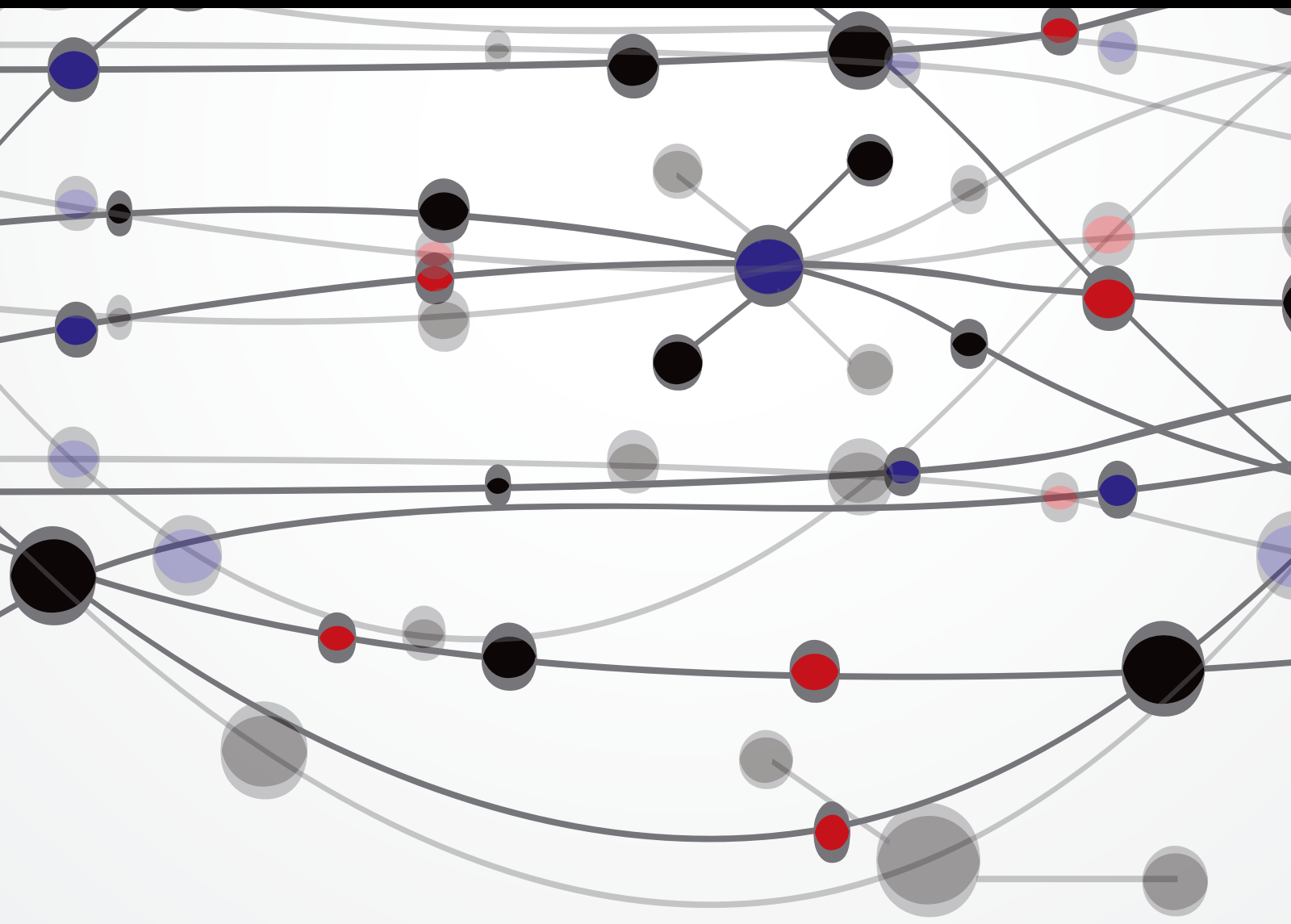
The Scientific World Journal

Gender Dysphoria: The Role of Sex Reassignment Surgery

Guest Editors: Miroslav L. Djordjevic, Christopher J. Salgado, Marta Bizic, and Franklin Emmanuel Kuehhas



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Editorial

Gender Dysphoria: The Role of Sex Reassignment Surgery

Miroslav L. Djordjevic,[1] Christopher J. Salgado,[2] Marta Bizic,[1] and Franklin Emmanuel Kuehhas[3]

[1] *School of Medicine, University of Belgrade, Serbia*
[2] *School of Medicine, University of Miami, FL, USA*
[3] *University of Vienna, Austria*

Correspondence should be addressed to Miroslav L. Djordjevic; djordjevic@uromiros.com

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This special issue represents a comprehensive, multidisciplinary look on gender dysphoria. We invited investigators to contribute original research articles as well as review articles that will further encourage the continuing efforts to understand the role of gender dysphoria, sex reassignment surgery, modalities of surgical treatment, and the patient's evaluation of hormonal, psychosocial, and psychosexual outcomes. We were particularly interested in articles describing new operative procedures, the modifications of old ones, the modalities of postoperative follow-up, the role of hormonal support, and the recommendations for the future. As a result, we have assembled this special issue with eight excellent papers providing authoritative and concise information on gender dysphoria patients and covering almost all aspects of their treatment.

In "*An overview of neovaginal reconstruction options in male to female transsexuals*," M. Bizic et al. reviewed numerous methods that have been described for vaginal reconstruction in the treatment of transgenders. The choice of surgical option for vaginoplasty depends on the surgeon's experience as well as on the patient's wishes and expectations. Sometimes a multidisciplinary approach is necessary in prevention of postoperative complications and poor psychosocial and psychosexual outcome. S. Vujović et al. investigated the importance of prenatal hormone exposure in the development of transsexualism by measurement of finger lengths in a sample of Serbian patients. In their paper entitled "*Finger length ratios in Serbian transsexuals*," both FtM and MtF patients were included and compared to cisgendered females and males. The results obtained support the biological origins of transsexualism.

The authors of "*Personality disorders in persons with gender identity disorder*" assessed personalities and personality disorders (PD) by comparing gender dysphoric and cisgender persons using the art's most frequently applied instrument, Structured Clinical Interview (SCID-II). Duisin et al. obtained significant results, some of which were similar to previous studies, while others diverged. Evaluation of PD's comorbidity with gender dysphoria is important for the optimization of treatment during the pretransitory and transitory periods, but for some patients it is relevant in the postoperative period as well. A paper entitled "*Assessment of self-perception of transsexual persons: pilot study of 15 patients*" by J. Barišić et al. investigates the self-perception of transsexuals by using the Rorschach test, an important and useful tool in psychological examination of candidates for sex reassignment surgery. The value of this pilot study lies in its examination of adaptive capacities for transition, which is of great importance in prediction of the outcome.

The complex anatomy of the clitoris is a subject area with which reconstructive surgeons must remain completely abreast. In their paper "*The role of clitoral anatomy in female to male sex reassignment surgery*," V. Vukadinovic et al. confirmed the significance of comprehensive understanding of the clitoral anatomy as a basis for a successful outcome after metoidioplasty. In addition, they pointed out the role of the clitoris in achieving a normal sexual life after transition from female to male, following either metoidioplasty or

total phalloplasty. Preliminary results from an Italian group of researchers, described by S. Bogliolo et al. in "*Robotic single-site surgery for female-to-male transsexuals: preliminary experience,*" showed us the importance of minimally invasive principles for hysterectomy and bilateral oophorectomy in FTM patients. Following the experience of laparoscopic approaches in reconstructive surgery, authors take a step beyond with recommendations on robotic surgery.

The paper entitled "*Psychosocial adjustment to sex reassignment surgery: a qualitative examination and personal experiences of six transsexual persons in Croatia*" presents N. Jokić-Begić's personal clinical experience in the specific cultural and religious environment of the Balkans. Exchange of the clinical observations of insights from the personal lives of transgender persons worldwide is significant, as it creates a medical and scientific ambience for overcoming the difficulties and obstacles gender dysphoric patients face throughout the process of transition and psychosocial adjustment after SRS. The authors stress the importance of social and medical support which sometimes highly correlates with the prolongation of transition period.

Finally, the paper from P. Tiewtranon'sgroup entitled "*The development of sex reassignment surgery in Thailand: a social perspective*" retrospectively evaluated the development of surgical procedures in Thailand. It describes how rich experience teamed with a dedication to surgical excellence provides the ideal environment for successful surgical treatment of transsexuals. The experiences described prove that guidelines for sex reassignment surgery are both simple to understand and useful to apply.

Acknowledgment

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Miroslav L. Djordjevic
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Review Article

An Overview of Neovaginal Reconstruction Options in Male to Female Transsexuals

Marta Bizic,[1] Vladimir Kojovic,[2] Dragana Duisin,[3] Dusan Stanojevic,[4,5] Svetlana Vujovic,[4,6] Aleksandar Milosevic,[7,8] Gradimir Korac,[1] and Miroslav L. Djordjevic[1,4]

[1] *University Children's Hospital, Tirsova 10, 11000 Belgrade, Serbia*
[2] *Institute for Child and Mother's Health "Dr Vukan Cupic", Radoja Dakica 6-8, 11070 Belgrade, Serbia*
[3] *Clinic of Psychiatry, Clinical Centre of Serbia, Pasterova 2, 11000 Belgrade, Serbia*
[4] *School of Medicine, University of Belgrade, Dr Subotica 8, 11000 Belgrade, Serbia*
[5] *Clinic for Gynecology and Obstetrics "Narodni Front", Kraljice Natalije 62, 11000 Belgrade, Serbia*
[6] *Institute of Endocrinology, Diabetes and Metabolic Diseases, Clinical Centre of Serbia, Dr Subotica 13, 11000 Belgrade, Serbia*
[7] *Clinical Hospital Centre "Zvezdara", Dimitrija Tucovica 161, 11050 Belgrade, Serbia*
[8] *Faculty of Dental Medicine, University of Belgrade, Rankeova 4, 11000 Belgrade, Serbia*

Correspondence should be addressed to Marta Bizic; martabizic@uromiros.com

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Transsexualism is a complex condition in which the person experiences the inconsistency between the desired gender and their biological gender. Absence of the vagina is devastating in male to female transsexuals. Creation of the neovagina is the main surgical problem in these patients. Historically, beginnings of the neovaginal creation have their roots in the treatment of Mayer-Rokitansky syndrome and conditions such as cloacal anomalies, certain intersex disorders, vaginal malignancies, or severe vaginal trauma, but have more recently found great purpose in male to female sex reassignment surgery. Many operative procedures have been described but none is ideal. Therefore, the search for new, improved solutions continues. In neovaginoplasty reconstruction of the vulvovaginal complex is performed in its entity. The gold standard in neovaginal reconstruction in male to female sex reassignment surgery is penile skin inversion technique with or without scrotal flaps, which enables adequate sensation of the neovagina, good neovaginal depth, good erotic sensitivity of the neclitoris, and esthetically acceptable labia minora and maiora.

1. Introduction

Transsexualism, as a condition, is widely misunderstood. In the light of their gender identity issues, transsexuals are generally perceived as emotionally unstable persons, incapable of coping with their everyday lives. The term "transsexual" came into professional and public usage in the 1950's to denote a person who aspired to or actually lived in the anatomically opposite gender, regardless of whether they had undergone a gender reassignment surgery and/or were undergoing hormonal treatment. Recently, however, the general public has become somewhat more aware and more accepting of transsexuals. In the International Classification of Diseases (ICD-10) *"transsexualism"* is described as a desire to live and be accepted as a member of the opposite sex, usually accompanied by a sense of discomfort with, or inappropriateness of, one's anatomic sex, and a wish to undergo surgery and hormonal treatment to make one's body as congruent as possible with one's preferred sex [1]. There are different studies regarding the prevalence of transsexualism in general population accounting for 1 : 7400 to 1 : 42000 in assigned males and 1 : 30040 to 1 : 104000 in assigned females [2–8]. Sex reassignment surgery (SRS) is the last step in an individual's transition to the preferred gender. It comprises surgical procedures that will reshape the individual's body into a body with the appearance of the desired gender. In male to female transsexual patients, the surgeon needs to reconstruct female genitalia, as well as to remodel a male body into a female-looking body.

One of the first surgeons, who successfully performed gender reassignment surgery from female to male, and later from male to female, was a plastic surgeon Sir Harold Gillies. Together with Dr. Ralph Millard, he performed a vaginoplasty using the skin flap technique that became the standard for the next few decades [9].

In male to female genital reassignment surgery, the objective is to create a vagina and external genital organs that are as feminine as possible in appearance, with no scars or traumatic postoperative neuromas, as concluded by Karim et al. [10]. The urethra is shortened, so that the urinary stream points downwards in the sitting position. In this procedure, it is important to avoid formation of fistulas or strictures. An ideal neovagina should be moist, elastic and hairless, no less than 10 cm in depth and about 3-4 cm in diameter, with no introital stenoses. Its innervation should provide adequate sensation, to achieve a satisfactory level of erogenous stimulation during sexual intercourse [10]. Clitoris should be small and obscured, but sensitive, offering the patient complete arousal. Labia minora and majora should be as similar as the female vulva as possible and notbulky.

A variety of surgical options exists for vaginal reconstruction. In this article, we review several different reconstructive approaches. Regardless of reconstruction method, the goals remain the same: creating a functional and aesthetically acceptable vagina and vulva, with a normal voiding function and satisfactory sexual function.

Nowadays, the two most widespread techniques for neovaginal reconstruction are "penile inversion technique", with or without combining scrotal flaps and the use of intestinal pedicled transplants. Due to their importance, these two techniques will be discussed in more detail, compared to other reviewed techniques.

2. Surgical Techniques for Vaginoplasty

2.1. Nongenital Skin Grafts. One of the first techniques in neovaginal reconstruction in transsexual patients, introduced by Abraham, dates from nineteen thirties and comprises the use of skin grafts [11]. In his technique, the skin graft was draped, inside-out, over a sponge placed between the rectum and urethra to serve as a mold, in line with the technique first published by Abbe in congenital vaginal absence in nineteenth century [12], and popularized later in 1938 by Banister and McIndoe [13]. Split-thickness skin grafting is commonly associated with low morbidity. Because of its relative simplicity, this method gained worldwide acceptance. The advantage of nongenital skin graft technique is that it is a single stage procedure, yielding a hairless neovagina of sufficient depth and width, with low risk of postoperative complications. The disadvantages include neovaginal prolapse, scarring of the donor area, circular scarring present at the neovaginal introitus, the tendency of the skin graft to shrink, condylomatosis, intraepithelial neoplasia in combination with Human Papilloma Virus (HPV), carcinoma, poor erogenous sensation and absence of natural lubrication [14–16].

2.2. Penile Skin Graft. Fogh-Anderson was the first to report the creation of a neovagina from a full thickness skin graft harvested from penile skin, as a male-to-female gender reassignment surgery in transsexuals, in 1956 [14, 17]. The skin graft was fixed to a mold, in line with the "McIndoe technique." This technique is also a single stage procedure; its other advantage is that it uses hairless penile skin for the creation of a neovagina, with almost no visible scars to the donor area. In addition, the risk of postoperative complications is low, due to the fact that full-thickness skin grafts are less prone to contraction than split-thickness skin grafts. Still, intermittent dilatation is required in these patients as well, for several months postoperatively, to prevent shrinking of the neovagina. In addition, they may develop the same postoperative complications as the patients with split-thickness neovaginas, such as condylomatosis, intraepithelial neoplasia in combination with HPV, carcinoma, poor erogenous sensation and absence of natural lubrication [14–16].

2.3. Genital Skin Flaps. As stated previously, Gilles and Millard reported the use of penile skin flap in the creation of a neovagina in male to female transsexuals in 1957 [9]. This procedure requires several sub-procedures to form the new vagina. Following the usual bilateral orchiectomy, the penis is dissected into its anatomical components, that is, the corpora cavernosa, the glans cap with the urethra and the neurovascular bundle, and the vascularized penile skin [9, 18, 19]. Quite a few modifications of this technique have been described since, and it remains the gold standard in male to female sex reassignment surgery. There are generally three groups of such modifications: (a) Use of inverted penile skin on an abdominal pedicle, as the sole graft, in the form of an inside-out skin tube [9, 14]; (b) Splitting the pedicled penile skin flap to create a rectangular flap, which is then augmented by a rectangular scrotal skin flap with a posterior pedicle to increase the size of the neovagina [14, 20]; (c) The pedicled penile skin flap that can also be enlarged with a long vascularized urethral flap, which is harvested and then embedded in the penile skin-tube flap [21, 22]. The advantages of the penile skin flap technique in comparison to the skin grafts techniques include a decreased tendency to contract, sensation provided by the pedicle, absence of hair on the flap and a far less common occurrence of neovaginal prolapse. The disadvantages include postoperative use of vaginal dilatators for at least 6 months after the surgery, according to instructions. Limited vaginal depth due to the limitation of penile skin length and mobilization of the pedicle results in wider anterior commissure that leaves clitoris more exposed and more sensitive and sometimes even painful during recovery. In cases where the penile skin length is insufficient, the scrotal skin flap can be used; however, unless this region is subjected to laser hair removal preoperatively, this will result in a partly hairy neovagina [23, 24].

One of the main issues is the corpora cavernosa dissection up to their attachments to the inferior ramus of the pubic bones [25]. In cases with very long corporeal crura, corporeal bodies are removed while the remnants of the corpora cavernosa (erectile tissue) are destroyed and the tunica albuginea

Figure 1: Marked incision lines for clitoroplasty and vaginoplasty.

sutured with absorbable sutures**.** This prevents any postoperative erection that can hinder future sexual intercourse or narrow the neovaginal introitus during arousal. To construct the new vagina, the skin of the penile body and prepuce (in uncircumcised patients) is harvested and then shaped into a vascularized island tube flap. Obtaining a long vascularized pedicle for the tube is of key importance, so the incision is made <2 cm above the base of the mobilized penile skin. At this point, the loose subcutaneous tissue allows for the formation of a long vascularized pedicle. At the base of the pedicle, a small incision is made to transpose the urethral flap [26]. The skin on the dorsal side of the tube flap is incised, leaving the vascularized subcutaneous tissue intact. Once a neovagina is created, a blunt dissection of the vaginal cavity is performed anterior to Denonvilliers fascia, taking care not to injure the rectum. A long-handled Deschamps ligature carrier preloaded with 2-0 absorbable suture is used to pierce the sacrospinous ligament medially to the ischial spine. The surgeon must pay attention not to place the suture close to the ischial spine to prevent injury of the pudendal nerve and internal pudendal vessels. The two ends of the suture are brought out so that the fixation stitches can be tied in place; one is passed through the skin and the other is passed through the urethral flap in the part situated in the distal third of the neovagina, after which the stitches are tied. In this way, a vaginopexy to the sacrospinous ligament is performed, with deep placement of the neovagina in the perineal cavity. This provides a good placement of the neovagina, avoiding its prolapse [22, 27, 28] (Figures 1, 2, 3,4,5, 6 and 7).

2.4. Nongenital Skin Flaps. As the male to female genital reconstructive surgery evolved, the search for a surgical technique with a more acceptable result for both patient and the surgeon lead to the use of nongenital skin flaps. There were different approaches from different centers, such as Cairins and De Villiers, who used medial thigh flap for neovaginal reconstruction in transsexual patients, and Huang who used inguinopudendal flaps to create the neovagina [29, 30]. Advantages of these techniques include the creation of a neovagina of an adequate depth, less risk of contraction and reduced period of postoperative dilatation compared to the nongenital skin graft technique. Disadvantages include scarring of the donor area, technically very demanding procedures and bulkiness of the flaps, with reduction of the neovaginal vault and no self-lubrication. Nevertheless,

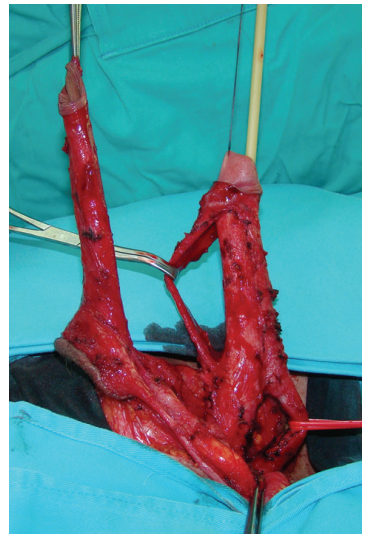

Figure 2: Freed penile skin, dissected neurovascular bundle and mobilized urethra.

Figure 3: Penile disassembly is done. Conically shaped clitoris with preserved neurovascular bundle is created.

Karim et al. believe that nongenital skin flaps should be considered only as alternative surgical methods in failed primary vaginoplasties, where a pedicled intestinal transplant is still their method of choice [10, 14].

2.5. Pedicled Intestinal Transplant Vaginoplasty. Bowel vaginoplasty was first described by Sneguireff in 1892 using the rectum in the treatment of vaginal agenesis [31]. Later, in 1904, Baldwin reported the use of ileal segment in the treatment of congenital vaginal absence, but also suggested that the sigmoid colon might be used for the same purpose [32]. In male to female transsexuals, first mention of intestinal vaginoplasty dates from 1974, when Markland and Hastings used cecum and sigmoid transplants [14, 33]. Ileum is frequently used by many surgeons, but its mucosa produces

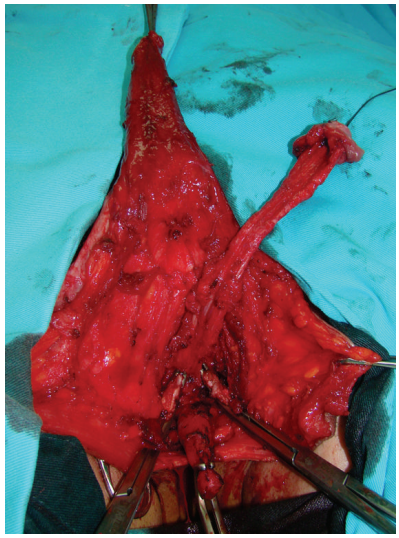

Figure 4: Removal of the corpora cavernosa deeply to their attachments on the pubic bones.

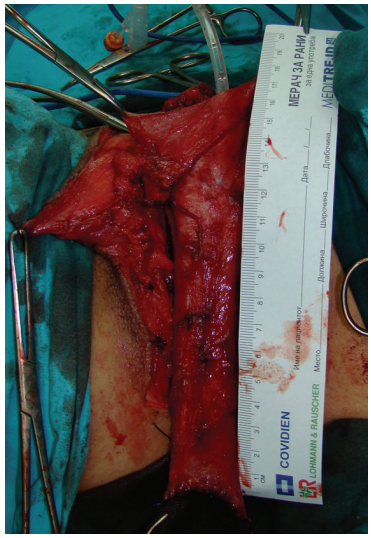

Figure 5: Long tube consisting of vascularized penile skin and urethral flap is inverted to form neovagina.

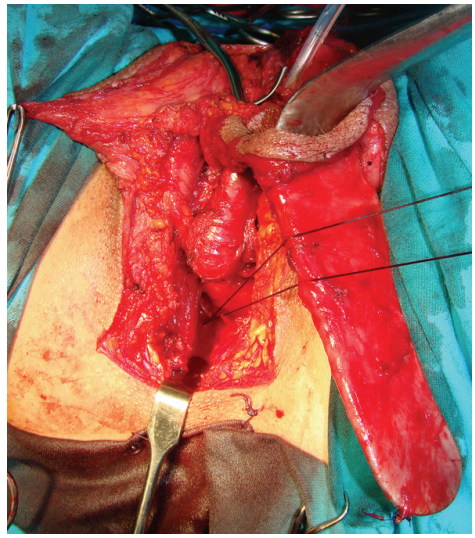

Figure 6: Neovagina is tied deeply to the sacrospinous ligament using Deschamps ligature carrier to prevent its prolapse.

Figure 7: Outcome at the end of surgery.

more abundant and less lubricating secretions then the sigmoid segment [34]. Rectosigmoid vaginoplasty results in a well-proportioned, self-lubricating neovagina, which does not require postoperative dilatation for extended periods of time [35, 36]. Use of rectosigmoid colon as a pedicled flap for the creation of a neovagina is effective, being that a graft of sufficient length may be obtained, with an excellent blood supply that could prevent complications such as shrinkage or narrowing. This segment is thick-walled, large in diameter and can tolerate trauma better than small bowel, bladder or skin grafts, and subsequently leads to a decreased risk of bleeding after sexual intercourse. Introital or perineal skin flaps are designed in a manner that prevents purse string scarring; in addition, they are approximated to the sigmoid vagina, for the same reason. This is usually achieved via a "U" shaped incision posterior to the urethra [37]. Complete mobilization of the vascularized flaps is performed, in order to ensure that the introital opening is located as high as possible, which prevents mucosal prolapse, as well as to achieve a more pleasing esthetic result, as the anastamosis will be deeply set and thus obscured. (Figures 8, 9 and 10) Postoperative management is simple and easy. The production of mucus can lead to excessive discharge, which decreases dramatically after 3–6 months, regardless of the sigmoid segment length. Filipas et al. recommended a daily vaginal cleansing regiment to evacuate the mucus, for a period of one month [38]. The use of vaginal dilatators to maintain neovaginal patency is

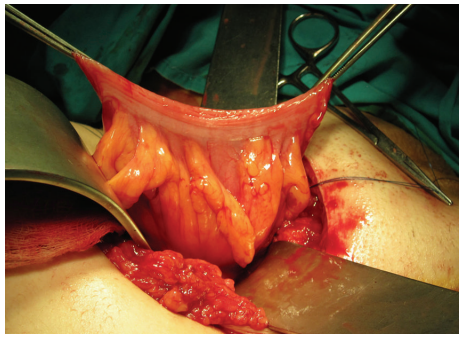

Figure 8: Harvested segment of sigmoid colon with its mesentery.

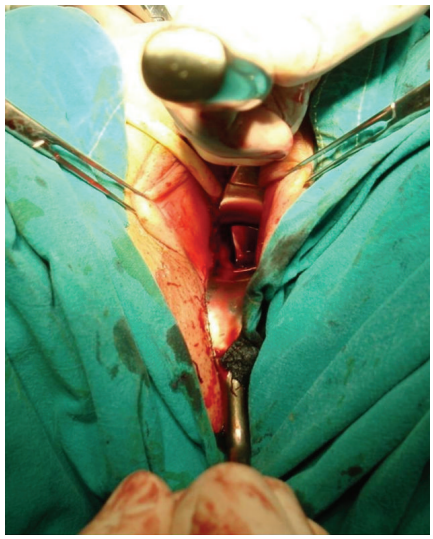

Figure 9: Anastomosis of the sigmoid colon with genital skin flaps, deeply hidden.

temporary and well tolerated by the majority of patients. Further disadvantages of intestinal vaginoplasty are the need for preoperative bowel preparation and additional abdominal surgery with intestinal anastomosis, which increases the risk of postoperative ileus. In addition, diversion colitis, as well as adenocarcinoma of neovagina, introital stenosis, mucocele and constipation have been reported [39–41], although with a low incidence.

Kim et al. recently concluded that rectosigmoid vaginoplasty is the best choice for male to female transsexuals who have previously undergone total penectomy and orchiectomy, or for those with previously failed skin vaginoplasty and for patients with Mayer-Rokitansky syndrome, as was also reported by Lima et al. [36, 42].

2.6. Clitoro-Labioplasty. Even though genital reconstructive surgery was primarily focused on finding the best technique of creating a neovagina that would allow the patient to engage in sexual intercourse, in recent years both patients and surgeons have become increasingly concerned with the aesthetic results of vulva and neoclitoris creation, as well as their ability to provide adequate erogenous sensation [43].

Figure 10: Appearance at the end of surgery.

A section of penile skin base is used to form the labia minora, which are sutured to the de-epithelialized area of the neoclitoris; thus the neoclitoris is hooded with the labia minora. Excessive scrotal skin is removed and the remaining section used to form the labia majora. A small posterior base of the inverted Y-incision, advocated by Karim et al., facilitates the creation of an aesthetically appealing posterior commissure [44]. However, secondary corrections may be needed because of the changes in appearance, due to the healing process, usually one year post-operatively [45].

A very important surgical step is the creation of a well-vascularized neoclitoris during the primary vaginal reconstruction. The first report of the construction of a clitoris was published by Brown in 1976, using a reduced glans, attached to its dorsal penile neurovascular pedicle [46]. The high percentage of clitoral necrosis reported by Brown himself provoked other authors to seek new or modified techniques in clitoroplasty [47, 48]. Up to 1995, creation of the neoclitoris was not an important part of surgical standards in MTF sex reassignment surgery. Nowadays, the glans cap is divided into two parts, ventral and dorsal; the dorsal section of the glans is reduced by excising the central ventral tissue, leaving the sides of the glans intact. Lateral excisions on the glans are not recommended, to avoid injuring the neurovascular bundle, which enters the glans cap lateroventrally. However, the sides are de-epithelialized and sutured, to obtain a conical shape of the neoclitoris [49].

Additional incisions and corrections in pursuit of a perfect outcome can endanger the penile skin blood supply and survival of the neoclitoris and result in hypertrophic scar formation, wound dehiscence, or partial or complete necrosis of the flap due to the tension on suture lines. The widely accepted opinion is that it is better to wait with the corrective procedures until wound healing was complete, because no further operation will be necessary in most patients. In cases where the ventral space between the labia majora is too wide, simultaneous infrapubic double-Z-plasties can be performed with great success [24, 45].

The clitoris, its prepuce and labia minora remain among the most difficult structures to reconstruct. The ideal

clitoro-labioplasty, which would yield a result resembling a biological female in every aspect, has not yet been achieved [14, 21].

3. Quality of Sexual Life

Most of the studies on transsexual patients focus on long-term psychological, surgical and physical health, while just a few focus on their sexual life after genital reassignment surgery [50, 51].

There are reports of sexual satisfaction after vaginoplasty in male to female patients, who were capable of achieving an orgasm in 70–80% [52]. As concluded by Lief and Hubschman, a patient can be sexually satisfied following a SRS, despite inadequate sexual functioning [53]. Our group also reported satisfactory results in 79% of male to female transgender patients following vaginoplasty involving penile skin combined with urethral flap [22, 26].

There are but a few reports presenting functional questionnaire-based results of vaginoplasty in patients after vaginal reconstruction, though majority of these studies are related to the patients with vaginal agenesis. Labus et al. reported absence of sexual dysfunction in 72.2% of their patients according the Female Sexual Function Index (FSFI), with depression symptoms in 22.2% [54]. Borkowski et al. assessed the functional results of Krzeski's cystovaginoplasty and patients' satisfaction using 18 parameters. Authors reported approximately 90% the overall satisfaction among the patients in the study group with the improvement of their sexual life and femininity [55]. Nevertheless, it is difficult to draw any general conclusion or to compare results between these studies, as different inventories and different surgical methods were used within different groups of patients.

Sexual expectations should be carefully discussed with the patients in preoperative preparation in order to help the patients deal with sexual changes and new function of new genitals. Aesthetic result, sexual arousal, lubrication as well as absence of pain during sexual intercourse are critical points of a successful male to female surgery. In their study, Weyers et al. reported that in average the transsexual women were very satisfied with their womanhood. Sexual functioning and sexual satisfaction assessed by FSFI was different in the study group according to the patient's sexual orientation, and markedly lower in transwomen with homosexual preference. As a generalized conclusion, authors stated that the modification of the FSFI questionnaire for the transwomen should be created to fully understand the sexual function and difficulties in transsexual women [56]. Psychological and psychosocial evaluation by structured interview and standardized questionnaires should be a part of this type of study. However, due to wide variations of circumstances and previous surgical involvement in these patients, such a study would still have certain limitations. In addition, it is difficult to identify a control group for any comparative [37, 54]. The lack of standardized methods for recording outcomes in terms of long term complications, as well as sexual function, limits the possibilities of direct comparison of results. Therefore, although a consensus on the ideal method of vaginal substitution may never be reached, efforts should be made to reach a consensus on the ideal way to follow these patients in the long term.

4. Conclusions

Functional satisfaction in patients undergoing male to female sex reassignment surgery is greatly reliant on adequate depth of the neovagina as well as on the sensation of the neoclitoris needed to achieve an orgasm. Overall satisfaction of the patients is also related to aesthetic appearance of the neocreated vulva, visibility of scars and need for repeat surgeries.

The goal of surgeons involved in male to female sex reassignment surgery should be to reach the procedure that will result in a neovagina that meets the patients' aesthetic and functional expectations.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

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References

[1] WHO, *International Statistical Classification of Diseases and Related Problems*, 10th Revision, WHO, Geneva, Switzerland, 2nd edition, 2005.

[2] P. J. van Kesteren, L. J. Gooren, and J. A. Megens, "An epidemiological and demographic study of transsexuals in the Netherlands," *Archives of Sexual Behavior*, vol. 25, no. 6, pp. 589–600, 1996.

[3] L. Garrels, G. Köckott, N. Michael et al., "Sex ratio of transsexuals in Germany: the development over three decades," *Acta Psychiatrica Scandinavica*, vol. 102, no. 6, pp. 445–448, 2000.

[4] G. de Cuypere, M. van Hemelrijck, A. Michel et al., "Prevalence and demography of transsexualism in Belgium," *European Psychiatry*, vol. 22, no. 3, pp. 137–141, 2007.

[5] J. F. Veale, "Prevalence of transsexualism among New Zealand passport holders," *Australian and New Zealand Journal of Psychiatry*, vol. 42, no. 10, pp. 887–889, 2008.

[6] S. Vujovic, S. Popovic, G. Sbutega-Milosevic, M. Djordjevic, and L. Gooren, "Transsexualism in Serbia: a twenty-year follow-up study," *Journal of Sexual Medicine*, vol. 6, no. 4, pp. 1018–1023, 2009.

[7] M. Hoshiai, Y. Matsumoto, T. Sato et al., "Psychiatric comorbidity among patients with gender identity disorder," *Psychiatry and Clinical Neurosciences*, vol. 64, no. 5, pp. 514–519, 2010.

[8] T. Baba, T. Endo, K. Ikeda et al., "Distinctive features of female-to-male transsexualism and prevalence of gender identity disorder in japan," *Journal of Sexual Medicine*, vol. 8, no. 6, pp. 1686–1693, 2011.

[9] H. Gillies and R. D. Millard Jr., "Genitalia," in *The Principles and Art of Plastic Surgery*, pp. 369–388, Butterworth, London, UK, 1957.

[10] R. B. Karim, J. J. Hage, and J. W. Mulder, "Neovaginoplasty in male transsexuals: review of surgical techniques and recommendations regarding eligibility," *Annals of Plastic Surgery*, vol. 37, no. 6, pp. 669–675, 1996.

[11] F. Abraham, "Genitalumwandlung an zwei männlichen Transvestiten," *Zeitschrift für Sexualwissenschaft und Sexualpolitik*, vol. 18, pp. 223–226, 1931.

[12] R. Abbe, "New method of creating a vagina in a case of congenital absence," *Medical Record*, vol. 54, pp. 836–838, 1898.

[13] J. B. Banister and A. H. McIndoe, "Congenital absence of the vagina, treated by means of an indwelling skin graft," *Proceedings of the Royal Society of Medicine*, vol. 31, no. 9, pp. 1055–1056, 1938.

[14] G. Selvaggi, P. Ceulemans, G. de Cuypere et al., "Gender identity disorder: general overview and surgical treatment for vaginoplasty in male-to-female transsexuals," *Plastic and Reconstructive Surgery*, vol. 116, no. 6, pp. 135e–145e, 2005.

[15] D. N. Steffanoff, "Late development of squamous cell carcinoma in a split skin graft lining a vagina: case report," *Plastic and Reconstructive Surgery*, vol. 51, no. 4, pp. 454–456, 1973.

[16] H. M. Fernandes, T. P. Manolitsas, and T. W. Jobling, "Carcinoma of the neovagina after male-to-female reassignments," *Journal of Lower Genital Tract Disease*, vol. 18, no. 2, pp. E43–E45, 2014.

[17] P. Fogh-Andersen, "Transsexualism, an attempt at surgical management," *Scandinavian Journal of Plastic and Reconstructive Surgery*, vol. 3, no. 1, pp. 61–64, 1969.

[18] R. Meyer and U. K. Kesselring, "One-stage reconstruction of the vagina with penile skin as an island flap in male transsexuals," *Plastic and Reconstructive Surgery*, vol. 66, no. 3, pp. 401–406, 1980.

[19] S. Perovic, "Male to female surgery: a new contribution to operative technique," *Plastic and Reconstructive Surgery*, vol. 91, no. 4, pp. 703–712, 1993.

[20] J. C. Goddard, R. M. Vickery, A. Qureshi, D. J. Summerton, D. Khoosal, and T. R. Terry, "Feminizing genitoplasty in adult transsexuals: early and long-term surgical results," *The British Journal of Urology International*, vol. 100, no. 3, pp. 607–613, 2007.

[21] M. Sohn and H. A. G. Bosinski, "Gender identity disorders: diagnostic and surgical aspects (CME)," *Journal of Sexual Medicine*, vol. 4, no. 5, pp. 1193–1208, 2007.

[22] S. V. Perovic, D. S. Stanojevic, and M. L. J. Djordjevic, "Vaginoplasty in male transsexuals using penile skin and a urethral flap," *The British Journal of Urology International*, vol. 86, no. 7, pp. 843–850, 2000.

[23] J. J. Hage, "Vaginoplasty in male to female transsexuals by inversion of penile and scrotal skin," in *Reconstructive and Plastic Surgery of the External Genitalia*, R. M. Ehrlich and G. J. Alter, Eds., pp. 294–300, WB Saunders, Philadelphia, Pa, USA, 1999.

[24] S. Krege, A. Bex, G. Lümmen, and H. Rübben, "Male-to-female transsexualism: a technique, results and long-term follow-up in 66 patients," *The British Journal of Urology International*, vol. 88, no. 4, pp. 396–402, 2001.

[25] R. B. Karim, J. J. Hage, F. G. Bouman, and J. J. M. L. Dekker, "The importance of near total resection of the corpus spongiosum and total resection of the corpora cavernosa in the surgery of male to female transsexuals," *Annals of Plastic Surgery*, vol. 26, no. 6, pp. 554–557, 1991.

[26] S. V. Perovic, D. S. Stanojevic, and M. L. Djordjevic, "Vaginoplasty in male to female transsexuals using penile skin and urethral flap," *International Journal of Transgenderism*, vol. 8, no. 1, pp. 43–64, 2005.

[27] D. S. Stanojevic, M. L. Djordjevic, A. Milosevic et al., "Sacrospinous ligament fixation for neovaginal prolapse prevention in male-to-female surgery," *Urology*, vol. 70, no. 4, pp. 767–771, 2007.

[28] B. Amend, J. Seibold, P. Toomey, A. Stenzl, and K. D. Sievert, "Surgical reconstruction for male-to-female sex reassignment," *European Urology*, vol. 64, no. 1, pp. 141–149, 2013.

[29] T. S. Cairins and W. de Villiers, "Vaginoplasty," *South African Medical Journal*, vol. 57, no. 2, pp. 50–55, 1980.

[30] T. T. Huang, "Twenty years of experience in managing gender dysphoric patients: I. Surgical management of male transsexuals," *Plastic and Reconstructive Surgery*, vol. 96, no. 4, pp. 921–930, 1995.

[31] W. F. Sneguireff, "Zwei falle von restitutio vaginae per transplantation en ani et recti," *Zentralblatt für Gynäkologie*, vol. 28, article 772, 1904.

[32] J. Baldwin, "The formation of an artificial vagina by intestinal transplantation," *Annals of Surgery*, vol. 40, article 398, 1904.

[33] C. Markland and D. Hastings, "Vaginal reconstruction using cecal and sigmoid bowel segments in transsexual patients," *Journal of Urology*, vol. 111, no. 2, pp. 217–219, 1974.

[34] J. X. Wu, B. Li, T. Liu et al., "Eighty-six cases of laparoscopic vaginoplasty using an ileal segment," *Chinese Medical Journal*, vol. 122, no. 16, pp. 1862–1866, 2009.

[35] S. Perovic, D. Stanojevic, M. Djordjevic, and N. Djakovic, "Refinements in rectosigmoid vaginoplasty," *European Urology*, vol. 33, pp. 156–157, 1998.

[36] S. K. Kim, J. H. Park, K. C. Lee, J. M. Park, J. T. Kim, and M. C. Kim, "Long-term results in patients after rectosigmoid vaginoplasty," *Plastic and Reconstructive Surgery*, vol. 112, no. 1, pp. 143–151, 2003.

[37] M. L. Djordjevic, D. S. Stanojevic, and M. R. Bizic, "Rectosigmoid vaginoplasty: clinical experience and outcomes in 86 cases," *Journal of Sexual Medicine*, vol. 8, no. 12, pp. 3487–3494, 2011.

[38] D. Filipas, P. Black, and R. Hohenfellner, "The use of isolated caecal bowel segment in complicated vaginal reconstruction," *The British Journal of Urology International*, vol. 85, no. 6, pp. 715–719, 2000.

[39] F. Abbasakoor, C. Mahon, and P. B. Boulos, "Diversion colitis in sigmoid neovagina," *Colorectal Disease*, vol. 6, no. 4, pp. 290–291, 2004.

[40] H. Hiroi, T. Yasugi, K. Matsumoto et al., "Mucinous adenocarcinoma arising in a neovagina using the sigmoid colon thirty years after operation: a case report," *Journal of Surgical Oncology*, vol. 77, no. 1, pp. 61–64, 2001.

[41] J. K. Parsons, S. L. Gearhart, and J. P. Gearhart, "Vaginal reconstruction utilizing sigmoid colon: complications and long-term results," *Journal of Pediatric Surgery*, vol. 37, no. 4, pp. 629–633, 2002.

[42] M. Lima, G. Ruggeri, B. Randi et al., "Vaginal replacement in the pediatric age group: a 34-year experience of intestinal vaginoplasty in children and young girls," *Journal of Pediatric Surgery*, vol. 45, no. 10, pp. 2087–2091, 2010.

[43] E. Belgrano and A. Lissiani, "La femminilizzazione dei genitali esterni e la creazione della neovagina," in *Il Transessualismo*, E. Belgrano, B. Fabris, and C. Trombetta, Eds., pp. 87–97, Editrice Kurtis, Milan, Italy, 1999.

[44] R. B. Karim, J. J. Hage, F. G. Bouman, R. de Ruyter, and P. J. M. van Kesteren, "Refinements of pre-, intra-, and postoperative care to prevent complications of vaginoplasty in male transsexuals," *Annals of Plastic Surgery*, vol. 35, no. 3, pp. 279–284, 1995.

[45] J. J. Hage, A. Y. Goedkoop, R. B. Karim, and R. C. J. Kanhai, "Secondary corrections of the vulva in male-to-female transsexuals," *Plastic and Reconstructive Surgery*, vol. 106, no. 2, pp. 350–359, 2000.

[46] J. Brown, "Creation of a functional clitoris and aesthetically pleasing introitus in sex conversion," in *Transactions of the Sixth International Congress of Plastic and Reconstructive Surgery*, D. Marchac and J. T. Hueston, Eds., pp. 654–655, Masson, Paris, France, 1976.

[47] S. O. Rubin, "A method of preserving the glans penis as a clitoris in sex conversion operations in male transsexuals," *Scandinavian Journal of Urology and Nephrology*, vol. 14, no. 3, pp. 215–217, 1980.

[48] J. Eldh, M. T. Edgerton, and D. A. Gilbert, "Construction of a neovagina with preservation of the glans penis as a clitoris in male transsexuals," *Plastic and Reconstructive Surgery*, vol. 91, no. 5, pp. 895–900, 1993.

[49] L. Szalay, "Construction of a neoclitoris in male transsexuals," *Plastic and Reconstructive Surgery*, vol. 93, no. 3, pp. 646–648, 1994.

[50] G. de Cuypere, C. Jannes, and R. Rubens, "Psychosocial functioning of transsexuals in Belgium," *Acta Psychiatrica Scandinavica*, vol. 91, no. 3, pp. 180–184, 1995.

[51] A. A. Lawrence, "Patient-reported complications and functional outcomes of male-to-female sex reassignment surgery," *Archives of Sexual Behavior*, vol. 35, no. 6, pp. 717–727, 2006.

[52] G. de Cuypere, G. T'Sjoen, R. Beerten et al., "Sexual and physical health after sex reassignment surgery," *Archives of Sexual Behavior*, vol. 34, no. 6, pp. 679–690, 2005.

[53] H. I. Lief and L. Hubschman, "Orgasm in the postoperative transsexual," *Archives of Sexual Behavior*, vol. 22, no. 2, pp. 145–155, 1993.

[54] L. D. Labus, M. L. Djordjevic, D. S. Stanojevic, M. R. Bizic, B. Z. Stojanovic, and T. M. Cavic, "Rectosigmoid vaginoplasty in patients with vaginal agenesis: sexual and psychosocial outcomes," *Sexual Health*, vol. 8, no. 3, pp. 427–430, 2011.

[55] A. Borkowski, M. Czaplicki, and P. Dobronski, "Twenty years of experience with Krzeski's cystovaginoplasty for vaginal agenesis in Mayer-Rokitansky-Küster-Hauser syndrome: anatomical, histological, cytological and functional results," *The British Journal of Urology International*, vol. 101, no. 11, pp. 1433–1440, 2008.

[56] S. Weyers, E. Elaut, P. de Sutter et al., "Long-term assessment of the physical, mental, and sexual health among transsexual women," *Journal of Sexual Medicine*, vol. 6, no. 3, pp. 752–760, 2009.

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Research Article

Finger Length Ratios in Serbian Transsexuals

Svetlana Vujović,[1] Srdjan Popović,[1] Ljiljana Mrvošević Marojević,[1] Miomira Ivović,[1] Milina Tančić-Gajić,[1] Miloš Stojanović,[1] Ljiljana V. Marina,[1] Marija Barać,[1] Branko Barać,[1] Milena Kovačević,[2] Dragana Duišin,[3] Jasmina Barišić,[3] Miroslav L. Djordjević,[4] and Dragan Micić[1]

[1] *Clinic for Endocrinology, Diabetes and Metabolic Diseases, Clinical Centre of Serbia, Faculty of Medicine, University of Belgrade, Dr Subotića 13, 11000 Belgrade, Serbia*
[2] *Faculty of Medicine, University of Banja Luka, Bosnia and Herzegovina*
[3] *Clinic for Psychiatry, Clinical Centre of Serbia, Serbia*
[4] *University Childrens Hospital, Tiršova 10, 11000 Belgrade, Serbia*

Correspondence should be addressed to Svetlana Vujović; vujovics@eunet.rs

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Atypical prenatal hormone exposure could be a factor in the development of transsexualism. There is evidence that the 2nd and 4th digit ratio (2D : 4D) associates negatively with prenatal testosterone and positively with estrogens. The aim was to assess the difference in 2D : 4D between female to male transsexuals (FMT) and male to female transsexuals (MFT) and controls. We examined 42 MFT, 38 FMT, and 45 control males and 48 control females. Precise measurements were made by X-rays at the ventral surface of both hands from the basal crease of the digit to the tip using vernier calliper. Control male and female patients had larger 2D : 4D of the right hand when compared to the left hand. Control male's left hand ratio was lower than in control female's left hand. There was no difference in 2D : 4D between MFT and control males. MFT showed similar 2D : 4D of the right hand with control women indicating possible influencing factor in embryogenesis and consequently finger length changes. FMT showed the lowest 2D : 4D of the left hand when compared to the control males and females. Results of our study go in favour of the biological aetiology of transsexualism.

1. Introduction

Gender dysphoria is characterized by suffering from a strong, persistent discomfort between biological sex and experienced-expressed gender, with significant impairment in interpersonal, familial, social, professional, and other important areas of functioning [1]. Since 1964, when Harry Benjamin defined transsexualism, many etiological hypotheses were suggested. The cause of transsexualism remains unclear. The hypothesis that atypical prenatal hormone exposure could be a factor in the development of the transsexualism was examined by establishing whether an atypical pattern of digit length could be one of these manifestations [2]. Largest ever study of transsexual genetic, which compared the length of androgen receptor gene, the gene which is known to make circulating testosterone less effective, shown longer androgen receptor gene in male to female (MF) transsexuals. Less potent testosterone could affect the development of the brain "under masculinization" and make it more structurally similar to female brain (Prince Henry's Institute). This study is under criticism of many other scientific groups and require further examinations.

Sexual orientation in humans may be influenced by levels of prenatal sex steroids which canalize neuroendocrine development. As well, some lines of evidence for sexual-orientation-related differences in somatic markers of prenatal sex hormones support this view [3].

Recent attention has been paid to gender specific patterns of asymmetry in paired bilateral traits. Sexual dimorphism on digit length ratio is a feature common to many mammals

[4]. Previous studies indicated that the fingers in the adult human hand differ in length and in distal extent in the clear majority of males [5]. The distal extent of the ring finger (4D) tends to be relatively greater, using the middle finger as standard, than the index finger (2D) in men. So, men have smaller 2D : 4D ratio compared to women. It was hypothesized that finger length pattern development might be affected by early androgen exposure. There is evidence that the ratio of the length of 2nd and 4th digits (2D : 4D) associates negatively with prenatal testosterone and positively with prenatal estrogens [6].

During early fetal life the digits of the hands are similar in length. Subsequently, under hormone exposure (predominantly androgens), differentiation leads to a pattern of unequal finger lengths, described by Peters et al. as the finger-digit length pattern [7]. The sexual dimorphism is determined as early as the 14th week of fetal life [8]. A significant negative association between 2D : 4D ratio and fetal testosterone/fetal estradiol ratio was found in amniotic fluid. These findings lent support to an association between low 2D : 4D and high levels of free testosterone relative to free estradiol and high 2D : 4D with low free testosterone relative to free estradiol [9]. Prenatal androgen appears to be important in the development of 2D : 4D sex difference, since it has been reported in children as young as 2 years old and since human exposed to supernormal androgen level display a smaller 2D : 4D ratio. The common control by the Hox genes of the differentiation of both the urogenital system and the appendicular skeleton has been proposed as an explanation for the recent finding that fluctuating asymmetry and the 2D : 4D are both associated [10, 11].

The androgen receptor gene contains a domain, which includes a variable number of CAG sequences and alleles with low number of CAG repeats show high transactivation activity when complexed with testosterone. Low number of CAG repeats and low 2D : 4D are both associated with high sperm number and protection against breast cancer. This suggests that CAG number and 2D : 4D are correlated; that is, low CAG number and low 2D : 4D indicate high activation of androgen-responsive genes [2].

Second and forth digit ratio was also found to be correlated with sexual orientation, left hand preference, fetal growth, Asperger syndrome, sperm count, autism, breast cancer in women, and myocardial infarction in men [9, 12].

Such an indirect parameter, as digit-length, can partly reflect hormone milieu during fetal life.

In the last 20 years Belgrade gender team followed up 250 transsexuals. While many previous studies founded higher incidence of male to female transsexuals, compared to female to male transsexuals, our study shown the equal number [13]. So, it was interesting to compare the digit length ratio (2D : 4D) in our country and compare them with the results from other studies and controls.

The aim of this study was to determine whether adult sexually dimorphic physical traits (like finger length ratio) relate to traits that are largely determined in utero, namely, whether reduced androgenization in utero during fetal development influenced occurrence of female to male transsexuals (FMT) and reduced androgens in male to female transsexuals (MFT). In addition, we wanted to assess difference in 2D : 4D ratio between transsexuals and controls.

Table 1: Some characteristics of transsexuals.

Characteristics	Male to female	Female to male
Years of age	28.5 ± 3.6	34.3 ± 4.6
Weight (kg)	65.5 ± 10.8	69.1 ± 11.3
Hight (cm)	184.8 ± 12.3	168.8 ± 10.2
BMI (kg/m^2)	24.2 ± 2.6	22.3 ± 3.7
Age at request (years)	23.5 ± 1.2	27.0 ± 3.4
Time since operation (years)	1.2 ± 2.3	1.4 ± 3.1
Mother's age (years)	26.0 ± 11.2	26.2 ± 20.3
Father's age (years)	30.7 ± 8.2	32.9 ± 10.1

2. Subjects and Methods

The tested groups were divided into the following:

(I) male to female transsexuals (MF): 42 subjects.

(II) female to male transsexuals (FM): 38 subjects.

Main characteristics of transsexuals are shown in Table 1.

The diagnosis of gender identity disorder was made by consensus of two board certified psychiatrists, according to the criteria of the 4th edition of the Diagnostic and Standard Manual of Mental Disorders [1].

They were, otherwise, healthy individuals:

(III) male controls (MC): 45 subjects, 30 ± 3.4 years of age, BMI 24 ± 3.2 kg/m^2.

(IV) female controls (FC): 48 subjects, 28 ± 4.1 years of age, BMI 22.4 ± 3.1 kg/m^2, with regular menstrual cycles.

Manning et al. [14] found that 2D : 4D from photocopies tended to be lower than that from direct measurements. Finger length differences could result from the shapes of fat pads at the tips of the fingers and these may be dependent on sex and sexual orientation. So, we made the decision to make a more precise measurement of digit lengths by X-rays at the ventral surface of the both hands from the basal crease of the digit to the tip using vernier caliper measuring to 0.05 mm, according to the standard published procedure and recommended guidelines of Bergsma and Feingold [15]. This measurement is known to show high degree of repeatability. Intraobserver variability in measurement technique was 0.01%. All measures were done in transsexuals prior to hormone reassignment therapy.

At the time of the research the medical authorities in Serbia did not require approval of the Ethic Committee. Participation in the study was voluntary and anonymous.

We have used parametric test (unpaired t-test, simple linear and multiple regression test) for all analysis. Means and standard errors were reported as measures of central tendency and dispersion. Statistical analysis was performed with ANOVA, Kruskal-Wallis and Wilcoxon test.

3. Results

Results of the 2D : 4D ratio in male to female transsexuals, female to male transsexuals, and control males and females are shown on Figure 1.

Our study found larger 2D : 4D for right hand in control males, compared to left hand (0.928 versus 0.935). Control female exhibited, as well, larger 2D : 4D for right hand, compared to left hand (0.921 versus 0.945). Control males left hand ratio 2D : 4D is lower (0.935) than in female left hand control (0.945) while there were no differences for the right hand (0.928 versus 0.921).

No differences were found between MFT and control males in 2D : 4D (0.935 : 0.935). MFT shown similar 2D : 4D of the right hand with control women (0.92 versus 0.921) indicating some possible etiological factor influencing period of embryogenesis and finger length changes. Interestingly, FMT shown the lowest 2D : 4D ratio of the left hand compared to the ratio in control males and females (0.926 versus 0.935 versus 0.945).

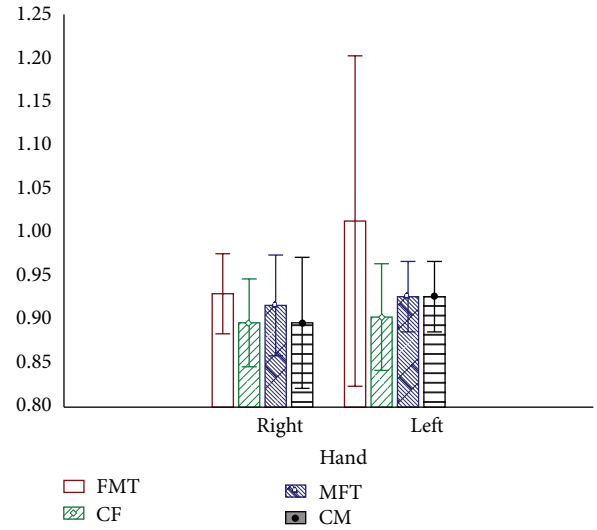

Figure 1: Finger length patterns in transsexuals and controls. FMT: female to male transsexuals. CF: control females. MFT: male to female transsexuals. CM: control males.

4. Discussion

The etiology of transsexualism is not yet clarified. Many hypothesis exist and this study shown some more data in examining some indirect parameters of early androgen exposure of the sexual dimorphic brain region and changes of finger length ratio.

From the period when Swaab discovered changes in a special brain nucleus differences between male and female transsexuals and controls attention was paid on all other body characteristics.

Kallai et al. [16] found that the 2D : 4D ratio was associated with and asymmetry in the hippocampal subregion. Smaller volume of the left side was found in posterior part of the hippocampus in female with a low (masculine type) 2D : 4D ratio. Thus development of the middle and posterior regions of the hippocampal formation may respond in opposite ways to prenatal levels of testosterone. Such a difference was not detected in some other brain regions. Our study confirmed that FMT had the lowest left hand 2D : 4D compared to control males and control females (0.926 versus 0.928 versus 0.945).

Study of Manning et al. [17] showed that 2D : 4D in right and left hands had a sexually dimorphic pattern. They found that in males 2D : 4D was 0.98 meaning that fourth digit tended to be longer than second while in females the ratio tended to be 1.0 meaning equal length. Our study indicated the ratio of 0.935 in control male left hand, while in control females left hand it was 0.945. Normative values of male mean 2D : 4D ratio vary between 0.94 and 1.0 across population [9]. We found 2D : 4D male ratio (right hand 0.928 versus left hand 0.935). According to Buck et al. study [18] the male ratio 2D : 4D was 0.918 and female 0.927. Larger sex differences were found for the right hand of males indicating that the right hand 2D : 4D is more sensitive to fetal androgens than the left hand ratio [19].

Schneider et al. [20] found 2D : 4D in MFT similar to that in control female which is consistent with our findings for the right hand (0.920 versus 0.91) confirming lower androgenization effects in MFT during embryogenesis.

FMT had the lowest left hand 2D : 4D compared to control females and control males (0.926 versus 0.945 versus 0.945) confirming the hypothesis of androgenization of female brain during prenatal period in FMT.

Peters et al. [5] have shown that the sexual dimorphism in finger measures is more strongly expressed in the distal extent of finger tips than in the length of finger. Smaller between-finger differences were found for females than for males. Lesser distal extent of the index finger, relative to the middle finger, was found in males than in females.

Nevertheless, Bang et al. [11] confirmed that finger length measurements do not have power to predict the testicular function in adult men.

Meta-analysis of accumulates evidence of effects of functional androgen receptor gene variants and 2D : 4D does not support initial evidence [21].

The present data suggest an early organizational effect of sex hormones through the association between body shape and finger length patterns. Also, these data draw attention to difficulties in the interpretation of results when somatic features are employed as biological markers.

5. Conclusion

Transsexualism in humans is biological in origin. Our findings support a biological etiology of MFT implicating decreased prenatal androgen exposure in MFT. 2D : 4D could be potentially used as a marker for prenatal androgen exposure.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

References

[1] American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders*, American Psychiatric Association Press, Washington, DC, USA, 5th edition, 2013.

[2] J. T. Manning, P. E. Bundred, and B. F. Flanagan, "The ratio of 2nd to 4th digit length: a proxy for transactivation activity of the androgen receptor gene?" *Medical Hypotheses*, vol. 59, no. 3, pp. 334–336, 2002.

[3] Q. Rahman, "Fluctuating asymmetry, second to fourth finger length ratios and human sexual orientation," *Psychoneuroendocrinology*, vol. 30, no. 4, pp. 382–391, 2005.

[4] W. M. Brown, C. J. Finn, and S. M. Breedlove, "Sexual dimorphism in digit-length ratios of laboratory mice," *Anatomical Record*, vol. 267, no. 3, pp. 231–234, 2002.

[5] M. Peters, K. Mackenzie, and P. Bryden, "Finger length and distal finger extent patterns in humans," *The American Journal of Physical Anthropology*, vol. 117, no. 3, pp. 209–217, 2002.

[6] W. M. Brown, M. Hines, B. A. Fane, and S. M. Breedlove, "Masculinized finger length patterns in human males and females with congenital adrenal hyperplasia," *Hormones and Behavior*, vol. 42, no. 4, pp. 380–386, 2002.

[7] M. Peters, Ü. Tan, Y. Kang, L. Teixeira, and M. Mandal, "Sex-specific finger-length patterns linked to behavioral variables: consistency across various human populations," *Perceptual and Motor Skills*, vol. 94, no. 1, pp. 171–181, 2002.

[8] F. W. George, J. E. Griffins, M. Leskin, and J. D. Wilson, "Endocrine control of sexual differentiation," in *Fetal Endocrinolog*, M. J. Nov and J. A. Resko, Eds., pp. 341–357, Academic Press, New York, NY, USA, 1981.

[9] S. Lutchmaya, S. Baron-Cohen, P. Raggatt, R. Knickmeyer, and J. T. Manning, "2nd to 4th digit ratios, fetal testosterone and estradiol," *Early Human Development*, vol. 77, no. 1-2, pp. 23–28, 2004.

[10] R. C. Firman, L. W. Simmons, J. M. Cummins, and P. L. Matson, "Are body fluctuating asymmetry and the ratio of 2nd to 4th digit length reliable predictors of semen quality?" *Human Reproduction*, vol. 18, no. 4, pp. 808–812, 2003.

[11] A. K. Bang, E. Carlsen, M. Holm, J. H. Petersen, N. E. Skakkebaæk, and N. Jørgensen, "A study of finger lengths, semen quality and sex hormones in 360 young men from the general Danish population," *Human Reproduction*, vol. 20, no. 11, pp. 3109–3113, 2005.

[12] A. Ökten, M. Kalyoncu, and N. Yariş, "The ratio of second- and fourth-digit lengths and congenital adrenal hyperplasia due to 21-hydroxylase deficiency," *Early Human Development*, vol. 70, no. 1-2, pp. 47–54, 2002.

[13] S. Vujovic, S. Popovic, G. Sbutega-Milosevic, M. Djordjevic, and L. Gooren, "Transsexualism in Serbia: a twenty-year follow-up study," *Journal of Sexual Medicine*, vol. 6, no. 4, pp. 1018–1023, 2009.

[14] J. T. Manning, B. Fink, N. Neave, and N. Caswell, "Photocopies yield lower digit ratios (2D : 4D) than direct finger measurements," *Archives of Sexual Behavior*, vol. 34, no. 3, pp. 329–333, 2005.

[15] M. Feingold, "The face and syndrome identification," in *Morphogenesis and Malformation of Face and Brain, the National Foundation-March of Dimes Birth Defects*, vol. 11 of *Original Article Series Bergsma*, pp. 213–215, March of Dimes, New York, NY, USA, 1975.

[16] J. Kallai, Á. Csathó, F. Kövér et al., "MRI-assessed volume of left and right hippocampi in females correlates with the relative length of the second and fourth fingers (the 2D : 4D ratio)," *Psychiatry Research*, vol. 140, no. 2, pp. 199–210, 2005.

[17] J. T. Manning, D. Scutt, J. Wilson, and D. I. Lewis-Jones, "The ratio of 2nd to 4th digit length: a predictor of sperm numbers and concentrations of testosterone, luteinizing hormone and oestrogen," *Human Reproduction*, vol. 13, no. 11, pp. 3000–3004, 1998.

[18] J. J. Buck, R. M. Williams, I. A. Hughes, and C. L. Acerini, "In-utero androgen exposure and 2nd to 4th digit length ratio—comparisons between healthy controls and females with classical congenital adrenal hyperplasia," *Human Reproduction*, vol. 18, no. 5, pp. 976–979, 2003.

[19] D. McFadden and E. Shubel, "Relative lengths of fingers and toes in human males and females," *Hormones and Behavior*, vol. 42, no. 4, pp. 492–500, 2002.

[20] H. J. Schneider, J. Pickel, and G. K. Stalla, "Typical female 2nd-4th finger length (2D : 4D) ratios in male-to-female transsexuals—possible implications for prenatal androgen exposure," *Psychoneuroendocrinology*, vol. 31, no. 2, pp. 265–269, 2006.

[21] M. Voracek, "No effect of AR gene CAG and GGC repeat polymorphism on digit ratio (2D : 4D): meta analysis," Vienna, Austria, 2013.

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Research Article

Personality Disorders in Persons with Gender Identity Disorder

Dragana Duišin,[1] Borjanka Batinić,[1,2] Jasmina Barišić,[1] Miroslav L. Djordjevic,[3] Svetlana Vujović,[4] and Marta Bizic[3]

[1] *Clinic of Psychiatry, Clinical Centre of Serbia, 11000 Belgrade, Serbia*
[2] *Department of Psychology, Faculty of Philosophy, University of Belgrade, 11000 Belgrade, Serbia*
[3] *Children's Hospital, School of Medicine, University of Belgrade, 11000 Belgrade, Serbia*
[4] *Clinic of Endocrinology, Clinical Centre of Serbia, School of Medicine, University of Belgrade, 11000 Belgrade, Serbia*

Correspondence should be addressed to Dragana Duišin; draganaduisin@gmail.com

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Background. Investigations in the field of gender identity disorder (GID) have been mostly related to psychiatric comorbidity and severe psychiatric disorders, but have focused less on personality and personality disorders (PDs). *Aims.* The aim of the study was to assess the presence of PDs in persons with GID as compared to cisgendered (a cisgender person is a person who is content to remain the gender they were assigned at birth) heterosexuals, as well as to biological sex. *Methods.* The study sample consisted of 30 persons with GID and 30 cisgendered heterosexuals from the general population. The assessment of PDs was conducted by application of the self-administered Structured Clinical Interview for DSM-IV Axis II PDs (SCID-II). *Results.* Persons with GID compared to cisgender heterosexuals have higher presence of PDs, particularly Paranoid PD, avoidant PDs, and comorbid PDs. In addition, MtF (transwomen are people assigned male at birth who identify as women) persons are characterized by a more severe psychopathological profile. *Conclusions.* Assessment of PDs in persons with GID is of great importance as it comprises a key part of personalized treatment plan tailoring, as well as a prognostic factor for sex-reassignment surgery (SRS) outcome.

1. Introduction

Persons diagnosed, according to Diagnostic and Statistical Manual of Mental Disorders 4th edition (DSM-IV) [1], with gender identity disorder (GID) suffer from strong, persistent discomfort between biological sex and experienced/expressed gender, with significant impairment in interpersonal, familial, social, professional, and other important areas of functioning. In DSM-V [2], in order to avoid stigma and to describe the stressed state of gender nonconformity, the diagnostic name is replaced with "gender dysphoria." Sex-reassignment surgery (SRS) has proven to be an effective intervention for persons with GID, as confirmed by a number of follow-up studies reporting high levels of postsurgical satisfaction as well as improvement in the quality of life and the general functioning of patients who undertake it [3–6]. Presurgery diagnostic procedures in which psychiatric examination plays a major role are of great importance due to long-term consequences on the patient's life and functioning. The evaluation of SRS outcome is also important as SRS can also have negative implications, including personal regret and dissatisfaction, raising questions as to the most appropriate treatment (psychotherapy, cross-sex hormone treatment, and SRS) for persons diagnosed with GID [4, 7].

The review of the literature on the subject indicates that persons with GID have higher rates of psychological problems and psychiatric disorders, such as negative self-image, low self- esteem, adjustment disorders, depression, suicidality, and personality disorders (PDs) compared to normal controls [8–11]. Investigations in the field of GID have been mostly focused on the presence of psychiatric comorbidity and severe psychiatric disorders, as well as risks for suicidal behavior and self-mutilation [8, 9, 11, 12]. Studies focusing on the assessment of personality and PDs in gender dysphoric persons by standardized instruments are rare [9–17]. Review of the data in this domain has shown that assessment of psychopathology in persons with GID has been conducted at different phases of sex reassignment, predominantly with the following instruments: Minnesota

Multiphasic Personality Inventory (MMPI-II), The Mini-International Neuropsychiatric Interview (M.I.N.I.), Structured Clinical Interview for DSM-IV (SCID), Defense Style Questionnaire (DSQ), Rorschach protocols, and so forth [12–16, 18–20].

The scientific literature regarding PDs in persons with GID offers contradictory results. Some studies have found the presence of PDs, while others did not find any PDs [8–16, 19, 21]. Discrepancies in results in some studies may be attributable to differing methodological issues (as shown in Table 4).

An overview of the literature offers data about relative prevalence rate of DSM-IV [1] Axis II disorders of between 3% and 66% [8–16], with cluster B PDs (borderline, histrionic, and narcissistic) identified as the most frequent, whereas some studies [13] have reported lower prevalence rates of PDs compared to higher rates recently found in large epidemiological samples [12, 16].

Certain researchers in the 1980s stressed the importance of psychological testing, addressing possible conceptualizations of GID (e.g., transsexualism) as a variant of borderline pathology [17]. GID, by some authors, has also been considered as a part of an underlying psychotic disorder [21], resulting in recommendations to abandon sex reassignment due to profound psychological dysfunction [22]. A third group of authors regard GID as a separate nosological entity, assuming psychiatric comorbidity as a consequence of persistent, sometimes long-life, gender incongruence and concomitant psychosocial distress [11, 16, 20]. Furthermore, psychiatric comorbidity and mental instability would appear to be important unfavorable prognostic factors for long-term psychosocial adjustment [3, 4, 23].

Although presence of PDs in persons with GID should not be considered an absolute contraindication for gender transition by cross-sex hormone therapy or SRS [16], it is reasonable to assume that the presence of any PDs may in fact interfere with adaptation to the postsurgical condition. Bodlund and Kullgren [4], for example, found that any PD diagnoses with a higher percentage of personality pathological traits were associated with negative postsurgery outcome. Despite clinical relevance, studies using standardized diagnostic instruments are rare.

An Italian study by Madeddu et al. [13] found the most frequent PDs from cluster B to be narcissistic PD, in particular, followed by histrionic and borderline PDs, with no differences between male-to-female (MtF) and female-to-male (FtM-transmen) (transmen are people assigned female at birth who identify as male) transsexuals (e.g., GID) samples.

Investigations by Bodlund et al. [14] found a statistically significant presence of PDs mainly within cluster B (assessed by SCID-II), as well as the majority with comorbid PDs in persons with GID. Furthermore, this study revealed significantly more subthreshold pathology among transsexuals (e.g., GID) than controls. The frequency of PD-fulfilled criteria was 29% among transsexuals (e.g., GID) versus 17% among controls [14].

The study of Haraldsen and Dahl [16], using SCID I and SCID-II for DSM-III-R and DSM-IV, found current Axis I disorders in 33% of 86 persons with transsexualism (e.g., GID) (predominantly mood and anxiety disorders) and Axis II disorders (e.g., PDs) (most frequently of cluster B) in 20% of persons. The authors have concluded that transsexual (e.g., GID) patients selected for SRS showed a relatively low level of self-rated psychopathology before and after treatment, suggesting that the view of transsexualism (e.g., GID) as a severe mental disorder is doubtful.

Cole et al. [11] reported that less than 10% of patients with GID evidenced problems associated with mental illness and that GID is usually an isolated diagnosis and not a part of any psychopathological disorder. Research by Hepp et al. [12] found high comorbidity in patients with GID, proposing psychiatric treatment in this respect. The authors found higher prevalence rates of Axis I disorders compared with the general population. The DSM-IV Axis II PDs diagnoses were found in all clusters as follows: clusters A (16,1%), B (22,6%), and C (19,4%) and PD not otherwise specified (6.5%).

A recent Japanese study by Hoshiai et al. [9] has registered psychiatric comorbidity in 19.1% male-to-female (e.g., transwomen) MtF and in 12.0% female-to-male (e.g., transman) FtM persons with GID and concluded that the majority of them had no psychiatric comorbidity. However, the aforementioned study showed that a high percentage (78%) of patients without current psychiatric comorbidity had seriously thought about committing suicide, with 30,6% of patients having performed self-mutilation [9].

The study of Miach et al. [19] did not find any parameters implying positive correlation between transsexualism (e.g., GID) and severe PDs.

We can summarize from the previously listed studies that GID is reported to be related to a high degree of personality psychopathology in the past, while recently, more studies imply that GID is an entity not related to severe psychiatric comorbidity.

The assessment of personality is one of the main predictive factors for the satisfied SRS outcome, according to previous studies [4, 5, 14, 24]. This is of crucial value not only in diagnosis of GID, but also even more in the assessment of psychological abilities and capacities in coping with the great difficulties of pretransitional and posttransitional life. It would be of great clinical and scientific value to present clinical cases of gender dysphoric persons in exploration phases [24] as well as through followup.

With this in mind, the aim of this study was to assess the presence of PDs in persons with GID compared to gender congruent heterosexual persons. The first hypothesis was that there was a significant difference in the presence of PDs between persons with GID and gender congruent heterosexual group. The second hypothesis was that there was also a significant difference in the presence of PDs in persons with GID with regard to biological sex.

2. Subjects and Methods

2.1. Sample and Procedure. The research was undertaken at the Clinic of Psychiatry, Clinical Centre of Serbia, over a two-year period. The study sample consisted of two groups:

the first group consisted of 30 persons with GID (9 FtM and 21 MtF) with mean age 30.4 (min 19, max 49, SD ± 14.5). The second group consisted of 30 genderly congruent heterosexuals from the general population (15 females and 15 males) with mean age 35.07 (min 21, max 53, SD ± 14.9). Subjects with GID were explored in pretransitional, transitional, and posttransitional phase.

In both groups, inclusion criteria excluded current or past psychotic disorder. The diagnosis of GID was made by consensus of two board-certified psychiatrists according to the criteria of the 4th edition of the Diagnostic and Statistical Manual of Mental Disorders [1]. All subjects were interviewed individually by independent researchers at the clinical level taking medical and psychiatric histories, as well as family information, from which the researchers made their own diagnosis. The control sample of genderly congruent heterosexuals was randomly selected through voluntary and anonymous electronic interviews by placing selected testing materials on a website. At the time of the research, the medical authorities in Serbia did not require approval of the ethics committee. Participation of subjects was voluntary and anonymous.

2.2. Measures. The assessment of PDs was conducted by the self-administered Structured Clinical Interview for DSM-IV Axis II personality disorders (SCID-II) [25]. The SCID-II is a semistructured interview designed to provide categorical assessment (present or absent) of ten PDs, as well as depressive personality disorder, passive-aggressive personality disorder, and personality disorder not otherwise classified, which are included in Appendix B of DSM-IV [1]. The SCID-II was widely used both in research and clinical settings in the field of GID [12, 15, 16].

According to DSM-IV diagnostic criteria, SCID-II classified PDs in three clusters:

(I) cluster A: paranoid PD, schizoid PD, and schizotypal PD;

(II) cluster B: borderline PD, antisocial PD, narcissistic PD and histrionic PD;

(III) cluster C: avoidant PD, dependent PD, and obsessive-compulsive PD.

Modelled on the clinical interview, the instrument begins with a brief overview that characterized the subject's usual behaviour and relationships and provides information as to the subject's capacity for self-reflection. SCID-II has three columns: the left-hand column contains the interview questions, the centre column lists the DSM-IV diagnostic criteria, and the right-hand column is for recording item ratings. Each PD is rated as either "?," "1," "2," or "3." The "?" rating indicates that there is inadequate information to code the other three, so it should be recoded after the interview of family members or partners who are able to describe patterns of behavior. Applied to our sample, SCID-II showed good internal consistency (α =0 .87).

Table 1: Comparative statistical analysis of presence of PDs in GID persons versus cisgender heterosexuals.

PD type	Group		P
	GID N (%)	Heterosexual N (%)	
Avoidant	8 (26,7%)	1 (3,3%)	0.007*
Dependent	3 (10%)	1 (3,3%)	0.290 (n.s.)
Obsessive-compulsive	9 (30%)	5 (16,7%)	0.222 (n.s.)
Paranoid	13 (43,3%)	2 (6,7%)	0.001*
Schizoid	5 (16,7%)	1 (3,3%)	0.073 (n.s.)
Schizotypal	2 (6,7%)	0 (0%)	0.092 (n.s.)
Histrionic	5 (16,7%)	5 (16,7%)	0.999 (n.s.)
Narcissistic	4 (13,3%)	2 (6,7%)	0.385 (n.s.)
Borderline	10 (33,3%)	4 (13,3%)	0.067 (n.s.) (n.s.) > 0,05
Impulsive	3 (10,0%)	2 (6,7%)	0.639 (n.s.)
Antisocial	0 (0%)	0 (0%)	0.999 (n.s.)

*Significant.
n.s.: nonsignificant.

2.3. Data Analysis. In order to analyse obtained data we used the following statistical methods: χ^2 test, value Spearman correlation test, and discriminative analysis.

3. Results

3.1. Sociodemographic Characteristics of the Sample. The gender ratio was as follows: heterosexual group F : M = 15 : 15 (50 : 50%), GID group F : M = 9 : 21 (30 : 71%). There was not a significant difference in gender ratio (P = 0.114 >0,05).

Mean age between the GID and cisgender heterosexual groups differs significantly (mean age in heterosexual group was 35.13 years and 29.77 years in group with GID (P = 0.007<0,05).

The participants in the two groups were all selected from an urban environment. The educational levels of the groups were as follows: elementary school/secondary school/high school: heterosexual group versus GID group: 0%/30%/70% versus 10%/63,30%/26,7%. The groups differ significantly regarding educational level (P = 0.000<0,05). The lower percentage of persons with GID who had completed high school could be explained by the fact that further education for persons with GID with new ID in Serbia is possible only after they pass surgical transition.

3.1.1. Comparative Statistical Analysis of Presence of PDs in Persons with GID versus Cisgender Heterosexuals. As shown in Table 1, 20 out of 30 persons with GID compared to 11 out of 30 cisgender heterosexuals have PDs, which is of statistical significance (P = 0.029 <0.05). Six persons (20%) with GID were diagnosed with one PD, as well as 6 (20%) heterosexuals. More than one PD (e.g., comorbid PDs) was found in 14 (46,66%) persons with GID and in 5 (16,7%) heterosexuals, which is of statistical significance (P < 0,05). The SCID-II

Table 2: Comparative statistical analysis of presence of PDs in GID persons versus cisgender heterosexuals related to male sex (Male—M).

PD type	Group/sex		P
	GID/MtF N (%)	Heterosexual/M N (%)	
Avoidant	5 (23,8%)	0 (0%)	0.015*
Dependent	2 (9,5%)	0 (0%)	0.135 (n.s.)
Obsessive-compulsive	6 (28,6%)	3 (20,0%)	0.555 (n.s.)
Paranoid	9 (42,9%)	1 (6,7%)	0.011*
Schizoid	4 (19,0%)	0 (0%)	0.031*
Schizotypal	2 (9,5%)	0 (0%)	0.135 (n.s.)
Histrionic	4 (4,8%)	2 (13,3%)	0.362 (n.s.)
Narcissistic	1 (4,8%)	1 (6,7%)	0.807 (n.s.)
Borderline	8 (38,1%)	0 (0%)	0.001*
Impulsive	3 (14,3%)	0 (0%)	0.064 (n.s.)
Antisocial	0 (0%)	0 (0%)	

*Significant.
n.s.: nonsignificant.

Table 3: Comparative statistical analysis of presence of PDs in GID persons versus cisgender heterosexuals related to female sex (Female—F).

PD type	Group/sex		P
	GID/FtM N (%)	Heterosexual/F N (%)	
Avoidant	3 (33,3%)	1 (6,7%)	0.093 (n.s.)
Dependent	1 (11,1%)	1 (6,7%)	0.707 (n.s.)
Obsessive-compulsive	3 (33,3%)	2 (13,3%)	0.250 (n.s.)
Paranoid	4 (44,4%)	1 (6,7%)	0.028*
Schizoid	1 (11,1%)	1 (6,7%)	0.707 (n.s.)
Schizotypal	0 (0%)	0 (0%)	0.092 (n.s.)
Histrionic	4 (44,4%)	3 (20,0%)	0.206 (n.s.)
Narcissistic	3 (33,3%)	1 (6,7%)	0.093 (n.s.)
Borderline	2 (22,2%)	4 (26,7%)	0.807 (n.s.)
Impulsive	0 (0%)	2 (13,3%)	0.159 (n.s.)
Antisocial	0 (0%)	0 (0%)	

*Significant.
n.s.: nonsignificant.

results have shown a significant difference between the two groups in relation to presence of specific PDs as follows: 26,7% of persons with GID met the criteria for diagnosis of avoidant PD ($P = 0,007$) and 43,3% of paranoid PD ($P = 0.000$).

3.1.2. Comparative Statistical Analysis of Presence of PDs in Persons with GID versus Cisgender Heterosexuals Related to Male Sex (Male—M). As shown in Table 2, 23,8% of MtF from GID group (transwomen) met the criteria for diagnosis of avoidant PD compared to 0 (0%) in the male heterosexual group ($P = 0,015$).

Significant difference was found regarding presence of paranoid PD in the group with GID persons related to male biological sex as follows: MtF persons 9 (42,9%) ($P = 0,011$) compared to 1 (6,7%) in male heterosexuals.

Significant difference was found regarding the presence of schizoid PD—present in 4 MtF persons (19,0%) ($P = 0.031$) versus male heterosexuals with 0 (0%).

There was a significant difference in the presence of borderline PD related to male biological sex—present in MtF persons with GID in 38,1% ($P = 0,001$) compared to 0 (0%) in male heterosexuals.

We did not find any other significant difference in present PDs in relation to male sex when both groups were compared (as shown in detail in Table 2).

3.1.3. Comparative Statistical Analysis of Presence of PDs in Persons with GID versus Cisgender Heterosexuals Related to Female Sex (Female—F). Significant difference regarding presence of PDs in relation to female sex was found in paranoid PD, present in 4 FtM persons with GID (44,4%), while it was present only in one heterosexual female (6,7%) ($P = 0.028$). There was not any other significant difference in this respect, as shown in detail in Table 3.

4. Discussion

The most frequent DSM-IV [1] Axis II personality disorders assessed by SCID-II in our sample of persons with GID were from cluster A, paranoid PD, followed in order of relevance by cluster C, avoidant PD. Some of these data are similar and some are different from previous studies which have found cluster B as the most frequent in persons with GID, followed by clusters C and A [11–16]. Further analysis of obtained data has shown a significant presence of comorbid PDs in persons with GID, and the presence of comorbidity of PDs differentiates the two groups with statistical significance. Similar data were obtained in the study of Bodlund et al. [14], where 1/3 of patients who requested SRS had PDs from clusters B and C, while a majority of subjects had comorbid PDs.

A comparison with previous studies regarding psychiatric comorbidity on Axis II PDs among patients with GID (as shown in Table 4) indicates some differences in this study sample. High discrepancies in some studies (as shown in Table 4) related to the prevalence rate of Axis II PD diagnosis may be attributable to some methodological differences related to personality assessment methods. Some of the studies which used the SCID-II instrument have found different clusters of PDs such as PDs of all three clusters [12, 16] or PDs from clusters B and C [14, 15]. It is important to note that some studies which found high prevalence of clusters A and B or B and C diagnosis used clinical interview as a personality assessment tool [11, 14, 22]. The Italian study of Madeddu et al. [13] using DSM-IV criteria found cluster B PDs (narcissistic PD, followed by histrionic PD and borderline PD), cluster

Table 4: An overview of the studies focusing on the presence of PDs and psychiatric comorbidity in persons with GID (e.g., transsexualism).

Author	Levine, 1980 [22]	Bodlund et al., 1993 [14]	Bodlund and Armelius, 1994 [15]	Cole et al., 1997 [11]	Haraldsen and Dahl, 2000 [16]	Hepp et al., 2005 [12]	Madeddu et al., 2009 [13]	Hoshiai et al., 2010 [9]	This paper
Diagnostic criteria	DSM-III	DSM-III-R	DSM-III-R	DSM-IV	DSM-III-R/IV	DSM-IV	DSM-III-R	DSM-IV	DSM-IV
Assessment method	Clinical interview	SCID	SCID screen	Clinical interview	SCID-II	SCID-II	SCID-II	—	SCID-II
Sex		MtF-10 FtM-9	—	MtF-318 FtM-117	MtF + FtM-86	MtF-20 FtM-11	MtF-34 FtM-16	MtF-230 FtM-349	MtF-21, FtM-9
Total sample	$N = 51$	$N = 19$	$N = 18$	$N = 435$	$N = 86$	$N = 31$	$N = 50$	$N = 579$	$N = 30$
Prevalence of PD	66%	3 (30%) 6 (67%)	33,3%	18 (6%) 5 (4%) 4% MtF, 3% FtM	8 (40%) 4 (36%) prevalence of PD 19,8%	42%	20 (77%) 23 (23%)	41 (19%) 38 (12%)	20 (66,6%) comorbid PDs 13 (46,6%)
Main results		Mainly cluster B or C PDs	Clusters B (22,2%), C (11,1%), and A (0%)	Clusters A (schizoid PD) and B (borderline PD) most frequent diagnosis	Clusters A 5,8%, B 8,1%, and C 5,8%, NOS 0%	Clusters A 16,1%, B 22,6%, and C 19,4%, NOS 6,5%	Clusters A 2%, B 22%, and C 12%. NOS 16% No differences in psychopathological profile and severity between MtF and FtM TS	Adjustment disorder (6,7%), anxiety disorder (3,6%), and mood disorder (1,4%, 8/579): all were associated with histories of suicidal ideation (in FtM, but not in MtF group)	Clusters A and C (paranoid PD—43,3% and avoidant PD—26,7%). Differences in relation to biological sex in GID group versus heterosexuals (MtF: paranoid, schizoid, borderline, and avoidant PD; FtM: paranoid PD)
Sample characteristics	Patients requesting SRS	Transsexuals, for example, GID (DSM-III-R)	Transsexuals, for example, GID (DSM-III-R)	Patients requesting SRS	Mixed sample, pre- and post-SRS	GID (DSM-IV)	GID (DSM-III-R)	GID (DSM-IV)	GID patients (DSM-IV)

C diagnosis (obsessive-compulsive PD), NOS PD, and rarely PDs from cluster A.

Findings of significant presence of paranoid and avoidant PDs in the GID group of our study are not supported by findings in previous studies (as shown in Table 4). One of the possible explanations is sociocultural differences in Serbia, which could be tested in further investigations in the Balkans, in order to ascertain if there are certain discrepancies between northern and southern European countries in this respect.

The finding of paranoid and avoidant PDs as significant characteristics of persons with GID in our sample stresses the need for careful assessment of SRS candidates. These personality features strongly influence cognition and behavior of GID persons and therefore can be clinically relevant for eligibility and readiness for SRS.

Regarding the presence of PDs related to biological sex, our study found significant differences in Axis II PDs in persons with GID with regard to biological sex when compared with the same sex in the cisgender heterosexual group as follows: paranoid, schizoid, borderline, and avoidant PDs were significantly present in MtF persons compared to heterosexual males, while paranoid PD was significantly present in female sex within the group of persons with GID (FtM) compared to the female sex in the heterosexual group.

Our study is in line with most previous studies suggesting that MtF persons (transwomen) are generally characterized by a more severe psychopathological profile (23,26), when compared to FtM (transmen). Results of the Cole et al. study [11] also showed that psychiatric comorbidity is more frequent among MtF patients. On the other hand, there are some studies [13] not supporting the difference in PD prevalence with regard to biological sex. Haraldsen and Dahl [16] did not distinguish the frequencies of psychiatric comorbidity in MtF and FtM persons. Study of Madeddu et al. also [13] did not find any differences in psychopathological profile and severity between MtF and FtM persons.

Some authors have argued that there is a complex and still unclear relationship between the development of PDs and GID. Even though PDs and GID may be independent conditions, sometimes it may be difficult to establish whether GID symptoms could be better explained by personality disorder pathology. In some clinical cases it is mixed, and it is of great clinical relevance to indicate the presence of PD symptoms in GID persons [14] as the onset of both disorders can be traced back to adolescence/early adulthood. Clinical experience in persons with GID suggests that PDs may evolve as a dysfunctional way of coping with gender dysphoria [16, 26, 27].

A prevalence rate of Axis II disorders emerged, slightly higher than what was found in previous studies based on DSM-IV-oriented Structured Clinical Interviews [12, 15, 16]. The prevalence of DSM-IV Axis II disorders in general population based surveys, using diagnostic interviews, was between 4% and 13% [28], suggesting that individuals with GID are more prone to develop a PD. However, a personality disorder is not a precondition for developing a GID. The present study should enlighten the very underresearched issue of PD comorbidity in GID.

5. Conclusion

The study has confirmed two hypotheses—the first that there are significant differences in presence of PDs in persons with GID compared to genderly congruent heterosexual persons and the second that there are significant differences in the presence of specific PDs in persons with GID with regard to biological sex. A high percentage of comorbid PDs in persons with GID could be a consequence of overlapping of DMS-IV diagnostic criteria for PDs. According to DSM-V classification [2], it is recommended that a final diagnosis of GID should be confirmed in a six-month followup.

The authors of the study stressed the great importance of including personality assessment in standard GID diagnostic procedures, as presence or absence of PD **c**omorbidity is one of the contributing factors to the successful or unsuccessful SRS outcome [29].

Conflict of Interests

The authors declare that they have no conflict of interests.

References

[1] American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders*, American Psychiatric Association Press, Washington, DC, USA, 4th edition, 1994.

[2] American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders*, American Psychiatric Association Press, Washington, DC, USA, 5th edition, 2013.

[3] A. Michel, M. Ansseau, J. J. Legros, W. Pitchot, and C. Mormont, "The transsexual: what about the future?" *European Psychiatry*, vol. 17, no. 6, pp. 353–362, 2002.

[4] O. Bodlund and G. Kullgren, "Transsexualism—general outcome and prognostic factors: a five-year follow-up study of nineteen transsexuals in the process of changing sex," *Archives of Sexual Behavior*, vol. 25, no. 3, pp. 303–316, 1996.

[5] M. Landén, J. Wålinder, G. Hambert, and B. Lundström, "Factors predictive of regret in sex reassignment," *Acta Psychiatrica Scandinavica*, vol. 97, no. 4, pp. 284–289, 1998.

[6] A. A. Lawrence, "Factors associated with satisfaction or regret following male-to-female sex reassignment surgery," *Archives of Sexual Behavior*, vol. 32, no. 4, pp. 299–315, 2003.

[7] G. Lindemalm, D. Körlin, and N. Uddenberg, "Long-term follow-up of "sex change" in 13 male-to-female transsexuals," *Archives of Sexual Behavior*, vol. 15, no. 3, pp. 187–210, 1986.

[8] N. Okabe, T. Sato, Y. Matsumoto, Y. Ido, S. Terada, and S. Kuroda, "Clinical characteristics of patients with gender identity disorder at a Japanese gender identity disorder clinic," *Psychiatry Research*, vol. 157, no. 1–3, pp. 315–318, 2008.

[9] M. Hoshiai, Y. Matsumoto, T. Sato et al., "Psychiatric comorbidity among patients with gender identity disorder," *Psychiatry and Clinical Neurosciences*, vol. 64, no. 5, pp. 514–519, 2010.

[10] M. S. C. Wallien, H. Swaab, and P. T. Cohen-Kettenis, "Psychiatric comorbidity among children with gender identity disorder," *Journal of the American Academy of Child & Adolescent Psychiatry*, vol. 46, no. 10, pp. 1307–1314, 2007.

[11] C. M. Cole, M. O'Boyle, L. E. Emory, and W. J. Meyer III, "Comorbidity of gender dysphoria and other major psychiatric diagnoses," *Archives of Sexual Behavior*, vol. 26, no. 1, pp. 13–26, 1997.

[12] U. Hepp, B. Kraemer, U. Schnyder, N. Miller, and A. Delsignore, "Psychiatric comorbidity in gender identity disorder," *Journal of Psychosomatic Research*, vol. 58, no. 3, pp. 259–261, 2005.

[13] F. Madeddu, A. Prunas, and D. Hartmann, "Prevalence of axis II disorders in a sample of clients undertaking psychiatric evaluation for sex reassignment surgery," *Psychiatric Quarterly*, vol. 80, no. 4, pp. 261–267, 2009.

[14] O. Bodlund, G. Kullgren, E. Sundbom, and T. Hojerback, "Personality traits and disorders among transsexuals," *Acta Psychiatrica Scandinavica*, vol. 88, no. 5, pp. 322–327, 1993.

[15] O. Bodlund and K. Armelius, "Self-image and personality traits in gender identity disorders: an empirical study," *Journal of Sex and Marital Therapy*, vol. 20, no. 4, pp. 303–317, 1994.

[16] I. R. Haraldsen and A. A. Dahl, "Symptom profiles of gender dysphoric patients of transsexual type compared to patients with personality disorders and healthy adults," *Acta Psychiatrica Scandinavica*, vol. 102, no. 4, pp. 276–281, 2000.

[17] L. M. Lothstein, "Psychological testing with transsexuals: a 30-year review," *Journal of Personality Assessment*, vol. 48, no. 5, pp. 500–507, 1984.

[18] L. Cohen, C. de Ruiter, H. Ringelberg, and P. T. Cohen-Kettenis, "Psychological functioning of adolescent transsexuals: personality and psychopathology," *Journal of Clinical Psychology*, vol. 53, no. 2, pp. 187–196, 1997.

[19] P. P. Miach, E. F. Berah, J. N. Butcher, and S. Rouse, "Utility of the MMPI-2 in assessing gender dysphoric patients," *Journal of Personality Assessment*, vol. 75, no. 2, pp. 268–279, 2000.

[20] Y. L. S. Smith, L. Cohen, and P. T. Cohen-Kettenis, "Postoperative psychological functioning of adolescent transsexuals: a rorschach study," *Archives of Sexual Behavior*, vol. 31, no. 3, pp. 255–261, 2002.

[21] G. R. Brown, T. N. Wise, P. T. Costa Jr., J. H. Herbst, P. J. Fagan, and C. W. Schmidt Jr., "Personality characteristics and sexual functioning of 188 cross-dressing men," *The Journal of Nervous and Mental Disease*, vol. 184, no. 5, pp. 265–273, 1996.

[22] S. B. Levine, "Psychiatric diagnosis of patients requesting sex reassignment surgery," *Journal of Sex & Marital Therapy*, vol. 6, no. 3, pp. 164–173, 1980.

[23] F. Pfäfflin and A. Junge, "Nachuntersuchungen nach geschlechtsumwandlung. Eine kommentierte literaturqbersicht 1961–1991," in *Geschlechtsumwandlung. Abdandlungen zur Transsexualität*, F. Pfäfflin and A. Junge, Eds., pp. 149–457, Schattauer, Stuttgart, Germany, 19992.

[24] D. Duisin, Z. Rakić, J. Barisić, and G. Nikolić-Balkoski, "A transsexual patient searching for adjustment," *Serbian Arhives of Medicine*, vol. 136, no. 7-8, pp. 406–409, 2008.

[25] M. B. First, M. Gibbon, R. L. Spitzer, J. B. W. Williams, and L. S. Benjamin, *Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II)*, APA, Washington, DC, USA, 1997.

[26] G. Kockott and E.-M. Fahrner, "Male-to-female and female-to-male transsexuals: a comparison," *Archives of Sexual Behavior*, vol. 17, no. 6, pp. 539–546, 1988.

[27] W. Bockiting, G. Knudson, and Goldberg, *Counselling and Mental Health Care of Transgender Adults and Loved Ones*, Vancouver Coastal Health, Trenscend Trangender Support & Education Society, and the Canadian Rainbow Health Coalition, 2006, http://www.amsa.org/AMSA/Libraries/Committee_Docs/CounselingAndMentalHealthCareOfTransgenderAdultsAndLovedOnes.sflb.ashx.

[28] J. Coid, "Epidemiology, public health and the problem of personality disorder," *The British Journal of Psychiatry*, vol. 182, no. 44, pp. s3–s10, 2003.

[29] R. Reid, "Why measure outcome in transsexualism? GENDYS," in *Proceedings of the 7th International Gender Dysphoria Conference*, Manchester, UK, 2002.

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Clinical Study

Assessment of Self-Perception of Transsexual Persons: Pilot Study of 15 Patients

Jasmina Barišić,[1] Marija Milosavljević,[1] Dragana Duišin,[1] Borjanka Batinić,[1,2] Svetlana Vujović,[3,4] and Srdjan Milovanović[1,4]

[1] *Clinic for Psychiatry, Clinical Centre of Serbia, 11000 Belgrade, Serbia*
[2] *Department of Psychology, Faculty of Philosophy, University of Belgrade, 11000 Belgrade, Serbia*
[3] *Clinic for Endocrinology, Clinical Centre of Serbia, 11000 Belgrade, Serbia*
[4] *School of Medicine, University of Belgrade, 11000 Belgrade, Serbia*

Correspondence should be addressed to Jasmina Barišić; jasminabarisic@yahoo.com

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Background and Aims. There have been few studies in the area of Self-Perception in transsexual persons, except for the population of transsexual adolescents. Bearing in mind its importance not only in the assessment of personality but also in predicting adaptive capacity, the goal of our research is based on the examination of Self-Perception of adult transsexual persons. *Method*. The study was conducted using a Rorschach test, which provides an insight into various aspects of Self-Perception. The sample consisted of 15 transsexual persons, who passed the standard diagnostic procedure. *Results*. The results suggest that transsexual persons manage to maintain Adequate Self-Esteem. Hypervigilance Index and Obsessive Style Index are negative, while the values showing a negative quality of Self-Regard and the capacity for introspection tend to increase. In the process of Self-Introspection, negative and painful emotional states are often perceived. *Conclusion*. The estimation of Self-Perception in adult transsexual persons indicates a trend of subjective perception of a personal imperfection or inadequacy. This is probably the result of experiencing discomfort for a number of years due to gender incongruence and dysphoria, in particular in persons who enter the sex reassignment procedure later in their adulthood.

1. Introduction

According to the Tenth Revision of the International Classification of Diseases and Related Health Problems (ICD-10) [1] transsexualism (TS) has been an important research field for the last 30 years, given the specificity of persons with gender dysphoria (GD). Transsexual persons (TSP) are characterized by a strong and persistent sense of discomfort and inappropriateness with one's anatomic sex, identification with the opposite sex, and the persistent wish to be rid of one's genitals and live as a member of the other sex. Transsexualism is rare, with an estimated worldwide lifetime prevalence of 0.001-0.002% or 0.0019–0.0024% [2].

Previous research of transsexualism has been mainly focused on the assessment of psychiatric comorbidity with an emphasis on high risks for suicidal behavior and self-mutilation [3–5]. In addition, TS was associated with the presence of significant degree of personality psychopathology and severe psychiatric comorbidity, which has not been confirmed in recent studies [3, 4, 6–8].

There is predominance of the assessment scales and personality inventory in TS research studies with the most commonly used Minnesota Multiphasic Personality Inventory (MMPI-2), Mini-International Neuropsychiatric Interview (MINI), Structured Clinical Interview for DSM-IV Axis I and Axis II Disorders (SCID-I and SCID-II), and so forth [9–15].

Rorschach inkblot test has been rarely used in studies on TSP due to its specificity, complexity, and difficulties in interpretation, although the opportunities it provides are of major importance for the clinical assessment, in particular with

the appearance of Exner's Comprehensive System [16]. The use of Exner's Comprehensive System provides an overview of the seven clusters involving major domains of psychological functioning (Processing, Mediation, Ideation, Controls, Affect, Self-Perception, and Interpersonal Perception) [16].

Review of the literature and research related to the assessment of Self-Perception of transseuxual persons is relatively modest. In one of the few studies dealing with this issue, Cohen et al. [17] find no support for the idea that adolescent transsexuals significantly differ from nonpatients with regard to thinking disturbances and negative Self-Image (score operationalized with the increased number of MOR responses). In another study which assessed pre- and postoperative functioning of adolescents no increase of Morbid (MOR) responses was observed, nor were other significant increases within the Self-Perception cluster [16]. These researches were focused on the evaluation of transsexual adolescents, whereas the authors of this study had no access to research concerning Self-Perception assessment of the adult transsexual persons.

Self-Perception is associated with Self-Image and Self-Involvement. Self-Image is made up of the impressions that the client has about his/her own characteristics. Many of these impressions are easily accessible to conscious thinking, but some are partially or completely out of reach of consciousness because they are unwanted or conflicting, so there is a tendency towards concealment or suppression.

Assessment of Self-Perception in Rorschach includes the assessment of the cluster Self-Esteem, Self-Regard, Self-Awareness, and Sense of Identity, and the resulting scores are interpreted by Exner's Comprehensive System [16, 18]. Global Self-Esteem is defined as an individual's personal Self-Esteem and how one feels about him or herself overall, that is, the individual's positive or negative attitude toward the self as totality [19]. Feeling satisfied with the characteristics people recognize in themselves gives them a sense of well-being and brings pleasure into their lives. Limited or impaired capacities to view themselves favorably and thoroughly make people susceptible to adjustment difficulties [18].

Transsexual persons are characterized by anatomic discomfort and accordingly a certain degree of subjective suffering due to gender, incongruence and dysphoria, while their stigmatization and minority stress (additive to general stressors experienced by all people) further emphasize the development of psychological symptoms, such as anxiety and depression [20, 21]. Lower global Self-Esteem has been also found as an effect of being a member of a devalued social group [22]. Bockting [23] notes that some negative outcomes for transsexual individuals may be due to the impact of social stigma and intrapsychical conflict between the individual's sex assigned at birth and gender identity. Therefore, it is possible to expect that Self-Perception in TSP often has a negative connotation, in particular in people who enter the sex reassignment procedure later in their adulthood.

In the assessment of Self-Perception of transsexual persons, besides the presence or absence of personality psychopathology, psychiatric comorbidity seems to be an important prognostic factor for long-term psychosocial adjustment [2].

Having in mind that studies in the field of Self-Perception with TSP are rare (except for the transsexual adolescents) and important in the process of personality assessment and prediction of adaptive capacity and outcomes during the transition and posttransition period, the goal of our research is based on the exploration of Self-Perception of adult transsexual persons. Even though there are a number of scales for Self-Perception assessment, we have decided to assess this concept by Rorschach method which provides an insight into various aspects of Self-Perception [19, 24].

2. Methods

2.1. Subjects. Fifteen patients who had been assessed and diagnosed with transsexualism according to the ICD-10 [1] at the Clinic for Psychiatry, Clinical Centre of Serbia, during one year, were requested to participate in this study, with the use of the Rorschach test. All patients underwent a standard psychiatric evaluation to diagnose TS.

The average age of the 15 patients was 28.3 years (SD = 7, min 19, max 40). Eight patients were transmen (FtMs—transman is assigned female at birth, but identifies as male) and seven were transwomen (MtFs—transwoman is assigned male at birth, but identifies as woman). MtFs and FtMs did not differ significantly in terms of age and duration of the sex-hormone therapy (all patients examined in the study commenced an endocrine treatment in 2–6-month duration).

2.2. Procedure. The Rorschach was administered to the patients in accordance with the procedures for the Comprehensive System and it is a standard diagnostic measure in TSP according to the Cabinet of Transgender States, Clinic for Psychiatry, Clinical Centre of Serbia, Belgrade [16].

2.3. Measures

2.3.1. Rorschach Inkblot Method. Through the use of Exner's Comprehensive System in the analysis of Rorschach protocols, an overview of the seven clusters involving major domains of psychological functioning is obtained. Self-Perception cluster of variables provides information about how people view themselves, particularly with respect to their level of Self-Esteem, the extent of their Self-Awareness, and the nature of their Self-Image. The relevant Rorschach findings help to identify whether people feel satisfied and comfortable with themselves or are burdened by negative self-attitudes [18]. According to Weiner [18] this cluster has a composite structure and provides an insight into various aspects of the concept, such as the following.

Maintaining Adequate Self-Esteem (Fr + rF, 3r + (2)/R). Self-Esteem consists of the attitudes that people form toward their personal qualities and capabilities. The more favorably people compare themselves to others with respect to their qualities and capabilities, the higher their level of Self-Esteem is. Adequate Self-Esteem promotes Self-Acceptance, Self-Respect, and Self-Confidence based on realistic appraisal of

Table 1: Means and standard deviations for variables included in cluster of Self-Perception.

	Min	Max	M	SD
HVI	0	0	0	0
OBS	0	0	0	0
Index of Egocentricity	0.04	0.60	0.34	0.14
$Fr + rF$	0	2	0.13	0.51
Sum V	0	2	0.86	0.63
FD	0	5	1.73	1.33
$An + Xy$	0	7	1.80	1.93
MOR	1	5	2.13	1.12
H	1	4	2.53	1.06
$Hd + (H) + (Hd)$	0	5	2.06	1.57

one's capabilities, and it contributes to feeling of general satisfaction with themselves and their actions. Balanced attention to self and others and seeing oneself as being a worthy person are measured on the RIM by Reflections ($Fr + rF$) and the Egocentricity Index ($3r + (2)/R$).

Promoting Positive Self-Regard (V, MOR). Self-Regard is a composite of relatively positive and negative self-attitudes. The attitudes that constitute an individual's Self-Regard often fluctuate in response to changing circumstances. Used in concert with Reflections and the Egocentricity Index as measures of Self-Esteem, the Rorschach Vista (V) and Morbid (MOR) variables monitor aspects of Self-Regard.

Enhancing Self-Awareness (FD). Viewing oneself adaptively involves maintaining a moderate level of Self-Awareness. The FD variable provides a Rorschach Index of interest in and capacity for introspection.

Forming a Stable Sense of Identity [H:Hd + (H) + (Hd)]. A stable Sense of Identity fosters good psychological adjustment by providing people a clear and consistent impression of the kind of individual they are, what they believe in, and where they are headed in their lives.

2.4. Data Analysis. Data are expressed as mean values for each of the variables taken into consideration in this study. The data were analyzed by using SPSS-18 statistical package (SPSS Inc., Chicago, Illinois, USA).

3. Results

The results of variables for the cluster examined which were obtained via Rorschach protocol are presented in Table 1; that is, these are the means and standard deviations for variables included in the Self-Perception cluster.

The analysis of the means and standard deviations for the variables of interest of the study shows no significant deviations from the average values for normal population compared to the Hypervigilance Index (HVI = 0) and Obsessive Style Index (OBS = 0) that are negative. The Egocentricity Index a measure of Self-Focusing which is about the average show no significant deviations, while 6 the values indicating negative Self-Regard (V = 0.866, MOR = 2.133) had a tendency to increase. The score related to the Enhancing Self-Awareness (FD = 1.73) indicates a tendency toward elevated Self-Inspection of transsexual persons. In addition, given that the average sum of $An + Xy$ exceeds 1, it could be said that attention to an individual physical aspect is increased in TSP.

4. Discussion

The obtained average values of the seven variables included in the cluster of Self-Perception indicate potential ways in which people see themselves. None of the 15 survey respondents showed positive indexes, Hypervigilance Index (HVI) and Obsessive Style Index (OBS), which indicates that such persons have no prevailing tendency toward perfectionism, nor general vulnerability which is a result of basic mistrust towards the environment.

The values obtained in $Fr + rF$ responses and Egocentricity Index $3r + (2)/R$ indicate Maintaining Adequate Self-Esteem. Replies indicating reflection were present only in one patient, and therefore the presence of evident narcissistic characteristics cannot be generally attributed to the examined sample of TSP. As for the Egocentricity Index that indicates the level of Self-Care, mean values were obtained as for normal adult population, ranging from 0.33 to 0.44; thus we cannot say that transsexual persons are self-centered to a greater extent than usual [18].

Values indicating the quality of Self-Regard (V = 0.866, MOR = 2.133) indicate that the Self-Inspection process comprised negative and painful emotional states, associated with chronic concerns of a negative Self-Image, which is often accompanied by negative emotions due to gender dysphoria. The average value of MOR responses suggests that negative features are included in the Self-Concept or that there is an experience of imperfection. This finding is consistent with the core psychological conflict between gender and sex underlying the transsexualism. Considering that the MOR responses represent materials of significant

projective importance, there seems to be a trend showing that their Self-perception includes the subjective impression of a personal imperfection or inadequacy. Primarily negative Self-Regard contributes to adjustment problems associated with self-critical, self-denigrating, and self-loathing attitudes and also with depression and suicidality which is often observed as a trend in people with gender dysphoria.

Enhancing Self-Awareness (FD = 1.73) indicates a tendency toward elevated Self-Inspection and Self-Awareness, which suggests a presence of alert attention in relation to the intrapsychic experiences. People who are overly aware of themselves tend to be self-conscious to a fault. Constantly examining themselves and always alert to how they may look or sound to others, they have difficulty relaxing and just being themselves in a natural and unconcerned manner. Such finding, combined with the value of Sum Vista (V), indicates painful emotions related to introspection which is consistent with the experience of psychological discomfort conditioned by core issues in transsexuals.

Having in mind that the sum $An + Xy$ exceeds 1, we can say that the attention to one's physical aspect is elevated. This finding is consistent with the diagnostic criteria and clinical experience in working with transsexual persons, who show a negative impression of their body and the physical structure because there is a strong sense of discomfort with one's body and desire to change the body to harmonize it with the subjective gender experience. Forming a stable Sense of Identity is connected with the capacity to identify oneself with real persons. Due to the fact that the number of H responses is greater than the $Hd + (H) + (Hd)$, respondents who make up our sample meet these criteria and typically have adequate capacity to identify themselves with people who are a real part of their lives and with whom they have had opportunities to form such identifications.

5. Conclusion

Overall results of our study indicate that transsexual persons have Adequate Self-Esteem, while the Egocentricity Index is of average values as in normal adult population. They also indicate a trend toward elevated introspection, with increased attention to the physical aspects of the body; that is, in the process of Self-Inspection negative and painful emotional states are present. It means that the trend of increased number of MOR responses in relation to the studies on adolescents transsexual persons is probably the result of long-term suffering, having in mind that the people who are involved in our study had initiated the sex reassignment procedure during their mature adult age [17, 25]. Prolongation or entering the desired procedure relatively late results in the trend mentioned above, that is, the subjective experience of personal imperfection or inadequacy.

Analysis of the results obtained may indicate that delayed entering into the sex-reassignment procedure in transsexual persons may potentiate the negative image of themselves and cause exhaustion of adaptive resources and consequently development of comorbid disorders, particularly depression and suicidal behavior.

6. Limitations of the Study

The pilot study conducted has several limitations which need to be acknowledged. One of the limitations is the size of the sample. The total number of subjects was small for statistical purposes so only descriptive statistics was performed. Another limitation is the absence of a control group. According to the results obtained, in further research it is necessary to conduct a study that would include the assessment of Self-Perception in transsexual persons of different age groups, aimed at confirming the assumption that the prolongation of entering into the desired changes affects some aspects of Self-Perception.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

References

[1] World Health Organization, *International Statistical Classification of Diseases and Related Health Problems*, World Health Organization, Geneva, Switzerland, 10th edition, 1992.

[2] M. Hoshiai, Y. Matsumoto, T. Sato et al., "Psychiatric comorbidity among patients with gender identity disorder," *Psychiatry and Clinical Neurosciences*, vol. 64, no. 5, pp. 514–519, 2010.

[3] U. Hepp, B. Kraemer, U. Schnyder, N. Miller, and A. Delsignore, "Psychiatric comorbidity in gender identity disorder," *Journal of Psychosomatic Research*, vol. 58, no. 3, pp. 259–261, 2005.

[4] C. M. Cole, M. O'Boyle, L. E. Emory, and W. J. Meyer III, "Comorbidity of gender dysphoria and other major psychiatric diagnoses," *Archives of Sexual Behavior*, vol. 26, no. 1, pp. 13–26, 1997.

[5] J. À Campo, H. Nijman, H. Merckelbach, and C. Evers, "Psychiatric comorbidity of gender identity disorders: a survey among dutch psychiatrists," *American Journal of Psychiatry*, vol. 160, no. 7, pp. 1332–1336, 2003.

[6] J. A. Meerloo, "Change of sex and collaboration with the psychosis," *American Journal of Psychiatry*, vol. 124, no. 2, pp. 263–264, 1967.

[7] M. S. C. Wallien, H. Swaab, and P. T. Cohen-Kettenis, "Psychiatric comorbidity among children with gender identity disorder," *Journal of the American Academy of Child and Adolescent Psychiatry*, vol. 46, no. 10, pp. 1307–1314, 2007.

[8] O. Bodlund, G. Kullgren, E. Sundbom, and T. Hojerback, "Personality traits and disorders among transsexuals," *Acta Psychiatrica Scandinavica*, vol. 88, no. 5, pp. 322–327, 1993.

[9] L. M. Lothstein, "Psychological testing with transsexuals: a 30-year review," *Journal of Personality Assessment*, vol. 48, no. 5, pp. 500–507, 1984.

[10] J. Beatrice, "A psychological comparison of heterosexuals, transvestites, preoperative transsexuals, and postoperative transsexuals," *Journal of Nervous and Mental Disease*, vol. 173, no. 6, pp. 358–365, 1985.

[11] E. Gómez-Gil, A. Gómez, S. Cañizares et al., "Clinical utility of the bem sex role inventory (BSRI) in the Spanish transsexual and nontranssexual population," *Journal of Personality Assessment*, vol. 94, no. 3, pp. 304–309, 2012.

[12] M. Fleming, D. Cohen, P. Salt, D. Jones, and S. Jenkins, "A study of pre-and postsurgical transsexuals: MMPI characteristics," *Archives of Sexual Behavior*, vol. 10, no. 2, pp. 161–170, 1981.

[13] A. L. C. de Vries, B. P. C. Kreukels, T. D. Steensma, T. A. H. Doreleijers, and P. T. Cohen-Kettenis, "Comparing adult and adolescent transsexuals: an MMPI-2 and MMPI-A study," *Psychiatry Research*, vol. 186, no. 2-3, pp. 414–418, 2011.

[14] J. E. Grant, M. Flynn, B. L. Odlaug, and L. R. N. Schreiber, "Personality disorders in gay, lesbian, bisexual, and transgender chemically dependent patients," *American Journal on Addictions*, vol. 20, no. 5, pp. 405–411, 2011.

[15] I. R. Haraldsen and A. A. Dahl, "Symptom profiles of gender dysphoric patients of transsexual type compared to patients with personality disorders and healthy adults," *Acta Psychiatrica Scandinavica*, vol. 102, no. 4, pp. 276–281, 2000.

[16] J. E. Exner, *A Rorschach Workbook for the Comprehensive System*, Rorschach Workshops, Asheville, NC, USA, 4th edition, 1995.

[17] L. Cohen, C. de Ruiter, H. Ringelberg, and P. T. Cohen-Kettenis, "Psychological functioning of adolescent transsexuals: personality and psychopathology," *Journal of Clinical Psychology*, vol. 53, pp. 187–196, 1997.

[18] I. B. Weiner, Ed., *Principles of Rorschach Interpretation*, Lawrence Erlbauma Associates, Mahwah, NJ, USA, 2nd edition, 2003.

[19] M. Rosenberg, C. Schooler, C. Schoenbach, and F. Rosenberg, "Global self-esteem and specific self-esteem: different concepts, different outcomes," *American Sociological Review*, vol. 60, no. 1, pp. 141–156, 1995.

[20] I. H. Meyer, "Prejudice, social stress, and mental health in lesbian, gay, and bisexual populations: conceptual issues and research evidence," *Psychological Bulletin*, vol. 129, no. 5, pp. 674–697, 2003.

[21] E. Coleman, W. Bockting, M. Botzer et al., "Standards of care for the health of transsexual, transgender, and gender-nonconforming people, version 7," *International Journal of Transgenderism*, vol. 13, no. 4, pp. 165–232, 2011.

[22] W. Bockting, A. Benner, and E. Coleman, "Gay and bisexual identity development among female-to-male transsexuals in North America: emergence of a transgender sexuality," *Archives of Sexual Behavior*, vol. 38, no. 5, pp. 688–701, 2009.

[23] J. Katz, T. E. Joiner Jr., and P. Kwon, "Membership in a devalued social group and emotional well-being: developing a model of personal self-esteem, collective self-esteem, and group socialization," *Sex Roles*, vol. 47, no. 9-10, pp. 419–431, 2002.

[24] M. Rosenberg, *Society and the Adolescent Self-Image*, Princeton University Press, Princeton, NJ, USA, 1965.

[25] Y. L. S. Smith, L. Cohen, and P. T. Cohen-Kettenis, "Postoperative psychological functioning of adolescent transsexuals: a rorschach study," *Archives of Sexual Behavior*, vol. 31, no. 3, pp. 255–261, 2002.

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Clinical Study

The Role of Clitoral Anatomy in Female to Male Sex Reassignment Surgery

Vojkan Vukadinovic,[1,2] Borko Stojanovic,[1] Marko Majstorovic,[1] and Aleksandar Milosevic[2]

[1] *University Children's Hospital, Tirsova 10, 11000 Belgrade, Serbia*
[2] *School of Medicine, University of Belgrade, 11000 Belgrade, Serbia*

Correspondence should be addressed to Borko Stojanovic; stojanovicborko@gmail.com

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Introduction. Controversies on clitoral anatomy and its role in female sexual function still make clitoral reconstructive surgery very challenging. We evaluated the role of clitoral anatomic features in female to male sex reassignment surgery. *Material and Methods*. The study included 97 female transsexuals, aged from 18 to 41 years, who underwent single stage metoidioplasty between March 2008 and January 2013. The operative technique involved vaginectomy, the release of clitoral ligaments and urethral plate, urethroplasty by combining buccal mucosa graft and genital flaps, and scrotoplasty with insertion of testicle prostheses. Postoperative questionnaire was used to evaluate aesthetic, functional, and sexual outcome. *Results*. The mean followup was 30 months. The mean length of the neophallus was 7 cm, compared to mean preoperative length of the hypertrophied clitoris of 3.3 cm. Complications occurred in 27.84% of all patients, related mostly to urethroplasty. Voiding while standing was achieved in all cases. None of the patients had problems in sexual arousal, masturbation, or orgasms. *Conclusion*. Accurate knowledge of the clitoral anatomy, physiology, and neurovascular supply is crucial for a successful outcome of female to male sex reassignment surgery. Our approach appears to ensure overall satisfaction and high quality of sexual life.

1. Introduction

Throughout history, there have been controversies concerning the anatomy of the clitoris and its role in female sexual function. The first comprehensive evaluation of clitoral anatomy was reported by De Graaf in the 17th century, followed by the study of Kobelt in the 19th century. Cadaver studies and magnetic resonance imaging have recently managed to clarify the exact position, structure, and innervation of the human clitoris [1, 2]. Clitoris is defined as a highly innervated and vascular erectile structure, consisting of the glans and paired erectile bodies—bulbs, crura, and corpora. The intimate relation of these erectile tissues to distal urethra and vagina is believed to have an important role in sexual response. Nevertheless, there are certain aspects of innervation, histology, and physiology of the clitoris that still remain unclear, making our knowledge of the correlation between clitoral anatomy, sexual function, and genital surgery incomplete [3, 4]. Therefore, clitoral reconstructive surgery still poses a great challenge for the genital surgeon, encompassing many different procedures and techniques. Total amputation of the clitoris used to be the single treatment for patients with clitoris hypertrophy (disorders of sexual development, congenital adrenal hyperplasia), causing female genital mutilation. In order to preserve sensation and achieve better aesthetic appearance, more refined techniques of recession and reduction clitoroplasty have been described [5].

Female to male transgenderism is another indication for clitoral reconstructive surgery, where the creation of a neophallus from a hormonally hypertrophied clitoris plays a crucial role. The principles of this technique, as well as the term "metoidioplasty", were introduced by Lebovic and Laub [6]. Refinements of the technique were described afterwards by other authors. Hage presented his experience in 32 female to male transsexuals, achieving small phallus, that is, hardly capable of sexual penetration [7]. Perovic and Djordjevic reported their metoidioplasty technique, that is, based on repair of the most severe forms of hypospadias

and intersex [8]. The main goals of the procedure are male appearance of the genitalia and voiding while standing, without compromising sexual function. We evaluated the principles of metoidioplasty to determine the importance of clitoral anatomy in female to male gender reassignment surgery.

2. Material and Methods

Between March 2008 and January 2013, 97 female transsexuals, aged 18–41 years (mean 29), underwent single stage metoidioplasty, in line with the Standards of Care of the World Professional Association for Transgender Health [9]. After Institutional Ethics Committee approval, informed consent was signed by all patients entering the procedure. The patients were treated hormonally prior to surgery and underwent hysterectomy and adnexectomy either before (63 cases) or simultaneously (34 cases) with metoidioplasty. To achieve additional enlargement of the clitoris, patients were advised to use dihydrotestosterone gel twice a day for a period of 3 months prior to surgery, combined with a vacuum device also twice a day for 30 minutes. Preoperative length of the hypertrophied clitoris ranged from 2.5 cm to 4 cm (mean 3.3 cm). (Figures 1(a), 2(a), and 2(b)).

2.1. Operative Technique. The current operative procedure includes the following steps: vaginectomy, release of clitoral ligaments and urethral plate, straightening and lengthening of the clitoris, urethroplasty by combining buccal mucosa graft and genital flaps, and scrotoplasty with insertion of testicle prostheses. Vaginectomy is performed by total removal of vaginal mucosa (colpocleisis), except the part of anterior vaginal wall near the urethra, which is used for urethral lengthening. Incision is made circumferentially between the inner and outer layers of the clitoral prepuce and continued around the urethral plate and native urethra. After degloving, the clitoral ligaments are completely dissected to bring the clitoris forward. The ligamentous support of the clitoris—suspensory ligament—consists of superficial and deep components. These components are multiplanar, keeping the clitoral body curved. Therefore, its main role is to prevent the clitoris from straightening, while maintaining its stability during sexual activity (Figure 1(b)). Additional curvature is due to short, undeveloped, wide urethral plate, which adheres ventrally to clitoral bodies (Figures 1(c) and 2(c)). In order to straighten and lengthen the clitoris as much as possible, ligamentous components need to be completely released and also urethral plate needs to be divided (Figure 3). Care must be taken to avoid injury of the neurovascular structures during this maneuver. Paired clitoral neurovascular bundle originates from pudendal neurovascular bundle, ascending to the upper part of the clitoral body where the crura unite. The dorsal clitoral nerves pass in large fibers to enter the deep layers of the glans, without visible distal branches that reach the tip of the clitoris. Analogously to glans penis innervation, the innervation of the glans clitoris is impressive, particularly in its dorsal part.

Ventrally, the wide and undeveloped urethral plate is dissected from the clitoral bodies. It is imperative to prevent injury of spongiosal tissue around the urethral plate and excessive bleeding, and also to preserve the blood supply to the urethral plate. Dissection includes the bulbar part of the plate surrounding the native orifice to provide good mobility for urethral reconstruction. Since the wide urethral plate is always short and adheres to the corporal bodies, causing the ventral clitoral curvature, it is divided at the level of glanular corona. This achieves a complete straightening and lengthening of the clitoris.

The bulbar part of urethra is created by joining the flap harvested from anterior vaginal wall and the remaining part of divided urethral plate. Additional urethral reconstruction is performed using a buccal mucosa graft and vascularized genital skin flaps (Figures 1(d) and 1(e)). The buccal mucosa graft is harvested from the inner cheek using a standard technique. The graft is fixed and quilted to the corporeal bodies starting from the advanced urethral meatus to the tip of the glans. Urethra can then be covered using a labia minora flap or dorsal clitoral skin flap. The inner portion of labia minora is dissected to create a flap with appropriate dimensions without dissociation from the outer labial surface. This ensures an excellent vascularization of the flap (Figure 4(a)). The flap is joined with the buccal mucosa graft, without tension, over a 12–14 Fr stent to create the neourethra (Figure 4(b)). Outer surface of the labia minora then covers all suture lines, forming ventral penile skin. In the case of poorly developed labia minora, a well-vascularized longitudinal island flap is harvested from dorsal clitoral skin. The flap is transposed ventrally by the buttonhole maneuver. Lateral edges of the skin flap and the buccal mucosa graft are sutured together with a one-layer running suture to form the neourethra. Abundant flap pedicle is fixed laterally to cover all suture lines of the neourethra. The glans is incised in two parallel lines and both glans wings are dissected extensively, to enable glans closure without tension, creating a conical glans. The penile body is reconstructed using the remaining clitoral and labia minora skin. The labia majora are reconstructed to create the scrotum. Silicone testicle prostheses are inserted through bilateral incisions at the top of labia majora (Figures 1(f) and 5). Suprapubic urine drainage was placed in all cases and kept in for 3 weeks. The urethral stent was removed after 10 days. Postoperative use of vacuum pump is necessary to prevent retraction of the neophallus, starting three weeks after surgery.

A postoperative interview was used for evaluation of aesthetic, functional, and sexual outcome. Structured questionnaire with determined response categories was derived from a structured interview (BVT, Biographical Questionnaire for Transsexuals and Transvestites; Verschoor & Poortinga, 1988), with additional self-created items regarding general sexual life and patients' satisfaction with aesthetic outcome [10]. Self-developed items were measured on a three-point scale ((1) dissatisfied; (2) partially satisfied; (3) completely satisfied). Patients were asked about overall satisfaction with the appearance of their new genitalia and voiding while standing, as well as sexual parameters: quality of erection and

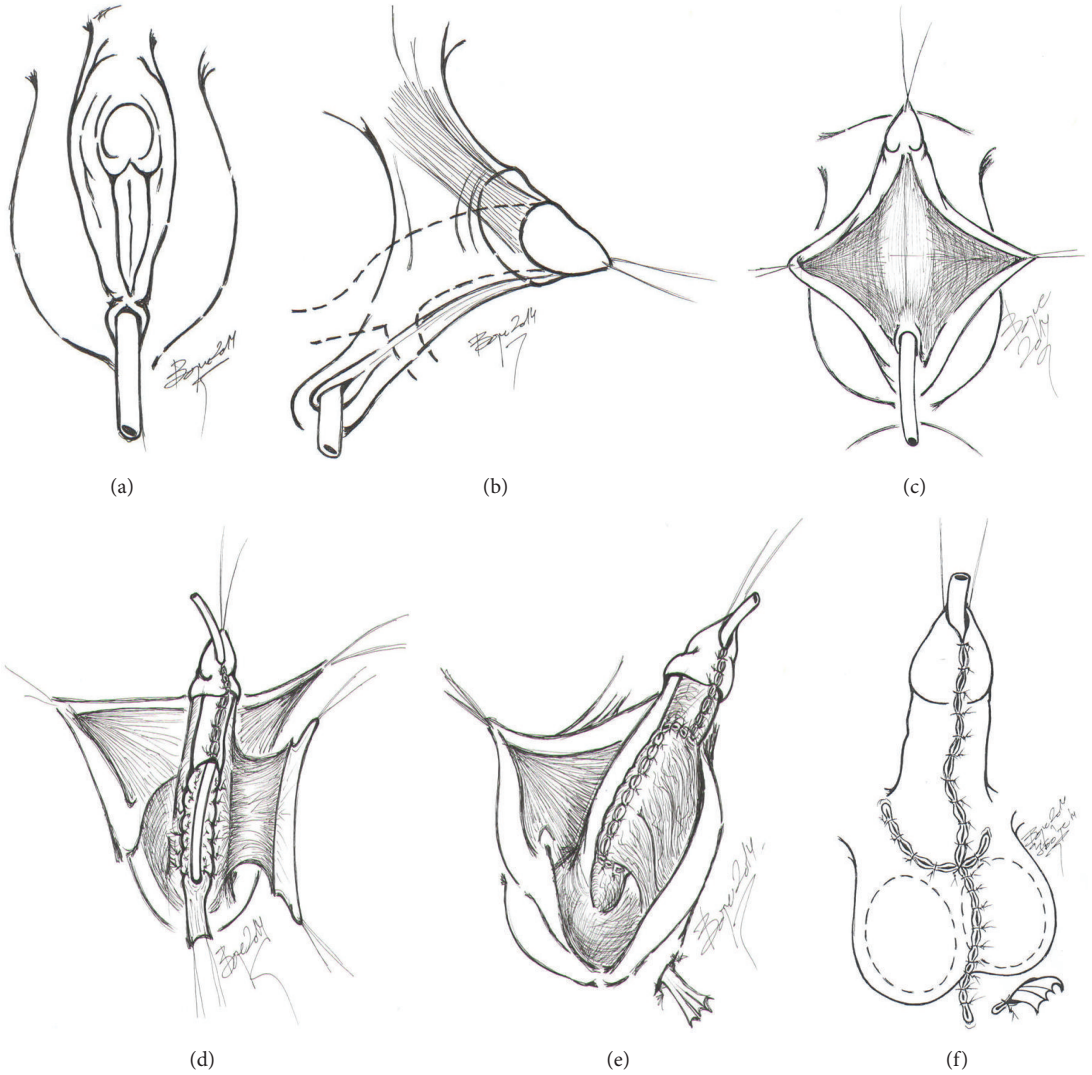


Figure 1: Schematic presentation of clitoral anatomy in metoidioplasty. (a) Ventral aspect of hormonally enlarged clitoris; labia majora appear as scrotums. (b) Clitoral bodies are curved due to dorsal ligamentous support and short urethral plate. (c) Urethral plate is wide and adherent, with visible demarcation to labia minora. (d) Urethroplasty—buccal mucosa graft, previously quilted, combined with well vascularized labia minora flap. (e) Flap is joined with buccal mucosa graft to create neourethra. (f) Final appearance of the neophallus.

Figure 2: Preoperative appearance of genital area. (a) Ventral aspect. Clitoral bodies and glans are hormonally enlarged. Labia majora resemble scrotums. (b) Lateral aspect of hypertrophied clitoris. (c) Wide urethral plate between the glans and native urethral orifice.

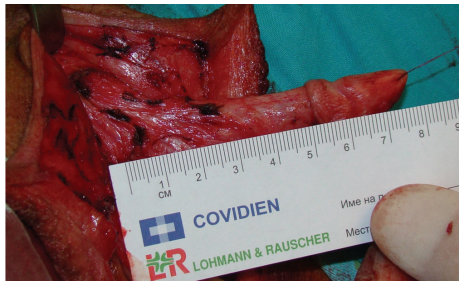


Figure 3: Corpora with glans are 8 cm in length after complete division of clitoral ligaments dorsally and short urethral plate ventrally.

erogenous sensation of the neophallus, sexual arousal, frequency of masturbation, orgasm during masturbation, sexual intercourse with partner, and overall sexual satisfaction.

3. Results

Followup ranged between 13 months and 69 months (mean 30 months). The length of the neophallus was from 5 cm to 10.5 cm (mean 7 cm). Intraoperatively measured length of the reconstructed urethra was from 9.5 cm to 14 cm (mean 11 cm).

Complications occurred in 27 patients (27.84%). They were classified as minor, which could be managed nonoperatively, and as major, which required additional surgery. Minor complications included dribbling and spraying during voiding and were reported by 17 patients (17.53%). These spontaneously resolved within 3 months after surgery in all cases. The major complications were related to urethral reconstruction and testicular prosthesis. There were 2 urethral strictures (2%) and 6 fistulas (6.18%) that were successfully repaired 6 months later by minor surgical procedures. Normal micturition was obtained in all of these cases, with no urinary leaks. Testicular displacement occurred in 2 patients and was corrected by the replacement and proper positioning of the displaced prosthesis. Reconstruction of the mons pubis region, neophallic skin, or scrotum, due to aesthetic appearance, was performed in 11 patients (11.34%).

Majority of patients (83.50%) were completely satisfied with the new appearance of their genitalia, while 87.63% reported overall complete sexual satisfaction (Table 1). There were no complications related to sexual function. Good quality of erection, sexual arousal, and completely preserved erogenous sensation were reported by all 97 patients, while 70% of patients always experienced orgasm during masturbation. In 20 patients who reported sexual intercourse with partners, length of the neophallus was inadequate for full penetration. Nevertheless, the length of the neophallus was not a limiting factor for voiding while standing, which was achieved in all cases. In 12 patients who additionally required augmentation phalloplasty, microvascular latissimus dorsi muscle flap transfer was performed.

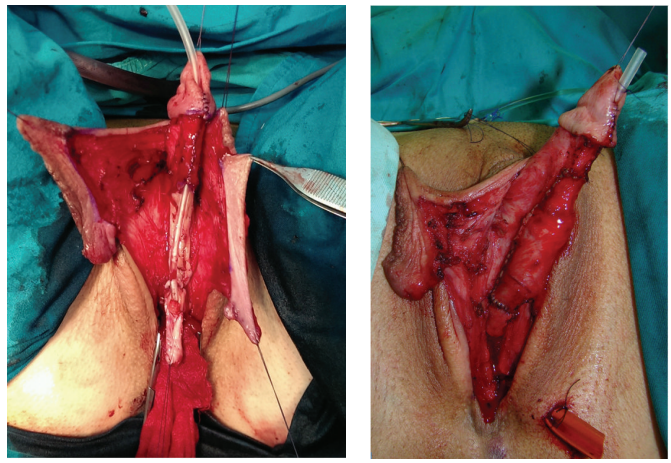
Table 1: Patients' satisfaction with metoidioplasty results.

Parameters	Number of patients (%)
Satisfaction with appearance of genitalia	
Completely satisfied	81 (83.50%)
Partially satisfied	12 (12.37%)
Dissatisfied	4 (4.13%)
Voiding while standing	
Completely satisfied	97 (100%)
Partially satisfied	
Dissatisfied	
Quality of erection	
Completely satisfied	91 (93.81%)
Partially satisfied	6 (6.19%)
Dissatisfied	
Erogenous sensation of the neophallus	
Completely satisfied	97 (100%)
Partially satisfied	
Dissatisfied	
Sexual arousal	
(Very) often	97 (100%)
Never—sometimes	
Frequency masturbation	
(Very) often	83 (85.57%)
Never—sometimes	14 (14.43%)
Orgasm during masturbation	
(Almost) always	68 (70.10%)
Never—sometimes	29 (29.90%)
Sexual intercourse with partner	
With penetration	
Without penetration	20 (100%)
Overall sexual satisfaction	
Satisfied	85 (87.63%)
Neutral	7 (7.22%)
Unsatisfied	5 (5.15%)

4. Discussion

Information on the human clitoris varied over time but was generally overwhelmingly insufficient until recently. As our knowledge of its anatomy and neurophysiology improved through past decades, surgical reconstruction for many indications changed, in order to avoid injury to neurovascular structures, maintain sensitivity of the glans, and achieve good psychosexual and psychosocial outcome [11–13].

Creation of the neophallus is one of the most challenging procedures in female to male sex reassignment surgery. Metoidioplasty has been instituted as a method of choice in female to male transsexuals who prefer avoiding complex, multistaged surgical creation of an adult-size phallus. It is an option in cases where the clitoris seems large enough after hormonal treatment to provide a phallus that will satisfy the patient. Most patients' main desires are to have genitalia of male-like appearance, to be able to void while standing, and to be capable of having a normal sexual relationship [14].



(a) (b)

Figure 4: Urethral reconstruction. (a) Flap is harvested from the left labia minora, with preserved vascularization. Previously, buccal mucosa graft is quilted to the ventral side of the corpora. (b) Flap is joined with buccal mucosa graft to create neourethra without tension.

Figure 5: Appearance at the end of surgery. Penile skin reconstructed using remaining genital skin. Two testicular implants inserted into scrotums created from both labia majora.

Metoidioplasty is a one-stage procedure with low complication rate, where postoperative appearance and voiding while standing are the key endpoints. The main disadvantage is that it does not produce a phallus long enough to allow penetration, and all patients must be familiarized with this fact prior to surgery. The main goals are straightening and lengthening of the clitoris, as well as reconstruction of the urethra. Clear understanding of the female genital anatomy and sexuality is necessary for a successful outcome [15].

Anatomical background for creation of the neophallus from clitoris was established by reported similarities in the embryology, anatomy, and function of the male and female genitalia. Toesca et al. reported that the corpora cavernosa of the clitoris are essentially similar to the penis, except that there is no subalbugineal layer between the tunica albuginea and the erectile tissue. Consequently, the clitoris can become tumescent but not stiffly erect like the penis. With sexual arousal it becomes engorged, rather than really erect like the penis; however, this fact has no crucial impact on sexual function [16].

Anatomical analogy between fetal clitoris and penis was also observed by Baskin et al. who reported anatomical dissection of the clitoris and its impact on reduction clitoroplasty. The position of the nerves, at 11 o'clock and 1 o'clock along the shaft of the clitoris and glans, was demonstrated. The absence of nerves at the 12-o'clock position and the lowest nerve density on the ventral aspect of the glans were emphasized, as well as abundant innervation of the top and dorsal portion of the glans clitoris [2, 17]. Vaze et al. performed studies on 6 adult cadavers, determining the course of the dorsal nerve of the clitoris [18]. The findings were similar to those of Baskin et al. but the exact function of the dorsal clitoral nerve remained uncertain. It is believed to be a pure sensory nerve, making its role in sexual function unclear. However, it is important to avoid any iatrogenic injury to the clitoral nerves during metoidioplasty. One must take special care when releasing the clitoral ligaments to preserve complete innervation and sensation. Rees et al. facilitated that maneuver by describing, in detail, the anatomy of the ligamentous support of the clitoris in their cadaver dissection study [19]. As their main finding, they described the suspensory ligament of the clitoris, with its superficial and deep components, which was observed in all specimens. The superficial component extends widely from the deep fascia of the mons pubis and attaches the mons pubis to the clitoral body, the full length down the clitoris, entering into the labia majora on their medial aspect. It is a thick, fibro-fatty structure, 7-8 cm wide. The deep component is fibrous and rigid and attaches the clitoral body and bulbs to the pubic symphysis. It appears to be fibrous rather than fibro-fatty, up to 1 cm in thickness. The release of both components of the suspensory ligament, with dissection of the short urethral plate, is the crucial step in straightening and lengthening

of the clitoris to create a neophallus in female transsexuals. The length of the neophallus in our patients was from 5 cm to 10.5 cm (mean 7 cm), compared to preoperative length of the hypertrophied clitoris, which ranged from 2.5 cm to 4 cm (mean 3.3 cm).

Reconstruction of the urethra that will enable voiding in a standing position remains one of the main goals of metoidioplasty. In search for better solutions, Djordjevic and Bizic have already reported simultaneous use of buccal mucosa graft and labia minora flap, as a one-stage procedure, with a successful outcome [20]. In this study, we report minor complications in 17.53% of all patients, in the form of dribbling and spraying during voiding. The major complications occurred as urethral stricture and fistula, in 2% and 6.18% of cases, respectively. Voiding while standing was reported in all cases. Also, all patients were satisfied with the new male appearance of their genitalia. In some cases, penile webbing and tissue around the base of the penis presented a problem for voiding while standing, requiring surgical correction.

Maintenance of the sexual function is an imperative for successful outcome of gender reassignment surgery [21]. Certain aspects of clitoral anatomy and neurophysiology, as well as its exact role in female sexuality, are still being assessed. O'Connell et al. evaluated the relationship between the clitoris, urethra, and vagina. Cadaveric dissection and MRI studies brought about an increased understanding of the gross anatomy of the urethra and surrounding erectile tissue. Integral relationship between the clitoris and the distal urethra and vagina is believed to be responsible for female orgasm, making this cluster of tissues (clitoris, distal urethra, and distal vagina) a special entity with a major role in female sexual response [3, 22]. Still, the study of Oakley et al. determined the highest concentration of small nerves within the mucosal surface of the glans, compared to a smaller number of nerve fibers in the skin over clitoral-urethral complex, emphasizing the role of glans clitoris in sexual function [23]. Overall, clitoral glans and clitoral-urethral complex with distal vagina are highlighted as fundaments of female sexual function.

There are recent studies on psychosocial and psychosexual outcome of sex reassignment procedures, but the available literature lacks evidence-based studies, including long-term followup. It is widely accepted that there is greater sexual satisfaction after the transition. Good genital sensitivity is explained by advances and refinements in surgical techniques [14, 21]. De Cuypere et al. evaluated sexual and physical health after sex reassignment surgery, with the mean followup of 6.2 years in female to male transsexuals [24]. They observed improvement of many parameters of sexual life after female to male transition. Sexual satisfaction with a partner after surgery was reported by 81.9% of patients, compared to 50% prior to surgery. Orgasm frequency increased from 45.5% to 77.8%, frequent sexual arousal increased from 40% to 60.9%, and frequent masturbation increased from 20% to 78.3% of participants. Overall sexual satisfaction was reported in 76.2% of the cases, with 19% of unsatisfied patients. Some of these changes can be contributed to the influence of male hormones on sexual behavior and libido, as reported. In our series, overall sexual satisfaction is documented in 87.6% of the cases, orgasm when masturbating is documented in 70%, and erection of the neophallus and sexual arousal is documented in 100%. Hage and van Turnhout reported long-term results of metoidioplasty in 70 patients [25]. Only 8 patients had an uneventful postoperative course, with most complications related to urethroplasty—urethral fistula and stricture. In 17 of 70 patients additional phalloplasty with free flaps was performed at a later stage. Based on their research, metoidioplasty is still the method of choice for female to male transsexuals who are not sure whether they need phalloplasty at the moment of transition.

When performing metoidioplasty, adequate preservation of sexually related tissues is necessary. Urethroplasty and clitoral lengthening and reconstruction, when performed by experienced experts, appear not to compromise sexual function at all. In our study, complete satisfaction with the quality of erection and sensation of the neophallus was reported by all patients. None of the patients had problems or difficulties in sexual arousal, masturbation, or orgasms. Still, long-term analyses on psychosexual and psychosocial outcomes of metoidioplasty are lacking.

5. Conclusion

Accurate knowledge of the clitoral anatomy, relations, and neurovascular supply is crucial for achieving a successful outcome in clitoral reconstructive surgery, without compromising sexual function. Metoidioplasty represents a creation of a neophallus from hormonally hypertrophied clitoris in female to male transsexuals. Recent cadaver and MRI studies of clitoral anatomy revealed new features of histological structures and the relationship between the clitoris, urethra, and vagina, as well as the anatomy of its neurovascular supply. These findings, combined with our previous observations, emphasized some aspects of metoidioplasty. Release of all anatomical layers of suspensory ligaments, followed by precise dissection of short urethral plate, is necessary for a complete straightening and lengthening of the clitoris. Preservation of the neurovascular supply, as well as dorsal aspect of the glans, during dissection is essential in maintaining sexual function. An adequate postoperative sexual functioning is reported by the majority of patients. However, analyzing the long-term psychosexual and psychosocial outcome of metoidioplasty is necessary for complete evaluation.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

References

[1] H. E. O'Connell, K. V. Sanjeevan, and J. M. Hutson, "Anatomy of the clitoris," *Journal of Urology*, vol. 174, no. 4, pp. 1189–1195, 2005.

[2] L. S. Baskin, A. Erol, Y. W. Li, W. H. Liu, E. Kurzrock, and G. R. Cunha, "Anatomical studies of the human clitoris," *Journal of Urology*, vol. 162, no. 3, pp. 1015–1020, 1999.

[3] H. E. O'Connell, J. M. Hutson, C. R. Anderson, and R. J. Plenter, "Anatomical relationship between urethra and clitoris," *Journal of Urology*, vol. 159, no. 6, pp. 1892–1897, 1998.

[4] S. Yavagal, T. F. de Farias, C. A. Medina, and P. Takacs, "Normal vulvovaginal, perineal, and pelvic anatomy with reconstructive considerations," *Seminars in Plastic Surgery*, vol. 25, no. 2, pp. 121–129, 2011.

[5] W. L. Lean, J. M. Hutson, A. V. Deshpande, and S. Grover, "Clitoroplasty: past, present and future," *Pediatric Surgery International*, vol. 23, no. 4, pp. 289–293, 2007.

[6] G. S. Lebovic and D. R. Laub, "Metoidioplasty," in *Reconstructive and Plastic Surgery of the External Genitalia*, R. M. Ehrlich and G. J. Alter, Eds., pp. 355–360, WB Saunders, Philadelphia, Pa, USA, 1999.

[7] J. J. Hage, "Metaidoioplasty: an alternative phalloplasty technique in transsexuals," *Plastic and Reconstructive Surgery*, vol. 97, no. 1, pp. 161–167, 1996.

[8] S. V. Perovic and M. L. Djordjevic, "Metoidioplasty: a variant of phalloplasty in female transsexuals," *The British Journal of Urology International*, vol. 92, no. 9, pp. 981–985, 2003.

[9] WPATH Committee Opinion, "Genital surgery," in *The Standards of Care for Gender Identity Disorder*, pp. 28–30, 6th edition, 2005.

[10] A. M. Verschoor and J. Poortinga, "Psychosocial differences between Dutch male and female transsexuals," *Archives of Sexual Behavior*, vol. 17, no. 2, pp. 173–178, 1988.

[11] A. Senaylı, "Controversies on clitoroplasty," *Therapeutic Advances in Urology*, vol. 3, no. 6, pp. 273–277, 2011.

[12] J. C. Alcázar, J. Torres, J. S. Lara, and I. Garnica, "Refinements and steps in clitoroplasty: our experience," *Journal of Plastic, Reconstructive & Aesthetic Surgery*, vol. 66, no. 6, pp. e175–e177, 2012.

[13] G. Selvaggi, C. M. Ressa, G. Ostuni, and L. Selvaggi, "Reduction of the hypertrophied clitoris: surgical refinements of the old techniques," *Plastic and Reconstructive Surgery*, vol. 121, no. 5, pp. e358–e361, 2008.

[14] M. Sohn and H. A. G. Bosinski, "Gender identity disorders: diagnostic and surgical aspects," *The Journal of Sexual Medicine*, vol. 4, no. 5, pp. 1193–1208, 2007.

[15] M. L. Djordjevic, D. Stanojevic, M. Bizic et al., "Metoidioplasty as a single stage sex reassignment surgery in female transsexuals: Belgrade experience," *The Journal of Sexual Medicine*, vol. 6, no. 5, pp. 1306–1313, 2009.

[16] R. J. Levin and N. Edge, "The human sexual response—similarities and differences in the anatomy and function of the male and female genitalia: are they a trivial pursuit or a treasure trove?" in *The Psychophysiology of Sex*, E. Janssen, Ed., pp. 35–56, Indiana University Press, Bloomington, Ind, USA, 2007.

[17] C. Shih, C. J. Cold, and C. C. Yang, "Cutaneous corpuscular receptors of the human glans clitoris: descriptive characteristics and comparison with the glans penis," *The Journal of Sexual Medicine*, vol. 10, no. 7, pp. 1783–1789, 2013.

[18] A. Vaze, H. Goldman, J. S. Jones, R. Rackley, S. Vasavada, and K. J. Gustafson, "Determining the course of the dorsal nerve of the clitoris," *Urology*, vol. 72, no. 5, pp. 1040–1043, 2008.

[19] M. A. Rees, H. E. O'Connell, R. J. Plenter, and J. M. Hutson, "The suspensory ligament of the clitoris: connective tissue supports of the erectile tissues of the female urogenital region," *Clinical Anatomy*, vol. 13, no. 6, pp. 397–403, 2000.

[20] M. L. Djordjevic and M. R. Bizic, "Comparison of two different methods for urethral lengthening in female to male (metoidioplasty) surgery," *The Journal of Sexual Medicine*, vol. 10, no. 5, pp. 1431–1438, 2013.

[21] A. A. Lawrence, "Sexuality before and after male-to-female sex reassignment surgery," *Archives of Sexual Behavior*, vol. 34, no. 2, pp. 147–166, 2005.

[22] N. M. Stikkelbroeck, C. C. Beerendonk, W. N. Willemsen et al., "The long term outcome of feminizing genital surgery for congenital adrenal hyperplasia: anatomical, functional and cosmetic outcomes, psychosexual development, and satisfaction in adult female patients," *Journal of Pediatric and Adolescent Gynecology*, vol. 16, no. 5, pp. 289–296, 2003.

[23] S. H. Oakley, G. K. Mutema, C. C. Crisp et al., "Innervation and histology of the clitoral-urethal complex: a cross-sectional cadaver study," *The Journal of Sexual Medicine*, vol. 10, no. 9, pp. 2211–2218, 2013.

[24] G. de Cuypere, G. T'Sjoen, R. Beerten et al., "Sexual and physical health after sex reassignment surgery," *Archives of Sexual Behavior*, vol. 34, no. 6, pp. 679–690, 2005.

[25] J. J. Hage and A. A. van Turnhout, "Long-term outcome of metaidoioplasty in 70 female-to-male transsexuals," *Annals of Plastic Surgery*, vol. 57, no. 3, pp. 312–316, 2006.

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Clinical Study

Robotic Single-Site Surgery for Female-to-Male Transsexuals: Preliminary Experience

Stefano Bogliolo, Chiara Cassani, Luciana Babilonti, Barbara Gardella, Francesca Zanellini, Mattia Dominoni, Valentina Santamaria, Rossella Elena Nappi, and Arsenio Spinillo

Department of Obstetrics and Gynaecology, IRCCS-Fondazione Policlinico San Matteo and University of Pavia, 19 Viale Camillo Golgi, 27100 Pavia, Italy

Correspondence should be addressed to Stefano Bogliolo; s.bogliolo@smatteo.pv.it

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Hysterectomy with bilateral salpingo-oophorectomy is a part of gender reassignment surgery for the treatment of female-to-male transsexualism. Over the last years many efforts were made in order to reduce invasiveness of laparoscopic and robotic surgery such as the introduction of single-site approach. We report our preliminary experience on single-site robotic hysterectomy for cross-sex reassignment surgery. Our data suggest that single-site robotic hysterectomy is feasible and safe in female-to-male transsexualism with some benefits in terms of postoperative pain and aesthetic results.

1. Introduction

Transsexualism is a condition in which a person lives a significant incongruence between gender identity and physical phenotype [1]. This conflict causes general suffering called gender dysphoria and a strong desire to live and be accepted as a member of the opposite sex. Treatment for person with gender identity disorder is based on psychiatric and psychological support, hormonal therapy, and gender reassignment surgery [1]. Female-to-male reassignment surgery is a series of complex surgical procedures which may include mastectomy, hysterectomy with bilateral salpingo-oophorectomy (BSO), and penile and scrotal reconstruction. The aim of our study is to evaluate if robotic single-site hysterectomy with BSO could play a role in reassignment surgery for female-to-male transsexualism (FMT).

2. Material and Methods

We conducted a retrospective analysis of perioperative data from ten consecutive patients who underwent robotic-assisted single-site laparoscopic hysterectomy (RSSH) for FMT at our institution from April to December 2013. Candidates for gender reassignment were referred to us for the operation from various centers. All patients had diagnosis of gender identity disorder assessed by mental health professional according to DSM-IV-TR criteria [2] and all of them met World Professional Association for Transgender Health Standards [3] including documentation of long term desire of transition to the other sex, living as a male, and receiving testosterone for at least six months. Inclusion criteria in all cases were age > 18 years and absence of any contraindication to endoscopic surgery. After Institutional Ethics Committee approval, specific written informed consent was taken from all the patients in agreement with local and international legislation (Declaration of Helsinki). Participants were also informed that the RSSH may be converted to laparoscopic or laparotomic hysterectomy, in presence of any specific difficulties.

Data regarding baseline patients' characteristics (age, BMI, previous surgery, comorbidities, smoke, hormonal therapy, parity, and sexual function) were collected as reported in Table 1.

Visual Analogic Scale ranging from 0 = no pain to 10 = agonizing pain was used to evaluate postoperative pain, and VAS score was recorded every 3–6 hours for all patients from the end of surgery till discharge. According to our anesthesia protocol standard analgesic therapy with ketorolac

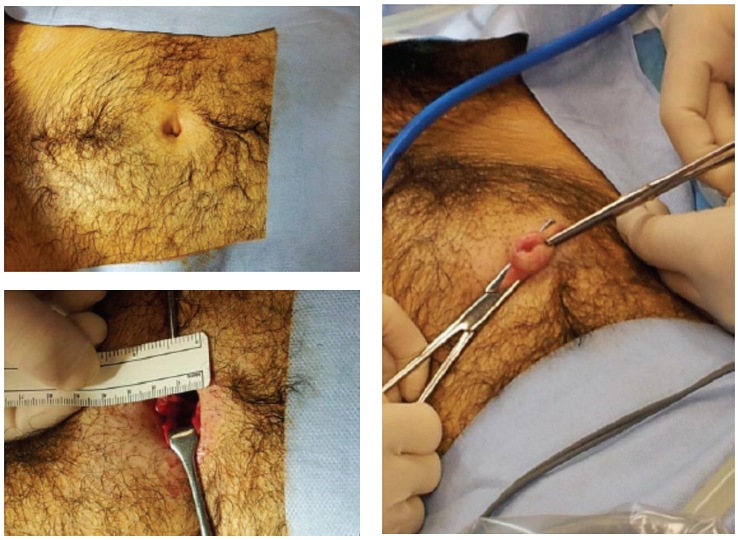

Figure 1: Single-site umbilical incision.

Table 1: Patients' characteristics.

Characteristics	Values
Age (years)	28 ± 5.7 (M ± DS)
BMI (kg/m^2)	22 ± 1.7 (M ± DS)
Parity	—
Previous abdominal surgery	4 (40%)
Mastectomy	9 (90%)
Comorbidities	2 (20%)
Smoke	10 (100%)
Androgen therapy (years)	2.6 ± 1.2 (M ± DS)
Virgin	2 (20%)

30 mg twice a day and acetaminophen 1000 mg every 8 hours was administered, while tramadol was used only on demand. At the end of surgery ropivacaine local infiltration was performed at the single-site port access.

All patients received venous thromboembolism and antibiotic prophylaxis according to institutions guidelines.

Every surgery was performed using a da Vinci Si Surgical System (Intuitive Surgical, Sunnyvale, CA, USA) by a team consisting of two experienced surgeons (Stefano Bogliolo and Luciana Babilonti) and one bedside assistant for uterine manipulation. The single-site system is a multichannel port device not reusable with space for 4 cannulae and an insufflation valve. The specific cannulae are as follows: two 250 mm in length curved cannulae for robotic instruments, one cannula for the high-definition three-dimensional endoscope, and one 5 or 10 mm assistant surgeon cannula.

2.1. Surgical Technique. Uterine manipulator device was placed, when possible, in order to improve uterine mobilization. A 2 cm incision was performed at the umbilical scar in correspondence with the physiological hernia (Figure 1) and single-site port, previous lubrication with a sterile saline solution, was introduced in abdominal cavity within a descending movement.

Pneumoperitoneum up to 12 mmHg of pressure was started and patient was placed in lithotomy position at the 30° Trendelenburg position. da Vinci Si robotic column was positioned between the patient's legs and da Vinci Si 8.5 mm 30° endoscope was placed in umbilical trocar. After that, two 5 × 250 mm curved cannulae were introduced through the specific lumen, under constant visualisation and eventually the specific robotic instruments were placed (surgical forceps on Arm 2 and curved scissor on Arm 1). The assistant's 5 or 10 mm cannula was also inserted allowing the use of classic bipolar instruments overcoming the absence of specific robotic one.

The technique used for robotic single-site hysterectomy and BSO was similar to that used in standard laparoscopy; uterus and adnexa were removed through the vagina and vaginal cuff was closed both vaginally and robotically depending on anatomic features.

3. Results and Discussion

A series of 10 patients underwent RSSH + BSO at our department during nine months. The clinic-pathological characteristics of these patients were reported in Table 1. The median patients' age was 28 ± 5.7 years (range 20–40) and the median BMI was 22 ± 1.7 kg/m^2 (range 19–25).

Regarding surgical procedure in all cases a total hysterectomy with BSO was performed.

The mean operative time was 137±32 min (range 90–210), the mean console time was 79 ± 15 min (range 55–110), and the mean docking time was 9 ± 2 min (range 6–18). The mean intraoperative blood loss was 30 ± 24 mL (range 15–100). The median uterine weight was 89 ± 15 gr (range 60–120).

The vaginal cuff closure was performed in eight cases transvaginally; only in two cases of virgin patients the vaginal

suture was performed with extracorporeal knots, with the aid of a push knot, as previously described [4].

Regarding perioperative outcomes, no laparoscopic or laparotomic conversion was needed during robotic surgical procedure.

Only in one case a minor postoperative complication occurred: vaginal bleeding required a partial vaginal suture for hymeneal ring laceration, due to important atrophy.

The median hospital stay was 2.4 ± 0.9 days (range 2–5). All patients underwent the same surgical analgesic protocol without opioids and they experienced low postoperative pain (VAS value: 1 IQR 0–3 at 60 minutes and VAS value: 0 IQR 0-0 at 24 hours after intervention).

3.1. Discussion. Traditionally, in sex reassignment surgery, total laparoscopic hysterectomy with BSO is performed. Vaginal route, ideally "scarless" surgery, cannot routinely be offered to FMT patients because most transsexuals are nulliparous and virginal and have narrow and atrophic vaginal walls as a result of long term hormonal therapies [5]. But even if they are small, classic laparoscopic incisions, one suprapubic and two lateral symmetrically placed over the anterior superior ileac crests, could be easily recognized as a "mark" of gynaecologic surgery. In recent years the phenomenon of endoscopic single-site surgery started a new way in reducing invasiveness of both laparoscopic and robotic surgery in gynecology, achieving the goal of reduction of postoperative pain and improving patients' cosmetic satisfaction [6–10]. Furthermore robotic-assisted single-site approach seems to overcome some technical limitations of laparoendoscopic single-site surgery due to increased movements of instruments and ergonomics [11, 12].

At present there are no experiences describing robotic single-site technique in FMT; therefore a comparison between our preliminary data and perioperative outcome of similar reports is not possible.

Indeed the surgical technique of single-site hysterectomy is not different from that used in benign gynaecological disease and our FMT data are in line with those reported in literature for female patients [11, 13]. Nevertheless we recognize that this study has limitations, which include the retrospective design and the small number of patients.

Cross-sex surgery should be ideally offered to all transsexuals who do not desire fertility, for different reasons. First, according to literature, surgical reassignment allows amelioration of quality of life in several meaningful areas (socio-professional, relationship, and psychological) and improves social and sexual functioning [14]. Moreover the ablative genital surgery can reduce the risk of hormone-dependent cancers related to long term testosterone exposure [15].

At present only few studies focused on surgical outcome and technique of hysterectomy with BSO for female-to-male transsexualism. In 1999 Ergeneli et al. first reported the feasibility and safety of laparoscopically assisted vaginal hysterectomy in FMT reassignment surgery in eight patients who subsequently underwent phallic construction. According to the author laparoscopy was useful allowing preservation of structures necessary for phallic reconstruction [16].

In 2007 O'Hanlan et al. reported the largest series in literature evaluating surgical outcome of 41 transsexual patients compared to normal female patients who underwent total laparoscopic hysterectomy and BSO [5]. The authors concluded that there were not significant differences in complications and no complications sustained by the transsexuals were unique to their status.

Recently in 2013 Lazard et al. reported a series of ten patients who underwent single-point access laparoscopic hysterectomy for sex reassignment with no conversion to standard laparoscopy or laparotomy [17].

Similar to Lazard, in our peculiar series, robotic single-site approach allowed performing total hysterectomy and BSO with 100% success. The use of single intraumbilical incision made scar completely hidden; thus transsexual patients did not bear the "stigma" of standard laparoscopic gynecologic surgery [18]. Moreover the ultimate goal of reassignment surgery is a functional phallus; thus in excising generative organs gynecologists are asked to preserve structures vital for subsequent reconstructive surgery. Single transumbilical incision avoids the risk of interrupting the inferior epigastric or circumflex ileac circulation, potentially important for future genital reassignment surgery.

Robotic single-site surgery in our experience achieved the goal of excellent postoperative pain control as already highlighted by other authors [8, 12]. All patients did not require supplementary drugs for pain control. Ropivacaine wound infiltration was performed at the end of operation according to literature data [19], in minimizing pain response to surgical trauma.

General satisfaction about surgery and aesthetic results are objective of an ongoing study at our institution. However preliminary data regarding the first five patients at 1–3 and 6 months reported a satisfaction VAS score >8 for both aspects.

4. Conclusion

Larger series and long term follow-up data are still lacking, but we consider single-site robotic surgery a valid choice in FMT reassignment surgery, with a low rate of complications, good pain control, and excellent aesthetic results. Indeed in our small series only a minor perioperative complication occurred and not directly related to single-site technique.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

References

[1] L. J. Gooren, "Care of transsexual persons," *The New England Journal of Medicine*, vol. 364, no. 13, pp. 1251–1257, 2011.

[2] American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders*, American Psychiatric Association, Washington, DC, USA, 4th edition, 2000.

[3] E. Coleman, W. Bockting, M. Botzer et al., "Standards of care for health of transsexual, transgender, and gender-nonconforming

people, version 7," *International Journal of Transgederism*, vol. 13, no. 4, pp. 165–232, 2012.

[4] S. Bogliolo, C. Cassani, L. Babilonti, and A. Spinillo, "Vaginal cuff closure during robotic single-port hysterectomy: is vaginal route always the best one?" *Surgical Endoscopy*, vol. 27, no. 12, pp. 4754–4755, 2013.

[5] K. A. O'Hanlan, S. L. Dibble, and M. Young-Spint, "Total laparoscopic hysterectomy for female-to-male transsexuals," *Obstetrics & Gynecology*, vol. 110, no. 5, pp. 1096–1101, 2007.

[6] F. Fanfani, A. Fagotti, and G. Scambia, "Laparoendoscopic single-site surgery for total hysterectomy," *International Journal of Gynecology and Obstetrics*, vol. 109, no. 1, pp. 76–77, 2010.

[7] F. Fanfani, C. Rossitto, M. L. Gagliardi et al., "Total laparoendoscopic single-site surgery (LESS) hysterectomy in low-risk early endometrial cancer: a pilot study," *Surgical Endoscopy*, vol. 26, no. 1, pp. 41–46, 2012.

[8] A. Fagotti, C. Bottoni, G. Vizzielli et al., "Postoperative pain after conventional laparoscopy and laparoendoscopic single site surgery (LESS) for benign adnexal disease: a randomized trial," *Fertility and Sterility*, vol. 96, no. 1, pp. 255.e2–259.e2, 2011.

[9] P. F. Escobar, M. A. Bedaiwy, A. N. Fader, and T. Falcone, "Laparoendoscopic single-site (LESS) surgery in patients with benign adnexal disease," *Fertility and Sterility*, vol. 93, no. 6, pp. 2074.e7–2074.e10, 2010.

[10] L. Mereu, A. Pontis, G. Carri, and L. Mencaglia, "Single-port access laparoscopic hysterectomy: a new dimension of minimally invasive surgery," *Journal of Gynecological Endoscopy and Surgery*, vol. 2, no. 1, pp. 11–17, 2011.

[11] V. Cela, L. Freschi, G. Simi, M. Ruggiero, R. Tana, and N. Pluchino, "Robotic single-site hysterectomy: feasibility, learning curve and surgical outcome," *Surgical Endoscopy*, vol. 27, no. 7, pp. 2638–2643, 2013.

[12] E. Vizza, G. Corrado, E. Mancini et al., "Robotic single-site hysterectomy in low risk endometrial cancer: a pilot study," *Annals of Surgical Oncology*, vol. 20, no. 8, pp. 2759–2764, 2013.

[13] F. Sendağ, A. Akdemir, and M. K. Oztekin, "Robotic single-incision transumbilical total hysterectomy using a single-site robotic platform: initial report and technique," *The Journal of Minimally Invasive Gynecology*, vol. 21, no. 1, pp. 147–151, 2013.

[14] N. Parola, M. Bonierbale, A. Lemaire, V. Aghababian, A. Michel, and C. Lançon, "Study of quality of life for transsexuals after hormonal and surgical reassignment," *Sexologies*, vol. 19, no. 1, pp. 24–28, 2010.

[15] A. Mueller and L. Gooren, "Hormone-related tumors in transsexuals receiving treatment with cross-sex hormones," *European Journal of Endocrinology*, vol. 159, no. 3, pp. 197–202, 2008.

[16] M. H. Ergeneli, E. H. Duran, G. Özcan, and M. Erdogan, "Vaginectomy and laparoscopically assisted vaginal hysterectomy as adjunctive surgery for female-to-male transsexual reassignment: preliminary report," *European Journal of Obstetrics Gynecology and Reproductive Biology*, vol. 87, no. 1, pp. 35–37, 1999.

[17] A. Lazard, L. Cravello, S. Poizac, A. Gorin-Lazard, M. Gamerre, and A. Agostini, "Hysterectomy and bilateral adnexectomy by laparoscopic single port access for female to male transsexualism," *The Journal of Sexual Medicine*, vol. 10, no. 5, p. 1439, 2013.

[18] S. Bogliolo, C. Cassani, L. Babilonti, V. Musacchi, R. E. Nappi, and A. Spinillo, "Robotic single site hysterectomy with bilateral salpingo-oophorectomy in female to male transsexualism," *The Journal of Sexual Medicine*, vol. 11, no. 1, p. 313, 2014.

[19] G. P. Joshi, F. Bonnet, and H. Kehlet, "Evidence-based postoperative pain management after laparoscopic colorectal surgery," *Colorectal Disease*, vol. 15, no. 2, pp. 146–155, 2013.

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Research Article

Psychosocial Adjustment to Sex Reassignment Surgery: A Qualitative Examination and Personal Experiences of Six Transsexual Persons in Croatia

Nataša Jokić-Begić, Anita Lauri Korajlija, and Tanja Jurin

Department of Psychology, Faculty of Humanities and Social Sciences, University of Zagreb, Ivana Lucica 3, 10000 Zagreb, Croatia

Correspondence should be addressed to Nataša Jokić-Begić; njbegic@ffzg.hr

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In Croatia, transgender individuals face numerous social and medical obstacles throughout the process of transition. The aim of this study was to depict the factors contributing to the psychosocial adjustment of six transsexual individuals living in Croatia following sex reassignment surgery (SRS). A combination of quantitative and qualitative self-report methods was used. Due to the specificity of the sample, the data were collected online. Standardized questionnaires were used to assess mental health and quality of life alongside a series of open-ended questions divided into 4 themes: the decision-making process regarding SRS; social and medical support during the SRS process; experience of discrimination and stigmatizing behaviors; psychosocial adjustment after SRS. Despite the unfavorable circumstances in Croatian society, participants demonstrated stable mental, social, and professional functioning, as well as a relative resilience to minority stress. Results also reveal the role of pretransition factors such as high socioeconomic status, good premorbid functioning, and high motivation for SRS in successful psychosocial adjustment. During and after transition, participants reported experiencing good social support and satisfaction with the surgical treatment and outcomes. Any difficulties reported by participants are related to either sexual relationships or internalized transphobia. The results also demonstrate the potentially protective role that a lengthier process of transition plays in countries such as Croatia.

1. Introduction

Studies have demonstrated a high prevalence of mental health problems among transsexual individuals (TS) [1–3]. Mental health problems in TS individuals are related to social environments which foster isolation, marginalization, a lack of social support, discrimination including interpersonal and systemic microaggression, and victimization [4, 5]. The link between societal stigma and discrimination and mental health problems is conceptualized in the Minority Stress Model proposed by Meyer [6]. According to this model, minority stress is stress that stems from being part of a minority and, as such, adds to the usual level of general stress experienced by all people. Because it is the result of social structures and norms that exist independently of the individual, it is chronic and is socially conditioned [7]. This framework suggests that stigma, prejudice, and discrimination create a hostile social environment, which causes internalized transphobia and mental health problems including depression, anxiety, and posttraumatic stress [7]. The findings also indicate that the rejection TS that individuals face is significantly more severe than the discrimination experienced by LGB individuals [8]. Research has demonstrated that social support, self-acceptance, and integration of minority identity can ameliorate minority stress [7]. Improving access to mental health and social services that affirm *trans* identity and promote resilience are noted as important preventive activities that can decrease minority stress and its negative consequences for the psychological and physical health of *trans* individuals.

According to the European Parliament [9], choosing one's gender or sex is a basic human right of every person. The Parliament thus calls on the Commission and the World Health Organization to withdraw gender identity disorders from the list of mental and behavioral disorders and to ensure a nonpathologizing reclassification in the negotiations for the 11th version of the International Classification of Diseases ICD-11. Professional opinion in western countries

has shifted from transsexualism to transgenderism in the last two decades [10], in which a binary view on gender has given way to the notion of gender identity as a continuum, with male and female gender identities standing at each of its poles. This shift in expert opinion, in which gender nonconformity is seen as a gender variation rather than a disorder, has no doubt contributed to the psychological welfare of individuals undergoing sex reassignment surgery (SRS) and their families [10]. However, even in those countries representing benchmarks of good practice in the care of TS individuals, not all mental health experts adopt the same approach towards supporting transgender people [11].

Furthermore, although there are specialized centers providing multidisciplinary care for gender-dysphoric individuals in many countries, there are countries in which such forms of care are not available. Therefore, the question remains as to how far these most recent high standards of care for TS individuals can be interpreted and applied in culturally diverse countries with more traditional values. Indeed, in communities with more traditional values, the challenges faced by TS individuals differ from those faced by TS persons in urban western societies with a prescribed standard of care [12, 13]. In such societies, those who do not express their sexuality or gender in traditionally accepted ways may feel unwelcome [14]. In such environments, TS persons are met not only with incredulity, a lack of understanding, and stigmatization from their social environment, but also with the ignorance of the very experts from whom they are seeking support [15].

A final challenge arises in light of the vast availability of information via the Internet. With access to information about levels and standards of care across countries, TS individuals worldwide are now fully aware of the form and standard of care to which they are entitled, but which they are perhaps denied due to political, financial, geographical, or ideological contexts. This leads to high levels of frustration and impatience among TS persons, which might contribute to the decision to undergo very risky hormonal self-medication.

Croatia is a central eastern European country belonging to a group of European countries that show pronounced homonegative views [16]. In the past year, a right-wing political movement became very actively and visibly outspoken against homosexual marriage and gender ideology in a campaign that culminated in a national referendum decision on December 2013 to outlaw same-sex marriage. Attitudes towards gender-variant persons are rarely researched in Croatia, but the available data demonstrate that public attitudes are predominantly negative [17]. Consistent with this attitude is the complete absence of specialized care centers for TS persons in the Republic of Croatia and a notable lack of qualified mental health providers working with transgender persons [15]. Experts who work with TS individuals are small in number and connect with one another only on an informal basis, in most cases through TS individuals themselves. These TS individuals, in turn, share information via the Internet and, in such a way, are able to connect with experts who are transgender friendly and therefore are more knowledgeable about transsexuality. In Croatia, no accepted standards exist that would regulate diagnosis, therapy, and ethical questions pertaining to the care and support of TS individuals. Such standards would help both experts and TS persons in offering and organizing the necessary treatment [18]. Paradoxically, while the health care system does not provide appropriate treatment for TS persons, the Croatian legal system allows for the change of name and gender following SRS.

In this situation, TS persons are left to fend for themselves or solely in the hands of whichever doctor they come in contact with. Medical students and young doctors, during periods of study and residency, often do not receive comprehensive training regarding different gender variations or sexual orientations. In contrast, psychology students receive large amount of information about transgenderism. A small number of experts working with TS persons are attempting to further change the attitudes of their colleagues through lectures at professional conferences and by publishing articles in professional periodicals [18]. However, due to the hierarchical organization of the Croatian health care system, which positions doctors as superior to psychologists, this knowledge does not influence everyday clinical practice as much as it should.

Due to this lack of knowledge, doctors adopt a pathologizing approach towards TS individuals, treat transsexuality as a psychiatric disorder, and typically refer TS persons to psychiatric treatment. The knowledge and attitude of the mental health professionals with whom TS individuals come into contact then determine which steps are taken, including both the duration of psychotherapy and whether an endocrinologist or surgeon is contacted. Because no expert teams for the care of TS individuals currently exist, the endocrinological and surgical treatment of the individual is influenced predominantly by reasons unrelated to the medical needs of the patient, such as the attitudes of a particular doctor and the availability of an examination or treatment. Even in instances where the mental health professional does approach transsexuality in a contemporary manner, he or she has nowhere to direct the patient for surgical treatment other than foreign facilities (most often in Serbia). Furthermore, Croatian health insurance does not cover the costs of treatment that such a diagnosis requires, which means that TS persons must rely solely on their own financial means to receive necessary medical treatment.

Together, these circumstances surrounding the medical care of TS persons in Croatia cause most individuals to resign themselves to isolation and not seek help. Clinical experience has shown that most TS individuals eventually give up considering sex change [15] and come up with more or less satisfactory ways of life that do not include surgery. The results of research conducted with 16 transgender persons demonstrated that a majority of individuals were afraid that their disorder would be discovered that they often stopped considering surgery as an option and received little support from their family, partner, and social environment [15]. In the previously described Croatian context, this is undoubtedly the result of the unavailability of adequate medical care, a lack of legal regulation, and the negative attitudes of not only the general population, but also the medical practitioners responsible for providing care to TS persons.

Currently, there are two civil society organizations (CSO) in Croatia aiming to address this issue: one that has been

operating for the past two years that primarily focuses on activism and advocacy and the other is providing psychological counselling. This latter organization has been operating for 15 years and aims to provide services consistent with the Standards of Care (SOC) of World Professional Association for Transgender Health (WPATH) for psychosocial care. The data presented in this paper were collected in a psychological counselling centre located in the capital city of Croatia, Zagreb. This centre is staffed by psychologists who work on a primarily voluntary basis and provide initial psychodiagnostic assessment and counselling to TS individuals and their families. For people undergoing gender transition, psychological monitoring is organized through all phases of medical treatment. Over the years, psychologists have established an informal network of other professionals in Croatia (endocrinologists, psychiatrists, general practitioners, and gynecologists) that are transfriendly and to whom TS individuals can be referred. For SRS, patients are referred to medical facilities outside of Croatia and most commonly to Serbia, where personal contacts have been made with experts in transsexuality. Support groups have also been organized in the counselling centre.

Despite these challenging circumstances, some gender dysphoric individuals in Croatia persist in achieving the goal of making their own physical characteristics match their gender identity and have continued to live in Croatia after surgery. This paper will examine the psychosocial adjustment of six transsexual individuals living in Croatia following SRS.

The paper aims to depict the factors contributing to psychosocial adjustment despite the poor social and medical circumstances faced by transgender individuals. A combination of quantitative and qualitative self-report methods was used, employing well-recognized and established questionnaires to assess the mental health status of participants and a series of open-ended questions to gain insight into the complex experience of psychosocial adjustment following SRS in Croatia. Undoubtedly, the described situation in Croatia is also the case in other countries. As such, understanding the factors and processes that support mental health in marginalized populations has the potential to make an enormous impact on the quality of life, safety, and health-seeking behaviors of individuals in both Croatia and other contexts.

2. Methods

2.1. Participants and Procedure. In accordance with the qualitative and exploratory nature of the study, in which the subjective experience of adjustment following SRS was examined, a purposive sampling strategy was employed to select participants meeting several study criteria. The intended sample of our study was all TS persons in Croatia who underwent SRS in the last 15 years and who underwent psychologist-supervised transition in the centre for psychological counseling in Zagreb prior to surgery, a program provided entirely outside of public health care. In the last 15 years, 42 TS persons have sought support at the centre, 8 of whom have undergone SRS. While there are certainly more people living in Croatia who have completed the SRS process in this period, they did not do so within the context of standardized or supervised health care and, as such, no corroborating valid data exists. Of the 8 individuals identified through the counseling centre, 6 agreed to participate in our study. One MtF individual who underwent surgery in Croatia 15 years ago and currently lives abroad declined the invitation to participate in the study because of her negative experience with the Croatian health care system. Another FtM individual appears to have emigrated out of Croatia and is no longer in contact with people in the *trans* community, and was therefore unavailable. In Table 1, demographic data of the sample c is presented.

2.2. Data Collection. The method of data collection was chosen based on the specificity of the sample. Namely, of the six participants taking part in the research, 3 lived in the same location as the researchers, while two lived in other cities in Croatia and one outside of Croatia. This made data collection via in-depth interview impossible and made online data collection a necessity. For this reason, a questionnaire was created using Survey Monkey. The first section of the survey consisted of standardized questionnaires and questions pertaining to demographic data, while the second section included a series of open-ended questions divided in 4 themes: (1) the decision-making process regarding SRS; (2) social and medical support during the SRS process; (3) experience of discrimination and stigmatizing behaviors; (4) psychosocial adjustment after SRS.

A letter of invitation and a brief description of the research, along with a link to the online questionnaire, were sent via E-mail to all 8 available individuals who met the study criteria. Six participants completed the questionnaire. As previously mentioned, one MtF participant declined participation due to an extremely negative experience with SRS in Croatia.

2.3. Data Analysis. The results of the standardized questionnaire were calculated for each participant and compared to Croatian norms.

In order to analyze open-ended questions, a data input table with all responses was constructed, after which observations, reflections, and remarks were noted. Following this analysis, common themes or patterns, as well as commonalities and differences in the participants' experiences, were identified.

2.4. Instruments

2.4.1. SF-36 Health Survey Croatian Version. The Croatian version of SF-36 Health Survey is a multipurpose, short-form health survey which consists of 36 questions [19]. Each of the questionnaire items refers to one of the following eight health indicators: physical functioning (10 items); role-physical, a limitation in performing important life roles due to physical health (4 items); bodily pain (2 items); general health (5 items); vitality (4 items); social functioning (2 items); role-emotional, a limitation in performing important life roles due to emotional problems (3 items); mental health (5 items). The total result is most often shown in the form of an 8-point profile that individually represents each measured aspect of health on a scale from 0 to 100. On all scales, higher scores

Table 1: Demographic characteristics of participants ($N = 6$).

Transition	Age	Onset	Education	Employment	Relationship status	Attracted to:	Operation performed in	Year of operation
FtM	24	Early	Student	Student	Single	Female	Serbia	2013
MtF	34	Late	M.A.	Employed	Single	Female	Thailand	2010
FtM	37	Early	M.A.	Employed	In a relationship	Female	Serbia	2010
MtF	33	Early	M.A.	Employed	In a relationship	Male	Thailand	2009
MtF	42	Early	M.A.	Employed	Single	Male	Serbia	2013
FtM	33	Early	PhD	Employed	Cohabitation	Female	Serbia	2012

indicate better subjective health. The internal consistency of the SF-36 scales ranged from 0.78 to 0.94 [19].

2.4.2. CORE-OM—Croatian Version. The Croatian version of the CORE-OM (Clinical Outcome in Routine Evaluation—Outcome Measures) [20] contains 34 items on which clients record how often they have felt a certain way during the past two weeks (0: never, 1: very rarely, 2: sometimes, 3: often, and 4: almost always). These items refer to four dimensions: subjective gain (4 items); problems/symptoms (12 items); daily functioning (12 items), and risky behavior (6 items). Individual results, results on risk-free items (all items apart from those dealing with risky behavior), and overall results are presented as an average result (the overall result divided with the number of items on a particular scale or dimension). Higher overall or individual results reflect a greater number of problems and higher levels of distress. This also applies to the dimension of subjective gain, in which a higher score indicates a lower level of gain and more difficulties in this area. Research has indicated that the CORE-OM has satisfactory reliability, expressed through a measure of internal consistency ranging around 0.90 for the overall scale and between 0.70 and 0.90 for individual dimensions [21, 22].

2.4.3. The Depression Anxiety Stress Scale. The depression anxiety stress scale (DASS-21) [23] is a self-assessment measure that examines the frequency and prominence of negative emotional states (depression, anxiety, and stress) during the last seven days in both psychiatric patients and healthy population. The scale consists of 21 items divided into three subscales: the depression scale (7 items), the anxiety scale (7 items), and the stress scale (7 items). Participants are asked to assess each of the given symptoms on a scale from 0 to 4 based on their experiences during the previous week. Reliability coefficients of the Cronbach alpha (α) type were 0.82 on the depression scale, 0.84 on the anxiety scale, and 0.83 on the stress scale [24].

Six TS participants took part in the present study: 3 FtM and 3 MtF, ranging in age from 24 to 42 years. Five participants experienced an early onset of transsexuality, with the remaining participant experiencing late onset. Educational achievement for all participants is at the graduate level, and five participants are currently employed (the remaining participant is still a student). Three of the participants are single and three are in a relationship, with one participant living with their partner. Five participants are homosexual according to natal sex, and one is heterosexual. All participants underwent SRS outside of Croatia: four in Belgrade, Serbia (all FtM and one MtF), and two in Phuket, Thailand. All SRS were performed in the period between 2009 and 2013.

3. Results

Individual results on the SF-36, DASS-21, and CORE-OM questionnaires are presented in Table 2. On the DASS, all participants achieved results that fell within the category of normal mood variations. This finding is also true for both the subscales and the overall results on the CORE-OM questionnaire, where all the results fall under gender specific cutoff scores. On the SF-26, three participants achieved scores on some of the scales that fell below the average normative results for age and gender; one MtF (33) participant achieved a lower score on the mental health scale only; the oldest MtF (42) participant achieved lower than average results on six SF-36 scales; one FtM (33) participant achieved lower than average scores on five SF-36 scales.

As described previously, participants were asked a series of open-ended questions related to the decision-making process regarding transition and sex reassignment surgery, their experience of discrimination due to gender dysphoria, social support during the process of transition, and psychosocial adjustment after surgery. Responses to these questions were analyzed using the thematic, qualitative approach described previously.

3.1. Deciding to Undergo SRS. All participants in the study are transsexual persons who expressed a pronounced desire for sex reassignment surgery. Other options were not considered to be plausible alternatives by any of the participants.

> *Transition without surgery was never an option for me as I would have considered such a transition unsatisfactory and incomplete. So, it was right from the start that I saw surgery as the final step in making my body complete in the male sense. (FtM, 24)*

> *I would never have been content without surgery, would never have been able to have this lifestyle and I would have been unhappy with my body. Surgery was the only way for me to reach contentment and happiness and to live my life to the fullest. (MtF, 34)*

Table 2: Results on CORE-OM, SF-36, and DASS-21 for each participant ($N = 6$).

Transition	Age	SF-36								CORE-OM					DASS-21		
		PF	RP	RE	SF	MH	EV	P	GH	F	P	SWB	R	ALL	DEP	ANX	STRESS
FtM	24	100	100	100	100	84	80	90	95	0.08	0.42	1.00	0.00	0.29	1.00	3.00	1.00
MtF	34	100	100	100	100	100	75	80	85	0.83	0.25	1.50	0.00	0.56	1.00	1.00	2.00
FtM	37	100	100	100	100	88	85	90	85	0.50	0.25	1.00	0.00	0.38	0.00	0.00	0.00
MtF	33	100	100	100	88	68*	70	80*	77	0.75	0.75	1.25	0.00	0.68	3.00	0.00	4.00
MtF	42	75*	100	67*	63*	60*	60	70*	57*	0.92	1.42	1.50	0.17	1.03	5.00	3.00	6.00
FtM	33	100	100	33*	100	68*	50*	80*	72*	0.58	1.00	1.25	0.17	0.74	3.00	0.00	3.00

Note. *Results lower than normative average score for gender and age group. SF-36 scales: PH: physical functioning; RP: role physical; RE: role-emotional; SF: social functioning; MH: mental health; EV: vitality; P: bodily pain; GH: general health. CORE-OM scales: F: functioning; P: problems; SWB: subjective well-being; R: risk; ALL: total score. DASS-21 scales: DEP: depression; ANX: anxiety; STRESS: stress.

> *There was no alternative because that would have meant a continuation of suffering. I ascertained that it was the only way I could shed transsexuality and have a better quality of life. (FtM, 33)*

However, although the decision to undergo SRS was never in question for any of the participants, the decision-making process itself was hindered by various aggravating circumstances including a fear of how those around them would react and, for some participants, financial difficulties.

> *I was somewhat afraid of how those around me would react as only a very small number of people knew of my transition, but I hoped for the best. The people who did know of my transition were those closest to me and were supportive, so that made it a bit easier to expect others to accept it too. (MtF, 34)*

For some participants, the period preceding surgery was marked by various fears related to the outcome of the operation (in terms of functionality and aesthetics) and a fear of postoperative complications. The fear that one's health would suffer and that a dependence on others would be the result was also a source of worry for some TS persons. Because there are currently no SRS centres in Croatia, TS individuals are forced to decide at which foreign centre they will undergo surgery. In order to make this decision, participants reported primarily gathering information informally (via the Internet and from other TS persons), albeit using a very serious and systematic approach. In selecting the right foreign centre, participants considered three things to be particularly important: the quality of services rendered based on the experience of those who had already undergone surgery (this information was mostly gathered online), the individual's ability to cover financial costs, and the personal care provided at a particular centre. The reputation of the surgeon chosen to perform the operation was also of great importance.

> *The fact that the doctor I chose was very well renowned and respected in this area and that his method of performing this surgery was considered one of the best was, for me, the most important factor in deciding on where I was going to have the surgery. (MtF, 34)*

> *I considered the relative closeness of the centre, the price and very good results to be most important. Actually, the results of the surgery were some of the best I'd come across during my research online. (FtM, 24)*

Most participants underwent SRS within three years following the time at which transsexuality was formally identified. However, for some participants, the period between deciding to undergo surgery and actually undergoing SRS was as long as 10 years. For the most part, these lengthier periods can be attributed to financial issues and other circumstances within the lives of individual participants (such as completing college studies, family problems, and working conditions). The fact that endocrinological treatment also needed to be arranged and provided outside of Croatia, which included finding a doctor, ensuring sufficient funds for covering the costs of this process, and addressing various organizational problems, also contributed to the length of this period.

All participants expressed very high satisfaction with their decision to undergo SRS. The main source of this satisfaction stems from the experience of feeling whole and a new harmony between their psychological and physical selves. Also noteworthy was participants' reports of a growth in self-esteem as a result of having a physical body that matched their gender identities.

> *I finally feel like a man who's complete. I'm satisfied simply by knowing that I no longer have female genitalia and that it looks completely male. Certainly, it's also a great pleasure to be able to pee standing up. (FtM, 24)*

> *Everything turned out differently than what I had been expecting because I had expected to go through at least some uncomfortable situations, but everything turned out great. (FtM, 37)*

Participants also spoke about the difficulties encountered following SRS and upon return to one's social environment, which were largely related to the way in which society reacted to them and to an internalized transphobia that manifested itself through feelings of guilt.

> *The feeling that you've committed a crime and gotten away with it never leaves you. I don't know*

how real a problem this is because everyone has so far treated me well. (FtM, 33)

MtF individuals reported having problems in finding an emotional partner as well as experiencing fear about having to inform their male partner about their transition process.

My past is always following me and it does catch up with me in the end. It isn't that I'm ashamed of it, but that I don't want everyone I meet knowing about it because I have the feeling that they perceive me differently if they find out right away. The same thing happens when I'm in a romantic relationship because I'm always worried about how to tell the person and about how they'll react when I tell them. (MtF, 34)

None of the FtM participants mentioned any problems in partnership.

In the period following SRS, four participants reported being sexually active (two FtM and two MtF) and were sexually active exclusively with people of the opposite sex. For the most part, participants agreed that sex was of moderate importance.

The importance level I attach to sex changes from one period to the next; sometimes even I can't be sure how important it is. I like it, but considering how frequently I have it I don't think it's too important to me. (FtM, 24)

Almost all participants reported feeling pleased by how well SRS has allowed them to function sexually. For FtM participants, satisfaction was derived from the fact that they could now be sexually aroused with their newly formed genitals without feeling shame and being uncomfortable, by the appearance of their penis and by the fact that they could achieve erection and could urinate standing up. For the most part, MtF participants reported being most pleased by the appearance of their genitals.

I'm satisfied by the anatomical appearance. (MtF, 33)

When I started having sex after the surgery I was more than pleased with how everything works—from the compatibility of the genitals, vaginal lubrication and ability to achieve orgasm. (MtF, 34)

When participants were asked about their expectations regarding sexual functioning following SRS, most participants reported that their expectations had been fulfilled. However, one FtM participant reported expecting a bigger penis, while another reported expecting that he would be able to ejaculate. In addition, an MtF participant reported expecting to derive greater sexual satisfaction from stimulation.

Participants were also questioned about their experience with certain sexual activities following SRS. All participants reported engaging in masturbation. During this activity, none of the FtM participants reported having any sexual difficulties or problems. Two MtF participants complained about decreased sexual desire and one also noted that her experience of orgasm was now less intense. Participants reported that these problems did reduce satisfaction with their own sexual functioning.

I'm not particularly satisfied. My orgasms are "shallow", while my desire for sex is much lower. (MtF, 34)

As far as other sexual activities are concerned, four participants reported experiencing penetration following SRS. While two participants reported having had no problems, another two individuals reported problems in relation to penetration. Specifically, one FtM participant described having a problem with incomplete penetrative sex even with the help of purchased aids, while another MtF participant reported problems with orgasm and pain during penetration.

It takes me longer to achieve orgasm. Also, sometimes penetration that is too deep hurts. (MtF, 33)

Of other sexual activities, half of the participants reported experiencing petting, while experiencing oral and anal sex was reported by only one participant (MtF) following transition.

3.2. Discriminatory Behavior. In the first part of the questionnaire, participants were asked about the sources and types of discriminatory behavior they may have experienced during the SRS process. Two participants (FtM) reported never experiencing discriminatory behavior of this sort.

I have never experienced discriminatory behavior in any situation (FtM, 37)

Amongst participants who did report experiencing discrimination, such behavior was reported to come mainly from colleagues in the workplace and from administrative staff with whom they had come into contact during the SRS process. The incidence of such behavior was the lowest with friends and medical staff with whom they went through the SRS process.

It is important to note that all reports of discriminatory behavior of medical staff towards participants came exclusively from Croatian medical staff. In these instances, participants reported negative experiences such as deprecation, lack of understanding, and unwillingness to provide medical help.

I have had contact with so-called surgeons from Zagreb who think it's their prerogative to say who's male and who's female. (MtF, 42)

An endocrinologist from Zagreb who'd heard I wanted a sex-change started yelling at me that I wanted to have the surgery only so I could fool men. (MtF, 33)

Other discriminatory behaviors are reported by participants including receiving insults and being ignored or provoked. Participants also reported experiencing instances in which people were simply stunned.

3.3. Social and Medical Support during the SRS Process. In the second part of the questionnaire, the degree to which participants were satisfied with the support provided to them during the SRS process by family members, friends, colleagues, other TS individuals, and professionals (psychiatrists, psychologists, surgeons, endocrinologists, and general practitioners) was examined.

For four participants, the main sources of support during the SRS process were family members and friends. They reported that such support and acceptance from people they have known and have cared for their entire lives was very important to them.

> *Family, friends, my girlfriend—almost everyone around me. Their support could be seen in their understanding and care, and that's what was most important to me. It's very important to me for people I care about to understand and love me. (FtM, 37)*

> *My immediate family had several different functions to perform during that process—they helped me financially, offered me support and care after the surgery but were, at the same time, openly critical of the entire process and, by doing so, reflected how others around me might react. (FtM, 24)*

> *My family was both a source of financial support and my harshest critics. I knew that they wouldn't abandon me, but they were skeptical. (FtM, 33)*

> *My family and friends were a great source of support. My parents and sister were with me during the entire time of my recovery; they helped me, took care of me and cheered me on when it was hardest. (FtM, 24)*

Friends were most often the first people with whom participants confided in and from whom they asked for understanding and acceptance. For most participants, the role of friends during the SRS process was of an emotional nature rather than an instrumental one.

Participants with a partner reported that their partners were a great source of support during the SRS process, in both the emotional and the instrumental sense.

> *My girlfriend was a source of emotional support and instilled a sense of self-confidence in me in terms of being a man. She also took care of me during my recovery. (FtM, 33)*

> *Friends and others around me offered me support by accepting me completely. (MtF, 42)*

Two MtF participants reported that other TS individuals offered the most support, noting that these individuals were those who could completely understand what they were going through and who were familiar with the fears and worries they had experienced before surgery. Moreover, other TS individuals were a valuable source of information.

> *The support of other TS individuals could be seen clearly in their understanding of my situation. (MtF, 34)*

On the whole, findings indicate that friends, partners (in instances where participants had one), and other transgender individuals were the greatest sources of support during the SRS process. All participants additionally noted how valuable the support of other TS persons was for them.

> *Yes, my fears were unfounded. Everyone who found out about my sex-change was supportive after recovering from the initial shock of it. (MtF, 34)*

Participants were also asked about the support level offered by experts with whom they came into contact during the SRS process. Findings indicate that, for the most part, the participants' surgeon and psychologist were the most supportive professionals during this process. Participants reported feeling that the support received from the surgeon was of particular importance, where the surgery itself is perceived as a very delicate matter whose outcome is not only medically but also psychologically relevant. It was also very important to participants that the surgeon possesses a high level of expertise. Together, this expertise and support was reported to have had a great psychological impact on participants, allowing them to feel supported and accepted and to have confidence in the outcome of the surgery.

> *My greatest source of support was my surgeon as that's the most important phase of the transition. I trusted him because he was an expert, was accommodating and would adapt to his patient. (FtM, 33)*

When speaking about psychologists, participants reported that support from psychologists was most clearly visible in the understanding they offered and in their assistance in solving problems that preceded the surgery (i.e., the process of deciding whether to undergo surgery itself).

> *My greatest source of support was my psychologist because of her realistic approach to the problem. (MtF, 42)*

The manner and extent to which self-help TS support groups were important to participants were also examined. Participants reported that this type of support had two functions: one emotional and one instrumental.

More specifically, participants reported that other TS individuals were able to understand the emotional experiences they had gone through, help them achieve self-acceptance, and offer them an opportunity to discuss their SRS-related fears openly and without shame. In addition, other TS individuals were reported to be a valuable source of information and shared experience in helping participants deal with the problems they were facing. In these settings, other TS individuals provided information and support while deciding whether to undergo the SRS process, including information about specific medical centres and experts offering SRS.

The prime advantage of it is that you're swapping experiences and discussing the subject with people who are in exactly the same situation as you. (MtF, 33)

Interestingly, participants also made note of the potential disadvantages of this type of support. Namely, they reported feeling that being part of a support group and having intense contact with other TS individuals in various stages of their own transition can make one feel eager to speed up one's own transition. Consequently, one risks entering into the transition process without truly considering all the advantages and disadvantages of specific stages of the process (e.g., hormonal therapy).

After they've started their own transition process, some people meet someone who's already further along than they are, start to feel invigorated and start speeding their own process along without giving everything the necessary thought. (MtF, 37)

The desire of new members to achieve their goals over-night after meeting those who've already gone through the process. (MtF, 34)

When speaking about the support of other TS individuals, participants also noted that this source of support was relevant only during the transition process and that they often lost contact with other TS persons after successfully completing their own process of transition. However, this situation did not apply to instances in which more long-term friendships had been formed. Participants reported feeling that, following completion of the SRS process, they no longer perceived themselves as people with problems or a disorder and that, as such, they no longer needed the support of other TS individuals.

It was only during transition that the support of other TS people was relevant to me as I wanted to hear their experiences and see the results of their transition. I no longer need it nor am I interested in participating in such groups, apart from keeping in contact with some people with whom I've become long-term friends. (FtM, 37)

3.4. Recommendations for TS Persons in Croatia. Participants were asked to express their opinion as to why most TS individuals from Croatia eventually stop considering SRS and, in light of this fact, what advice they would give other TS persons in Croatia.

All participants agreed that financial issues were the main reason for a person to reject SRS and that lack of expert and family support were additional contributing factors. In general, they advised that TS individuals should be completely certain of their decision before undergoing SRS, be well informed, and have realistic expectations and patience. They also noted that living a fulfilled life is important.

I would advise them to get as informed as possible on the nature of the surgery, to know what they can expect and to have a plan ready for each outcome. You have to be very patient and there is a possibility that not everything will work out as it should the first time around (for instance, the results of a surgery may need to be corrected). Also, getting the surgery isn't the end of it—you have to go back to your "regular life". What I mean is that it's important not to give up on your education, job and friendships because that's all equally important for the process to succeed. Everything needs to be happening at once. I'd also advise them to be less afraid of how those around them will react because what's most important is how free and happy they are with themselves. (FtM, 33)

4. Discussion

The aim of this study was to depict the factors that contribute to the psychosocial adjustment of transsexual individuals who have undergone the gender transition process (including SRS) in a country in which the social environment is intolerant towards gender nonconformity.

Transsexuality is a universal phenomenon that affects individuals in all cultures. The standards of care for persons experiencing gender dysphoria and transsexuals as a subgroup relying on medical intervention regulate the provision of care in countries with a developed liberal democracy and high social standard. These are primarily western European countries, the USA, and highly developed countries in Eastern Asia. In these countries, gender identity is considered from a human rights perspective and mental health and medical professionals are obligated to approach the provision of health care for transsexual, transgender, and gender-nonconforming persons according to the Standards of Care of WPATH [25]. However, even some contexts providing gender reassignment treatment fail to provide appropriate and accessible treatment to all *trans* people [26]. Recent research in countries in the European Union indicates that TS persons are neither adequately supported nor given sufficient access to treatment because medical professionals lack the necessary knowledge in trans-related health care and health care systems refuse access to funding for treatment [26].

In countries where gender dysphoria is viewed not as gender variation but as a psychiatric disorder, transsexual persons are confronted with an additional set of challenges due to lack of regulation, lack of professional expertise in the area of *trans* health, and difficult pathways for accessing and arranging treatment. From 2013, Croatia is a full member of the European Union and possesses legal avenues for the process of legal name and gender change following sex reassignment surgery. However, Croatia has no national guidelines or legal, ethical, and professional recommendations for the organization of care for transsexual persons and no medical facility offering SRS. Attitudes towards sexual minorities and transsexual persons are mainly negative [17]. In such a context, gender nonconformative persons are exposed to high minority stress [27, 28]. Furthermore, transsexual persons are

also exposed to stress stemming from contact with health professionals whose behavior is not based on evidence-based medical recommendations but on personal belief systems or religious or cultural prejudice. Undoubtedly, psychosocial adjustment following SRS in such a social context is not without various unique and significant obstacles. The present study aimed to examine this difficulty and not yet researched experience.

The study included 6 transsexual persons (3 MtF and 3 FtM) who had completed the process of gender transition. All medical procedures for gender reassignment were organized outside the country, while psychological support was provided in Croatia. All subjects underwent SRS, reporting a view that it was their only option.

Data collected through standardized mental health questionnaires indicated that all participants are in a good mental state. Three participants achieved somewhat lower results in the sections examining quality of life, which can be attributed to their general physical condition. In one case, an MtF (42) participant achieved low results on six of the SF-36 health survey scales, which can be explained by the fact that the participant underwent SRS only three months prior to completing the questionnaire and was still dealing with various postoperative consequences. For this participant, none of the results achieved fell below the 25th centile and therefore do not represent an extreme deviation from the norm. The fact that this should be regarded as a reflection of physical rather than psychological symptoms is supported by the elevated results achieved by this participant on standardized questionnaires measuring psychological well-being (CORE-OM and DASS). For two other participants, lower results on the quality of life questionnaire might have been due to internalized transphobia, demonstrated by their responses given later in the questionnaire as well as the results achieved on other mental health scales.

The qualitative results similarly suggest generally good psychological adjustment amongst all participants. All participants reported being satisfied with their decision to undergo SRS and with the way the operation was performed. They reported being highly motivated to match their physical bodies with their gender identities and had decided to undergo the SRS procedure despite unfavorable psychosocial circumstances. Although they expressed certain fears before the surgery, participants asserted that these fears were not realized. In general, participants are well regarded in their social surroundings and are highly functional. The difficulties mentioned by participants related either to sexual functioning (noted by some participants) or to internalized transphobia, but none of these difficulties endangered their mental health or overall functioning in various social roles. It should be considered that some TS individuals will need psychological support after SRS.

A recent meta-analysis indicated that transition leads to a significant increase in quality of life for 80% of TS persons and a decrease in psychological disturbances in cases where such disturbances had been present before transition [29]. Conversely, the determination of morbidity and mortality in a cohort of TS persons from Sweden demonstrated that post-SRS transsexual individuals are at a considerably higher risk of mortality, suicidal behaviour, and psychiatric morbidity than the general population [30].

The results of the present study confirm the generally stable and favourable function of TS individuals following SRS. Prior research examining the outcomes of SRS suggests that factors contributing to favorable outcomes include good social support, absence of psychopathology, good surgical results, and satisfaction with physical appearance [31, 32]. This was similarly reflected in the results of the present study, where participants reported these factors in their responses concerning postsurgical adjustment. Namely, participants reported having good social support and were also very pleased with the surgical results and the manner in which they were treated by the medical staff performing the surgery. This, in turn, greatly influenced their feelings of satisfaction with the procedure. Moreover, several other protective factors were present amongst the participants, where all participants held a high SES, had good premorbid functioning [15], and, most importantly, were highly motivated to align their physical bodies with their gender.

The challenges that the participants faced were numerous and included a lack of local standards of medical care, organizational difficulties related to the transition process (e.g., finding an endocrinologist, a surgeon and hair removal professionals tolerant towards the needs of TS individuals), legal problems, lack of financial means needed to cover medical costs (all participants needed to pay for endocrinological and surgical treatment themselves), and discrimination. For the participants in this study, the lack of organized care for TS persons in Croatia contributed to a lengthier period between when they commenced of the transition process and when they underwent SRS than that is common in countries with standards of care [26]. Previous research carried out in a number of EU countries has suggested that a belief, amongst health care professionals, that individuals seeking gender transition suffer from a mental illness is a significant factor contributing to the inappropriate provision of care [26]. In these instances, TS individuals are most often referred to psychiatric treatment instead of accessing the medical care necessary for supporting transition. In Croatia, where high level of heteronormativity amongst medical professionals is the norm, it is nearly impossible for TS individuals seeking support to receive appropriate care through the public health system. Instead, the participants in the present study sought support through the psychological counseling centre, where psychologists knowledgeable in the specific needs of TS individuals provide counseling services in accordance with the standards of care. Access to appropriate medical care is gained through informal networks established between the counseling centre and local and international physicians with expert knowledge and experience in supporting TS individuals. Although this process typically takes a somewhat longer period of time, all care is provided in accordance with the standards of care.

Arguably, it is possible that this extended period is one factor that positively influenced the participant's adjustment following SRS. In addition, the mere passage of time might have had a positive influence on the adjustment of the participants' families and social surroundings. Participants

consistently reported that the support of family members, friends, and partners was very relevant to them. The importance of receiving support from those close to TS individuals has also been highlighted in previous research [32]. In light of these findings, it is reasonable to expect that family and friends themselves are also in need of expert psychoeducation and support. A study conducted on a representative sample of Croatian citizens indicated that more than 60% of participants consider transsexuality to be abnormal and would seek support from a psychiatrist if their child expressed transsexual feelings. Approximately one-fourth of respondents reported that, in this situation, they would throw the transsexual family member out of their home [17]. Arguably, the prolonged period preceding SRS experienced by our participants enabled both TS individuals and their families to more successfully adjust. During this period, participants had sufficient time to carefully plan their professional and social life following SRS, had participated in psychological treatment for a longer period, and had realistic expectations about the transition process and postsurgical adjustment reinforced.

Another factor potentially influencing the adjustment of participants in the Croatian context stems from a cultural-linguistic specificity, where the highly gender-polarized national culture is notable in the Croatian language itself. The Croatian language belongs to group of grammatical gender languages, in which recent research in language and gender has recognized that the language not only reflects, but also constitutes gender [33–35]. In this group of languages, which constitute approximately one-fourth of the world's languages, nouns are classified according to grammatical gender and every noun holds a single gender value. Therefore, in the Croatian language (as with all Slavic and some Roman languages), the representation of oneself (i.e., self-perception and self-labeling), as well as communication with others, is impossible without the reflection of gender. For example, I am hungry in English can be stated as *Ja sam gladna* (feminine) or *Ja sam gladan* (masculine), depending on whether the speaker is male or female. Similarly, in Croatian conversation, the question, "Are you hungry?" is posed as *Jesi gladna?* (feminine) or *Jesi gladan?* (masculine). As a result, a binary model of gender is present in nearly every sentence and, as such, it becomes very difficult to think about oneself and of others without this dualism. Furthermore, it is much easier to think and speak about oneself and to be perceived by others, if one's appearance is congruent with one's gender identity. This linguistic characteristic becomes significant in light of its consequences for the care of TS individuals. Specifically, the SOC recommendation for health professionals and families to respect the desired gender of a TS person in all means of communication becomes nearly impossible to be implemented in the Croatian context, where a TS individual will be referred to by his/her present gender appearance in all social settings. As a result, the period of time required by a TS individual and his or her social network to adjust to the *trans* identity is probably much longer in this culturally linguistic context. This linguistic duality is further reinforced by the collectivist nature of Croatian society. In such societies, it is common for gender identity to be based on a binary social construct [36]. It might be further hypothesized that these sociocultural circumstances make it easier to be transsexual (as opposed to any other sorts of transgendered person). This hypothesis should be examined in further research.

At first glance, these results appear to be a positive depiction of the psychosocial adjustment of TS individuals in Croatia. However, several specificities of the present study and the recommendations that might be derived need to be noted. Namely, the participants in this research represent a highly specific sample of persons who underwent the SRS process in a country without organized standards of care but who received continued psychosocial care during their transition process. Although this care was delivered in a CSO context and was a result of the personal enthusiasm of individual psychologists, it was conducted under the Standards of Care, 6th version [37] active at the time of care delivery. Although the present study did not examine the adjustment process of individuals who do not receive such care but are forced to fend for themselves, it seems reasonable to assume that the care afforded to the TS persons participating in the present research contributed to their adjustment well after surgery. The data collected in the qualitative part of the research indicated that participants felt it was very important to be "well informed," "patient," and "to not ignore other areas of life such as education and friendship." These aspects of adjustment were all directly addressed during psychological counseling. The results about sexual functioning after SRS emphasize the importance of sexual counseling for even better psychosocial adjustment of TS persons.

In countries that do not offer organized support to TS persons, self-organized support groups are a common way of spontaneously organizing peer support for TS persons [38]. The results of the present study suggest that, in addition to being invaluable for creating a sense of belonging and understanding amongst TS persons and being a valuable source of information, these support groups represent a potential hazard by accelerating transition without expert support. If this potentially negative effect is to be minimized, it is therefore important that such groups are not the sole source of support in such countries. The results further suggest that it is important to offer organized and guided support outside of the health care system and for experts to be educated and informed about the current standards and recommendations of WPATH.

The main limitation of the present study is the small number of participants. While the findings have allowed for some insight into the individual experiences of TS persons in Croatia, the size of the sample does not allow for any generalization. Another limitation arises from the fact that one of the study authors was also the psychologist providing psychosocial counseling to all participants. Although this author did not directly collect the data, it is possible that participants wished to provide "good" data. A final limitation of the study arises from the data collection method used. Because of the varying geographical locations of the participants, face-to-face interviews proved to be difficult to be organized, even those via Skype. However, the electronic method of data collection applied did have advantages in that it allowed the participants to answer questions anonymously

on their computers, a factor which might have enabled them to answer more honestly and frankly.

5. Conclusion

As the first study in Croatia conducted with persons who have undergone gender reassignment, the results of the present research confirm the importance of individual factors in the psychosocial adjustment of transsexual individuals following SRS in a country whose social environment is hostile towards gender nonconformity. Despite the unfavorable circumstances currently existing in Croatian society and health care, participants demonstrated stable mental, social and professional functioning, and a relative resilience to minority stress. The results also demonstrate the potentially protective role that a lengthier process of transition plays in countries such as Croatia. Arguably, the longer duration of gender transition strengthens individual resolve while also allowing both TS individuals themselves and those around them to better adjust to sex transition amongst TS persons. The absence of a robust body of research on transsexualism in Croatia limits knowledge about relevant factors contributing to the psychosocial adjustment of TS individuals living in country with predominantly negative public attitudes and no standards of care. Further research is needed to illuminate these results by creating one multicentric study which will follow all TS persons referring to psychological and medical care.

The findings of the present study also strongly confirm the biopsychosocial model and basic principles of the SOC, which place strong emphasis on a culturally sensitive approach. The most recent edition of the SOC [25] contends that even health professionals operating in contexts in which limited resources and training exist can effectively apply the core principles of care. These principles include maintaining a respect for patients, providing care that affirms gender identity and reduces the stress of gender dysphoria, being knowledgeable about the health care needs of TS individuals, matching the treatment approach to the needs of the individual, enabling access to appropriate care, and offering support for individuals within their families and communities [25]. The findings of the present study support this argument and confirm that, even in an intolerant context with few outlets for appropriate care and support for TS individuals, it is possible to effectively assist TS individuals throughout the transition process and to ensure the conditions for successful psychosocial adjustment following SRS.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

References

[1] K. Clements-Nolle, R. Marx, R. Guzman, and M. Katz, "HIV prevalence, risk behaviors, health care use, and mental health status of transgender persons: implications for public health intervention," *American Journal of Public Health*, vol. 91, no. 6, pp. 915–921, 2001.

[2] U. Hepp, B. Kraemer, U. Schnyder, N. Miller, and A. Delsignore, "Psychiatric comorbidity in gender identity disorder," *Journal of Psychosomatic Research*, vol. 58, no. 3, pp. 259–261, 2005.

[3] N. K. Rotondi, "Depression in trans people: a review of the risk factors," *International Journal of Transgenderism*, vol. 13, pp. 104–116, 2011.

[4] S. Maguen, J. C. Shipherd, and H. N. Harris, "Providing culturally sensitive care for transgender patients," *Cognitive and Behavioral Practice*, vol. 12, no. 4, pp. 479–490, 2005.

[5] K. L. Nadal, A. Skolnik, and Y. Wong, "Interpersonal and systemic microaggressions toward transgender people: implications for counseling," *Journal of LGBT Issues in Counseling*, vol. 6, no. 1, pp. 55–82, 2012.

[6] I. H. Meyer, "Minority stress and mental health in gay men," *Journal of Health and Social Behavior*, vol. 36, no. 1, pp. 38–56, 1995.

[7] W. Bockting, "The impact of stigma on transgender identity development and mental health," in *Gender Dysphoria and Disorders of Sex Development*, B. P. C. Kreukels, T. D. Steensma, and A. L. C. de Vries, Eds., pp. 319–330, Springer, New York, NY, USA, 2014.

[8] A. T. Norton and G. M. Herek, "Heterosexuals' attitudes toward transgender people: findings from a national probability sample of U.S. Adults," *Sex Roles*, vol. 68, no. 11-12, pp. 738–753, 2013.

[9] European Commission and Directorate-General for Justice, *On Human Rights, Sexual Orientation and Gender Identity at the United Nations*, Office for Official Publications of European Union, Luxemburg, Wis, USA, 2012.

[10] G. de Cuypere and L. Gijs, "Care for adults with gender dysphoria," in *Gender Dysphoria and Disorders of Sex Development*, B. P. C. Kreukels, T. D. Steensma, and A. L. C. de Vries, Eds., pp. 231–254, Springer, New York, NY, USA, 2014.

[11] J. À Campo, H. Nijman, H. Merckelbach, and C. Evers, "Psychiatric comorbidity of gender identity disorders: a survey among dutch psychiatrists," *American Journal of Psychiatry*, vol. 160, no. 7, pp. 1332–1336, 2003.

[12] D. K. Gupta, "Trans-sexuality: cultural issues involved in the management," *Indian Journal of Plastic Surgery*, vol. 42, no. 2, pp. 233–234, 2009.

[13] L. K. Newman, "Sex, gender and culture: issues in the definition, assessment and treatment of gender identity disorder," *Clinical Child Psychology and Psychiatry*, vol. 7, no. 3, pp. 352–359, 2002.

[14] A. Hedjazi, M. Zarenezhad, A. Hoseinzadeh, R. Hassanzadeh, and S. M. Hosseini, "Socio-demographic characteristics of transsexuals referred to the forensic medicine center in southwest of Iran," *North American Journal of Medical Sciences*, vol. 5, no. 3, pp. 224–227, 2013.

[15] N. Jokić-Begić, "Psychosocial characteristics of transsexual subjects in Croatia," *Socijalna Psihijatrija*, vol. 36, no. 3, pp. 116–124, 2008.

[16] A. Štulhofer and I. Rimac, "Determinants of homonegativity in Europe," *Journal of Sex Research*, vol. 46, no. 1, pp. 24–32, 2009.

[17] S. Božić and D. Almesberger, *Family Acceptance of Sexual and Gender Minorities: Research Results*, Lesbian organization Lori, Rijeka, Croatia, 2007.

[18] N. Jokić-Begić, A. Babić Čikaš, T. Jurin, E. Lučev, D. Markanović, and S. Ručević, "Transsexuality: living in a wrong body?" *Liječnički Vjesnik*, vol. 130, no. 9-10, pp. 237–247, 2008.

[19] D. M. Seršić and G. Vuletić, "Psychometric evaluation and establishing norms of Croatian SF-36 Health Survey: framework for subjective health research," *Croatian Medical Journal*, vol. 47, no. 1, pp. 95–102, 2006.

[20] N. Jokić-Begić, A. Lauri Korajlija, T. Jurin, and C. Evans, "Factor structure, psychometric properties andcut-off scores of Croatian version of Clinical Outcomes in Routines Evaluation—Outcome Measure (CORE-OM)," *Psychological Topiscs*. In press.

[21] C. Evans, J. Connell, M. Barkham et al., "Towards a standardised brief outcome measure: psychometric properties and utility of the CORE-OM," *British Journal of Psychiatry*, vol. 180, pp. 51–60, 2002.

[22] I. Skre, O. Friborg, S. Elgarøy et al., "The factor structure and psychometric properties of the Clinical Outcomes in Routine Evaluation—Outcome Measure (CORE-OM) in Norwegian clinical and non-clinical samples," *BMC Psychiatry*, vol. 13, pp. 99–112, 2013.

[23] P. F. Lovibond and S. H. Lovibond, "The structure of negative emotional states: comparison of the depression anxiety stress scales (DASS) with the Beck Depression and Anxiety Inventories," *Behaviour Research and Therapy*, vol. 33, no. 3, pp. 335–343, 1995.

[24] N. Jokić-Begić, Z. Suranyi, N. Jakšić, and E. Ivezić, "Validation of n version of the depression anxiety stress scale (DASS-21)," in *Paper Presented at the Meeting Psychological Days in Zadar*, Zagreb, Croatia, May 2012.

[25] E. Coleman, W. Bockting, M. Botzer et al., "Standards of care for the health of transsexual, transgender, and gender-nonconforming people, version 7," *International Journal of Transgenderism*, vol. 13, no. 4, pp. 165–232, 2012.

[26] S. Whittle, L. Turner, R. Coombs, and S. Rhodes, *Transgender Eurostudy: Legal Survey and Focus on the Transgender Experience of Health Care*, ILGA Europe, 2008.

[27] I. Grabovac, M. Abramović, G. Komlenović, and J. Mustajbegović, "Under rug swept: discrimination of LGBTIQ patients in Croatia," http://www.zagreb-pride.net/web/images/stories/dokumenti/under rug swept-discrimination of lgbtiq patients in croatia.pdf.

[28] R. C. Berg, M. W. Ross, P. Weatherburn, and A. J. Schmidt, "Structural and environmental factors are associated with internalised homonegativity in men who have sex with men: findings from the European MSM Internet Survey (EMIS) in 38 countries," *Social Science & Medicine*, vol. 78, pp. 61–69, 2012.

[29] M. H. Murad, M. B. Elamin, M. Z. Garcia et al., "Hormonal therapy and sex reassignment: a systematic review and meta-analysis of quality of life and psychosocial outcomes," *Clinical Endocrinology*, vol. 72, no. 2, pp. 214–231, 2010.

[30] C. Dhejne, P. Lichtenstein, M. Boman, A. L. V. Johansson, N. Långström, and M. Landén, "Long-term follow-up of transsexual persons undergoing sex reassignment surgery: cohort study in Sweden," *PLoS ONE*, vol. 6, no. 2, Article ID e16885, 2011.

[31] Y. L. S. Smith, S. H. M. Van Goozen, A. J. Kuiper, and P. T. Cohen-Kettenis, "Sex reassignment: outcomes and predictors of treatment for adolescent and adult transsexuals," *Psychological Medicine*, vol. 35, no. 1, pp. 89–99, 2005.

[32] A. Lawrence, "Factors associated with satisfaction or regret following male-to-female sex reassignment surgery," *Archives of Sexual Behavior*, vol. 32, no. 4, pp. 299–315, 2003.

[33] S. Winter, "Language and identity in transgender: gender wars, anatomania, and the thai kathoey," in *Problematizing Identity: Everyday Struggles in Language, Culture, and Education*, A. M. Y. Lin, Ed., pp. 119–136, Routledge, NY, USA, 2013.

[34] D. Kulick, "Transcender and language: a review of the literature and suggestions for the future," *A Journal of Lesbian and Gay Studies*, vol. 5, no. 4, pp. 605–622, 1999.

[35] M. Bucholtz and K. Hall, "Identity and interaction: a sociocultural linguistic approach," *Discourse Studies*, vol. 7, no. 4-5, pp. 585–614, 2005.

[36] A. A. Lawrence, "Societal individualism predicts prevalence of nonhomosexual orientation in male-to-female transsexualism," *Archives of Sexual Behavior*, vol. 39, no. 2, pp. 573–583, 2010.

[37] W. Meyer III, W. O. Bockting, P. Cohen-Kettenis et al., "The Harry Benjamin International Gender Dysphoria Association's standards of care for gender identity disorders, version 6," *Journal of Psychology & Human Sexuality*, vol. 13, no. 1, pp. 1–30, 2002.

[38] P. A. Albinsson and B. Yasanthi Perera, "Alternative marketplaces in the 21st century: building community through sharing events," *Journal of Consumer Behaviour*, vol. 11, no. 4, pp. 303–315, 2012.

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Review Article

The Development of Sex Reassignment Surgery in Thailand: A Social Perspective

Prayuth Chokrungvaranont,[1] Gennaro Selvaggi,[2] Sirachai Jindarak,[1] Apichai Angspatt,[1] Pornthep Pungrasmi,[1] Poonpismai Suwajo,[1] and Preecha Tiewtranon[3]

[1] *Division of Plastic & Reconstructive Surgery, Department of Surgery, Faculty of Medicine, Chulalongkorn University, Bangkok 10330, Thailand*
[2] *Department of Plastic Surgery, Institute of Clinical Sciences, Sahlgrenska Academy, Sahlgrenska University Hospital, University of Gothenburg Gröna Stråket 8, 41345 Gothenburg, Sweden*
[3] *Preecha Aesthetic Institute (PAI), Bangkok 10110, Thailand*

Correspondence should be addressed to Gennaro Selvaggi; selvaggigennaro@yahoo.it

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This paper reviews the development of gender reassignment in Thailand during the period of 1975–2012, in terms of social attitude, epidemiology, surgical patients' profile, law and regulation, religion, and patients' path from psychiatric assessment to surgery. Thailand healthcare for transsexual patients is described. Figures related to the number of sex reassignment surgeries performed in Thailand over the past 30 years are reported. Transsexual individuals are only apparently integrated within the Thail society: the law system of Thailand in fact, does not guarantee to transsexuals the same rights as in other Western countries; the governmental healthcare does not offer free treatments for transsexual patients. In favor of the transsexual healthcare, instead, the Medical Council of Thailand recently published a policy entitled "Criteria for the treatment of sex change, Census 2009." The goal of this policy was to improve the care of transsexual patients in Thailand, by implementing the Standards of Care of the World Professional Association of Transgender Health. Currently, in Thailand, there are 6 major private groups performing sex reassignment surgery, and mostly performing surgery to patients coming from abroad. Particularly, the largest of these (Preecha's group) has performed nearly 3000 vaginoplasties for male-to-female transsexuals in the last 30 years.

1. Introduction

A comparative study of international centers performing GRS has been previously published [1]. This survey reported on the standards and policies used in 1995 by 19 clinics located in Europe and North America. Today, surgical treatment (as well as the entire transsexual healthcare) is standardized in University Hospitals and is based on the Standards of Care (SOC) published by the World Professional Association for Transgender Health (WPATH) [2–6]. The overall goal of the SOC is to provide clinical guidance for health professionals to assist transsexual, transgender, and gender nonconforming people with safe and effective pathways to achieve lasting personal comfort and to maximize their overall healthcare. This assistance may include primary care, gynecological and urological care, reproductive options, voice and communication therapy, mental health services, and hormonal and surgical therapy.

Usually, the patient is referred from the General Practitioner (GP) to a mental health professional with a special interest in GD and eventually to a physician who can prescribe hormonal therapy. After a minimum of 12 months of continuous experience of living in an identity-congruent gender role under the control of the mental health professional and a minimum of 12 months of hormonal therapy, with a confirmed diagnosis of GD, the transsexual patient is referred for genital surgery [2]. At the end of the gender reassignment, patients still need to be provided with health assistance for life, to monitor the general health conditions and the surgical outcomes.

Dr. Preecha Tiewtranon and Dr. Prakob Thongpeaw performed the first male-to-female sex reassignment surgery in Thailand at the Chulalongkorn University Hospital (CUH) in Bangkok in 1975 [7]. At that time, the society had negative thinking about the transsexual patients and the surgical procedure [7].

Previously, no paper has reported on the past and present social and health care provided to transsexual patients in Thailand. The scope of this paper is to review the development of sex reassignment in Thailand during the period of 1975–2012 in terms of epidemiology, religion and social attitude, law and regulations, surgical patients' profile, and patients' path from psychiatric assessment to surgery. We were not able to find any other studies describing the development of sex reassignment surgery in other cultures or countries.

2. Epidemiology

In Europe, the most recent epidemiological studies and review about transsexualism report prevalence ranging from 1 : 11,900 to 1 : 45,000 for male-to-female persons (MTF) and 1 : 30,400 to 1 : 200,000 for female-to-male (FTM) persons [8], with an increasing number of patients seeking assistance in the recent years [9]. Particularly, in The Netherlands the prevalence of people wishing to receive hormonal or surgical therapy because of the incongruent gender identity is 0.6% for biological males and 0.2% for biological females [10].

In Asia, a recent report calculated the rates in Japan to be 1 : 25,000 for male-to-female and 1 : 12,000 for female-to-male [11].

Another study from the University of Singapore showed that the transsexuals number in this island is 35.2 per 100,000 inhabitants (1 : 2,900) for FTM and 12 per 100,000 (1 : 8300) for FTM [12].

Finally, the unpublished studies from Winter [13, 14] are calculating a prevalence of 0.3 to 0.6% MTF persons in Thailand.

Currently, the Chulalongkorn University, Bangkok, Thailand, is in the process of granting a study and collecting data on the prevalence of transsexualism in Thailand. Since it is possible to observe and find transsexual people in any public place such as school, universities, and any working place, a much higher incidence of transsexualism in Thailand is expected, compared to the data reported in the world literature.

3. Influence of Religion and Social Attitude on Gender Reassignment

Thailand is roughly 95% Buddhist. Winter and Udomsak have already published an overview on the position of Thailand transsexual within the Buddhist religion and society [15].

As in other South-East Asian societies, nonnormative gender categories form part of the indigenous cultural tradition [16], with the common belief until the beginning of last century of the existence of three sexes: male, female, and male-female [17].

Jackson (1988) [18] reports that the Buddhist Vinaya text (a code of conduct for monks) identified four main sex/gender categories: males, females, *ubhatobyanjanaka* (hermaphrodites), and *pandaka* (males displaying a variety of other nonnormative anatomies or sexual preference) [15].

Today, the terms transgender and transsexual are seldom used in Thailand. Instead, *Kathoey*, a word originally used todenote hermaphrodites is used today to describe a male-to-female transsexual [18].

Unlike Christians, Buddhists cannot point to specific religious laws or teachings forbidding homosexuality, transsexuals, or gay marriage. One of the fundamental teachings of Buddhism is tolerance of those who act differently or hold different views. At first blush, this tolerance (if not acceptance) would seem to extend to transsexuals in Thailand. Transsexuals, in fact, are integrated into everyday life, and physical or verbal assault on transsexuals in public is extremely rare [17].

Again, Buddhism may play a role. While the Buddhist focus on tolerance does in part shape Thailand society's tolerant view of transsexuals, the Buddhist principle of karma may provide an alternative explanation: Thai people believe that people are born *kathoey* because they are being punished on this life of their misdemeanor of a previous one [17, 19].

The standard karmic tale, in fact, is that transsexuals were formerly "playboys" in their former lives and, as a result of breaking so many lovelorn hearts of women, they were imposed the ultimate punishment, making them a woman trapped in a man's body, forever doomed to unrequited love. Therefore, they are a group to be pitied, not protected.

In the past, in fact, the Thai society had negative thinking about the transsexual individuals and the surgical procedure; particularly, the Thai society disliked patients' appearance and their overacting manners; furthermore, transsexual people were considered to have low education and no taste and were believed to work mainly in the sex industry [20].

Thai people also believed that the result of the surgery was not good, giving lots of complications [20].

It was not long ago (December 1996) [15] when a transsexual student enrolled in an education program at a public university murdered a female friend; in response to this, another well-known higher education institution in charge of Thailand's teaching universities banned transgender and homosexual students from attending their teacher training facilities.

At the time, transsexuals were variously referred to as "sexually deviant" and "sick. . .mentally" by members of the institute, and they were considered of having a bad influence on children. This argument was simply keeping in line with the Department of Mental Health, which at the time considered homosexuality a mental disorder. Subsequent pressure from both Thai and Western gay rights groups soon forced a repeal of the ban.

Up to day, *kathoey* have become so prominent a part of modern Thai culture that the authorities have taken steps to reduce their profile, for example, making it more difficult for them to work as teachers or tour guides and advising television stations to curb MTF appearance on shows [15].

According to a study by Dr. Winter, Hong Kong University students showed a marked male antipathy towards male gender variance [21].

At the opposite, more recently, several transsexual individuals became successful in their careers, especially in the entertainment and mass media industry such as the actors, singers, reporters, and even models.

Transsexual beauty pageants, such as Miss Tiffany's Universe and Miss Alcazar, are held in Thailand and televised nationally each year.

Today, Thailand appears to live up to its worldwide reputation as a place where transsexuals can experience greater freedom and acceptance than in other nations.

Particularly, transsexuals' appearance and manners seem to the Thai population much more similar to the way ladies are acting and behaving. At the same time, the sex surgical conversion got more and more the reputation of being successful, both domestically and internationally. In fact, parallel to the explosion of the tourism market (90's) in Thailand, more foreigners were coming to Thailand to receive sex change operations. The Thai population has been witnessing this medical tourism for the past 20 years [20].

In spite of this new Thai face, a closer look at its society and culture, however, still reveals a society with a decidedly mixed view of transsexuals [22].

4. Law and Regulations

4.1. Law and Society. Thailand legal system reflects the Thai society [23].

As far as the government of Thailand is concerned, male-to-female transsexuals are legally men. Transsexuals cannot legally change their gender on their ID cards, leading to problems with potential employers. Many employers do not want possible complications involved with hiring a transsexual if an equally qualified "normal" person can be hired. Because of this, the vast majority is relegated to occupations traditionally held by women, that is, waitresses, hairdressers, makeup artists, and vendors, even if they are university graduates. Transsexuals' birth gender must remain the same on their passports as well; a fact that can lead to confusion and unwanted scrutiny at border crossings and immigration checkpoints. Thailand also prohibits same sex marriage, meaning that when the partner of a transsexual dies, the deceased's family receives any or all assets [24].

In the past years, there have been some positive developments since the transsexuals and the gay community in general have achieved some legal gains. In 2002, in fact, the Department of Mental Health, under intense pressure from the gay community, removed homosexuality from its list of mental disorders. This decision helped to pave the way for the Thai military to announce in 2005 that it would discontinue its practice of dismissing transsexual and gay recruits for having "a severe mental disorder" and the subsequent announcement in March 2008 that the military would be adding a "third category" for transsexuals [24]. This third category would allow transsexuals to be dismissed from service due to "an illness that cannot be cured in thirty days", thereby removing the scarlet letter of "mental disorder" from their service records-records that must be provided at each job interview and with each loan application.

4.2. Regulations for the Treatment of Gender Reassignment. Until 2009, there was no definite rule to regulate gender reassignment in Thailand; nevertheless, some plastic surgeons (as the authors of the present manuscript) were still following the SOC as suggested by the WPATH, as for the criteria to select and treat transsexual patients. However, until 2008, there were many cases of castrations to teenagers, performed by nonurologists and nonplastic surgeons, and this made the social and the mass media upset and panic [23, 24].

As a consequence, pressure was put on the Thailand Medical Council to regulate the medical practice for the treatment of transsexual patients; subsequently, the Thailand Medical Council published a policy entitled "Criteria for the treatment of sex change, Census 2009", which was effective from November 25, 2009. Among the criteria, patients have to be over 20 years of age, or they can be between 18 and 20 and have consent of at least 1 guardian. Also, patients should have documents to approve their surgery from 2 different psychiatrists. For other details, the SOC of the HBIGDA/WPATH should be followed, including furthermore, the real life experience for at least 1 year [23, 24].

5. Thailand Health Care for Transsexual Patients

In spite of the fact that the Thailand Medical Council posed regulations on the treatments of transsexual patients, Thailand Government hospitals generally do not offer free treatments (psychological assessment, hormonal or surgery) to transsexual patients.

For this reason, Thaitranssexuals seek for all their gender treatments privately.

Most of the Thai transsexual patients do not visit the psychiatrist at the onset of the gender dysphoria: in fact, they do not believe that psychiatrists can be of any help to them, but only for signing for the diagnosis, which is allowing the surgeon to proceed with the surgery. Further to this, the quality of the care organization offered at the psychiatrist services (and other medical services) in the Government hospitals is presenting with long waiting queues; finally, very few psychiatrists in Thailand are currently interested in this field, and these psychiatrists are practicing in private settings. As a consequence, most of the transsexual patients visit the psychiatrist only when they decide to get the surgery done.

The hormonal treatment is a very weak point within the treatment, too: very few endocrinologists in Thailand have experience in this field, and patients prefer to listen to senior fellows of their society, accepting suggestions passed to each other as word of mouth, rather than giving their trust into endocrinologists. As a consequence, nearly all the transsexuals use hormones, but very few of them are under the care of endocrinologists. Hormones are usually bought directly from the pharmacy; no prescription is required.

Table 1: Number of vaginoplasty procedures performed at Chulalongkorn University Hospital.

Year	Number of vaginoplasty procedures performed
1973–2007	Data not available
2008	12
2009	17
2010	9
2011	13
2012	8
Total	59

Table 2: Ratio of the Thai/Foreign MTF transsexual patients operated in Thailand.

Periods	Thai/foreigners
1985–1990	95%/5%
1991–1995	90%/10%
1996–2000	75%/25%
2001–2005	50%/50%
2006–2010	30%/70%
2006–2010	30%/70%
2010–2012	10%/90%

Thai transsexuals mostly start with the hormonal treatment when in secondary school (14-15 years old). The popular hormones used are the contraceptive pill such as Progynova; Diane-35; Premarin; once a day; and/or Progynon/Proluton injection every 1-2 weeks. Some patients also add Androcur.

Sex reassignment surgery is usually performed when patients are in their 20's, and at this age most of the patients have received hormonal therapy for at least 5 years.

Nearly all the surgical treatments are performed privately. The Government finances surgical treatments rarely, and for teaching purposes only. These surgical treatments are exclusively performed at CUH and, more recently, at Lerdsin General Hospital in Bangkok. Even in these cases, surgery is not offered free of charge, but patients have to pay for some of the hospital costs. In 2012, 8 vaginoplasty operations in MTF transsexuals were performed at CUH (see Table 1). Three to four mastectomies in FTM transsexuals and 2 penile reconstructions (usually metaidoioplasty, with less than 10 procedures performed in the last 20 years) are also performed at CUH per year.

For transsexual patients coming from abroad and seeking private sex reassignment surgery in Thailand, letters confirming diagnosis of gender dysphoria from psychologists/psychiatrists from the patient's homeland are regularly accepted.

Currently, while in the University Hospitals all patients are from Thailand, within the private sector the ratio of foreigner to Thailand patients is 10 : 1 (see below).

Opposite to surgery for MTF transsexuals, surgery for FTM transsexuals is not common in Thailand even within the private sector.

5.1. Followups. Thai transsexuals receiving vaginoplasty are usually followed up until 1 year postop, while foreigner transsexuals are usually receiving their last followup with their surgeon 2 weeks postop; then, they are instructed to continue their care with endocrinologists or gynecologists in their home countries. They might come to Thailand for later followups if needed, but this is uncommon.

6. Surgeons' Profile

To date, there are about 20 Thai surgeons able to perform SRS. However, the highest number of the procedures (MTF only) in concentrated among 6 major groups are as follows: PAI (Preecha's Aesthetic Institute) (Bangkok), Suporn (Pattaya, Cholburee), Chettawut (Bangkok), Kamol (Bangkok), Sanguan (Phuket), and Yanhee (Bangkok).

By directly interviewing the surgeons involved in GRS in Thailand, we calculated the ratio between Thai and Foreigner patients surgeries operated in Thailand in the past years. All the above-mentioned Bangkok-based centers are included in this survey, except Yanhee.

Between 1985–1990, only 5% of the transsexual patients operated in Thailand were foreigners; at the opposite, 90% of the transsexual patients operated in Thailand in the period 2010–2012 were foreigners (see Table 2).

Now a day, there are at least 2 or 3 foreigner patients operated per day in Thailand, and receiving MTF-SRS.

Since 1985, the mean age of the Thailand transsexual patients is 27 years old (17–50).

Mean age of the foreigner transsexual patients is 46 years old (16–72).

Foreign patients resulted to have higher degrees (e.g. medical doctors, engineers, lawyers, police officers, etc.), more successful and stable in their profession, rather than Thai patients.

7. Conclusion

Since the first Thailand's sex change surgery in 1975, the Thai social attitude, law system, and regulations to treat transsexual patients have very much improved. Particularly, the WPATH SOC are full in place within the regulations presented by the Thailand Medical Council. In spite of these improvements, Thai transsexual individuals are not fully integrated within the society, the law system does not guarantee to transsexuals the same rights as in other Western countries, and health treatments for gender dysphoria (psychiatric assessment, hormonal and surgical treatments) are not provided free of charge within the umbrella of the Government Hospitals, but these are paid by the patients themselves. On the other hand, we believe that the way Thai transsexuals appear in the media and to the Western world, the current Thailand economy allowing for surgery at a cost cheaper than in Western country, and the experience progressively achieved by Thai surgeons over the past 30 years contributed to an increasing number of foreign patients coming and receiving gender reassignment surgery in Thailand.

Conflict of Interests

The authors declare that there is no conflict of interests regarding the publication of this paper.

References

[1] M. E. Petersen and R. Dickey, "Surgical sex reassignment: a comparative survey of international centers," *Archives of Sexual Behavior*, vol. 24, no. 2, pp. 135–156, 1995.

[2] R. Ettner, S. Monstrey, and E. Eyler, *Principles of Transgendereed Medicine and Surgery*, The Haworth Press, New York, NY, USA, 2007.

[3] W. J. Meyer III, W. O. Bockting, P. Cohen-Kettenis et al., "The standards of care for gender identity disorders, 6th version," *Journal of Psychology & Human Sexuality*, vol. 13, pp. 1–30, 2001.

[4] "The World Professional Association for Transgender Health. Standards of Care for the Health of Transsexual, Transgender, and Gender Nonconforming People. 7th Version," 2011, http://www.wpath.org.

[5] G. Selvaggi, P. Ceulemans, G. de Cuypere et al., "Gender identity disorder: general overview and surgical treatment for vaginoplasty in male-to-female transsexuals," *Plastic and Reconstructive Surgery*, vol. 116, no. 6, pp. 135e–1145e, 2005.

[6] G. Selvaggi, C. Dhejne, M. Landen, and A. Elander, "The 2011 WPATH standards of care and penile reconstruction in female-to-male transsexual individuals," *Advances in Urology*, vol. 2012, Article ID 581712, 13 pages, 2012.

[7] P. Chokrungvaranont and P. Tiewtranon, "Sex reassignment surgery in Thailand," *Journal of the Medical Association of Thailand*, vol. 87, no. 11, pp. 1402–1408, 2004.

[8] G. de Cuypere, M. van Hemelrijck, A. Michel et al., "Prevalence and demography of transsexualism in Belgium," *European Psychiatry*, vol. 22, no. 3, pp. 137–141, 2007.

[9] B. Reed, S. Rhodes, P. Schofield, and K. Wylie, "Gender variance in the UK: prevalence, incidence, growth and geographic distribution," GIRES, 2009, http://www.gires.org.uk/assets/Medpro-Assets/GenderVarianceUK-report.pdf.

[10] L. Kuyper and C. Wijsen, "Gender identities and gender dysphoria in the Netherlands," *Archives of Sexual Behavior*, vol. 43, no. 2, pp. 377–385, 2013.

[11] T. Baba, T. Endo, K. Ikeda et al., "Distinctive features of female-to-male transsexualism and prevalence of gender identity disorder in Japan," *Journal of Sexual Medicine*, vol. 8, no. 6, pp. 1686–1693, 2011.

[12] W. F. Tsoi, "The prevalence of transsexualism in Singapore," *Acta Psychiatrica Scandinavica*, vol. 78, no. 4, pp. 501–504, 1988.

[13] S. Winter, "Counting kathoey," 2013, http://web.hku.hk/~sjwinter/TransgenderASIA/paper_counting_kathoey.htm.

[14] S. Winter, "Lost in Transition: Transgender People, Rights and HIV vulnerability in the Asia-Pacific Region," 2012, http://www.undp.org/content/dam/undp/library/hivaids/UNDP_HIV_Transgender_report_Lost_in_Transition_May_2012.pdf .

[15] S. Winter and N. Udomsak, "Male, female and transgender: stereotypes and self in Thailand," *International Journal of Transgenderism*, vol. 6, no. 1, 2002.

[16] H. Brummelius, "Transformations of transgender: the case of the Thai kathoey," *Journal of Gay & Lesbian Social Services*, vol. 9, pp. 121–139, 1999.

[17] P. A. Jackson, *Dear Uncle Go: Male Homosexuality in Thailand*, Bua Luang Books, Bangkok, Thailand, 1995.

[18] P. A. Jackson, "Male homosexuality and transgenderism in the Thai buddhist tradition," in *Queer Darma: Voices of Gay Buddhists*, W. Leyland, Ed., Gay Sunshine Press, San Francisco, Calif, USA, 1998.

[19] M. Bunmi, *How Can People Be Kathoeys?* Abhidhamma Foundation, Bangkok, Thailand, 1986.

[20] S. Winter, B. Webster, and P. K. E. Cheung, "Measuring Hong Kong undergraduate students' attitudes towards trans people," *Sex Roles*, vol. 59, no. 9-10, pp. 670–683, 2008.

[21] S. Winter, "Transpeople in Thailand: acceptance or oppression?" in *Proceedings of the 10th International Conference of Thai Studies "Thai Societies in a Transnationalised World" (ICTS '10)*, Thammasat University, Bangkok, Thailand, 2010.

[22] J. Armbrecht, "Transsexuals and Thai Law," 2008, http://www.thailawforum.com/Transsexuals-and-Thai-Law.html.

[23] *Regulation of the Medical Council Concerning Ethics in the Medical Profession Rules for Treatment in Sex Change Operations 2552 B.E. (2009 A.D.)*, Chaninat & Leeds, 2009, http://www.thailawforum.com/sex-change-operations-law.html.

[24] *Announcement of the Medical Council 58/2552 B.E. (2009 A.D.) Regarding Guidelines for Persons Manifesting Confusion Concerning Their Sexual Identity or Desiring Treatment by Undergoing a Sex Change Operation*, Chaninat & Leeds, 2009, http://www.thailawforum.com/Guidelines-sex-change-operations.html.