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REVIEW

Urogenital Complications that Decrease Quality of Life in Transgender Surgery

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Abstract
Gender reassignment surgeries are performed not to treat a congenital or anatomical anomaly, but to treat the psychological problems of transsexuals. In fact, there is no definitive evidence showing that psychological problems in transsexuals are cured by hormonal and/or surgical treatments for gender reassignment. On the contrary, there is evidence that these psychological problems persist after medical and surgical interventions, and even increase in some transsexuals, and a new form of body dysphoria occurs in a quarter of cases. Psychological problems in transgender people are not cured by surgery, and additional surgery-related complications develop in three-quarters of the cases. The vast majority of these are urogenital complications, and more than half require reoperations. However, in a significant proportion of cases, the outcome is unsuccessful and these urogenital complications significantly reduce the quality of life of transsexuals. Data also show that the life expectancy of transsexuals who undergo surgery is shortened by an average of 25-28 years due to psychological problems, suicides, surgical complications, reoperations and diseases related to hormone use. These results have led to an increase in the number of detransitioners who regret their medical and surgical transition and want to return in recent years, and have increased ethical debates on this issue. In this article, urogenital complications that develop after transgender surgery, which reduce the quality of life and possibly play a role in regrets are summarized.

Keywords: Gender Dysphoria; Transgender surgery; Transsexual; Complication; Quality of life; Urogenital

INTRODUCTION

Gender-reassignment surgery(GRS), which can also be referred to as transgender surgery, is performed not to treat a congenital or anatomical anomaly, but to treat the psychological problems of transsexuals (1,2). In fact, there is no definitive evidence showing that psychological problems in transsexuals with gender dysphoria (GD) are improved by gender-affirming hormonal and/or surgical treatment (2-5). On the contrary, there are studies showing that these psychological problems continue after medical and surgical

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interventions (2), and even increase in some transsexuals after surgery (6), and that a new form of body dysphoria occurs in a quarter of the cases; these people are extremely disturbed with their new physical appearance after medical and/or surgical transition (7).

Transsexuals not only have GD, but are often accompanied by other psychiatric comorbidities (8). Although there is a partial decrease in GD, almost all of these psychopathologies are also observed after GRS. Psychological problems such as depression, post-traumatic stress disorder, personality disorders, problems with work and social life, criminal or violent events and related convictions, partner problems, feeling of loneliness and suicide are common in transgender people after GRS; In other words, psychological problems in transsexuals continue after surgery-throughout life (2). Even regret and detransition are seen; In recent years, there have been many detrans/detransitioners who regretted medical and surgical transition and shared their experiences with regret, there is a serious literature that is beginning to accumulate on the subject of regret and detransition (2,9-19). This situation increases debates and professional disagreements about what is the most appropriate medical approach, especially for young people with GD (20).

GRS is also debated due to surgical complications (21–23) and bioethical dilemmas; the most common bioethical issues in transgender medicine are what the optimal treatment is (there is no consensus on this issue), sterilization as a requirement of legal recognition (permanent infertility), the role of fertility and parenthood, and regrets and detransition after gender reassignment (11,24-26).

Another important issue regarding gender-affirming surgery is urogenital complications, which add to mental problems after surgery and reduce the quality of life. In a study conducted by Kuhn et al., the quality of life and patient satisfaction of a total of 55 transgender individuals who underwent transsexual surgery (52 from male to female, 3 from female to male) were found to be significantly lower 15 years after the transgender surgery (21,22). Urinary and sexual problems were shown as the most common reasons for dissatisfaction. Fifteen years after the operation, the general health status of these individuals was worse and their quality of life was lower due to role limitations, physical limitations and personal limitations (21).

Gender-affirming surgeries include facial surgery, chest surgery and genital surgery procedures (27). Each of these surgeries has its own complications, but since the subject of our article is limited to urogenital complications, we will mainly focus on genital surgery and will only describe the urogenital complications associated with these surgical procedures. For this purpose, PubMed was screened with the terms "transgender surgery", "gender affirming surgery", "vaginoplasty", "phalloplasty", "metoidioplasty", and "urological complications". A total of 194 articles were listed; 61 articles with the terms "gender affirming surgery," "urological complications," and "vaginoplasty," 92 articles when the term "phalloplasty" was added instead of vaginoplasty, and 41 articles when the term "metoidioplasty" was added. Duplicate articles were removed. And ultimately, 26 articles that were suitable for our review - focusing on and/or transplanting urogenital complications - were examined.

In this article, early and late urogenital complications that develop after gender-affirming (or transgender) genital surgery and reduce the quality of life are summarized.

Male-to-Female (MtF) Surgical Procedures and Complications:

Approximately three-quarters of transsexuals who request gender reassignment are in this group (73.4%) (28). Male-to-female gender-affirming surgeries include the following surgical procedures; 1) Facial surgery: brow reduction, hairline advancement, laser hair removal, feminizing rhinoplasty, malar augmentation, mandibular recontouring, chondrolaryngoplasty; 2) Chest surgery: augmentation mammoplasty and fat grafting; 3) Genital surgery: vaginoplasty (penile-inversion vaginoplasty or intestinal vaginoplasty) and vulvaplasty (27). Each of these surgeries has its own complications, but we will mainly focus on MtF genital surgery (penile-inversion vaginoplasty and intestinal vaginoplasty) and will only describe the urogenital complications associated with these surgical procedures.

The most commonly performed technique for primary male-to-female transgender vaginoplasty is penile inversion vaginoplasty (29,31,33). Penile-inversion vaginoplasty is the gold standard of feminizing genital surgery; it uses penile skin to form the neovagina, the glans for a neo-clitoris, and the scrotum and skin for labia majora and minora (27). However, in cases where the penis/phallus is not sufficiently developed, for example in cases where puberty blockade is applied [pubertal supression with hormon use also blocks penis-phallus development (30)], vaginoplasty can be performed using ileum and sigmoid colon segments as an alternative method. However, both of these methods have complications such as bleeding, hematoma, infection, delayed wound healing, neovaginal stenosis, flap necrosis, urethral stenosis, urethral fistula, incontinence, rectal injury, rectal fistula, internal organ injury and pelvic floor disorders. Some of these

are serious complications that require constant care and/or intervention (29,31).

Urogenital problems detected by *Kuhn et al.* 16 years after vaginoplasty are as follows; urination dysfunction 47%, urge 25%, stress incontinence 23%, never being sexually satisfied 23%, urge incontinence 17%, stool urgency/incontinence 9.4%, inability to empty the bowels/incomplete evacuation 7.6%, neovaginal prolapsus 7.5% and the need for reoperation for prolapsus 3.4% (23). *Kuhn et al.* in another study, they reported the urological problems experienced after transgender surgery as follows; change in urine flow direction 50%, feeling of insufficient emptying 22%, recurrent urinary tract infection 22%, stress urinary incontinence 16% and overactive bladder 6%. A diverted stream, overactive bladder and stress urinary incontinence were common problem (22).

Similarly, complications after transgender surgery reported by Papadopoulos et al. were as follows; delayed wound healing 25%, decentralized urine flow 22.5%, genital pain 15%, bladder infection 15%, bleeding 12.5%, decreased vaginal sensitivity 12.5%, impaired bladder function 10%, decreased chitoral sensitivity 10%, wound infection/abscess% 7.5, colon damage 7.5%, breast hardness 5.3%, vaginal stenosis 2.5%, short vagina 2.5%, genital odor 2.5%, clitoral asymmetry 2.5%, clitoral necrosis 2.5% and defecation problem 2.5%; Emergency surgery or re-operation was performed in one quarter of the cases in this study [in cases where wound infection/abscess colon damage, breast hardness, vaginal stenosis, short vagina and clitoris necrosis developed] (32).

According to a systematic review conducted by *Horbach et al.* (26 studies with a total of 1,563 cases were examined in this meta-analysis), the urogenital complications following transsexual surgery were as follows (penile skin inversion vaginoplasty was performed in 1,461 of the cases, ileal or colonic vaginoplasty was performed in 102); Neovaginal stricture or stenosis was the most commonly reported adverse outcome with an incidence of 12.0% (4.2-15.0%). Other complications included partial necrosis of the vagina (2.7–4.2%), clitoral necrosis (1–3%), genital pain (3–9%), rectal injury (2–4.2%), rectovaginal fistula (0.8–17.0%), neovaginal prolapse (1–2%), urethral meatal stenosis (1–6%), change in voiding function (32%), urinary incontinence (19%), wound dehiscence (12–33%), local abscesses (5%), and hematoma (3%) (33).

The complication rate is also high in ileal or colonic vaginoplasty, which is performed as an alternative method. *Morrison et al.* reported the overall complication rate after vaginoplasty performed with the ileal or colonic segment as 58% (34). The most common complications in this study were mucorea 29%, neovaginal strictures/stenosis 20%, protrusion 6.1%, rectovaginal fistula 2.4%, urethrovaginal fistula 1.2% and intestinal obstruction 1.2%. The long-term complications identified in this study were as follows; neovaginal stenosis 22.5%, protrusion 15.6%, intestinal obstruction 3.6%, colitis 2.5% and prolapse 2.4% (34).

Complications such as rectal-urethral fistulas, urinary incontinence and vaginal stenosis that develop after vaginoplasty surgery are complications that limit the patient's daily life and cause serious problems. These patients have to perform vaginal dilation with dilators of different sizes several times every day after surgery (at home and at work) to prevent vaginal stenosis. This is a painful procedure, especially at first. However, neovaginal stenosis is inevitable in some cases and cannot be treated with dilatation. In cases of stenosis where dilator treatment fails, it may be necessary to recreate the neovaginal space with revision surgery and re-cover the space with a new graft (29).

Female-to-Male (FtM) Surgical Procedures and Complications:

Approximately one quarter of transsexuals who request gender reassignment are in this group (28). Female-to-memale gender-affirming surgeries include the following surgical procedures; 1)Facial surgery: Brow augmentation, hair transplant, masculinizing rhinoplasty, malar modification, maxillary augmentation, mandibular recontouring, cenioplasty, thyroid cartilage augmentation; 2)Chest surgery: Periareolar mastectomy, double-incision mastectomy, free nipple grafting; 3) Genital surgery; phalloplasty and metoidioplasty (27). Each of these surgical procedures has its own complications, but due to the subject of the article, but due to the subject of the article, only urogenital complications due to phalloplasty and metoidioplasty will be summarized here.

The most common early complications in FtM gender-affirming genital surgical procedures which includes phalloplasty (creating a penis-phallus with tissues taken from the hand or arm) and metoidioplasty (creating a penis-phallus using the clitoris and vaginal walls), are wound dehiscence, infections, total and partial flap necrosis and urethral loss. Late complications of FtM genital surgical procedures include urethral stenosis, persistent vaginal cavity, penile prosthesis problems and urethrocutaneous fistulas (35-38). While *Morrison et al.* reported total flap loss after phalloplasty as 1.7% and partial flap loss as 5.43% (39), *Monstery et al.* reported partial flap loss as 7.3% (40).

The most common urological complications after

phalloplasty are urethral strictures, fistulas and associated urination problems. In a meta-analysis conducted by Wang et al., a total of 1,731 patients who underwent phalloplasty (39 articles) were examined and the overall complication rate was reported as 76.5% (in 75.1% of these cases, the radial forearm free flap was used); the urethral fistula rate was 34.1%, and the urethral stricture rate was 25.4% (41). These data show that more than three out of every four patients (>75%) who underwent phalloplasty developed complications -mostly urological.

In a meta-analysis conducted by *Hu et al.* (21 studies, 1566 cases), the rate of urethral fistula or stenosis detected after phalloplasty was found to be 49% [in one in two patients] and penile prosthesis complications were found to be 28% (42).

In a recent study conducted by *Veerman et al.* and published in the American Journal of Urology (J Urol.), the complications in trans men who underwent phalloplasty or metoidioplasty techniques and were followed for an average of 23 months were as follows; Urethral stricture was 63% in both techniques, urethral fistula was reported to be 27% in phalloplasty and 50% in metoidioplasty, and the need for reoperation due to fistula or stenosis was reported to be 73%. Despite this, 30% of cases were unable to urinate from the tip of the phallus. The authors commented in the conclusion that *"Genital gender affirming surgery with urethral lengthening is a complex procedure with a high complication rate. After treating complications no clinically relevant differences in urological functioning were recorded."* (43).

In another systematic review, *Nikolavsky et al.* reported that the rate of urethral fistula as 22-75% and urethral stenosis as 25-58% after phalloplasty and metoidioplasty (37).

Urethrocutaneous fistula is the most common urethral complication after phalloplasty and its incidence varies between 15-70%. This is often accompanied by urethral stricture. There is no standard treatment technique defined for the treatment of urethral fistulas or strictures (44).

In a recent meta-analysis, *Robinson et al.* examined a large and heterogeneous group of transgender men (1,212 patients, 129 genital reconstructions) and identified a total of 281 complications. These results are sourced from a large, heterogeneous group of transgender patients spanning 3 continents and dozens of surgical centers. More than half of the cases (50.5%) required reoperation. The rate of urethrocutaneous fistula was reported as 40%, urethral stenosis was reported as 32%, and worsening mental health was reported as 19%. According to the authors, these results support anecdotal reports that complication rates following gender affirming genital reconstruction are higher than are commonly reported in the surgical literature. In the conclusion section of the meta-analysis, the authors say: *"Complication rates, including urethral compromise and worsened mental health, remain high for gender affirming penile reconstruction."*(45).

After phalloplasty, urethral stricture develops in more than half of the cases, and in 94-96% of them, the need for reoperation (urethroplasty) occurs, but despite this, the result is unsuccessful in half of the cases. Reoperations or rescue urethral externalization surgeries are often needed. However, despite all efforts, patients may have to live with perineal urethrostomy for life (35).

Penile implants may also accompany phalloplasties and their complications include infection, erosion, migration, and mechanical failure (46). In a meta-analysis conducted by et al., penile prosthesis complications in phalloplasty were reported as 28% (42).

The data show that complications develop after phalloplasty in at least three quarters of cases and that reoperation is required in approximately half of them, but the outcome is unsuccessful in a significant proportion of cases. Transgender individuals who underwent phalloplasty, despite reoperations, they experience difficulty urinating, incontinence and perineal-genital pain, cannot urinate from the tip of the phallus, and may even have to live with a perineal urethrostomy for life. These urolgical complications significantly reduce the quality of life of transsexuals (21).

Complications that develop after metoidioplasty are similar to phalloplasty. *Waterschoot et al.* reported urethral fistula as 46%, permanent fistula as 36.5%, and urethral stricture as 19% after metoidioplasty (47). They also reported a 4.1% rate of high-grade complications in the first 30 days after surgery.

Are Urogenital Complications of Transgender Surgery Higher Than Reported in the Literature?

The data we have conveyed show that most of the transsexuals who have undergone gender-affirming surgery have to struggle with complaints such as inability to urinate or urinary incontinence throughout their lives. However, there are two more important issues at this point;

First, we know the early and mid-term complications of transgender surgery; Since complications such as urethral stricture, urinary fistula and infections recur at a high rate, transgender individuals who undergo gender-affirming surgery are forced to undergo urological follow-up throughout life and often need urological reoperations. However, we do not know the long-term effects of neourethra on kidney and

bladder functions (37,40).

Second, the rates of urogenital problems following gender-affirming surgery are probably higher than those reported in the literature (45). Because transsexuals are quite shy about expressing their urogenital problems after surgery. *Kuhn et al*. who have studies on this subject, report that urogenital problems after gender-affirming surgery are underreported, probably due to the shyness of transsexuals (22,23). The results of the comprehensive study conducted by *Kamran et al.* also support this interpretation. They examined "patient-reported outcome measures"(PROM) in this comprehensive study (which included 286 studies representing 85.395 transgender cases in more than thirty countries) and found that patient reports were absent or incomplete in most studies (48).

The data suggest that the urogenital complications that develop in transsexuals who undergo gender-affirming surgery are not fully reflected in the literature (more complications develop than the rates reported in the literature and/or may develop in the long term). Moreover, the complication rates reported in the literature are quite high. So why do trans men request phalloplasty, a surgical procedure with a high rate of complications, even though it is not mandatory? They do, because more than 98% of trans men desire to urinate while standing, which is considered a symbol of masculinity (37). This desire is a demand that exists at the level of obsession in trans men. Another possible reason for this high demand is that transgender people are not properly informed by healthcare professionals about surgical complications. Most transsexuals who think that their psychological problems will end with gender-affirming surgery are not subjected to an adequate psychiatric evaluation, nor are they informed as they should be about surgical complications. A recent study conducted by Vandenbussche in Germany, shows that this is the case; more than half (55%) of detransitioners who started the medical and/or surgical transition process (gender-affirming treatment) but later regretted it reported that they were not adequately informed (not adequately evaluated) by a doctor or psychiatrist before starting the transition (19). As we mentioned before, not only GD (and related psychological distress) is observed in transsexuals, but it is often accompanied by other psychiatric comorbidities (8). For this reason, an in-depth psychiatric evaluation and follow-up is essential in transsexuals (11). However, literature data show that in recent years, this has often been neglected and gender-determining medical or surgical treatments have been initiated with brief and superficial evaluations (11,21).

Shortened Lifespan and Unhappy Life in Transsexuals

Since gender reassignment surgery/transgender surgical procedures started in the 1970s, there has been an accumulation of knowledge and literature on this subject for more than 50 years. The main purpose of transgender surgery was not to treat a congenital or anatomical disorder, because there is no such problem, but to treat mental distress. For the treatment of psychological problems, radical surgical interventions -which cause irreversible loss of organs and functions- were recommended and performed (and are still being performed). However, relatively old and current literature showed/shows that psychological problems in transsexuals continue after these radical surgeries. In fact, the quality of life is decreasing even further after the surgery. The old and new literature do not contain any significant differences on this issue, contain similar results. A relatively early study conducted by *Sorensen* in Denmark (1981) reported that transsexual operations were not resocializing, but rather the opposite (49). Approximately 66% of the transgender people in the study lived alone and did not have sexual intercourse. Most of those who had sexual intercourse also had problems. 50% of the cases required additional surgeries due to complications and subjective problems that required reoperation of the vagina. People in the core group required fewer surgical corrections and were more satisfied with the surgical outcome, and they also had a better psychic state than the others. In this group, the advantages of gender reassignment seemed to outweigh the disadvantages, but in individuals outside the core group, subjective and objective problems were so pronounced that Sorensen says; "*But among the persons who do not belong to the core group subjective and objective problems seem so pronounced that operation must be advised against in spite of the often extremely, subjectively unsatisfactory condition of these patients preoperatively.*" (49).

Current studies conducted in Sweden and Denmark show that there is no change in these results. The Swedish cohort, which is the longest follow-up study on this subject, shows that mental problems in transgender people continue after surgery (2). Additionally, a study conducted by *Simonsen* et al. in Denmark shows that the life expectancy of of transsexual who underwent gender reassignment surgery was shortened by approximately 25-28 years. While the average life expectancy in Denmark is 81.9 years for women and 78 years for men, this period is 53.5 years for transsexuals who have undergone surgery (50). In other words, the lifespan of transsexuals who undergo gender reassignment surgery is shortened by 25-28 years. Because these transsexuals use hormones throughout their lives, accordingly, fatal diseases such as cancer, lung and cardiovascular diseases

increase, and when infections, surgery-related complications, reoperations, intense psychiatric problems and suicides are added, the average life expectancy decreases by 25-28 years (50). However, transsexuals who undergo surgery cannot be happy while they are also alive. Relevant studies show that psychological problems in transgender people continue after surgery, and that these problems even increase in some transgender individuals (2,6,49,50). When surgery-related urogenital complications are added to these psychological problems (such as reoperations, genital pain, difficulty in urinating, fistula, urinary incontinence and sexual problems), the quality of life of transsexuals decreases significantly (21,22).

Conclusion and Discussion

The data in the literature show that in gender reassignment surgery/transgender surgery - depending on the technique applied - urogenital complications develop in two-thirds to three-quarters of the cases, more than half of them require reoperation, but despite this, the outcome is unsuccessful in a significant portion of the cases. These complications significantly reduce the quality of life of transgender people. Data also shows that psychological problems in transgender individuals continue after surgery, and in some cases even increase, and that they have to struggle with these problems throughout life. When suicides, complications related to surgery, reoperations and diseases related to hormone use are added to these psychological problems, the lifespan of trans people is shortened by an average of 25-28 years (6,50).

Transsexuals who undergo gender reassignment surgery to get rid of their psychological problems (with this expectation) cannot get rid of these problems, and they also have to deal with surgery-related complications after the surgery. This situation significantly reduces the quality of life of transgender individuals. Mostly, Transsexuals complain about urogenital problems among postoperative complications (22,23). These complications may be one of the important reasons for regret and detransition (14). In recent years, there have been a significant number of detransitioners who regret starting their social, medical, and surgical transition and want to return (9-19). Current research displays that trans people who request gender reassignment treatment are not subjected to an adequate psychiatric evaluation before medical and surgical treatments, are given superficial or brief evaluations instead of in-depth examinations, and also are not sufficiently informed about surgical complications (11,19). This situation is a serious medicolegal and ethical risk for healthcare professionals. This risk increases disagreement among experts regarding the optimal treatment of GD/transsexuality (20,24-26).

It can be concluded that transgender surgery cannot treat the psychological problems of transgender people and also it causes urogenital complications that reduce the quality of life. There are problems in medical practice regarding the treatment of GD or transsexuality. Although there is no definitive evidence showing that transgender surgery treats mental problems in transgender people, and even though there are studies showing the opposite, these surgeries are still widely performed. In-depth evaluations [for indication] are not made before the decision on gender reassigning medical and surgical treatment. Although there is no consensus on what is the most appropriate treatment for GD/transsexuality, transgender surgery is widely performed around the world. Surely, this situation also increases the number of detransitioners who regret their transition and want to return. The data show that, in the context of the search for optimal treatment in GD/transsexuality, new studies are needed, including alternative treatment approaches, prioritizing the ancient principle of medicine "primum non nocere/first do not harm".

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