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**ARTICLE**

# *Testicular prosthesis complications and satisfaction rates after gender affirming scrotoplasty*

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***Background:*** *Testicular prosthesis implantation (TPI) is frequently performed as part of masculinizing genital gender-affirming surgery (GGAS), but complication and satisfaction data for assigned female at birth (AFAB) men remain limited. We report a single-centre experience assessing postoperative complications, explantation-free survival (EFS) and patient-reported satisfaction.*

***Methods:*** *We conducted a retrospective cohort study including all patients who underwent unilateral or bilateral transmasculine TPI (TM-TPI) from May 2007 to April 2025. Primary outcomes were postoperative complications (e.g., surgical-site infection, contamination, hematoma, migration, pain, extrusion) and EFS rate. Satisfaction was measured at 12 months using the 13-item Transmasculine Testicular Prosthesis Satisfaction Index (TM-TPSI), a questionnaire tool developed for this cohort.*

***Results:*** *Forty-four patients (mean age 40 ± 10 years) received solid silicone prostheses; median follow-up was 84.5 (IQR 65.3–95.0) months. Complications included superficial surgical-site infection in 8/44 (18%), one prosthesis contamination requiring removal, one extrusion requiring replacement, and one migration requiring repositioning (2%). Mean time to explant/reposition was 57.7 ± 61.5 months; the 5-year EFS rate was 97%. Of 41 respondents to the TM-TPSI, 84% were "mostly satisfied" or "more satisfied than unsatisfied"; the mean score was 46.0 ± 10.5.*

***Conclusions:*** *In this cohort, TM-TPI showed a low rate of surgical revisions and high patient-reported satisfaction over long-term follow-up. Multicentre studies and formal validation of the TM-TPSI are warranted to refine benchmarks and enable cross-cohort comparisons. TM-TPI is a procedure that needs to be further investigated with clear specificity for AFAB men.*

**Key Words:** Testicular prosthesis, gender affirming genital surgery, transgender men, complications, satisfaction, questionnaire

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## Introduction

In clinical terms, individuals whose gender identity is congruent with their chromosomal and phenotypic sex are described as cisgender, whereas those whose gender identity is incongruent with their sex assigned at birth are described as transgender.[1] The path of gender affirming care includes psychological, medical and surgical treatments.[1,2]

Genital gender affirming surgery (GGAS) is a crucial step for many transgender and gender diverse (TGD) patients in their journey of gender affirming care.[3] It is vital to remember that a transgender identity is not reliant on whether the individual has undergone medical or surgical transition. This inclusive perspective aligns with guidelines from organizations such as the World Professional Association for Transgender Health and the Standard of Care for the Health of Transgender and Gender Diverse People, version 8.[4]

The reported proportions of people who self-identified as TGD ranged from 0.1% to 2% among adults. The corresponding range among school children was 1.3% to 2.7%.[5] It is also reported that up to 91% of the TGD population seek medical Gender Affirming Care, including gender affirming hormone therapy, although only 25–35% seek gender affirming surgery.[6] An Italian study analyzed that about 1/100,000 persons underwent GGAS, with a higher ratio of TGD women undergoing vaginoplasty compared to TGD men (3.39:1).[7]

Assigned female at birth (AFAB) transgender men can undergo different masculinizing GGAS, such as phalloplasty or metoidioplasty, complemented by other reconstructive procedures for aesthetic or functional purposes, such as vaginectomy, urethroplasty, scrotoplasty, and testicular prosthesis implant (TPI).[8–10]

Scrotoplasty for AFAB TGD patients is performed by labia majora elevation and rotational flap advancement from the posterior to anterior position to form a pouch-like neoscrotum.[11] In literature, this reconstructive procedure is burdened by complications, such as surgical site infection (SSI), in 7–10% of patients.[12]

After scrotoplasty, some patients are satisfied with the neoscrotum, while others proceed with neoscrotal augmentation with transmasculine TPI (TM-TPI). Beyond volume restoration, testicular prosthesis implantation can have a meaningful impact on body image and genital congruence, particularly in patients who prioritize scrotal appearance and palpability as part of their postoperative goals. In AFAB men, however, neoscrotal tissue differs from cisgender scrotal anatomy in terms of flap design, vascularization, and compliance, which may influence implant positioning, mobility, and the risk profile for wound complications.[6] Moreover, TM-TPI is often performed in the context of staged genital reconstruction, and the timing of implantation (immediate versus delayed), concomitant procedures (e.g., penile prosthesis placement), and postoperative care pathways may all affect outcomes.[9] For these reasons, complication rates observed in cisgender orchiectomy populations may not be directly transferable to transmasculine cohorts, and AFAB-specific benchmarks are needed to inform counselling, shared decision-making, and follow-up strategies. Few studies described complications after TM-TPI in AFAB men and if they differ from cisgender TPI: the most common are dislocation (15–48%), infection (3–37%), and extrusion (7–31%).[13–16]

While satisfaction rates for testicular prosthesis in cisgender males reach over 80%,[17] no study about TPI satisfaction for AFAB men has been published yet. The aim of this work is to report our single-centre experience with TM-TPI in AFAB men, focusing on postoperative complications across long-term follow-up, prosthesis retention using explantation-free survival metrics, and patient-reported satisfaction at 12 months. By combining surgical outcomes with patient-centred evaluation, we sought to provide pragmatic data to support perioperative counselling and to identify device-related features that may drive dissatisfaction in a minority of patients.

## Materials and Methods

This paper follows the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement.[18] The STROBE checklist can be found in the Supplementary Material attachment.

The study was approved by the "CET Interaziendale AOU Città della Salute e della Scienza, Turin" Ethical Committee (Prot. N° 0079419 26/07/2021). All participants provided written informed consent prior to participation in the study, in accordance with the Declaration of Helsinki and national regulations.

### *Setting and participant selection*

This retrospective cohort study was conducted in a high-volume national tertiary referral centre, the Urology Clinic, Molinette Hospital, University of Turin, for GGAS.

From May 2007 to April 2025, all consecutive AFAB TGD men undergoing unilateral or bilateral TPI were enrolled (n = 44). The inclusion criteria

were as follows: written informed consent voluntarily signed in accordance with good clinical practice guidelines (Declaration of Helsinki) and national regulations; genetically female patients who underwent scrotoplasty or other genital reconstructive procedures; age >18 years. The exclusion criteria were any condition or situation that, in the judgment of the investigator, was a risk for the patient to undergo surgery (such as systemic active infection and immuno-deficiency) and may confound study results or significantly interfere with patient participation at the study (such as cognitive deterioration).

The following data characteristics were collected for each patient: age at surgery, smoking status, BMI, operative time, hospitalization days, type of GGAS, type of penile prosthesis (if implanted), type of testicular prosthesis and months of follow-up.

### *Surgical procedure and management*

The surgery was performed by experienced reconstructive urologists. Our center performs TPI as a delayed procedure after scrotoplasty to reduce the risk of vascular damage to the flaps and potential haematomas; in our experience, 6 months after scrotoplasty is a reasonable time window to perform TPI, avoiding the above-mentioned complications. After 10 min of preoperative hand-scrubbing with chlorhexidine of the pubic and neoscrotal areas for infection prevention accordingly to the Sexual Medicine Society of North America,[19] a transverse neoscrotal incision was made to obtain a subcutaneous pouch to allocate the testicular prosthesis. Our preparation of the silicone prosthesis did not include antibiotic soaking because the surface of the prosthesis was not hydrophilic, therefore, it cannot absorb disinfectant or antibiotic solutions. To prevent the prosthesis migration, the roof of the subcutaneous pouch was closed after the prosthesis allocation. In patients undergoing inflatable penile prosthesis implantation, since the activation pump is placed in the neoscrotum and inherently serves as a testicular prosthesis, only a single testicular prosthesis was implanted on the side contralateral to the pump through an additional ipsilateral incision.

Every patient underwent outpatient visits 7 and 30 days after surgery to provide appropriate medications and assess the appearance of any short-term complications, such as hematomas and any SSI. Thereafter, the patients had yearly visits for the first 5 years, then every 2 to 3 years.

### *Primary and secondary outcomes*

The study's primary endpoints were to quantify postoperative complications and to estimate explantation-free survival (EFS) following TM-TPI. Specifically, we recorded the number and type of postoperative adverse events, including SSI, testicular prosthesis contamination, hematoma, migration, genital pain, and extrusion. Infectious episodes were defined based on the presence of symptoms and clinical signs consistent with infection, such as fever, edema, erythema, local warmth, discomfort, and purulent discharge from the surgical site. In cases of suspected infection, a microbiological swab was obtained to identify the causative organism and to corroborate the infectious diagnosis. In addition, we assessed the explantation-free survival rate after TM-TPI as a key outcome of procedural durability. For consistency, complications were grouped into infectious events (superficial SSI and prosthesis contamination/abscess), mechanical or position-related events (migration/displacement requiring repositioning), and device exposure events (extrusion requiring removal or replacement). Superficial SSI was defined clinically by local inflammatory signs at the incision site, with targeted microbiological swabbing performed in cases of suspected infection to corroborate the diagnosis and guide antibiotic therapy when indicated.[20] Prosthesis-related reinterventions were recorded with the corresponding time from implantation to the first event. The EFS was calculated as the proportion of patients remaining free from prosthesis removal at 5 years of follow-up after surgery, while repositioning events were reported separately as revision procedures.

The secondary outcome was to evaluate the satisfaction index of the testicular prosthesis through a patient-reported outcome measure (PROM). Currently, no validated questionnaires in Italian regarding satisfaction rates of testicular prosthesis targeted to TGD patients are available. Our team produced a questionnaire, the Transmasculine Testicular Prosthesis Satisfaction Index (TM-TPSI), adapting some items from the Testicular Prosthesis Satisfaction Questionnaire employed by Clifford et al. for cisgender men.[17]

The TM-TPSI consists of 13 questions that investigate several domains, including the importance of testicular prosthesis, satisfaction level of the testicular prosthesis appearance and feeling (self-reported and partner-reported), procedure regret and recommendation for other patients. Every question determined an aspect of the testicular prosthesis satisfaction using a 5-point Likert scale,[21] except for the partner-reported domain that assigned 0 points in case of lack of partner.

**TransMasculine Testicular Prosthesis Satisfaction Index (TM-TPSI)**

1. How important is it for you "to appear to have" two testicles?
   - Extremely important (5)
   - Important (4)
   - Relevant, but not determinant (3)
   - Not very important (2)
   - Not important (1)
2. Do you consider it important to be offered the option of a testicular prosthesis implant when being counselled for genital gender-affirming surgery?
   - Extremely important (5)
   - Important (4)
   - Relevant, but not determinant (3)
   - Not very important (2)
   - Not important (1)
3. Are you satisfied with the size of the testicular prosthesis?
   - Extremely satisfied (5)
   - Satisfied (4)
   - Indifferent (3)
   - Not very satisfied (2)
   - Not satisfied (1)
4. Are you satisfied with the shape of the testicular prosthesis?
   - Extremely satisfied (5)
   - Satisfied (4)
   - Indifferent (3)
   - Not very satisfied (2)
   - Not satisfied (1)
5. Are you satisfied with the weight of the testicular prosthesis?
   - Extremely satisfied (5)
   - Satisfied (4)
   - Indifferent (3)
   - Not very satisfied (2)
   - Not satisfied (1)
6. Are you satisfied with the texture of the testicular prosthesis?
   - Extremely satisfied (5)
   - Satisfied (4)
   - Indifferent (3)
   - Not very satisfied (2)
   - Not satisfied (1)
7. Are you satisfied with the position of the testicular prosthesis?
   - Extremely satisfied (5)
   - Satisfied (4)
   - Indifferent (3)
   - Not very satisfied (2)
   - Not satisfied (1)
8. How comfortable does it feel?
   - Extremely comfortable (5)
   - Comfortable (4)
   - Indifferent (3)
   - Not very comfortable (2)
   - Uncomfortable (1)
9. Did you experience any gender euphoria following the implantation of the testicular prosthesis?
   - Maximum gender euphoria (5)
   - Great gender euphoria (4)
   - Some gender euphoria (3)
   - Little gender euphoria (2)
   - No gender euphoria (1)
10. What is your overall level of satisfaction with your testicular prosthesis?
    - Extremely satisfied (5)
    - Satisfied (4)
    - Indifferent (3)
    - Not very satisfied (2)
    - Not satisfied (1)
11. How satisfied is your partner with your testicular prosthesis?
    - Extremely satisfied (5)
    - Satisfied (4)
    - Indifferent (3)
    - Not very satisfied (2)
    - Not satisfied (1)
    - I don't have a partner (0)
12. If you could go back in time, would you choose to undergo the implantation again?
    - Strong yes (5)
    - Yes (4)
    - Indifferent (3)
    - No (2)
    - Strong no (1)
13. If asked, would you recommend a testicular prosthesis implant?
    - Strongly recommend (5)
    - Recommend (4)
    - Indifferent (3)
    - Not recommend (2)
    - Strongly not recommend (1)

**Score interpretation**:

- 65 to 53: mostly satisfied
- 52 to 39: more satisfied than unsatisfied
- 38 to 25: more unsatisfied than satisfied
- 24 to 12: mostly unsatisfied

**FIGURE 1.** English translation of transmasculine testicular prosthesis satisfaction index (TM-TPSI)

The questionnaire was administered in Italian, the participants' first language, at the 12th-month follow-up visit. A translation of TM-TPSI can be found in Figure 1.

The TM-TPSI was designed to capture elements that are particularly salient in transmasculine reconstructive pathways, including perceived importance of the implant as part of genital affirmation,

aesthetic satisfaction, tactile perception (weight and comfort), and decisional outcomes (regret and willingness to recommend the procedure). Although this instrument has not undergone formal psychometric validation, the item set was intentionally kept concise to facilitate completion during routine follow-up visits and to minimize respondent burden. Partner-related items were retained to acknowledge the relational dimension of postoperative sexual health.

The total score of TM-TPSI ranges from a minimum score of 12 points to a maximum score of 65 points. The range was divided into quartiles and identified 4 satisfaction categories: mostly satisfied, more satisfied than unsatisfied, more unsatisfied than satisfied, mostly unsatisfied.

The study was conducted in conformance with EU Regulation 2016/679 (General Data Protection Regulation, or GDPR) and the Declaration of Helsinki. Written informed permission was not required because participation was entirely voluntary, anonymous, and posed almost no risk.

### *Statistical analysis*

Statistical analyses were performed using Jamovi software (Version 2.6, The Jamovi project, Sydney, Australia).[22] Continuous variables are reported by mean and standard deviation (SD) or median and interquartile range (IQR) based on their normal distribution evaluated with the Shapiro–Wilk test.

Missing data were assessed for extent and pattern prior to analysis. Records with missing values were excluded from item-level analyses using complete-case methods, with denominators reported as the number of valid responses for each item. Given the anonymous, cross-sectional design and the limited proportion of missingness, no imputation was performed.

## Results

### *Cohort characteristics*

A total of 44 patients (mean age 40 ±10 years old) undergoing TM-TPI were enrolled. The operative time ranged from 15 to 300 min, due to different surgical procedures, from the simple unilateral TPI to bilateral TPI to concomitant penile prosthesis implant. The majority of participants had prior phalloplasty (n = 41, 93%), while only 3 (7%) patients underwent metoidioplasty. All participants implanted an 8cc solid silicone testicular prosthesis Eurosilicone® (GC Aesthetic, Apt, France). The median follow-up was 84.5 (IQR1-3 65.3-95.0). All but 3 (7%) participants completed the first 12 months of follow-up, resulting in 41 (93%) patients completing the TM-TPSI. Patients' demographic characteristics are fully listed in Table 1, and surgical characteristics in Table 2.

TABLE 1. **Cohort characteristics**

| Characteristics | n (%) |
|---|---|
| **Sample size** | 44 (100%) |
| **Age at surgery** | |
| 18–30 years old | 9 (20%) |
| 31–40 years old | 14 (32%) |
| 41–50 years old | 13 (30%) |
| >50 years old | 8 (18%) |
| **Smoking status** | |
| Smoker | 21 (48%) |
| No smoker | 23 (52%) |
| **BMI** | |
| 18–24 | 27 (62%) |
| 25–30 | 12 (27%) |
| >30 | 5 (11%) |
| **Surgery** | |
| Single TPI | 2 (5%) |
| Bilateral TPI | 1 (2%) |
| PPI + TPI | 41 (93%) |
| **Type of GGAS** | |
| Metoidioplasty | 3 (7%) |
| RAFFF Phalloplasty | 24 (55%) |
| ALTF Phalloplasty | 3 (7%) |
| SPPF Phalloplasty | 14 (32%) |
| **Type of penile prosthesis** | |
| Inflatable penile prosthesis | 40 (91%) |
| Malleable penile prosthesis | 1 (2%) |

Note. RAFFF, radial artery forearm free flap; SPPF, suprapubic pedicled flap; ALTF, anterior lateral thigh flap; TPI, testicular prosthesis implant; PPI, penile prosthesis implant; BMI, body mass index; GGAS, genital gender affirming surgery;

### *Outcomes*

Overall, postoperative morbidity was mainly driven by minor infectious events. Superficial SSI occurred in 8 patients (18%); in most cases, symptoms were self-limited and managed conservatively, with only 3 (7%) requiring oral antibiotics. More severe implant-related infectious morbidity was rare: one patient (2%) developed prosthesis contamination complicated by a localized abscess, ultimately requiring device removal. Other complications were uncommon and included one extrusion requiring replacement and one migration requiring surgical repositioning (each 1/44, 2%). When reintervention

TABLE 2. **Surgical characteristics**

| Surgical characteristics | Median (IQR1-IQR3) |
|---|---|
| **Sample size (n = 44)** | |
| **Operative time (minutes)** | |
| Single TPI | 17.5 (15.0–20.0) |
| Bilateral TPI | 50.0 (50.0–50.0) |
| PPI + TPI | 95.0 (90.1–114.0) |
| **Hospital stay (days)** | |
| Single TPI | 2.0 (2.0–2.0) |
| Bilateral TPI | 3.0 (3.0–3.0) |
| PPI + TPI | 2.0 (2.0–3.0) |
| **Follow-up (months)** | |
| Total | 84.5 (65.3–95.0) |

Note. TPI, testicular prosthesis implant; PPI, penile prosthesis implant.

was required (explantation, replacement, or repositioning), events tended to occur late rather than in the early postoperative window, with a mean time from implantation to the first revision procedure of 57.7 ± 61.5 months.

In our cohort, 32 patients completed at least 5 years of follow-up. In this subgroup, the EFS rate was 97%.

Out of the patients that answered TM-TPSI, the majority of them were "mostly satisfied" or "more satisfied than unsatisfied" (n = 37, 84%), while 4 (9%) were "more unsatisfied than satisfied" and 3 (7%) were "mostly unsatisfied". The mean score on TM-TPSI was 46.0 ± 10.5. The items that scored the lowest among patients, "more unsatisfied than satisfied" and "mostly unsatisfied," were items n° 5 ("Are you satisfied with the weight of the testicular prosthesis?") and n° 8 ("How comfortable does it feel?").

## Discussion

In line with our study aims to characterize postoperative morbidity, device retention, and patient-reported satisfaction after transmasculine testicular prosthesis implantation, this single-centre cohort demonstrated a generally favourable safety and acceptability profile over long-term follow-up. Specifically, complications were predominantly minor and managed conservatively (with superficial SSI representing the most frequent event), while prosthesis-related reinterventions (contamination/explantation, extrusion/replacement, migration/repositioning) were uncommon and typically occurred late in follow-up.

At the patient-reported level, administration of the cohort-specific TM-TPSI at 12 months showed high overall satisfaction, with the large majority of respondents reporting being at least more satisfied than unsatisfied; items related to prosthesis weight and comfort emerged as the main drivers of dissatisfaction in the small subgroup reporting poorer outcomes.

GGAS is a surgical procedure patient-tailored and can greatly differ among TGD individuals. Variations may involve the choice of reconstructive techniques, the use of prosthetic devices, or the sequence of staged operations. These differences reflect not only anatomical and clinical considerations but also the personal goals and expectations of each patient.

Our sample size included 41 (93%) AFAB men who underwent phalloplasty and 3 (7%) who underwent metoidioplasty. We hypothesize that the reason why fewer patients after metoidioplasty decided to undergo TM-TPI was rooted in our scrotoplasty technique that involves the preservation of the Martius flap bilaterally and the rotation of the flap inside the neo-scrotal pouch to create an aesthetically fuller neo-scrotum.

In our cohort of 44 participants, 14% had some kind of complication. In 7% of cases, they were managed with medical treatment (oral antibiotic only), while another 6.8% required surgical intervention. These findings suggest that most patients experienced stable long-term implant retention, while a small subset faced delayed device-related events necessitating surgical management.

From a practical standpoint, these results support a counselling framework that differentiates early, largely manageable wound morbidity from rarer device-specific complications that may arise later. In particular, the predominance of superficial SSI underscores the importance of standardized perioperative hygiene measures, early postoperative surveillance, and clear patient instructions on wound care and warning signs. The low frequency of migration and extrusion in our series may also reflect technical choices aimed at stabilizing the prosthesis within a tailored subcutaneous pouch; nonetheless, patients should be counselled that revision surgery can be required even several years after implantation. Importantly, the satisfaction findings provide actionable targets for device selection and preoperative expectation setting: dissatisfaction clustered around prosthesis weight and comfort, suggesting that implant size, material characteristics, and perceived firmness should be discussed explicitly before surgery. Taken together, these data may help clinicians frame TM-TPI as a generally well-tolerated

adjunct to scrotoplasty, while acknowledging that a minority of patients may value alternative sizing or may prioritize comfort over maximal volume.

As evidence in the literature regarding TM-TPI remains scarce, our complication rate is similar to other papers, such as Saxena et al. (14.2%).[12] Other studies reported 20-30% episodes of complications in similar cohorts.[13,14] A recent study on 112 TGD men had 12% of complications requiring testicular prosthesis removal.[23] Extrusion rate was 2%, similar to the one reported by Djordjevic & Bizic (1.9%),[24] while it was significantly lower compared to Hage & van Turnhout (30.0%).[15] Pigot et al. reported an overall explantation rate of 21.8% (7.0% for extrusion; 3.9% for infection) and a 15.6% relocation rate for displacement.[14] The dislocation rate of our cohort (2%) was adjacent to Stojanovic et al. (4.8%),[25] Hage & van Turnhout (4.3%),[15] and Schaff and Papadopulos (3.7%).[26]

Our findings regarding infection rate (2%) were in line with Pigot et al. (3.9%)[14] and Hage & van Turnhout for TPI performed delayed from urethral lengthening (4.3%),[15] while the same authors reported a higher infection rate for TPI performed during metoidioplasty (7.1%). Patients undergoing TPI at least 6 months after other GGAS procedures reduce the risk of wound complications.[27]

Complication rates for testicular prosthesis in cisgender men vary from 30% to less than 1%.[12,28,29] This range could be due to the worse clinical state of oncological patients undergoing orchiectomy and TPI compared to TGD patients or better elasticity in the scrotal skin and subcutaneous tissues of cisgender men compared to the neoscrotum in AFAB men.

Since no validated questionnaire targeting TGD patients has been published yet, we compared our satisfaction rate to a study on cisgender male patients[17] and found out similar overall satisfaction scores (84% vs. 83% satisfied or very satisfied).

The main limitation of this study was the monocentric retrospective design and small cohort. Another limitation was the lack of a validated questionnaire for testicular prosthesis satisfaction rate targeted to TGD patients, so we used our small cohort to conduct a pilot phase of the TM-TPSI.

In 2024, Kaur et al. developed a PROM questionnaire evaluating gender affirming care, Gender-Q.[30] The module regarding TPI items inquires about the size of the implants, how well-matched the testicles are, how they feel and appear when hanging, how freely they move, and whether the implants feel like a part of the body.[30,31] Currently, there is no validated translation in the Italian language of Gender-Q. In this context, PROM selection is not a purely methodological choice but directly influences what aspects of outcome are captured and, ultimately, optimized. While emerging instruments such as the Gender-Q provide an important framework for standardized assessment in gender-affirming care, local availability, language adaptation, and module specificity may limit immediate implementation in routine clinical pathways.

During the development of TM-TPSI, we deemed it was necessary to include other aspects such as the importance of counselling, details about the perception of the prosthesis (weight, texture), regret and partner's perspective.

The current state of the literature is lacking in-depth analysis of several aspects of GGAS. To further investigate complications and satisfaction rate of testicular prostheses in TGD patients, a multicentric approach with larger cohorts could reinforce our current results. Future work should pursue formal validation of TM-TPSI (e.g., internal consistency, test–retest reliability, construct validity) and evaluate convergent validity against established PROMs, enabling cross-centre benchmarking and supporting broader adoption.

Using different types of testicular prosthesis (solid silicone prosthesis vs. saline solution-filled prosthesis) and comparing the outcomes in terms of complication and satisfaction rate could provide a further perspective on TPI in TGD individuals.

## Conclusions

In conclusion, the TM-TPI represents a safe and effective option in the context of gender-affirming surgery, with outcomes that align with both functional and aesthetic goals. TM-TPI is a procedure that needs to be further investigated through larger cohorts and longer follow-up to confirm these results and to optimize AFAB patients' care.

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## Author Contribution

The authors confirm contribution to the paper as follows: Conceptualization, Marco Falcone and Lorenzo Cirigliano; methodology, Liliana Guadagni; validation, Marco Falcone, Lorenzo Cirigliano and Paolo Gontero; formal analysis, Liliana Guadagni; investigation, Mirko Preto, Liliana Guadagni, Ilaria Ferro, Natalia Plamadeala, Martina Scavone and Emanuele Zupo; data curation, Liliana Guadagni; writing—original draft preparation, Liliana Guadagni; writing—review and editing, Marco Falcone, Lorenzo Cirigliano and Liliana Guadagni; visualization, Liliana Guadagni; supervision, Marco Falcone and Lorenzo Cirigliano; project administration, Marco Falcone and Paolo Gontero. All authors reviewed and approved the final version of the manuscript.

## Availability of Data and Materials

All data and data analyzed during this study are available from the corresponding author upon reasonable request.

## Ethics Approval

The study was approved by the "CET Interaziendale AOU Città della Salute e della Scienza, Turin" Ethical Committee (Prot. N° 0079419 26/07/2021). Written informed consent was signed voluntarily according to the rules of good clinical practice (Declaration of Helsinki) and national regulations.

## Conflicts of Interest

The authors declare no conflicts of interest.

## Supplementary Materials

The supplementary material is available online at https://www.techscience.com/doi/10.32604/cju.2026.076284/s1.

## Abbreviations

The following abbreviations are used in this manuscript

| | |
|---|---|
| TPI | Testicular Prosthesis Implantation |
| TM-TPI | TransMasculine Testicular Prosthesis Implantation |
| GGAS | Genital Gender Affirming Surgery |
| TGD | Transgender and Gender Diverse |
| AFAB | Assigned Female at Birth |
| STROBE | Strengthening the Reporting of Observational Studies in Epidemiology |
| PROM | Patient Reported Outcome Measures |
| RAFFF | Radial artery free forearm flap |
| ALTF | Anterolateral thigh flap |
| SPPF | Suprapubic pedicled flap |
| BMI | Body Mass Index |
| TM-TPSI | TransMasculine Testicular Prosthesis Satisfaction Index |
| EFS | Explantation-free Survival |
| SSI | Surgical Site Infection |

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