Peer Review File

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Reviewer A

Comment 1: Line 64: suggest changing "transmasculine individuals" to "individuals assigned male at birth" and "bottom surgery" to "genital gender affirming surgery"

Reply 1: This has been corrected and updated in our manuscript.
Changes in the text: "There are several components to gender-affirming surgery including the construction of a phallus (neophallus) and scrotum, often the definitive step for individuals assigned male at birth (1). Traditionally, the IPP implants used in cis-males are also employed in genital gender affirming surgery (2)." (See Page 2, Paragraph 1)

Comment 2: Results - Very small cohort (2 patients), one with radial forearm flap and one with musculocutaneous latissimus dorsi flap (unusual flap choice)

Reply 2: Our title has been updated to reflect that this is a pilot study, hence our very small cohort, and additional explanation regarding the patient history of the musculocutaneous latissimus dorsi flap has been included.
Changes in the text: "One of our patients had phalloplasty done via a radial forearm flap. The other originally underwent phalloplasty via a left radial forearm flap at an outside institution that failed with subsequent successful revision done via a right musculocutaneous latissimus dorsi flap, also at the outside institution."
(See Page 2, Paragraph 3)

Comment 3: Range is 3.5-20 months for 2 patients (so only 1 patient has longer term follow-up), the second patient is only 3.5 months out. Not sure the second one is long enough to comment on this being a safe choice for IPP placement.

Reply 3: Our ranges have been updated from initial submission. We were able to make contact with the patient whose date of last follow-up was 3.5 months from operative date at the time of initial manuscript submission so that we now have follow-up 14 months from operation. We were also able to make subsequent contact with the second patient after their 20-month in person visit, so the last follow-up or contact date is now 23 months from operation. The post-operative figure remains listed as 20 months as that was the most recent in-person visit where photos were able to be obtained. This is specified in the body of the text.
Changes in the text: "[…] at time of last follow-up and/or communication with patients, which is currently 14 months and 23 months, respectively."
(See Page 4, Paragraph 4)

Comment 4: Figure 7 shows that the implant does not appear to extend all the way to the glans; is this because with the Tutoplast cap it is difficult to secure it into place? Are patients able to be sexually active with this?
Reply 4: The reason for this is due to intentionally leaving about 1 cm of neo-glans to prevent

penile prosthesis protrusion, which we have found is a common complication in this cohort of patients. In a revision down below on this document, there is mention of this appearing similar to a SST deformity which we have also addressed in the paper. We do acknowledge that more distal placement of the cylinder may be possible. The Tutoplast cap is not aimed to secure it into place nor is it difficult to do. Our patient has been able to be sexually active with the device and is extremely satisfied, with no issues performing penetrative intercourse.

Changes in the text: "Additionally, with the differences in anatomy in a transgender neophallus versus a cis-gender IPP placement, we purposefully leave about 1 cm of neo-glans to prevent penile prosthesis protrusion which is a common complication in this cohort of patients [1, 10, 12]."

"Both patients report continued satisfaction with the prosthesis as well as ability to perform penetrative intercourse with the device activated at time of last follow-up […]"

"Additionally, in comparison to cis-gender IPP results, the post-operative image in Figure 7 may appear to show results similar to that of a supersonic transporter deformity (SST), however, we purposefully left 1 cm of neo-glans distally to prevent device protrusion and the patient was extremely satisfied. As mentioned above, the patient was also able to perform penetrative intercourse without issues."

(See Page 3, Paragraph 3 and Page 4, Paragraph 4 and Page 7, Paragraph 2)

Comment 5: Would have liked to see more of a discussion on why to use Tutoplast rather than Dacron vs other surgical mesh. Is this cheaper? Faster to secure into place? Easier to remove? Safer? Just feels like a paper saying "we did this" but doesn't offer any advantages to current practice.

Reply 5: We have now included a paragraph explaining our rationale and discussion of Tutoplast vs Dacron/alternate surgical mesh.

Changes in the text:

"We utilized Tutoplast®, a cadaveric pericardium allograft tissue, versus Dacron or another surgical mesh for this operation. Tutoplast® has a wide variety of documented clinical applications including extensive use in surgical correction of Peyronie's Disease penile curvature with generally satisfactory results [13]. Given the high rate of complications in transgender IPP placement, there is an increased risk of requiring device revision, with reports varying from 14% up to 80%, although a recent meta-analysis finds that number likely being closer to the lower-end of that range [8, 10, 14-16]. The drawbacks of a grafting material such as Dacron or PTFE, albeit in Peyronie's Disease research, include possible increased risk of fibrosis [17-19]. In our experience, we have found that the level of fibrosis with Dacron makes IPP revision surgery more difficult, although it is important to note this is anecdotal. Tutoplast®, a processed human pericardium graft, is easily accessible to us at our institution and we have been satisfied with our results when utilizing it in cis-gender IPP placements. Thus, we sought to pilot utilizing this graft in our transgender IPP placements. While published research does show satisfactory results in utilization of other graft materials, the relative paucity of literature on this technique invites further study with other possible grafting approaches, which we sought to do here."

(See Page 5, Paragraph 2)

Comment 6: Would like to see a more beefy discussion prior to publication to show why Tutoplast is helpful compared to standard practice

Reply 6: Addressed in Comment 5

Changes in the text: Addressed in Comment 5

Reviewer B
Comment 7: I would be interested to know why Tutoplast is used rather than some other biologic prosthetic. Why use Tutoplast rather than a dermal matrix?

Reply 7: Addressed in Comment 5
Changes in the text: Addressed in Comment 5

Comment 8: Could the authors comment on the increase in price in the procedure with the use of Tutoplast? For the 2 patients this was used in, was the cost passed onto the patient or did insurance companies absorb the cost?

Reply 8: This is a great point addressed by the reviewer and we thank them for bringing this up. While we have not included any specifics in regard to insurance coverage or cost specifics, we have not noticed (anecdotally) any issues from either our or patient perspective in regards to cost or coverage. Both patients have presented several times for follow-up. We do feel that as data gathers on comparison of graft type outcomes, an analysis of associated costs would be very helpful for both provider and patient.
Changes in the text: "In future studies a detailed look at various graft costs and comparison of cost passed on to patients is worthy of investigation as well as this is an essential aspect of patient access to such operations."
(See Page 6, Paragraph 3)

Comment 9: One limitation the authors should note is that different flaps were used for these patients, and this adds heterogeneity to their patient subset. I would also like the authors to comment on why a latissimus flap was used for one of the patients in this sample. Latissimus flaps are not common for phalloplasty compare to radial forearm or ALT flaps, and placement of the prosthetic may have special anatomic considerations for this type of flap.
Reply 9: Addressed in Comment 2
Changes in the text: Addressed in Comment 2

Comment 10: Please review the grammar and syntax for the article. Some areas, such as around line 84, are missing articles to make the sentence have grammatical sense. Also, genesis pump has not previously been defined.

There are other areas in the manuscript that are also missing articles or that require English-language proofreading.

Reply 10: Grammar and syntax reviewed throughout article with several changes made, visible through tracked changes in Manuscript. Genesis pump defined in article as well.

Changes in the text:
Multiple grammatical changes / syntax changes throughout manuscript
"We prefer utilizing the Titan Genesis pump (Coloplast Corp., Minneapolis, MN, USA) for placement in the neoscrotum and a single Coloplast Titan® cylinder for placement in the neophallus."
(See Page 2, Paragraph 3)

Comment 11: This is a description of two patients. It is not necessary to state a range in line 129; just note that the two follow up periods are 20 months and 3.5 months. Notably, 3.5 months is quite short especially since the point of this manuscript is the avoid the complication of exposure, which may not be apparent in such a short postoperative period. The authors note it is also typical for them to get a 6 month follow up before releasing patients to PRN status. It would be more robust follow up if both patients had at least 6 month follow up. I am also curious to know why the 20 month follow up patient returned if the typical last follow up is at 6 months. Would recommend longer follow up (at least 6 months for each patient) before this manuscript is published.

Reply 11: Follow-up times have now been expressed as the two respective follow-up periods versus a range. Additionally, explanation included for time frame of follow up differing from normal IPP timeline.
Changes in the text: "However, given that these patients were both geographically located outside of the general area of our institution, in-person follow-up times varied from our usual IPP protocol in conjunction with patient availability to travel to our institution."
"[…]at time of last follow-up and/or communication with patients, which is currently 14 months and 23 months, respectively."
(See Page 4, Paragraph 3 and Page 4, Paragraph 4)

Reviewer C
Comment 12: N=2 does not make a scientific study

Reply 12: Change made to title of paper to reflect this being a pilot study of our initial experience in these two patients undergoing procedure with this grafting material.
Changes in text: Title now reads "A Pilot Study of Inflatable Penile Prosthesis Placement in Transgender Neophallus using Tutoplast® Pericardium Graft Sock Technique"

Comment 13: The claimed "novel" portion of this technique is the use of an often used tutoplast graft instead of gortex or other graft in exactly the same configuration. This is not a "technique" its a minor (minor) modification at best.

Reply 13: We have removed "novel" from the title of our study as well as its use throughout manuscript, and framed this as a pilot study. Given that there is no current literature available regarding the use of Tutoplast versus a different graft such as that mentioned by the revision above, our goal was to describe our outcomes here.
Changes in the text: Same as Comment 12

Comment 14: The authors use a periscrotal approach from the 1990's which most high volume implanters have abandoned in favor of an infrapubic approach (see B. L. Briles, R. Y. Middleton, K. E. Celtik, et al. Penile Prosthesis Placement by a Dedicated Transgender Surgery Unit: A Retrospective Analysis of Complications. J Sex Med 2022;19:641-649 and Kang, your citation#1 as just two examples). While its perfectly ok to use this approach, it gives me concern to see an unmodern approach to the surgery presented as "state of the art". One caveat to this concern is that if you are doing mostly abdominal phalloplasty, and you CANNOT safely make an infrapubic incision, and are choosing the periscrotal approach purposefully for safety purposes, then please make that clear in the manuscript.

Reply 14: Thank you for your feedback, we have updated our manuscript to cite the various approaches used in this operation as well as to highlight that the infrapubic approach is more commonly used today. We additionally have highlighted that our parascrotal approach is neither novel nor new, and to emphasize that our experience we mean to emphasize here is the utilization of Tutoplast versus any particular aspect of the process of insertion. We additionally appreciate your mention of the Briles et al paper as we have added reference to it throughout the manuscript.
Changes in the text: "Of note, there have been various approaches reported in transgender IPP placement, with the infrapubic approach more commonly utilized in present-day then the parascrotal approach described here, which is not a novel approach and has been previously described as well [1, 8-10]. The decision regarding approach can vary due to several factors including patient surgical history, type of device, and surgeon preference [11]."
(See Page 3, Paragraph 1)

Comment 15: the n=2 photos show particularly severe form of the classic "SST" deformity with the entire glans hanging loosely over the too-short implant. (Ie" not a good result"). I would consider this a failure which needed revision and so would my patients.

Reply 15: Addressed in Comment 4
Changes in the text: Addressed in Comment 4

Comment 16: it is not clear what you mean by "genesis pump" (sic: not capitalized). Please provide entire product name, manufacturer per scientific report format (eg: Coloplast Titan Cylinder; Coloplast; Humlebaek, Denmark) for this and any other products mentioned.

Reply 16: All devices mentioned in the text now follow this format, with Genesis Pump also now capitalized with additional context added to show this is in reference to prosthesis pump.
Changes in the text: Multiple device names updated throughout manuscript to now reflect correct format. Genesis Pump reference updated, as per Comment 10

Comment 17: the authors mention a technique, done by nobody these days, of just "placement of the cylinder against the bone" and somehow compare the well described technique of using a proximal "sock" to this technique. Every implanter working today ties the implant to the periostium by placing sutures through the rear portion of the device. It would be best to just pivot your paper

to "look if you want to use a rear sock, we used tutiplast and it worked pretty well" pilot study.

Reply 17: Thank you for your suggestion. Our goal here is not to necessarily portray this operation as novel, more so the utilization of a different grafting material in the distal and proximal cap technique. We have updated our paper to reflect as such. Normally, such as in cis-gender IPP literature with a much more extensive amount of research, such a modification may not warrant a stand-alone description and publication. However, we felt that given the paucity of not only research in regards to transgender neophallus IPP placement but also in grafting methods used in such procedures, a description of our experience with this technique could be worth contribution to the standing literature. We have added additional detail regarding anchoring of the cap and device as well. This was omitted in the original submission, and we appreciate the reviewer bringing this to our attention.

Changes in the text:

Removal of any reference to "novel" throughout manuscript with additional operative information added, including "[…] the proximal cylinder is anchored to the bone with sutures passing through it and the proximal Tutoplast® graft "cap" as well."

(See Page 4, Paragraph 1)

Reviewer D

Comment 18: Overall well written, but there are certain claims and assumptions that are wrong. The most obvious is the claim that no detailed discussion of anchoring to the pubic bone has been described; this has been previously reported. Also, there are minor typos and colloquial language errors that detract from the message.

Reply 18: We appreciate the reviewers response and we have done our best to address these. We have made grammatical changes throughout the text as well as removing any reference to no detailed discussion of anchoring. We have added multiple citations throughout the text as well with updated literature.

Changes in the text:

Multiple grammatical changes made throughout text and additional discussion/sources.

Comment 19: Regarding the validity of grafts at the base and tip of the cylinder preventing erosion, this has not been proven. The graft at the base may help with anchor strength as the body scars onto the graft which is also secured to the solid proximal component of the IPP. The graft at the tip may prevent erosion, but avoiding aggressive tunneling too close to the skin of the neophallus would be just as effective. Alloderm has been reported out of JHU as the savior for distal erosion, but this conclusion is not generalizable. Proper cylinder placement and measurement in a well healed and appropriately positioned neophallus works well in preventing distal erosion. In performing a number of IPP revisions, distal caps end up becoming a nodule at the tip that is separate from the cylinder altogether. Additionally, the photos demonstrate SST deformity. Not sure a distal graft in this patient would have made any difference.

Reply 19: We thank the reviewer for their suggestion. We have observed that distal caps appear to help, in our single-institution experience, with distal erosion. We have supplemented our

discussion regarding the validity of grafts as well as including reference to the JHU Alloderm data that has been published. In regards to the SST deformity, we also attempted to address this, as per Comment 4.

Changes in the text:

"In selecting extent of cylinder coverage with grafting materials, we used a previously described distal and proximal "cap" and "sock" graft approach [12]. In general, utilizing grafts at the base and tip of the cylinders as a means for preventing erosion is still in need of long-term follow-up and study. Solely proximal graft coverage with securement of the graft and cylinder to the pubis has been one reported approach, including with polyethelene terephthalate (Dacron) vascular graft and Hemashield Gold (Maquet, Rastatt, Germany), a similar polyester grafting material [1]. A recent study utilizing allograft material at the distal end of the cylinder in neophallus placement appears to reduce erosion and infection rates with promising initial findings [20]. Other approaches describe covering the entire cylinder to create a neotunica using polytetrafluoroethylene (GORE-TEX®, Gore Medical, Flagstaff, AZ, USA) [1]. The latter approach has been described as providing neophallus alignment and proximal cylinder securement, but follow-up studies report possible constraint on the cylinder during inflation, leading to cylinder aneurysm and increased failure rates [12, 21]. However, in a retrospective analysis of IPP placements in a dedicated transgender surgery unit utilizing a similar approach of covering the entire cylinder with vascular graft, complication rates appear to be below that of a meta-analysis of aggregate complication rates in IPP placements in phalloplasty patients [4]."

See Comment 4 for Changes in the text regarding SST deformity revision

(See Page 5, Paragraph 3, continuing to Page 6)

Comment 20: An introduction to IPP modification with pericardial grafts in transmen after phalloplasty is reported. There are minor grammatical errors that can be easily corrected. However, there are obvious omissions in the reference list with corresponding erroneous claims that makes one believe the authors either did not do a thorough literature review or they chose to purposefully omit studies relevant to their work. References must be updated to reflect work that has already been published.

Reply 20: Thank you for your suggestion, we have fixed minor grammatical issues throughout the manuscript. Additionally, we have done an extensive literature review on revision to hopefully address any omissions. If still lacking, we would appreciate any particular references the reviewer feels erroneous or areas that have been omitted.

Changes in the text:

Multiple grammatical changes throughout text with additional studies/sources added.

Reviewer E

Comment 21: All patients report satisfaction--what level of satisfaction? How was this measured? Satisfaction can be very subjective and mean different things for different patients, in particular with only 2 patients. Future studies with more patients may be able to properly assess satisfaction rates and potentially compare to cis-gender IPP satisfaction rates.

Reply 21: We absolutely agree with the reviewer and this is addressed as one of the limitations in our study. We have subjectively assessed these patients, including both sexual satisfaction as well

as other outcomes such as ability to urinate, etc. We did ask additional questions such as ability to operate device, perform penetrative intercourse without difficulty, pain, etc.

Changes in the text:

An additional limitation includes objective assessment of satisfaction and outcomes in these patients. While validated surveys exists for assessment of sexual satisfaction following IPP placement, there does not appear to be any transgender specific questionnaires at this time [22]. Both patients expressed satisfaction at follow-up visits with ability to perform penetrative intercourse and activate/deactivate device with no issues. Assessment of other metrics such as ability to urinate were also subjectively assessed, of which neither patient reported any concern. Future studies with an increased patient sample size will be useful in not only assessing outcomes and satisfaction more objectively but to also compare to these respective rates in cis-gender IPP patients."

(See Page 6, Paragraph 5)

Comment 22: The discussion should be labelled as discussion, not "take home points". The authors discuss instability during intercourse with respect to technique of proximal fixation, yet there is no reporting or discussion of the patients from this paper on erectile function or whether they feel instability with intercourse aside from one mention of patients reported ability to perform penetrative intercourse. They may be able to subjectively but given the above concerns about instability this should have been measured more objectively or at least asked of the patients specifically and reported as such.

Reply 22: This is an excellent point raised by the reviewer, and we have attempted to address the limitation of our assessment in Comment 21. From a subjective perspective, the patients were both extremely satisfied with sexual performance and ability to perform penetrative intercourse, however, targeted questions regarding sensation of instability would be extremely useful, especially given our discussion on the proximal graft's purpose. This is certainly a consideration in future studies from our institution as patient sample size and follow-up time increases.

Changes in the text: Same as those of Comment 21

Comment 23: Line 90--if looking at complication including infections with prosthetic implants, it would be useful information to know more details about the sterile preparation in particular, as the "usual sterile preparation" varies based on implanter.

Reply 23: Additional information regarding our sterile operative preparation added as well as several references to a surgical techniques paper with similar preparation to ours.

Changes in the text:

"The procedure begins with our usual sterile preparation and set-up, which follows similarly to that of previously published surgical techniques in transgender IPP placements [4]. This includes preoperative intravenous antibiotics, shaving of patient hair with clippers, placement of a 14 French foley catheter, and surgical site preparation with chlorhexidine gluconate (CHG) 2% and isopropyl alcohol 70% (ChloraPrep; Becton, Dickinson and Company; Franklin Lakes, NJ, USA). The device is soaked before implantation in a sterile solution containing a mixture of antibiotics including trimethoprim (Bactrim), gentamicin, and polymixin B [5]. We maintain a "no-touch" technique during insertion of the device as well as limiting the time the device is exposed to air

[6]."
(See Page 3, Paragraph 1)

Comment 24: Line 127: "no difficulty urinating" in post-operative follow up--was this measured in any way objectively or was this simply a subjective statement by the patients?
Reply 24: Addressed in Comment 21
Changes in the text: Addressed in Comment 21

Comment 25: There is a wide range of follow up and only two patients--one at 3.5 months and one at 20 months. Only one of these should be considered long term follow up. One patient reports mild pain in the neophallus that self resolves--is this the short term or long term follow up patient? If the short term follow up, might this indicate an impending complication potentially? Even if it does not cause the patient concern. Longer follow up is obviously needed to properly assess this.

Reply 25: Ranges have been updated to time of last follow up since the initial submission.
Changes in the text: Same as Comment 3

Comment 26: Some minor grammatical edits, though not a comprehensive list of errors:
Line 84: Genesis is a proper noun and should be capitalized and cited
Line 86: 'that' is repeated twice in a row
Line 97-98: 9 and 14 on Brooks dilators reference size in millimeter, would use 9 mm to 14 mm instead of #9 to #14
Line 98: dilate a tract, not "track"
Line 98: tense changed from present tense to past tense within a paragraph, should all be uniform (I.e. care is taken instead of was taken). The tenses change throughout, should be edited to be uniform and consistent.
Line 115: provided, not provider
Line 141-143: one of the products discussed here is cited correctly (I.e. Goretex) with the entire proper citation, the other products are not. Throughout the paper there is mention of several products which are not cited correctly and should be fixed. This includes Tutoplast itself, the main product used in this paper.

Reply 26: All corrected
Changes in the text: All lines updated per revision suggestions.
