

Peer Review File

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Reviewer A:

No major comments, technique appears c/w appropriate technique and will aid novice surgeons in learning the TC technique.

Comment 1: We appreciate the reviewers for their time and valuable, constructive feedback.

Reply 1: nil.

Changes in the text 1: nil.

Reviewer B:

- A. It is well written.
- B. In line 64 one "a" after retrospective needs to be deleted.
- C. Since you mention that the reason for the new technique is hematoma prevention, it would be important to include the rate of complications from hematoma formation in the introduction in line 70.
- D. I think the advice of leaving the measuring tape around the urethra is a very useful one.
- E. You do briefly describe the penoscrotal approach, please add a couple of sentences about when you prefer to use that approach over the perineal one.

Comments 2: We are grateful for the constructive feedback provided.

Reply 2:

- A. Nil
- B. 'a' after retrospective has been deleted. This is highlighted.
- C. It is noted that the reported incidence rate of hematoma formation following artificial urinary sphincter (AUS) insertion is estimated to be around 2-3%. In our early findings, there has been no postoperative hematoma formation with the tunical flap (TF) modification.
- D. Nil.
- E. Thank you for this recommendation. We have added the common indications we recommend for utilising the penoscrotal approach for AUS insertion. See below.

Changes in the text 2:

- A. Nil
- B. Line 65. In a retrospective study of 158 patients
- C. Line 72. Although large scale comprehensive studies specifically assessing hematoma formation rates post AUS insertion are lacking, various reports suggest an incidence rate of approximately 2-3% (11,12).
- D. Nil.
- E. Line 93. In reference to the penoscrotal approach, it is acknowledged that this is not a conventional method. Nonetheless, there are instances where the perineal region presents significant challenges, such as a history of multiple prior perineal continence procedures, complications from previous erosions, and the presence of perineal urinary fistulas. In these circumstances, opting for surgery through fresh tissue using a penoscrotal approach may prove to be a beneficial alternative.

Reviewer C:

- A. The authors present a novel technique for transcorporal artificial urinary sphincter placement, utilizing a rectangular tunica albuginea advancement flap arising from one erectile body to yield a more uniform closure of the tunical defect created by transcorporal cuff space development. This is an interesting technical modification achieving some of the goals of other described modifications (eg gullwing technique for transcorporal AUS, as noted by the authors) without the need for off-the-shelf graft implantation.
- B. Adding a diagram or illustration would be helpful for readers to better understand and reproduce the technique.
- C. The authors' argument for this approach is to theoretically limit the risk of hematoma formation; an illustration may better highlight the plausible mechanism for improved corporal closure utilizing a tunical advancement flap as in the presented case.
- D. A penoscrotal approach is currently nonstandard, acknowledging recent literature re-exploring its role in the modern era. The authors should comment further on their decision-making with respect to indications and plausible advantages in this case for a penoscrotal approach or consider removing this section from the video manuscript.
- E. The beginning of the video is cut off - there is no title slide, and the video begins on what appears to be the second slide, midway through the narrator's sentence. Please adjust cropping to address this.
- F. Thank you to the authors for commenting on how they believe this approach could modify sexual function outcomes relative to standard transcorporal techniques. This is an important consideration for a subset of patients and should be part of the surgeon's preoperative evaluation when considering the specific surgical technique, they will utilize in a given case.

Comments 2: We appreciate your insightful remarks and valuable input.

Reply 2:

- A. Thank you.
- B. We are thankful for your insightful and valuable contribution. We have added Figures 2 and 3. Figure 2 illustrates the principal surgical perspective for both transcorporal and perineal approaches. Figure 3 demonstrates the Tunical flap technique, encompassing the mobilization of the urethra, bilateral corporotomies, elevation of a tunica flap, transcorporal space creation, and the strategic positioning of the flap for optimal hemostatic closure and cuff space preservation.
- C. We are grateful for your contribution. An illustration to depict the mechanism of haematoma formation with the TC technique as well as a graphic to represent the improved corporal closure with the TF modification would significantly improve the understanding of this surgical technique. Both have been added to the manuscript as highlighted below. Figure 1 illustrates the mechanism of haematoma formation. Furthermore, this is also highlighted in the video in 2 separate slides. The mechanism of haematoma formation is from 00:52 to 01:01, while the improved corporal closure with the TF modification is shown from 01:02 to 01:17.
- D. Thank you for this recommendation. We have added the common indications and advantages for utilising the penoscrotal approach for AUS insertion. See below.
- E. Thank you. This has been updated. The title slide has been updated, and appropriate cropping performed.
- F. Thank you.

Changes in the text 2:

- A. Nil
- B. Line 166 and 171. Addition of 2 figures (posted below) into the main manuscript. Moreover, the TF modification is represented in the surgical video from 01:02 to 01:17

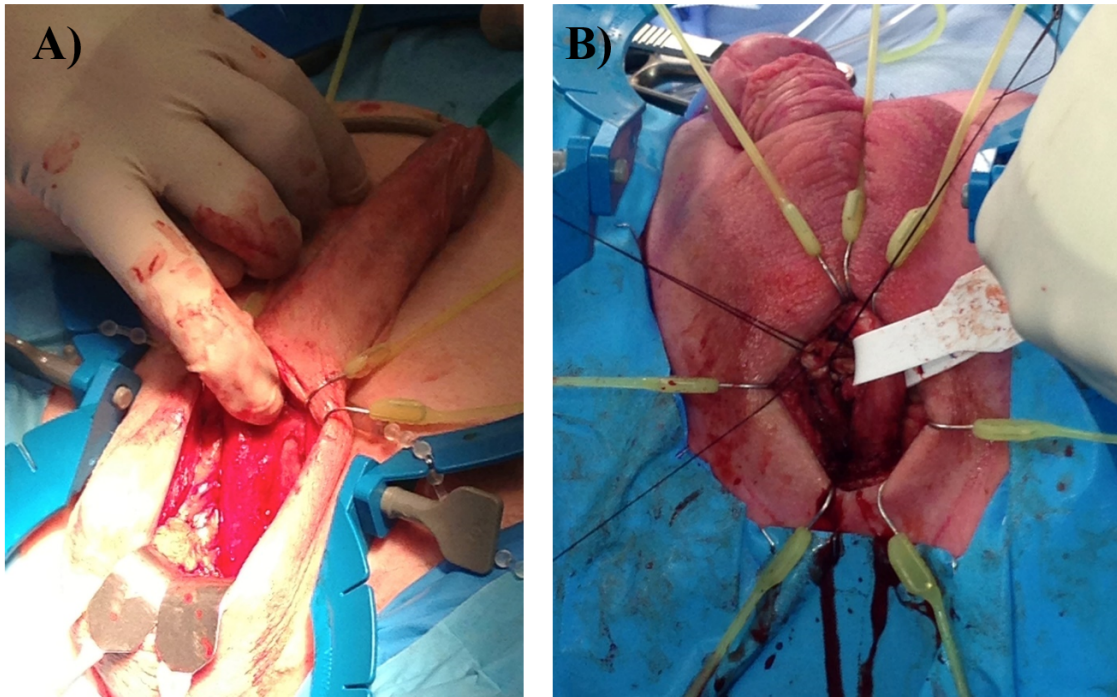


Figure 2. Surgical techniques for AUS insertion. A: Penoscrotal approach. B: Perineal approach.

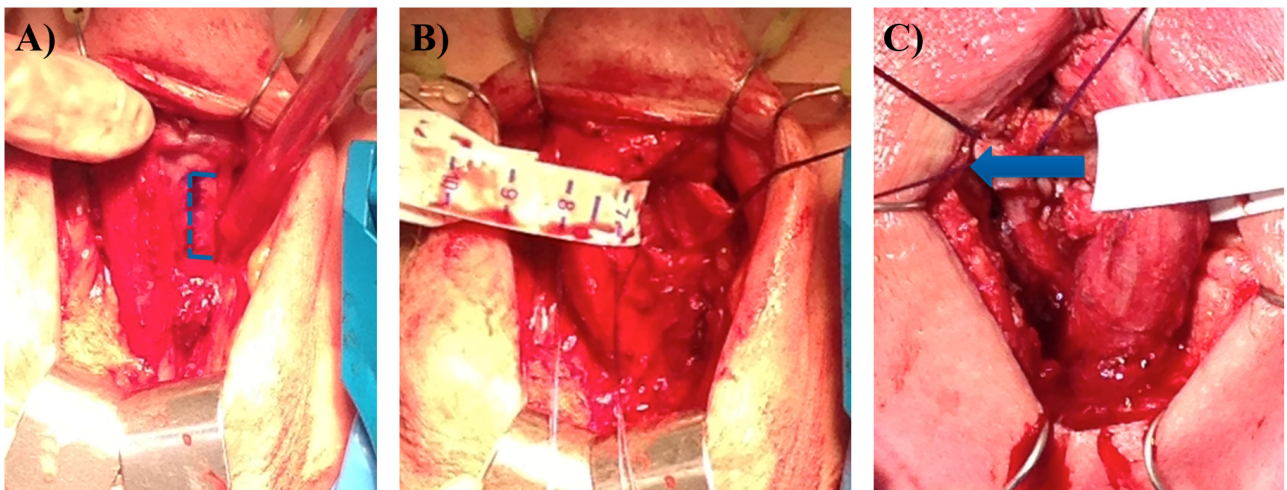


Figure 3. The Tunical flap technique for AUS insertion. **A:** Following the mobilization of the urethra, bilateral corporotomies of 2cm are executed. Subsequently, on one side, horizontal incisions are made at both the superior and inferior extents of the corporotomy which is used to mobilise and elevate a rectangular tunica flap. **B:** Dissection beneath the flap facilitates its mobilization. Additionally, precise dissection through the midline septum between the corporal bodies establishes a transcorporal space. **C:** The elevated tunical flap is maneuvered posterior to the urethra, and a continuous 2-0 vicryl suture is used for corporal closure. The flap's rectangular configuration facilitates a haemostatic seal. Optimal closure is achieved by securing a measuring tape around the mobilized urethra and corporal tissue, ensuring the cuff space is not compromised.

C. The below figure has been added to the surgical video as well as the manuscript as Figure 1.

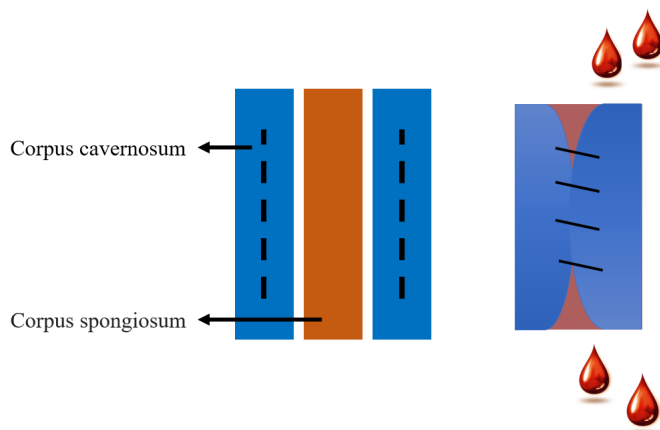


Figure 1. Haematoma formation post AUS insertion using the traditional TC cuff approach. The traditional TC method carries a potential for haematoma development, primarily due to the difficulty in achieving complete closure of the corporal defects posterior to the urethra.

- D. Line 93. In reference to the penoscrotal approach, it is acknowledged that this is not a conventional method. Nonetheless, there are instances where the perineal region presents significant challenges, such as a history of multiple prior perineal continence procedures, complications from previous erosions, and the presence of perineal urinary fistulas. In these circumstances, opting for surgery through fresh tissue using a penoscrotal approach may prove to be a beneficial alternative.
- E. The surgical video has been updated to reflect these. In particular, the title slide with narration is from the start of the video until minute 00:15 minutes. The narration has been timed with the start of the first slide. Please see the updated surgical video. Thank you again for these recommendations to improve the quality.
- F. Nil.

Reviewer D:

- A. Here is a nice work but the point of technique is already published. On the other hand, preoperative data of the included patients are missing like pad usage, number of previous operations.
- B. Inclusion criteria is also missing as this is an invasive method.
- C. In case of erosion, you can put the cuff more proximally or distally and usually there is no need to use the tunica flap.

Comment 3: Thank you for the comments and valuable feedback.

Reply 3:

- A. We appreciate your input. The pre-operative data has been added including previous surgeries, radiotherapy, number of pads, effect on quality of life as well as pre-operative flexible cystoscopy findings.
- B. Thank you. A paragraph highlighting the indications for the tunical flap modification has been added to the manuscript and highlighted for your review.
- C. Thank you for your valuable suggestions. In cases of prior erosion, it is essential to reposition the cuff either proximally or distally. The incorporation of peri-urethral corporal tissue is primarily intended to mitigate the risk of recurrence of the same complication. This article presents a technique designed to facilitate this approach in such scenarios.

Changes in the text 3:

- A. Line 98. The 2 patients featured in the video underwent a RP 15-20 years earlier. Following the development of biochemical recurrence, both also underwent salvage RTx. The patients suffered from SUI leading to AUS implantation 10-12 years ago. Initially achieving complete continence, they experienced a decline over the past six months, marked by moderate to severe SUI during most

daily activities and a significant reduction in quality of life, necessitating the use of 4-5 heavy pads daily.

- B. Line 75. The indications for the TC modification are failed AUS placements secondary to urethral erosion particularly in the setting of a compromised urethra where the proximal urethra is no longer available for use. Common causes of a compromised urethra include urethroplasty or pelvic RTx which require procedural alterations.
- C. Line 146. In cases of prior erosion, it is essential to reposition the cuff either proximally or distally as well as the incorporation of peri-urethral corporal tissue. This provides additional support over prior techniques to further prevent subsequent haematoma formation and cuff erosion.

Reviewer E:

The manuscript provides a comprehensive exploration of the TF modification for trans-corporal artificial urinary sphincter (AUS) insertion through perineal and penoscrotal approaches. It addresses challenges associated with AUS insertion following radical prostatectomy, such as complications, revisions due to urethral atrophy, and silicon fatigue.

Key Points:

- AUS Challenges: Discusses complications necessitating early revisions and the need for alternative techniques in cases of compromised urethral tissue.
- Comparison of Techniques: Reviews studies comparing trans-corporal cuff (TC) placement with standard AUS insertion, highlighting lower revision and erosion rates with TC. Functional outcomes and complication rates were similar between the techniques.
- TF Modification Details: Provides a step-by-step description of the TF modification, including surgical steps and considerations. Emphasizes potential benefits in preventing postoperative hematoma and preserving corporal volume for future procedures.
- Clinical Application: Emphasizes the TF technique's clinical utility in providing urethral support, particularly for patients ineligible for standard AUS insertion. Concludes its reliability in achieving haemostatic closure and additional urethral support.

Areas to improve in the manuscript include:

Long-term Follow-up: The manuscript lacks extensive long-term outcome data regarding the TF modification's efficacy and durability. More extended follow-up studies are crucial to establish its long-term success rates, potential complications over time, and patient-reported outcomes beyond immediate postoperative measures.

Comparative Studies: While it compares TC placement with standard AUS insertion, the manuscript could benefit from more comparative studies with larger sample sizes. This would strengthen the evidence supporting the TF modification's superiority in outcomes compared to other techniques or modifications.

Generalizability and External Validation: The manuscript focuses on specific technical details of the TF modification but lacks broader external validation in multiple clinical settings or by different surgical teams. External validation in diverse patient populations would enhance its generalizability and real-world applicability.

Patient-reported Outcomes: Including patient-reported outcomes such as quality of life, satisfaction, and psychological impact post-TF modification would provide a more comprehensive understanding of its overall impact on patients' lives.

Comment 4: We are grateful for your time and critical analysis of our work.

Reply 4:

Thank you for your recommendations.

We acknowledge these are limitations of our study, however this is in the context of the project being a pilot study. There is minimal research in this field hence this project was always regarded as a pilot. Furthermore, one purpose of our study was to establish this surgical technique which we can use to power a larger study multi—centre study to assess the benefit on a larger scale.

Unfortunately, we do not yet have data long-term follow-up particularly efficacy, durability as well as long term complications. Moreover, currently, our dataset lacks information pertaining to generalizability and external validation across various clinical settings and among different surgical teams.

We recognize these as significant limitations of our research. Nonetheless, given that our project is in its pilot phase, we are committed to ongoing assessment of long-term follow-up and external validation in diverse clinical environments. Thank you for the valuable recommendations.

Thank you for the recommendations.

Changes in the text 4:

Line 151. Limitations of the study include lack of long-term follow-up data, including efficacy, durability, and long-term complications. Additionally, the findings are yet to be generalized and externally validated in diverse clinical settings. Recognizing these limitations, we are dedicated to further research and validation in future studies.