

Peer Review File

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Reviewer A

Comment: This is an interesting article presenting a new rescue alternative for patients with extensive loss of the bulbar urethra who have failed multiple previous reconstructive procedures. 20 patients with severe post-traumatic injuries were reconstructed by transposition of the penis into the perineum with direct anastomosis from the remnant of penile urethra to the prostate urethra. With an average follow-up of 46 months, the procedure was estimated successful in 19 patients.

This alternative is added to the available armamentarium to deal with these very complex lesions, in which numerous previous procedures have already failed and in which local tissues are of poor quality due to previous scars. While it is an interesting proposal, there are numerous observations:

- The article in general is well written however I recommend reviewing the text to make it more concise, avoiding iteration of concepts that have already been mentioned previously.
- It is important to pay attention to the correct terminology. The 2010 SIU-ICUD Consensus Consultation established that the correct term is "penile urethra" and not pendulous urethra, so the term "pendulum-prostatic anastomosis" should not be used. Please correct.

Reply: Thank you very much for your feedback and comments! According to the 2010 SIU-ICUD Consensus Consultation, we have corrected 'pendulous urethra' to 'penile urethra', (see page2, line1; page 5, line5; page5, line6; page14, line12),

and corrected 'pendulum-prostatic anastomosis' to 'penile-prostatic anastomosis'. (see page1, line1; page2, line3; page2, line23; page4, line27; page7, line15; page9, line27; page9, line30; page11, line4)

- It is also inappropriate to talk about "scroto-membranous stenosis" because the scrotal urethra does not exist.

We have corrected 'scroto-membranous' to 'bulbo-menbranous'. (see page2, line3; page3, line2, page3, line10; page3, line16; page3, line18; page4, line4)

- In the Conclusions of the Abstract it is concluded that this technique "is an effective surgical salvage option". Since this is a preliminary report with a small number of patients, I would be more cautious and would use "may be considered as a salvage option" or similar.

We have changed "is an effective surgical salvage option" to "may be considered as a salvage option". (see page2, 21)

- Please explain in Material and Methods whether an informed consent prior to surgery was used in these patients.

Yes, informed consent was obtained from the patients. (see page4, line7)

- Please provide the approval number from the IRB of the institutions involved.

There is no IRB in our country 18 years ago and the technique has been used as a routine technique for complex urethral stricture in our institution.

- Please indicate whether a colostomy was used in patients with concomitant recto-urethral fistula.

Yes, a colostomy was used in patients with concomitant recto-urethral fistula. (see page4, line17)

- No "serious complications" are reported. Please indicate the exact number, and characteristics of these complications according to the Clavien classification.

The "serious complications" indicate the life-threatening complication include severe infection and necrosis of the penile urethra. According to the Clavien classification grade IV and grade V. No patients have these life-threatening complications. (see page4, line4)

- Please indicate what is your definition of failure.

According Male Urethral Stricture: AUA Guideline (2016), the successful treatment is most defined as no further need for surgical intervention or instrumentation. The patients don't experience obstructive voiding symptoms and peak uroflow > 15ml/sec. (see page7, line5)

- Please indicate the follow-up protocol of these patients. At what intervals they were followed and how many of these patients were compliant to this follow-up. In addition to uroflowmetry, what other tests were performed to rule out a stricture?

All patients were scheduled to be examined in the outpatient clinic 1 month, 3 months, 6 months, 12 months postoperatively. One year after the operation, we call the patients each year to ask if they have dysuria. All patients were followed up. If patient feel dysuria, urethrography and urethroscopy were performed to rule out a stricture. (see page4, line20)

- Please indicate how many months after discharge uroflowmetry was performed?

The uroflowmetry was checked at 1, 3, 6, 12 months after operation.

- 9 patients are indicated to have received a secondary penile straightening procedure. Please describe what it this procedure and describe the technique used.

Nine patients have received a secondary penile straightening procedure. This operation was performed at least 6 months later when the anterior urethra was revascularized from periurethral tissue. The second procedure involved straightening the penis and one-stage anterior urethral reconstruction using a penile circular fasciocutaneous skin flap. The curved spongy body of the penis was separated, the urethra was transected at the site of the coronary sulcus, and the spongy body was straightened. A new anterior urethra was reconstructed using a penile circular fasciocutaneous skin flap. (page5, line9)

- 5 received a staged Johansson urethroplasty. However, Johansson's technique requires suturing the skin borders to the urethral plate, but in this case there is no urethral plate. Was buccal mucosa used at some point for this purpose. Please specify.

Five patients received the third-stage surgery. This operation was reconstruction of a new anterior urethra using Johanson urethroplasty. It was performed 6 months after the second surgery. A longitudinal incision of two sides of the ventral epithelized skin was made, which circled the proximal and distal meatus of the urethra, and extended deep to the albuginea penis. A 1.2–1.5 cm wide strip of ventral epithelized skin at the urethral ditch was used to form the dorsal wall of the new urethra. The lateral skin was undermined and closed over the buried strip to form a tube for the new urethra. The ventral side of the new urethra was left to become epithelialized. These three-step techniques were described before. [Wu DL, Jin SB, Zhang J, Chen Y, Jin CR, Xu YM Staged pendulous-prostatic anastomotic urethroplasty followed by reconstruction of the anterior urethra: an effective treatment for long-segment bulbar and membranous urethral stricture. *European urology*, 2007, 51 (2):504-510; discussion 510-511. doi:10.1016/j.eururo.2006.07.003] (page5, line15)

In the second step, new urethral plate was reconstructed by a penile circular fasciocutaneous skin flap.

- in relation to case 17 it would be better to indicate "a 16-year-old patient" instead of saying "a boy".

It is changed. (page7, line14)

- The fourth paragraph of the Discussion indicates that the key to success depends on two techniques. For clarity it is suggested to say “two technical points”.

One is complete excision of the periurethral scar tissue. The other key technique point was the tension-free end-to-end anastomosis. It has been described in detail in the discussion part.

- If there is no precedent for the use of this technique in other centres, it is necessary to specify that it is an original technique, which has not been previously used and whose results require a greater number of patients and to be validated in other centres.

The technology was first reported in two patients at our center. [Wu DL, Jin SB, Zhang J, Chen Y, Jin CR, Xu YM Staged pendulous-prostatic anastomotic urethroplasty followed by reconstruction of the anterior urethra: an effective treatment for long-segment bulbar and membranous urethral stricture. *European urology*, 2007, 51 (2):504-510; discussion 510-511. doi: 10.1016/j.eururo.2006.07.003. There are few patients with such serious injuries or underwent several surgeries and this technique requires rich experience in urethroplasty, which is somewhat difficult. And Through our report, more urologists know that the success rate of this technique is high and reliable. Then this technique could be carried out in more centers.

-- Authors need to indicate the limitations of this report.

This technique should be applied that this can be added for severe, salvage, cases but not be regarded as a primary technique by any means and requires more patients and more centers to verify reliability. (see page11, line9)

-- A separate Conclusion section needs to be included at the end, following the Discussion section.

This part has been added. (see page11, line1)

Reviewer B

The authors present a very creative, but what ultimately will be a very divisive idea: penile transposition to deal with long-segment strictures of the urethra. This serves as an update from a 2 patient case report published previously.

Yes, transposing the penis to the perineum with penile-prostatic anastomotic urethroplasty may be an effective surgical salvage option for patients with posttraumatic complex posterior urethral strictures who have undergone failed previous surgical treatments and who have strictures or defects of the bulbomembranous urethra. the first step is to reconstruct posterior urethral by the penile urethra. when after posterior urethral conditions improve, we through the second step will be part of the penile urethra regression in situ, and build new urethral plate by the flap around. the third step, we underwent urethroplasty by the Johansson's technique. We think this technology is very meaningful, more patients accepted this technique in our center.

Methods: was cystoscopic surveillance used for these patients post-operatively? Why or why not? If it was, data should be included.

According Male Urethral Stricture: AUA Guideline (2016), the successful treatment is most defined as no further need for surgical intervention or instrumentation. The patients don't experience obstructive voiding symptoms and peak uroflow > 15ml/sec. (page6, line4)

Postoperative cystoscopy is not necessary unless the patients have symptoms of dysuria.

Results: Readers would benefit from a lengthened table 1 or new table 2 that summarizes the outcomes of the patients, whether additional surgery was required and their before and after flow rates or other objective data.

We have added the table2 that summarizes the outcomes of the patients. (page7, line25)

Discussion: repetitive of the results section: page 9 majority of the text belongs in methods or does not need duplicated.

We've reduced the relevant content.

What about PU w/ skin graft and or Buccal for these patients? Seems like a much more straightforward approach that would potentially preserve erections if that were an issue. Is there a literature on PU in this patient population that could be discussed or mentioned.

These were patients with severe trauma or multiple surgeries. These patients are struggling to get a healthy flap. and nor does the transplanted mucous membrane provide sufficient blood supply. The selection of patients was so strict that only 20 patients were treated in 16 years.

Alternative approaches for such patients such as SPT, urinary diversion, catheterizable channels should be mentioned and discussed in detail- while they do not allow for voiding via the penis these are potentially more effective, long-term solutions for this issue.

Routine techniques such as suprapubic cystostomy and urinary diversion can drain urine, but daily care post operation is troublesome, with risks of infection. Above all, patients prefer to be able to urinate autonomously. (see page9, line27)

More details in methods regarding the second procedure are required. I assume this would involve the reversal of the transposition, but the description does not allow for full understanding .

Nine patients have received a secondary penile straightening procedure. This operation was performed at least 6 months later when the anterior urethra was revascularized from periurethral tissue. The second procedure involved straightening the penis and one-stage anterior urethral reconstruction using a penile circular fasciocutaneous skin flap. The curved spongy body of the penis was separated, the urethra was transected at the site of the coronary sulcus, and the spongy body was straightened. A new anterior urethra was reconstructed using a penile circular fasciocutaneous skin flap.

Five patients received the third-stage surgery. This operation was reconstruction of a new anterior urethra using second-stage Johanson urethroplasty. It was performed 6 months after the second surgery. A longitudinal incision of two sides of the ventral epithelized skin was made, which circled the proximal and distal meatus of the urethra, and extended deep to the albuginea penis. A 1.2–1.5 cm wide strip of ventral epithelized skin at the urethral ditch was used to form the dorsal wall of the new urethra. The lateral skin was undermined and closed over the buried strip to form a tube for the new urethra. The ventral side of the new urethra was left to become epithelialized. These three step technique was described before. (page5, line9)

A limitation section should be added noting this is low quality evidence, single surgeon series, over many decades during which experience and possibly technique likely has changed. A caveat should be applied that this can be added for severe, salvage, cases but not be regarded as a primary technique by any means.

This technique should be applied that this can be added for severe, salvage, cases but not be regarded as a primary technique by any means and requires. more patients and more centers to verify reliability. (page10, line18)