

The Urological Society of India Guidelines for the management of urethral stricture (Executive Summary)

These guidelines have been drafted by the Urological Society of India (USI) urethral stricture guidelines panel for the use of urologists. The recommendations are updated till August 2020 and will remain valid till the next update or a maximum period of 5 years. This executive statement represents the best evidence and expert opinion and are not intended to replace clinical judgement. The complete guidelines document can be accessed from the USI website at www.usi.org.in.

METHODOLOGY

The majority of evidence for the management of urethral stricture is from retrospective case series. Randomized controlled trials for urethral reconstructive procedures are rare. The panel recognizes that certain aspects of urethral reconstructive surgery present unique challenges for randomized trials.

Literature search was conducted on PubMed, Cochrane Central Register of Controlled Trials, Embase, Mendeley, and Directory of Open Access Journals. The available articles were reviewed by the panelists and evidence was extracted. The articles published from India and pertaining to the Asian subpopulation were analyzed along with the world literature. Levels of evidence (LE) was based on the Centre for Evidence-Based Medicine guidelines.^[1]

RECOMMENDATIONS

The guidelines panel based its final recommendations on the best available Indian data and global evidence.

Grades of recommendation (GR) (strong/moderate/weak) are the strength of mandate based on the extent of risk-benefit ratio of either taking or not taking an action. The Clinical Principle is a statement that is widely agreed upon by clinicians, for which there may or may not be evidence in the medical literature. An Expert Opinion is a statement agreed on by the guidelines panel in the absence of evidence. In atypical circumstances, the clinician should carefully consider the benefits, risks, and patient preferences carefully before arriving at a decision.^[1]

The burden of urethral stricture disease in India has not been reported, but the etiology patterns have been reported in limited studies from men undergoing urethroplasty. A study of over 400 patients in eastern India has reported iatrogenic injury as the most frequent cause. Urethral catheterization was a more frequent cause than transurethral surgery in this population.^[2] A study comparing characteristics of strictures in men undergoing urethroplasty at leading centers in India and the West suggested that trauma-related strictures were much more common in India (36% vs. 15.8%), whereas the iatrogenic were lesser (16% vs. 35%). The incidence of Lichen Sclerosus (LS)-associated strictures were three times as compared to the western data (21.5% vs. 6.9%). Similarly, the number of pan-urethral strictures were almost two times that in West (18% vs. 8.9%), whereas strictures involving only the penile urethra were four times less common (5.3% vs. 27%). Regarding iatrogenic strictures, post-transurethral resection of prostate (TURP) strictures were three times more common than in the Western population.^[3]

The unique socioeconomic condition and the lack of easily accessible health care results in late presentations. Widespread tobacco chewing and abuse is a unique problem to the Indian subcontinent and certain other developing countries. Panurethral and long strictures are more common^[4] The long-term outcomes of buccal mucosal graft in this population are inferior as compared to nonusers as was reported in two Indian studies, whereas the outcomes with lingual mucosa remain unaffected by tobacco.^[5]

GUIDELINE STATEMENTS

Meatal/fossa navicularis strictures^[6,7]

1. Meatal dilatation is palliative (LE-4, GR moderate)
2. Meatotomy (Ventral) is the first line of treatment when possible (LE-4, GR moderate)
3. Meatoplasty.
 - Meatoplasty can be performed with dorsal inlay Buccal Mucosa graft as first choice (LE-4, GR moderate)
 - Ventral preputial skin graft as alternative (LE-5, GR-strong)
 - Local skin flaps can be used for meatoplasty (LE-4, GR moderate).

Penile strictures^[8-10]

1. Urethral dilatation Is palliative. It can be offered in a patient unfit for surgery, refuses surgery or after multiple failed surgeries (LE-3, GR-Moderate)

2. Dilatation/direct visual internal urethrotomy (DVIU) in penile strictures has poor results and best avoided (LE-3, GR-strong)
3. Self-catheterization: Palliative, noncurative (LE-3, GR-strong)
4. Urethroplasty.
 - a. Non-lichen sclerosis
 - Buccal mucosa urethroplasty dorsal onlay/inlay (LE-2, GR-strong)
 - Local flap (LE2, GR-moderate)
 - Narrow urethra; two staged urethroplasty (LE-3, GR-moderate).
 - b. Lichen sclerosis
 - Single staged buccal mucosa (LE-3, GR-strong).
6. Perineal Urethrostomy–Salvage procedure (LE-4, GR-moderate).

Pelvic fracture urethral distraction defects^[16,17]

1. Immediate Suprapubic Catheter (SPC) with delayed urethroplasty is the standard of care (LE-3, GR-strong)
2. Primary endoscopic realignment in stable patients is an option (LE-3, GR-weak)
3. Anastomotic Urethroplasty with simple/elaborated perineal approach should be performed LE-3, GR-strong
4. Adequate scar excision, optimal crural separation and inferior Pubectomy, tension free bulbo membranous anastomosis should be performed
5. Supracrural rerouting only if indicated
6. Perineo-abdominal repair with omental wrap may be required for complex cases (LE-3, GR-strong)
7. Children, recto urethral fistula and complex urethroplasties should be managed with help from experts (LE-3, GR-strong)
8. Bulbar Urethral necrosis: Pedicled Preputial or penile skin tube is the procedure of first choice (LE-3, GR-moderate)
9. Rectourethral fistula approach can be perineal/abdominal perineal with tissue interposition: Omentum, Dartos pedicle flap, Gracilis can be used as interposition (LE-3 GR-strong); diverting colostomy and SPC is recommended (LE 4, GR moderate).

Bulbar strictures^[11-13]

Nontraumatic bulbar strictures

1. DVIU (LE3, GR-strong)
There is not enough evidence to recommend Self-calibration after DVIU for preventing re-stricture (LE-3, GR-strong)
2. Urethroplasty:
 - a. Site of graft does not alter the outcomes for bulbar urethroplasty (LE-3, GR-strong)
 - b. In obese patients, young sexually active and post-TURP proximal bulbar strictures ventral onlay urethroplasty remains the first-choice (LE-5, clinical principle)
 - c. Proximal bulbar strictures with healthy, spongiosa ventral onlay urethroplasty is the first choice procedure (LE5, clinical principle)
 - d. Dorsal approaches include Barbagli-Circumferential mobilization or Kulkarni-One side dissection for dorsal onlay and Asopa for Dorsal inlay
 - e. Non-transecting bulbar urethroplasty. Incise dorsally and assess urethral plate. Short stricture, ventral mucosa can be excised and stricturoplasty performed (LE3, GR moderate).

Traumatic bulbar strictures

1. There is no role for DVIU (LE-3, GR-strong)
2. Short stricture-excision with anastomotic urethroplasty (LE-3, GR strong)
3. Long stricture/failed anastomotic -Augmented anastomotic urethroplasty is recommended (LE 4, GR strong).

Panurethral strictures^[14,15]

1. Simple urethral dilatation is palliative in nature (LE-4, GR-moderate)
2. Internal urethrotomy has no role (LE-3, GR-strong)
3. One-sided dissection is the best option (LE-3, GR-strong)
4. Two-stage urethroplasty (Johannsson's in the first stage with/without dorsal inlay Buccal Mucosal augmentation) can be performed in obliterative strictures. (LE-4 GR-moderate)
5. Non lichen Sclerosis–Fascio cutaneous genital flaps can be performed (LE-3, GR-moderate)

Dilatation/direct visual internal urethrotomy^[18,19]

1. Laser and cold knife–results are equivalent (LE2, GR-strong)
2. Catheter removal should be within 72 h. Long-term catheterization has no role (LE 4, GR-moderate)
3. Intraurethral injection of Mitomycin/other adjuvant agents are not recommended at present (LE-4, GR-weak).

Bladder neck contracture (post-transurethral resection of prostate/post-radical prostatectomy)^[20,21]

1. Urethral dilatation is a treatment option in post-radical prostatectomy vesicourethral stenosis (LE-3, GR-moderate)
2. Endoscopic bladder neck incisions are the initial procedure of choice (LE-3, GR-moderate)
3. Intralesional injection of mitomycin/steroids can be tried in recurrent cases (LE-4, GR-moderate)
4. Open/Robotic Y-V plasty and its modifications along with end to end anastomosis are indicated for recalcitrant vesicourethral stenosis and bladder neck contracture (LE-4, GR moderate).

Post-transurethral resection of prostate proximal bulbar strictures^[22,23]

Ventral onlay buccal graft augmentation is the procedure of choice in proximal strictures close to the membranous urethra (LE-3, GR strong).

Female urethral strictures^[24,25]

1. A single dilatation of a short segment stricture may be attempted. It is rarely curative (LE-3, GR strong)
2. Regular dilatations in females with lower urinary tract symptoms without a proven stricture on endoscopy has no proven benefits (LE-4, GR strong)
3. Urethroplasty (onlay or inlay) can be offered when dilatation fails-Vaginal and buccal mucosa both are acceptable options (LE-4, GR strong)
4. Local flap urethroplasty is a feasible option for strictures involving distal urethra (LE-4, GR moderate).

Special situations

Radiation strictures^[26,27]

1. Results are guarded (LE-4, GR-moderate)
2. Surgical options include anastomotic urethroplasty, flaps or free graft augmentation. (LE3, GR moderate)
3. Flaps recommended over free grafts (LE-5, GR moderate)
4. Perineal urethrostomy/scrotal drop back are salvage procedures (LE-4, GR weak).

Post-hypospadias surgery urethral strictures^[28,29]

1. Bulbar strictures:
Excision and primary anastomosis is not recommended. (LE-5, GR strong).
2. Penile stricture:
 - a. Dorsal inlay Buccal/Penile skin graft augmentation urethroplasty is the procedure of choice (LE-5, GR weak)
 - b. Johansson's Stage I with Asopa dorsal buccal inlay and tubularization in the second stage is an option (narrow/deficient urethral plate) (LE 3, GR moderate)
 - c. Two staged buccal urethroplasty (Insert buccal in the first stage and tabularization after 6 months. Inform patients about graft contraction and possible need for redo grafting (LE5, GR weak).
3. Fossa navicularis/meatal stenosis:
 - a. Single dilatation (LE4, GR moderate)
 - b. Dorsal inlay Buccal/nonhair bearing skin graft augmentation (LE-4, GR moderate).

Chronic renal failure and strictures (pre/post-transplant)^[30]

1. Urethroplasty is recommended before performing renal transplant (LE4, GR weak)
2. The complication rates of urethroplasty are higher in patients on dialysis awaiting renal transplantation (LE4, GR moderate)
3. Urethral reconstruction after renal transplantation has been seen to be safe. (LE4, GR moderate).

Neurogenic bladder and Clean Intermittent Catheterization^[31]

Patients who are on Clean Intermittent Catheterization and develop stricture urethra can be offered urethroplasty (LE-4, GR moderate).

Urethral stents^[32]

1. Not recommended (LE3, GR strong)
2. Stent failures should be treated by urethroplasty, removal of stent and preferably dorsal approach (LE-3, GR strong).

Postoperative care^[33]

1. Catheter removal at 3 weeks if performing peri-catheter urethrogram and at 4 weeks if peri-catheter urethrogram is not performed (LE4, GR moderate)
2. For complex cases the catheter is removed at 6 weeks (LE-4, GR moderate).

Follow up^[34]

- Uroflow >12 ml/s after a urethroplasty as optimal (LE-3, GR moderate) Follow with Uroflow, Patient-reported outcome measure at 3, 6, 9 and 12 months and yearly long term follow-up (LE-2, GR strong).
- Unsuitable Buccal Mucosa-Chronic tobacco exposure.^[35] The usual next choice of material is the lingual mucosa/preputial skin (In non-lichen Sclerosus) (LE3, GR moderate). Other experimental options are Saphenous vein (LE3, GR moderate) or tunica albuginea, rectal mucosa, tissue engineering (LE4, GR moderate).

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