Trauma and reconstruction

Post traumatic isolated bladder neck transection: Unreported and undescribed injury

Venkat A. Gite*, Atul Singal, Jayant V. Nikose, Hitesh M. Jain

Department of Urology, Grant Govt. Medical College and Sir J.J. Group of Hospitals, Mumbai, Maharashtra, 400008, India

On examination he had normal gait and SPC in situ. There was no evidence of fecal soilage, neurological deficit or solid organ injury, with normal anal tone. He is maintaining erection and unable to void. His routine biochemical tests were normal. Ultrasonography showed SPC bulb in situ without hydrourerter or hydronephrosis with adequate bladder capacity. Retrograde urethrogram was showing contrast reaching up to prostatic urethra which is dilated but not entering into the bladder. Voiding cystourethrogram was showing normal capacity bladder with dimple at the level of bladder neck. On Computed Tomography of pelvis he had multiple old united fractures of both pubic rami, bilateral anterior column of acetabulum, both sacral ali and right pubic bone with adjacent callus formation without pubic diasthesis. On Magnetic resonance imaging of pelvis, there was complete transection noted at junction of bladder neck and proximal prostatic urethra. Distance between dimple in bladder to opacified urethra was 7 mm with right side and posterior displacement of prostatic urethra. Distance between dimple in bladder to opacified urethra was 7 mm with right side and posterior displacement of prostatic urethra in relation to bladder neck [Fig. 1]. His Urodynamic study with Electromyography was normal with normal external sphincter activity. His penile Doppler was normal. Scopy through SPC tract was suggestive of normal capacity bladder with minimal trabeculae with scarring at the site of bladder neck [Fig. 2]. On Urethroscopy, anterior urethra was normal with dilated prostatic urethra, 19 F scope was negotiated 1 cm proximal to veru and complete cut off thereafter [Fig. 2]. These investigations were suggestive of isolated bladder neck cut off with multiple healed fracture pelvis with intact external sphincter and normal erection.

He was planned for vesico-prostatic anastomosis under general anesthesia. Infra umbilical inverted ‘Y’ incision was taken. There was evidence of minimal cavitation with fibrosis at the level of bladder neck. Bladder at the level of bladder neck dissected all around and cut open horizontally. Male urethral sound passed from below and prostatic urethra identified and was opened longitudinally over it. Spatulated end to side vesico-prostatic anastomosis was done over 16Fr silicon Foley’s catheter. Wound closed after placing SPC and retro pubic drain.

Post-operative course was uneventful, peri-catheter study at 4 weeks showed no leak. Per urethral catheter was removed at 4 weeks and SPC clamped. Patient was passing urine with adequate stream without incontinence. At 6 months follow up, cystourethroscope showed wide open anastomosis [Fig. 3]. Clinically he
was continent, having normal erection and passing urine with adequate stream. Uroflowmetry was normal.

Discussion: Traumatic rupture of bladder neck and posterior urethra has received very little attention in urological literature.\(^1\) Posterior urethral injury with pelvic ring disruption is due to anatomical shearing force or distraction at weak point i.e. junction between prostatic and membranous urethra.\(^2\) Surprisingly there is small but distinct group of pelvic injuries which are unclassifiable and termed as complex pelvic ring fracture, which result in rare posterior urethral injuries.\(^3\) Bladder neck injuries are usually longitudinal which can extend into prostatic and even sub-prostatic urethra and these injuries could be the distal extension of bladder laceration or proximal extension of laceration to prostatic urethra. Transverse bladder neck injuries are common in children.\(^3\) Anthony R. Mundy described new type of adult bladder neck injuries like trapped prostate or blow out of anterior aspect of prostate.\(^1\) In our case, it is transverse complete bladder neck transection without bladder or prostatic involvement which cannot be explained on etiological grounds nor can be placed in available classification system. Posterior urethral injuries are usually treated by initial diversion and delayed repair. However, bladder neck, prostatic urethral injury and associated rectal injuries should be repaired immediately as they do not heal spontaneously.\(^5\) In our case, patient presented to us after 3 months of primary injury but his previous records showed, he had an acute retention of urine and was hemodynamically stable without any other solid organ injury with stable multiple pelvic ring fractures. We feel primary endoscopic realignment should have been done initially if facilities of endoscopy, fluoroscopy and experienced surgeon are available. The ultimate goal in these types of injuries is maintenance of

Fig. 1. Pre-Operative MRI pelvis showing complete transection noted at junction of bladder neck and proximal prostatic urethra.

Fig. 2. Pre-Operative Urethroscopy image.

Fig. 3. Post-Operative cystoscopy image at 6 month follow-up.
continence, potency and should be stricture free. In such cases, key to success for surgery is clear delineation of healthy epithelium, tension reliving mobilization of lateral aspect of prostate and tension free layered anastomosis when associated with minimal cavity and fibrosis as in our case.

The erectile dysfunction along with urinary incontinence is common consequence of pelvic fracture specially combined with damage to posterior urethra. Surprisingly, inspite of having complex pelvic ring fracture and complete transaction of bladder neck, our patient has not developed incontinence, impotence or stricture post-operatively at 6 months follow up. The fact that the perineal membrane was intact, may explain why the autonomic nerves were not damaged and continence was not affected.

**Conclusion:** Bladder neck injuries in adults are usually longitudinal and associated with bladder or prostatic involvement. We described particular type of bladder neck injury in adult that has not seen or described before in literature.

### Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.eucr.2017.12.001.

### References

1. Munde Anthony R, Andrich Daniela E. Pelvic fracture-related injuries of the bladder neck and prostate: their nature, cause and management. *BJU Int*. 2009;105:1302–1308.
2. Sawant AS, Kapadnis LA, Kumar V, Pawar P, Tamhankar AS. Paediatric Post-Traumatic bladder neck distraction injury:case series. *J Clin Diagnostic Res*. 2017;11(2):03–04.
3. Andrich Daniela E, Day Adrain C, et al. Proposed mechanism of lower urinary tract injury in fracture of pelvic ring. *BJU Int*. 2007;100:567–573.
4. Durrant JJ, Ramaswamy A, Munde Anthony R. Pelvic fracture — related uretehral and bladder injury. *J R Army Med Corps*. 2013;159(sup I):32–39.
5. Weledji EP, Fokam P, Nzade D, Eyongeta D. Emergency primary repair of grade V bladder neck injury complicating pelvic fracture. *Ann Surg Innov Res*. 2014;8:4.