Primary Endoscopic Realignment in Female Urethral Injuries with Pelvic Fracture Can Reduce Avoidable Morbidity

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Abstract Female urethral injuries associated with Pelvic fracture are not as uncommon as it was previously thought. Primary endoscopic realignment of proximal urethra and catheterisation on guide-wire is very good procedure in early presentation. Every female patient with urethral injury due to pelvic fracture should be referred for primary repair to decrease the avoidable morbidity of these patients.

Keywords Female urethral injuries · Early repair · Endoscopic realignment

Introduction

Female urethral injuries associated with pelvic fracture are not as uncommon as it was previously thought [1]. These injuries, although less common in adult females, create a challenge to urosurgeon for their management. Its definitive management guideline is not yet to be established. Primary repair or urethral realignment on the catheter is still good option for management with good outcome [2]. In three cases of urethral injury associated with pelvic fracture, we have found that primary endoscopic realignment of proximal urethra and catheterization on glidewire is very good procedure for urethral realignment in early presentation.

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Case I

An 18-year-old woman presented to us with suprapubic cystostomy who had history of road accident with fracture pelvis 1 year ago and not passed urine through urethra since then. On examination when a catheter was introduced via urethral meatus, it came out from an opening in proximal vagina. Urethroscopic examination showed fistulous opening into vagina. Micturating cystourethrography (MCU) showed the closed bladder neck and no dye in urethra (Fig. 1). Proximal urethra was identified by inserting bougie via suprapubic cystostomy. Vesicourethral reconstruction was done at the bladder neck along with Martius flap. Postoperatively there was neither incontinence nor stricture. The patient was kept on self-urethral calibration for 6 months.

Case II

A 22-year old woman reported with history of pelvic fracture 6 months ago due to road accident. She also had suprapubic cystostomy for urinary retention after accident. Urethroscopic examination showed urethrovaginal fistula. No dye was seen in urethra on MCU. Proximal urethra was identified by inserting bougie via suprapubic cystostomy. Exploration and vesicourethral reconstruction was done transvaginally. Postoperatively she developed urethrovaginal fistula. The patient was lost to follow-up.

Case III

A 17-year-old adolescent girl came primarily to us with history of fall from height. She had pelvic fracture with

Fig. 1 MCU shows no dye in urethra

blood at introitus and unable to pass urine. The patient was resuscitated and emergency suprapubic cystostomy was done. As her condition settled, after 7 days she was taken for primary endoscopic realignment. When the catheter was passed, it came out from proximal vaginal wound (Fig. 2). Proximal urethral opening could not be identified. Cystoscopy was tried from distal urethra, but proximal urethra was not localized. An antegrade suprapubic cystoscope was passed and the bladder neck was identified. Bougie was not used because of fear of dislodgement of hematoma,

Fig. 2 Urethral injury with vaginal rent

further bleeding, increased chances of false passage formation. A guidewire was passed via cystoscope into the bladder neck and in proximal urethra which came out in vagina. This guidewire was threaded to distal urethra. A Foley's catheter was passed over guidewire into the bladder. Urethra and anterior vaginal wall was repaired. Postoperative recovery was uneventful. The catheter was removed after 3 weeks. The patient is continent and voiding with good stream.

Discussion

Female urethral injuries due to pelvic fracture are uncommon. Carter did not find any urethral injury in 146 female patients who sustain pelvic fracture [3], but Perry [4] reported 4.6 % incidence of urethral trauma (6/130 females) in fracture pelvis. Urethral injuries due to pelvic fracture are less common than those for similar injuries in males, 0–6 % in a modern series versus 10 % in males, likely as a result of greater mobility, relatively protected and shorter length of urethra in females [5]. On detailed search of net, we encountered 102 cases of pelvic fracture urethral injury in which 15 % were in adolescent and adult females [1, 6–12]. At our institute in past 5 years, we had three adolescent girls who sustained pelvic fracture urethral injury as compared to 52 male patients.

Pode [13] found that of 30 cases of pelvic fracture urethral injury 11 were adults. In a series of 5 female patients, only one was adult [2]. Mean age was 8 years in another series [7]. Black [11] mentioned slight adult predominance in his study of 25 female patients (13 out of 25) of urethral injury due to pelvic fracture.

These urological and gynecological injuries, however rare, are regularly overlooked with potentially serious consequences [1]. Vaginal examination is essential in all females who had pelvis trauma [3]. Whenever blood is present at introitus, edema of vulva, deep vaginal laceration, voiding difficulty, and/or unsuccessful catheterization, one should suspect urethral injury to avoid morbidity associated with it due to delay in diagnosis [4].

William [14] showed that vagina is always involved with female urethral injuries due to pelvis fracture. In our all three cases, anterior vaginal wall was injured and all three were unable to pass urine after injury.

Young Lee [15] points out about controversies about the management of female urethral rupture in 1986 after reviewing 268 cases (259 males and 9 females) of urethral injury. He recommends that primary realignment with surgery or interlocking Foley's catheterization is good in stable patients, otherwise delayed urethral reconstruction either by retropubic or transvaginal route is to be considered. Primary repair and if possible simple urethral realignment is advocated by Dorairajan et al [2] and other authors [6, 11]. Primary repair is the

preferred option, but suprapubic cystostomy should be done in life-threatening conditions [8, 12]. Venn says that it is difficult to recommend any specific treatment and one should treat patients according to severity of injury to urethra and surrounding organs [1].

Hartanto [10] recommended that a standard algorithm for the management of female urethral injury would be helpful on the basis of accurate diagnosis and recognition of associated injuries.

Proximal urethral identification was found to be difficult in patients with delayed presentation as urethra was obliterated. It was found to be very easy in cases of early presentation (i.e., in the third case with antegrade suprapubic cystoscopy). Identification of proximal urethra and catheterization on guidewire is much easier and less time-consuming procedure. One patient developed urethrovaginal fistula. Rest two showed good outcome. Although it is very small number of patients to comment, but outcome after primary repair seems to be better than delayed repair.

Conclusion

Female urethral injuries due to fracture pelvis are not as rare as they were thought, maybe because of increased incidence of road accidents. Primary repair or primary realignment, with help of antegrade suprapubic cystoscopic identification of proximal urethra, over catheters is best choice for management. Difficulty in identification of proximal urethra can be overcome by antegrade suprapubic cystoscopy. Early repair gives good results and should be performed routinely.

We recommend and want to give message to health professionals who deal with patients at the primary care level that every female patient with urethral injury due to

pelvic fracture should be referred for primary repair to decrease the avoidable morbidity.

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