

Early Endoscopic Realignment in Posterior Urethral Injuries

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ABSTRACT

Background: Posterior urethral injury requires meticulous tertiary care and optimum expertise to manage successfully. The aim of our study is to describe our experiences with pelvic injuries involving posterior urethra and their outcome after early endoscopic realignment.

Methods: A prospective study was carried out in 20 patients with complete posterior urethral rupture, from November 2007 till October 2010. They presented with blunt traumatic pelvic fracture and underwent primary realignment of posterior urethra in our institute. The definitive diagnosis of urethral rupture was made after retrograde urethrography and antegrade urethrography where applicable. The initial management was suprapubic catheter insertion after primary trauma management in casualty. After a week of conservative management with intravenous antibiotics and pain management, patients were subjected to the endoscopic realignment. The follow up period was at least six months. The results were analyzed with SPSS software.

Results: After endoscopic realignment, all patients were advised CISC for the initial 3 months. All patients voided well after three months of CISC. However, 12 patients were lost to follow up by the end of 6 postoperative months. Out of eight remaining patients, two had features of stricture and were managed with DVU followed by CISC again. One patient with stricture had some degree of erectile dysfunction who improved significantly after phosphodiesterase inhibitors. None of the patients had features of incontinence.

Conclusions: Early endoscopic realignment of posterior urethra is a minimally invasive modality in the management of complete posterior urethral injury with low rates of incontinence and impotency.

Keywords: endoscopic realignment; pelvis fracture; posterior urethra; suprapubic catheter; uroflometry.

INTRODUCTION

Management strategy for posterior urethral injuries has still remained controversial. Failure to accurately manage posterior urethral injuries may lead to significant long term sequelae such as recurrent stricture, incontinence and erectile dysfunction. After initial management with the placement of a suprapubic cystostomy, subsequent management varies from immediate or early to delayed manipulation.

Many centres and experts adopt delayed urethroplasty after initial placement of suprapubic cystostomy, after

three to six months of injury. This provides simple and effective urinary drainage until the associated injuries are stabilized and local edema has resolved. Though this delayed urethroplasty is effective, its long-term suprapubic tube drainage is associated with wound infection, urinary tract infection, bladder calculi, discomfort, leakage and dislodgment.

Several reports have demonstrated success with early endoscopic realignment as the initial management strategy for acute posterior urethral injuries.^{1,2} The main aim is to provide early definitive transurethral catheter drainage and avoid the need for open reconstruction.

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Many reports suggest a suprapubiccystostomy at the time of injury with delayed open urethroplasty 4 to 6 months post injury.³ In centres where urethral stricture is commonly treated, this has good success rate.⁴ However, virtually all patients treated with a suprapubic tube and delayed reconstruction require urethroplasty, while early realignment might obviate the need in many of them.

The purpose of this study was to investigate the outcome of patients undergoing early endoscopic realignment after sustaining complete posterior urethral injuries. Early endoscopic treatment is a safe, rapid and minimally invasive endourological technique.

METHODS

This was a cross-sectional prospective study conducted at B and B teaching hospital in the department of Urology and General Surgery. We had 208 cases who were admitted in our institute with different types of pelvic injuries in last three years (November 2007-October 2010). Among them, we had 68 patients (32.69%) with different grades of urethral injuries. Patients were prospectively observed and data were collected in pre-designed proforma. Ethical approval was taken from the concerned body. The age range was 18 to 46 years (mean 31) and injuries were due to road traffic accidents and fall injuries.

In all cases with suspected urethral injuries, after initial resuscitation in emergency, retrograde urethrogram was performed. Suprapubiccystostomy was inserted immediately in those who had features of urethral injury at urethrogram. Retrograde and voiding antegradeurethrogram were performed prior to endoscopic realignment. As soon as vascular and orthopaedic injuries were controlled and local haemostasis had been obtained (i.e., about 6-10 days post injury), patients were subjected to early endoscopic realignment.

Early alignment of posterior urethra was carried out by two surgeons. The patient was placed in the lithotomy position. The first operator explored the anterior urethra up to the rupture site by retrograde urethroscopy. The second operator inserted a flexible cystoscope antegradely from the suprapubiccystostomy site, to explore the bladder, bladder neck and the posterior urethra, down to the rupture site. In cases where the two cystoscopes met, the operator from down below passed the urethroscope into the bladder. If not, the operator from up above inserted a guidewire down to the posterior urethra and then pushed it down to the rupture site. Once the guide wire was seen by the operator from down below, it was grasped with a biopsy

forceps and pulled out through the external urethral meatus and then 18-20 French Foley's catheter was slid over the guide wire up to the bladder.

All patients received prophylactic antibiotics. Patients with associated significant nonurologic injury requiring emergent operative intervention either had attempted endoscopic realignment of posterior urethra in the operating room or intraoperative placement of a suprapubic catheter followed by attempted delayed realignment postoperatively. Foley's catheter was placed after realignment for three weeks, and then the urine flow was assessed with uroflowmetry. All patients who voided were subjected to clean intermittent self catheterization (CISC) for initial three months. Patients were followed up at one month postoperatively and then after three months. After three months of CISC, patients were followed up every month for six post-operative months. In cases where early endoscopic realignment failed, patients were subjected to suprapubic catheter placement followed by delayed open urethroplasty after 3 to 6 months.

RESULTS

Two hundred and eight patients with pelvic fracture were identified in the last three years and were admitted in our institute. Of these, 68 patients (32.69%) were diagnosed as having urethral injuries and among them, 20 patients (29.41%) underwent early endoscopic realignment after being diagnosed as complete posterior urethral rupture. Three patients underwent delayed urethroplasty owing to failed early endoscopic realignment and four patients were managed with open railroading and alignment of urethra. The rest had either incomplete urethral injuries or simply contusion of lower urinary tract and were managed conservatively.

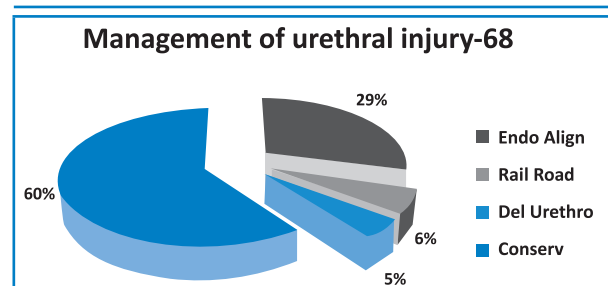


Figure 1. Management of urethral injuries at B and B Hospital (Nov 2007-Oct 2010).

One patient had an associated bladder neck injury with unstable pelvic rami fracture which was managed with open bladder neck repair and railroading along with stabilization of pelvic fracture in the same setting. After alignment, patients were kept under systemic antibiotics along with pain medications for two weeks. Normally,

patients were discharged after a week postoperatively with catheter in situ and were followed in outpatient unit. The first TWOC (trial without catheter) was done after three postoperative weeks. All the subjects voided satisfactorily and had optimum flow rate in uroflowmetry.

Patients were taught to perform CISC at least once a day from the very next day till three months post operatively then they were advised to stop. After that, patients were thoroughly examined along with uroflowmetric assessment and detailed history taken including that of incontinence, impotency and urine flow status. At the end of first three months postoperative months, only eight out of twenty patients came for the follow up and the rest were lost to follow up.

Table 1. Complications of endoscopic realignment at the end of 3rd and 6th month.

Complications	3 rd month (out of 20 patients) n (%)	6 th month (out of 8 patients) n (%)
Stricture	0	2 (25)
Incontinence	0	0
Impotence	1 (5)	1 (12.5)
Total	1 (5)	3 (37.5)

By the end of 3 months, all 20 patients had been voiding well with satisfactory pressure flow study. One patient had some degree of erectile dysfunction which improved to some extent with phosphodiesterase inhibitors (Sildenafil). None of the patients had any degree of incontinence or stricture. By the end of six months, only 8 patients came for follow up study and the rest (12 patients) were lost to follow up and were presumed to be doing fine. Out of 8 patients, two had poor flow of urinary stream and were later found to have developed urethral stricture. They were managed with Direct Vision internal Urethrotomy (DVU) and were advised to undergo CISC for the next three months. One patient with some degree of erectile dysfunction was on continued follow up till initial 6 months and he improved significantly with Sildenafil.

DISCUSSION

The management of patients with traumatic posterior urethral disruption remains controversial and many techniques have been proposed. Many primary realignment techniques, using various interlocking sounds with or without traction, have been proposed. The main criticism of these techniques, in addition to their poor results, is that they are performed blindly and there is a risk of creating a false passage.

Primary endoscopic realignment is a minimally invasive option which is performed as soon as haemodynamic conditions are controlled, orthopaedic injuries stabilised

and local haemostasis has been obtained by tamponade. This rapid and non aggressive technique provided definitive treatment for 20 patients in this study and led to continence in all along with normal erection in all except one. The secondary stricture rate was high (25%) but these strictures were short (< 2 cm) and were managed successfully with internal urethrotomies. The risk of introducing infection to the perineal haematoma exists but seems minor.⁵ No pelvic haematoma infection was observed in our series. The entire procedure of early endoscopic alignment was found to be comfortable after a week of injury because the tissue around the rupture was still soft and less haematoma was noted around the ruptured site by then.

Various series have reported the incidence of complications including urinary incontinence (2.7- 9%), impotence (22-28%) and urethral stricture (43-62.5%).^{5,6} W Eric et al had incontinence in 12.5%, impotence in 25% and stricture in 50% in their series after early endoscopic realignment.⁷ The study conducted by Patterson et al had stricture rate of nearly 40% out of 29 patients they studied. Only one patient had incontinence and about 14% had features of impotency.⁸ On the contrary Webster et al had very higher rate of stricture 95% out of 19 patients they studied with about 5% of incontinence and nearly 53% of features of impotencies.⁹ Follis et al had reasonable rate of stricture (15%) out of 20 patients following an early alignment with impotency in 20% and none of them had features of incontinence.¹⁰ Hussman et al had very similar outcome as that of Webster et al. Out of 17 patients they had stricture rate of about 94%, incontinence of 12% and impotency of 47%.¹¹ A large series by Elliot and Barret had nearly 33% of stricture rate out of 53 patients he studies. They had low rate of stricture of 4% and impotency in 15%.¹² Koraitim et al¹³ and Herschorn et al¹⁴ had similar outcome stricture rate of about 52% out of 23 patients and 52% out of 13 patients respectively. Like wise Moundouni et al had stricture rate of 48% and none of them had incontinence.¹⁵

Stricture following early endoscopic realignment is quite high in most of the series. Our series had stricture rate of about 25% (2/8) out of 8 patients and only one patient (12.5%) had features of impotency and none were incontinent.

Early endoscopic realignment in posterior urethral injury has the advantages of shorter hospitalization, shorter operative time, less blood loss and less urethral stricture. It seems to be the first choice for patients with posterior urethral injury. It is an effective and easy method to treat posterior urethral injury, even in patients with unstable pelvis fracture.

Limitation of this study is that the sample size at the end of study period was small though it was 20 to start with. At the end of three months post procedure we could follow up only 12 patients and only 8 patients by the end of six months. We presume that those patients who couldn't be followed up are doing alright otherwise. People living in far remote areas in mountains are quite reluctant to come for the follow until a very major issue has bothered them due to their financial constrains or poor access to the centre. This is the real scenario in our context where long term follow up study is very difficult.

CONCLUSIONS

In spite of being a small series, the outcome of early endoscopic realignment in our study is quite encouraging. An early alignment is possible in most patients with posterior urethral trauma and may decrease the requirement for subsequent stricture management. We believe that this technique should be considered initially in all patients with posterior urethral injury. This procedure does not appear to increase the rate of impotence, incontinence or strictures; rather, it decreases the need for open urethroplasty procedure and long term suprapubic urinary diversion.

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