

Supracrural Rerouting as a Technique for Resolution of Posterior Urethral Disruption Defects

Seyed Jalil Hosseini,¹ Alireza Rezaei,¹ Mojtaba Mohammadhosseini,¹ Iraj Rezaei,¹ Babak Javanmard¹

Introduction: Selection of an acceptable method for the treatment of posterior urethral disruption defects would be highly desirable. We determined the efficacy and success rate of some techniques including supracrural rerouting for removing of these defects among our patients.

Materials and Methods: Records of 200 consecutive men treated with anastomotic urethroplasty for traumatic posterior urethral strictures were reviewed at our teaching hospital. Prior treatment, surgical approach, and ancillary techniques required during reconstruction were evaluated.

Results: Success rate due to posterior urethral reconstruction was achieved in 78.0% of cases. Supracrural urethral rerouting was performed in 11 patients (5.5%), of whom 7 sustained recurrent stricture requiring intervention. The highest success rate of defect resolving was reported by urethral mobilization (92.4%).

Conclusion: Supracrural rerouting is not an acceptable technique and can result in postoperative complications such as recurrent stricture in most of the patients with posterior urethral disruption defects.

Keywords: urethra, injuries, rupture, posterior urethral strictures, reconstructive surgical procedures

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INTRODUCTION

Management of posterior urethral disruption defects is quite challenging, and different techniques have been proposed with variable long-term results.⁽¹⁾ These techniques may be associated with several serious complications and often require the expertise of a specialist.⁽²⁾ Over the years, various management strategies have been employed in an attempt to minimize the morbidity associated with posterior urethral disruption defects and their resolution has dramatically improved. Therefore, the selection of an acceptable method for the treatment of this defect would be essential in order to achieve desirable

outcomes. However, the efficacy of supracrural rerouting has been remained unclear. Using this method has been reported to result in recurrent stricture in most of the patients.⁽³⁾ In the present study, we retrospectively evaluated the efficacy and success rate of this technique for removing of posterior urethral disruption defects among our patients.

MATERIALS AND METHODS

In a retrospective study, 200 consecutive men treated with anastomotic urethroplasty for traumatic posterior urethral strictures were reviewed at our teaching hospital.

Department of Reconstructive Urology, Shohada-e-Tajrish Hospital, Shahid Beheshti University of Medical Sciences, Tehran, Iran

Corresponding Author:
Babak Javanmard, MD
PO Box: Tehran 13185-1678, Iran
Tel: +98 21 2235 5280-1
Fax: +98 21 2235 5281
E-mail: dr_javanmard@yahoo.com

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In the acute setting, early realignment with a urethral catheter was attempted when deemed clinically appropriate. Furthermore, emergent treatment with open or percutaneous suprapubic drainage was more commonly done. Realignment techniques varied but the predominant technique used was antegrade manual passage of an 18-F Coudé catheter during transvesical exploration with retrograde retrieval of a 16- or 18-F catheter into the bladder. Once realignment was completed, the urethral catheter was removed after 4 to 6 weeks. Suprapubic cystostomy was maintained subsequently if a voiding trial failed. Open repair was performed 6 months after the injury. Combined antegrade and retrograde cystourethrography was performed preoperatively under fluoroscopic guidance, in order to evaluate urethral distraction length and coronal displacement of the prostatic urethra. Urethral reconstruction was performed using a technique previously described.⁽⁴⁾

Patients' charts were reviewed for etiology, prior treatment, and ancillary techniques used during reconstruction. Urethroplasty success was quantified by urethrography, direct interview with the patient, and cystoscopy with retrograde urethrography, when necessary (whenever the patient reported a problem). The routine follow-up included cystoscopy and retrograde urethrography, 3 and 12 months postoperatively. The need for clean intermittent catheterization or dilation was considered treatment failure. Urethral stricture on retrograde urethrography and cystoscopy which needed ancillary treatment was also considered failure.

RESULTS

The mean age of the patients was 30.4 ± 8.2 years (range, 14 to 67 years). They had a mean follow-

up period of 19.3 ± 7.7 months (range, 4 to 35 months), postoperatively. Car and motor accident were the main causes in 147 (73.5%) and 36 (18.0%) patients, respectively. Gunshot wounds of the posterior urethra accounted for 9 (4.5%) of the lesions and straddle injury was the underlying etiology in 8 (4.0%).

Successful posterior urethral reconstruction was achieved in 156 of the 200 patients (78.0%). Thirty-six cases were considered as failed because of voiding dysfunction reported by the patient and 21, because of urethral stricture on retrograde urethrography. Also, 28 patients had urethral stricture on follow-up cystoscopy, and 29 needed ancillary treatment, including urethrotomy and dilation (Table).

Direct anastomosis with scar excision and urethral mobilization was performed in 79 of 200 patients (39.5%). Corporal splitting was performed in 69 cases (34.5%) and inferior pubectomy was done in 22 (11.0%). Supracrural urethral rerouting was performed only in 11 patients (5.5%). A combined abdominoperineal procedure was performed to reconstruct complex defects in 19 patients (9.5%), which was successful in 15 of them (78.9%). Supracrural rerouting technique was performed when free-of-tension anastomosis was not successful and the urethra was rerouted around the left corpus cavernosum for achieving more length of the urethra for anastomosis.

The underlying etiology of injury in 11 patients who underwent supracrural rerouting included car and motor accident in 9 (81.8%), gun shot in 1 (9%), and straddle injury in 1 (9%). Six these patients (54.5%) had a history of failed previous open surgery, and none of them had a history of primary realignment. These patients had a mean follow-up period of 24.4 ± 6.7 months

Operative Steps Versus Urethral Realignment and Outcome

Operative Steps	Primary State		Successful Treatment (%)
	Not Realigned	Realigned	
Urethral mobilization	77	2	73 (92.4)
Corporal splitting	67	2	50 (72.4)
Inferior pubectomy	22	0	16 (72.7)
Urethral rerouting	11	0	2 (18.2)
Abdominoperineal salvage	18	1	15 (78.9)
Total	195	5	156 (78.0)

(range, 18 to 31 months) with cystoscopy and urethrography. During the follow-up period, 7 patients (63.6%) developed sustained recurrent stricture requiring intervention, all whom had voiding dysfunction, 3 had stricture on retrograde urethrography, and 4 had stricture on cystoscopy. After ancillary intervention, the stricture recurred in 6 patients during follow-up period.

Early urethral realignment during the acute treatment phase after pelvic fracture was associated with subsequent successful delayed reconstruction in all patients (all of the 5 cases). Of the 5 patients with early realignment, 2 successfully underwent reconstruction with only urethral mobilization, 2 underwent corporal splitting, and 1 underwent abdominoperineal salvage alone (Table). None of the patient required inferior pubectomy.

DISCUSSION

Several studies investigated various maneuvers for reconstruction of posterior urethral disruption defects; however, some patients needed supracrural rerouting. In the present study, supracrural urethral rerouting was performed only in 5.5% of the patients and the success rate of this step was only 18.2%. Other available studies have also obtained similar results in comparison with our study. In one study, supracrural rerouting was performed in 3% of the patients, of whom 75% experienced recurrent stricture.⁽³⁾ Also, in another study by Pratap and colleagues, 6 of 25 patients required supracrural rerouting.⁽⁴⁾ Cooperberg and colleagues did not use this step among their patients with posterior urethral disruption.⁽¹⁾ Comparable results were also obtained by Jordan.⁽⁵⁾ In a 2003 update of the experience of Webster and Ramon, Flynn and coworkers⁽⁶⁾ also noted a chronological progression in 2 decades towards more elaborate repairs with urethral mobilization (8%), only rarely completed without the addition of corporal splitting (34%), inferior pubectomy (12%), or supracrural urethral rerouting (38%).

Some reconstructive centers noted that urethral rerouting is almost always unnecessary,⁽⁷⁾ and some investigators found that liberal urethral mobilization and corporal splitting alone are

sufficient, when needed, to enable successful posterior urethral construction in most patients.⁽¹⁾ In the present study, we also confirmed that urethral mobilization and corporal splitting had high success rates in comparison with rerouting. It seems that supracrural urethral rerouting has a limited role only for measurement of last resorts, and because of its complications such as recurrent stricture, this technique should not be routinely used by urologists.

In the present study, the success rate of urethral mobilization was considerably higher than other steps. This high success rate was also reported in other studies.^(3,6) The most common approach to the treatment of posterior urethral distraction defect, consisting of urethral mobilization to bridge defects up to 3.0 cm, was described primarily in 1977 by Turner-Warwick.⁽⁸⁾ It seems that most of the patients can be treated with urethral mobilization alone.

CONCLUSION

Similar to the previous studies, it can be concluded that the supracrural rerouting is not an acceptable technique in the patients who undergo urethral construction, and in most of the cases, this defect can be successfully removed only with other acceptable steps such as urethral mobilization.

CONFLICT OF INTEREST

None declared.

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