Stricture of the Male Urethra : 29 Years Experience of 323 Cases

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Abstract

The authors reported 323 cases of male urethral stricture managed at Ramathibodi Hospital from 1969 to 1998 (29 years period). Etiology included traumatic causes 237 (73%) and post infection 54 cases (16%).

The managements were urethroplasties 281 cases (87%), urethrotomy 21 cases (6%) and dilatation 21 cases (6%). The over all successful rate of urethroplasty was 89 per cent. The mean follow-up time was 2.5 years (0.5 - 15 years).

Key word : Urethra, Stricture, Reconstruction, Urethroplasty

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Strictures of the male urethra are a source of significant morbidity and their management remains controversial. The common causes of the stricture are traumatic and infection for bulbomembranous and penile part respectively. Pelvic fracture appears to be the most serious injury which leads to urethral disruption and distraction. The urethral stricture caused from pelvic fracture may be a long stricture and its management is complicated. Apparently few urologists have vast experience in urethroplasty, therefore, we could not find a large series in management of urethral stricture with a long term follow-up. The purpose of this article was to review our experience in management of urethral stricture over a 29 year period.

MATERIAL AND METHOD

The medical records of all patients with urethral strictures treated at the Division of Urolo-

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gy, Ramathibodi Hospital and Medical School from 1959 to 1998 were reviewed. Patient age, etiology and site of stricture as well as type of repair, results of repair and any complication were noted.

RESULTS

Three hundred and twenty - three patients who met the study criteria were identified. Mean patient age was 32 years. (Range 3-90 years). Etiology of stricture included : traumatic in origin 237, post infection 54 and unknown 32. (Table 1) Among the traumatic causes they were divided to traffic accident 152, iatrogenic 22, fall with straddle injuries 56, gun shot wound 4, stab wound 2 and dog bite 1. (Table 2) Associated injuries included pelvic fracture 103, bladder rupture 22, testicular rupture 8, testicular dislocation 1 and rectal tear 4. (Table 3) Average time to definite surgery was 5 months (range 3 months - 10 years). The sites of stricture were at membranous urethra 191, bulbous urethra 89 and penile urethra 43. Twenty - three cases were referred from other hospitals because of urethroplasty failure.

Cysto - urethrography was done in all cases (Fig. 1) and the length was a access before surgery. For treatment, twenty-one cases received dilatation only and 21 cases were treated with internal urethrotomy only. Two hundred and eighty-one (281) underwent urethroplasty including 123 with end to end anastomosis, 103 two stage Turner - Warwick's, 38 two stage Johansen's, 12 one stage Blandy & Singh's and 5 preputial pedicle flap interposition (Table 4). Re-operation was required in 26 cases because of stricture recurrences.

Long term complications included 2 ingrown hairs in the neourethra and 2 stones in the urethral diverticulum. Three cases were found to have vesicocutaneous fistula due to prolonged cystostomy. No erectile dysfunction or incontinence related to the procedures was found. The

Table 1. Etiology of stricture urethra.

Traumatic in origin	237
Post infection	54
Unknown	32

Table 2. Traumatic causes.

Traffic accident	152
Iatrogenic	22
Straddle injury	56
Gun shot wound	4
Stab wound	2
Dog bite	1

Table 3. Associated injuries.

Pelvic fracture	103
Bladder rupture	22
Testicular rupture	9
Rectal tear	1

Table 4. treatment of urethral stricture.

Dilatation	21
Internal urethrotomy	21
Urethroplasty	281
end to end anastomosis	123
two stage of Turmer-Warwick	103
two stage of Johensen	38
One Stage of Blandy & Singh	12
preputial pedicle flap	5

Fig. 1. Shows pre-operative cystourethrogram.

Fig. 2. Shows retrograde urethrogram after end to end anastomosis of membranous urethral stricture.

Fig. 3. Shows retrograde urethrogram after complete two stage of Turner-Warwick.

Fig. 4. Shows retrograde urethrogram after one stage of Blandy & Singh and partial restricture was noted and cure after internal urethrotomy.

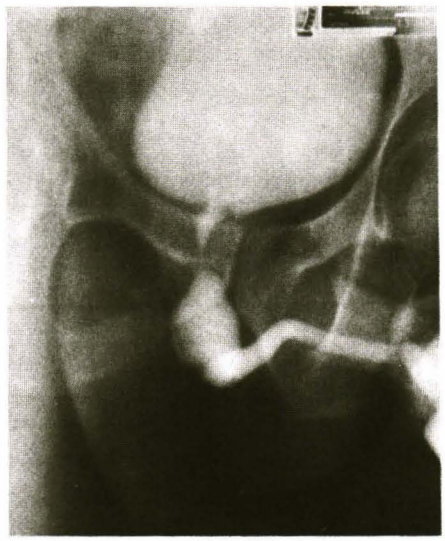

Fig. 5. Shows retrograde urethrogram after preputial skin pedicle flap inlay technique.

mean follow-up time was 2.5 years (range 6 months-15 years). Overall, good long term results were obtained.

DISCUSSION

Male urethral stricture is one of most troublesome abnormalities for both the patients and

urologists. The first reconstructive surgical procedure for the treatment of urethral stricture was described by Hamilton Russell in 1914[1]. He excised the stricture area and anastomosed one wall of the remaining urethra allowing the result of secondary intention healing[2]. The current principles of reconstruction of urethral stricture include 1). excision and re-anastomosis 2). regeneration of uroepithelium 3). substitution urethroplasty and 4). combination techinque[3].

The re-anastomosis technique is excision of the stricture and anastomose the healthy urethra [4-6]. It is generally accepted as applicable for a stricture less than 2 cm in length in the bulbous urethra and almost any length in the membranous urethra[7]. It has limitations for usage in end to end anastomosis in the penile part due to creation of chordee[8]. The over all results can be expected more than 90 per cent[8,9]. In our study, we found that bulbous urethra of up to 3 cm stricture or longer needed substitution or staged technique. The membranous stricture can be managed by end to end anastomosis, separation of corpora, pubectomy and urethral rerouting can give longer tension free anastomosis[5-7]. In our study, we found severe scarring and very long stricture from pelvic fracture which were difficult to manage by end to end anastomosis. There fore, staged urethroplasty was used in strictures more than 5 cm long and with severe scarring especially in reoperation.

The principle of re-generation of the uroepithelium is fibrosis was cut or torn and let the uroepithelium to regenerate over that area. Urethral dilatation and internal urethrotomy including laser ablation of urethral stricture can be used under this principle. There are very few recent reports on successful management of urethral stricture with dilatation. Devereux and Burfield reported successful results of the management of stricture with dilation[10]. Anyway, both dilatation and internal urethrotomy are accepted in a short stricture involving superficial spongiofibrosis and two attempts at treatment should be the limit [11]. In long term, some reports showed a high recurrent rate[12,13]. In our study, we found that both dilatation and internal urethrotomy can be used in a short non obliterated stricture not longer than 1 cm. Laser ablation is used in many institutes and showed good results but needs further long term follow-up[14,15] Wallstents are widely used in Europe[11], they can be used in the bulbar part especially in recurrent strictures but does not seem to work well when there is a deep spongiofibrosis of full thickness scar[11,16].

The substitution principle includes the usage of flap and graft. A flap from the genital area such as preputial skin or scrotal skin can be applied with a high success rate[17-20]. A flap outside the genital area mostly from the inner thigh can also be used in urethral reconstruction[21]. A graft from skin, bladder mucosa and buccal mucosa can be used in the treatment of penile and bulbous urethral stricture[22-24]. The usage of flap and graft to perform one stage urethroplasty is preferred among urologists but complicated cases or recurrent stricture need staged urethroplasties[25,26]. One Stage of Blandy & Singh and two stage Turner-Warwick scrotal inlay can be used in the stricture of bulbous and membranous parts longer than 3 cm[27]. In our study, we used these techniques in a long stricture up to 6 cms with a high success rate (85%). Hair follicle is one of the problems in long term when we used scrotal skin inlay but it can be reduced by catholysis technique[27].

Stricture of penile urethra can be managed with flap or graft in one stage with good results including cosmetic[28]. In our study, we found that our patients had severe stricture from periurethral abscess and traumatic wound. Therefore, staged urethroplasty of Johansen can be used[29]. We treated 38 patients with penile urethral stricture by this technique and very good results were obtained (100%) without any complication.

Incontinence and erectile dysfunction are the concern of both patients and urologists but we found a very low incidence of both entities related to urethroplasty. Most patients who suffered from these problems were from initial trauma especially fracture of the pubic bone[30]. Mark SD found that the longer stricture (more than 4 cms) and bilateral pubic rami fracture have a higher incidence of erectile dysfunction because the nerve control can be destroyed at the time of initial injury [31]. In our study, none of our patients had incontinence or erectile dysfunction related to our procedures.

SUMMARY

The majority of male urethral strictures can be successfully managed with the appropriate surgical approach. Functional preservation of the urethra can be accomplished in most of the patients.

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ท่อปัสสาวะตีบตันในผู้ป่วยชาย : ประสบการณ์ 29 ปี จำนวน 323 ราย

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วีระ วิเศษสินธุ์, พ.บ., กฤษฎา รัตนโอฬาร, พ.บ.*, ไพฑูรย์ คชเสนี, เอฟ อาร์ ซี เอส.**

ได้รายงานการรักษาผู้ป่วยชายที่มีปัญหาท่อปัสสาวะตีบตัน 323 ราย ซึ่งได้เข้ารับการรักษาที่หน่วยศัลยศาสตร์ระบบปัสสาวะ ภาควิชาศัลยศาสตร์ คณะแพทยศาสตร์ โรงพยาบาลรามาธิบดี ระหว่าง พ.ศ.2512-2541 (ระยะเวลา 29 ปี) สาเหตุของท่อปัสสาวะตีบประกอบด้วย อุบัติเหตุ 237 ราย (73%) อักเสบติดเชื้อ 54 ราย (16%) และไม่ทราบ 32 ราย (9%) การรักษาโดยการผ่าตัดซ่อมแซมท่อปัสสาวะ (Urethroplasty) 281 ราย (87%) ส่องกล้องตัดขยายท่อปัสสาวะ (Urethrotomy) 21 ราย (6%) ขยายท่อปัสสาวะ 21 ราย (6%) ผลของการรักษาอยู่ในเกณฑ์ดี โดยประสบความสำเร็จปัสสาวะคล่อง ไม่มีปัสสาวะตกค้าง รวมทั้งไม่ต้องกลับมาทำการรักษาอีก 251 ราย (89%) ระยะเวลาติดตามการรักษาเฉลี่ย 2.5 ปี (0.5-15 ปี)

คำสำคัญ : ท่อปัสสาวะ, ท่อปัสสาวะตีบตัน, การผ่าตัดซ่อมแซมท่อปัสสาวะ

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