

## MEATAL STENOSIS AND STRICTURE URETHRAE IN POSTOPERATIVE PATIENTS OF URETHROPLASTY: A PROSPECTIVE STUDY

Md Minhajuddin Sajid<sup>1\*</sup> Md Akbar Husain Bhuiyan<sup>2</sup> Md Abdullah Al Farooq<sup>1</sup>  
M A Mushfiqur Rahman<sup>3</sup> Tanvir Kabir Chowdhury<sup>3</sup> Md Golam Habib<sup>4</sup> Adnan Walid<sup>5</sup>

### Abstract

**Background:** The postoperative complications of urethroplasty in hypospadias surgery still remain a great challenge to Paediatric urologists. The aim of the study was to find out the cause and incidence of meatal stenosis and stricture urethra following urethroplasty and to solve the postoperative complication. **Materials and methods :** This Prospective study was carried out in the department of Paediatric Surgery, Chittagong Medical College Hospital from April 2013 to October 2014 for a total of 19 months. A total of 50 hypospadias patients were selected for this study. After urethroplasty, outcome was assessed in terms of meatal stenosis and stricture urethra in the study period. **Results :** Meatal stenosis occurred in 5 patients in first follow up, which responded to regular dilatation in 3 patients in second follow up and till the end of third follow up, 2 patients were continuing regular meatal dilatation. In this study, urethral stricture occurred in 2 patient (4%) in second follow up, which was treated with regular urethral dilatation under general anaesthesia. **Conclusion :** It is evident from this study that, meatal stenosis is not very uncommon after urethroplasty which can very easily be treated by regular meatal dilatation. Urethral stricture, though not common, can also be treated by regular urethral dilatation under General Anaesthesia (GA).

1. Associate Professor of Paediatric Surgery  
Chittagong Medical College, Chittagong
2. Professor of Paediatric Surgery  
Chittagong Medical College, Chittagong
3. Assistant Professor of Paediatric Surgery  
Chittagong Medical College, Chittagong
4. Medical Officer of Paediatric Surgery  
Chittagong Medical College Hospital, Chittagong
5. MS Student (Paediatric Surgery)  
Chittagong Medical College, Chittagong

\*Correspondence: **Dr. Md. Minhajuddin Sajid**  
E-mail: minhajsajid@yahoo.com  
Cell : 01911 811421

Received on : 03.05.2017

Accepted on : 16.07.2017

### Key words

Hypospadias; Meatal stenosis; Stricture urethra; Urethroplasty.

### Introduction

Meatal stenosis is an abnormal narrowing of the urethral meatus in males. This refers to the size of the opening at the tip of the penis. This condition is usually acquired but can exist from birth. Meatal stenosis is more common than urethral stricture and its incidence is increased when the practice of placing the external urethral meatus at the tip of the glans were routinely adopted in hypospadias surgery<sup>1</sup>. The problem arose as a result of circular anastomosis and could be averted if a dart of glans tissue is excised or if an oblique anastomosis is done<sup>2</sup>. Stenosis could also be due to a tight glans closure and a glans tunnel of sufficient width should be constructed to readily accept the neourethra<sup>3</sup>.

Meatus can become stenotic by crusting, oedema, or synechia. A stent left in place usually precludes these complications. Meatal stenosis should be avoided by creating a generous channel through the glans, without compromising blood supply. Sitzbath twice daily with placement of an ophthalmic ointment tube nozzle into the urethral meatus suffices. Gentle bougienage with a straight sound also assists in assessing meatal patency<sup>4</sup>. Occasionally, meatotomy or meatoplasty is needed when associated with a proximal fistula or neourethral diverticulum<sup>5</sup>.

Stricture may occur at the proximal anastomosis of urethroplasty. This may be due to "angulation" of anastomosis and may be avoided by lateral fixation of the anastomosis to the tunica albuginea. Strictures may be repaired by excision and reanastomosis. Most cases of urethral strictures can be managed by gentle dilatation in first few weeks postoperatively. Occasionally, meatotomy or meatoplasty is needed, especially with proximal fistula or urethral diverticulum. More proximal strictures can be treated by visual internal urethrotomy and patch graft urethroplasty<sup>4,6</sup>.

### Materials and methods

This was a prospective study carried out in the Department of Paediatric Surgery, Chittagong Medical College Hospital from April 2013 to October 2014 for a total of 19 months. A total number of 50 patients of distal, mid and proximal penile hypospadias, admitted in Chittagong Medical College Hospital from the outpatient department, were selected for this study.

Inclusion criteria for selection of cases were patients with anterior, mid and posterior variety of hypospadias, all cases were randomly selected, and patient's age was up to 12 years.

The exclusion criteria were, patients with glanular and coronal variety of hypospadias, cases with previous history of operation in the inguinoscrotal region for some other reasons and, the patient who didn't give consent to the operative or randomly assigned procedure.

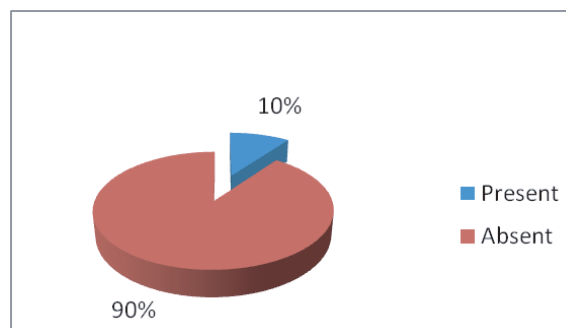
After admission of the patient, pre-operative routine and microscopic examination of urine, culture and sensitivity tests were carried out routinely. During operation, if a tunica vaginalis wrap application was considered, the testicle opposite the pedicle wrap (If the surgeon had chosen a pedicle wrap around one side of phallus) was chosen to overcome and neutralize the opposite pulling forces on the penis. But, if the hypospadias procedure did not include a pedicle, the surgeon included either testicle to begin the tunica vaginalis procurement. The penis was degloved upto the base, the testicle was elevated gently, the scrotal attachment to the tunica vaginalis and testis was separated and the testicle and tunica vaginalis were delivered to the wound. Dissection of the filmy attachment along the spermatic cord was completed. The tunica vaginalis was opened distally and by making a transverse incision, the dissection was carried out parallel to the spermatic cord towards the superficial inguinal ring. Once the dissection was completed (Fig 1) and haemostasis obtained, the testicle was replaced into the scrotum in neutral position. Thus the neourethra was covered with the tunica vaginalis. Fine forceps, iris scissors and skin hooks were used to prevent gross handling of tissues. We used 6/0 polyglactin suture and 5/0 chromic catgut for skin repair. All patients were dealt with proper antibiotic for a minimum period of 10 days. Post-operative analgesia was maintained with intramuscular injection pethidine, per rectal diclofenac sodium, syrup paracetamol orally and also by the effect of caudal anaesthesia.



A Urinary diversion was provided by means of a PVC Feeding tube of 6-8 French (Fr) in the neourethra was kept in situ for 10 days. Dressing was changed on 6<sup>th</sup> Post Operative Day (POD). Average post-operative hospital stay was 10 days. All the patients were followed up for 2 months at the interval of 2 weeks, starting from the date of discharge.



**Fig 1:** The process of urethroplasty in progress



**Fig 2 :** Presence of Meatal stenosis in the study group of patients



**Fig 3 :** One patient passing urine normally with straight flow and normal stream

## Results

**Table 1 :** Table showing complications of urethroplasty postoperatively with correction of after regular follow up

Complication	Study (n=50)		
	No (%) 1 <sup>st</sup> FU (2 weeks)	No (%) 2 <sup>nd</sup> FU (1 month)	No (%) 3 <sup>rd</sup> FU (3 month)
Meatal stenosis	5 (10%)	3 (6%)	2 (4%)
Urethral stricture	0	1 (2%)	0

Meatal stenosis occurred in 5 patients (10%) in first follow up, which responded to regular dilatation in 3 patients in second follow up and till the end of third follow up, 5 patients (10%) were continuing regular meatal dilatation (Fig-2,3). In this study, urethral stricture occurred in 1 patient (2%) in second follow up, which was treated with regular urethral dilatation under general anaesthesia (Table 1).

## Discussion

Urethral stricture is an abnormal narrowing of the tube that carries urine out of the body from the bladder. It may be caused by inflammation or scar tissue from surgery, disease, injury or snugly fitting urethral stent, catheter or cystoscope. Rarely, it may be caused by pressure from a growing tumor near the urethra.

Urethral stricture and meatal stenosis are the second most common complication of hypospadias surgery, after urethrocutaneous fistula<sup>1</sup>. It is difficult to determine the exact incidence of these complications, but Belman showed that the range was 0–22.7% drawing data from 21 publications (From 1974 to 1981)<sup>3</sup>. Later it was claimed that the incidence of stenosis had significantly decreased since surgeons were no longer employing circumferential anastomoses<sup>7,8</sup>. This claim is supported by the work of others who reported a 9–31% incidence of early stricture when the inner preputial skin was tubularised as a one-stage repair<sup>9,10</sup>. Despite the reduction of these complications, stricture continued to be a significant complication of hypospadias surgery with an incidence of 6.5% in 582 patients<sup>11</sup>.

In our study, meatal stenosis occurred in 5 patients (10%) in first follow up, which responded to regular dilatation in 3 patients in second follow up and till the end of third follow up, 2 patients (2%) were continuing regular meatal dilatation. Another study showed a 32% occurrence of meatal stenosis in 31 operated patients<sup>12</sup>. Only one (2%) of our patients developed urethral stricture (10%) in second follow up, which was treated with regular urethral dilatation under G/A. The other study with 31 patients also had one (3%) patient who developed urethral stricture<sup>12</sup>. A study in Norfolk and Norwich University Hospital showed that meatal stenosis was found in 6 patients (8.57%) out of 70 patients where all the surgeries were performed by single surgeon<sup>13</sup>. Post urethroplasty meatal stenosis was 7% in a study carried out in Abbotabad, Pakistan, and 7.4% in another hospital in Zaria, Nigeria where out of 54 patients, 4 patients developed meatal stenosis and 3 patients (5.6%) developed urethral stricture<sup>14,15</sup>.

## Conclusion

In our study, posturethroplasty meatal stenosis was initially 10% which reduced to 4% after serial meatal dilation. This is near to other studies performed in other centres of the world. Posturethroplasty urethral stricture was 2% which is also similar to other studies. This also responded to serial dilatation of urethra under G/A. Thus, although meatal stenosis is not very uncommon after hypospadias surgery, it can be improved after serial dilatation. Moreover, if improved technique of urethroplasty is undertaken with meticulous operative and postoperative care, these complications can be overcome.

## Disclosure

All the authors declared no competing interest.

## References

1. Malone P. Meatal Stenosis and Urethral Strictures after Hypospadias Surgery. In: Hadidi AT, Azmy AF editors. Hypospadias Surgery. Berlin Heidelberg New York: Springer-Verlag; 2004; 295-300.
2. Duckett JW, Coplen D, Ewalt D, et al. Buccal mucosal urethral replacement. J Urol. 1995; 153:1660–1663.

3. Belman AB. Hypospadias. In: Welch KJ, Randolph JG, Ravitch MM, O'Neill JA, Rowe MI (eds): *Pediatric surgery*, 4th edn. Year Book, Chicago. 1986; 1286–1302.
4. Harris DL, Jeffrey RS. One-stage repair of hypospadias using split preputial flaps (Harris). *Br J Urol*. 1989; 63:401–407.
5. Mouriquand PDE, Mure PY. Hypospadias. In: Gearhart JP, Mouriquand PDE, Rink R (eds) *Pediatric urology*. Saunders, Philadelphia. 2001;713–728.
6. Kumar MVK, Harris DL. A long term review of hypospadias repaired by split preputial flap technique (Harris). *Br J Plast Surg*. 1994; 47:236–240.
7. Duel BP, Barthold JS, Gonzalez R. Management of urethral strictures after hypospadias repair. *J Urol*. 1998; 160:170–171.
8. Duckett JW. The current hype in hypospadiology. *Br J Urol*. 1995; 76 [Suppl 3]:1-7.
9. Murphy J P. Hypospadias in Paediatric Surgery (eds) Ashcraft, K.W. Sharp R J. W.B. Saunders Company, Philadelphia, Pennsylvania. 2000; 763-782.
10. Horton C E Jr Horton, C.E. Complications of hypospadias surgery, *Clin.plast.Surg*. 1988;15(3): 371-379.
11. Retik A B, Keating M, Mandell J.'Complications of hypospadias repair', *Urol. Clin. North Am*.1988;15 : 223-226.
12. Snow B W, Cartwright P C. *Tunica vaginalisblanket*. 1999.
13. Duckett versus Bracka Technique for Proximal Hypospadias Repair: A Single Centre Experience, *Journal of pediatric surgical specialities*. 2015;9(2): 1-52.
14. An Audit of Single stage Hypospadias Repair at Ayub Hospital Complex, *Journal of Ayub Medical College and Hospital Complex, Abbotabad, JAMC*. 2004, 16(4):21-25.
15. Hypospadias: 10 years review of outcome of treatment in Pediatric Urological Practice, *Sub Saharan African Journal of Medicine*. 2015;2(1):28-32.