

Outcome of surgical meatoplasty versus meatal dilatation in children with post circumcision meatal stenosis

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Abstract :

Background : Meatal stenosis is a condition is occurred in 8% to 9% of male child after neonatal circumcision , Many theories described the etiology of development of meatal stenosis,those are either sever meatal inflammation or due to meatal devascularization caused by cutting of frenular artery during circumcision or due to meatal ammonitis . , meatal stenosis dose not become apparent till the child is toilet trained, Dysurea , frequency , terminal heamaturia and incontinence are the leading symptoms to discover meatal stenosis, the condition rarely cause a change in the upper urinary tracts. Meatal stenosis is treated either by surgical meatoplasty or periodic dilatation.

Aims: To evaluate the symptomatic improvement in children with urethral meatal stenosis after surgical meatoplasty and compare it with conservative periodic meatal dilatation with hydrocortisone cream.

Patients and method: 23 child with variable degree of meatal stenosis their age were between 2.5 years to 5 years examined in private clinic for their symptoms, undergone complete evaluation including physical examination, laboratory urine analysis , ultrasounic examination for assessment of the bladder and upper urinary tract , and biochemical tests. The 23 patients were divided into 2 **group A** (12 child) and **group B** (11 child).

Group A were treated by weekly dilatation using sound metal dilator size 10/12 French , for 4 weeks, Also hydrocortisone 2.5% cream for 3 days implicated to the meatus following each dilatation session.

Group B was treated by surgical meatoplasty (1)

Results: Two month after the procedures all patients in group A , B were re examined:

In **group A** 10 patients (83.3 %) developed re stenosis and just 2patients (16.6%) still had adequate urethral meatal opening.

In **group B** 10 patients (90.9%) had good symptomatic improvement and adequate urethral opening, just one(9%) patient still has obstructive urethral symptom .

Conclusions: Surgical meatoplasty should be considered other than conservative meatal dilatation in definitive treatment of meatal stenosis in children.

Key word: Meatal stenosis , meatoplasty ,meatal dilatation.

Introduction:

Meatal stenosis is a condition that almost always is acquired in 8% to 9% of male child after neonatal circumcision...(1)*

Many theories described the etiology of development of meatal stenosis those are :

disruption of the normal adhesion between the prepuce and glans and removal of foreskin ,cause a significant inflammatory reaction causing severe meatal inflammation and cicatrix formation which leads to meatal stenosis(3) .

other theory is due to meatal devascularization caused by cutting of frenular artery during circumcision...(2) .

the last theory is associated with inflammatory reaction from ammonia present in urine on the glans causing meatal ammonites , which finally lead to meatal stenosis...(5)

Clinically most of the cases , meatal stenosis does not become apparent till the child is toilet trained , If the meatus is pinpoint , the boy void with forceful fine stream that has great casting distance , but , some boys has a dorsally deflected stream and prolonged voiding. Dysuria , frequency , terminal hematuria and incontinence are the leading symptoms to discover meatal

stenosis . The affected boys usually presented with one or all the above symptoms ...(2)*

In examination the meatus should be calibrated with bougie...(2)*, For children who have abnormal voiding pattern or recurrent urinary tract infection , ultrasonography for assessment of bladder and upper tract , and voiding cystourethrography in VCUG suspected cases of posterior urethral valve.

However , meatal stenosis rarely cause a change in the urinary tract. In general 5% of child with meatal stenosis have abnormal voiding cystourethrography (VCUG), and 1% of them have upper tract anomalies . Cystoscopy indicated for those with abnormal VCUG or dilated kidneys...(2)*

Treatment :

1- surgical meatoplasty by doing a ventral incision on the glans extend it toward the frenulum to provide adequate meatus , the urethral mucosa is sutured to the glans with fine 4\0 vicryl suture...(1)*.

2-periodic dilatation of the meatus using 2% Lidocaine gel. Dilatation is done with sound metal dilator which inserted to urethra just for less than 1 cm to provide adequate meatus ...(4)*

Meatal diameter is age depending which we depend on at dilatation
For child from 6 week to 3 year should be 10 French .

For child from 4 year to 10 year should be 12 French .

For child from 11 year to 12 year should be 14 French . (2)*

Patients and methods :

For group A :

1- sound metal dilators up to 10/12 French .

2- Lidocaine gel 2% .

3- hydrocortisone cream 2.5% .

For group B :

1- surgical set including small mosquito and scissor .

2- sound metal dilators up to 10/12 French.

3- Vicryl absorbable suture 4/0 .

Type of study: Therapeutic comparative study.

Period: from 10 /1/2012 to 15/12/2012.

23 child were investigated for their meatal stenosis in private clinic in Baghdad. A thorough medical history of their present illness were taken and examination of their meatus is done by inspection ,Ultrasound taken for all children to evaluate bladder and upper tract , which were normal for all of the examined children , so ,no one of them need VCUG nor cystoscopy.

Random blood sugar was taken for those who present with frequency to exclude diabetes, Biochemical investigation with hepatic viral

study for group B patients who treated by surgery.

Group A were 12 patients all treated by weekly dilatation by sound metal dilators up to 10 and 12 Fr(according to ages) using Lidocaine 2% gel as a lubricant and anesthetic agent ,followed by application of hydrocortisone cream 2.5% 3 time daily for 3 days after each dilatation session , the procedure is repeated for 4 weeks . All patients were reexamined one month from last dilatation session to re exam their children and re evaluate their symptoms.

Group B were 11 patients all shifted to surgical meatoplasty under general anesthesia in general hospital in Baghdad city.

Meatoplasty is done by making dilatation of urethral meatus by sound up to 10 and 12 Fr(depending on child age) and crushing the ventral surface of glans to the frenulum by a mosquito then incise the crushed area by scissor , finally 2 stitches by 4/0 vicryl suture is placed on each side of urethral mucosa to the glans which help to keep the

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incised region opened , no dressing was required after termination of surgery .

Patients were reexamined 2 month after surgery and re evaluated for their symptoms .

Results :

For group A : of the 12 patients who undergone dilatation 10 patients (83.3 %) developed re stenosis , all of their symptoms re emerge after 2 to 3 weeks from last dilatation cession, two patients (16.6 %) still had adequate urethral meatus after one month , however, both of them had pain at voiding , and developed re stenosis in the following few weeks .

For group B :of the 11 patients who undergone surgical meatoplasty 10

patients (90.9%) developed good symptomatic response in term of good urinary stream ,no frequency , no dysurea with adequate urethral meatus ,just ,One patients (9%) his age was 4.5 years still had difficulty in voiding although his meatus was adequate I shift him to VCUG which was normal ,but, on cystourethroscopy trabeculated bladder and normal urethra , his symptoms get better on anticholenergic drug .

Table (1-1) show the result of interventions in both group A & B

GROUPS	PATIENTS NO.	TREATMENT STRATEGY	SYMPTOMATIC IMPROVMENT	RESTENOSIS WITHIN 2 MONTH
A	12	Periodic dilatation	2 patients (16.6)%	10 patients (83.3)%
B	11	Surgical meatoplasty	9 patients (90.9)%	1 patients (9)%

Discussion :

Meatal stenosis is one of most common urological condition that affect male at infancy , childhood , toddlerhood ,and preschool children periods , it affect 8 to 9 % of circumcised male , The condition used to be treated by meatal dilatation commonly by general practitioners using the bulb of thermometer .

In this study the patients were randomly selected at different age, time of presentation, period and severity of symptoms, and time since circumcision. They sub classified into group A and group B .

In group A which include 12 patients, after one month of last dilatation session 10 patients (83.3 %) developed re stenosis ,The other 2 patients (16.6%) few weeks from re evaluation also developed stenosis .

In group B which include 11 patients , after one month of surgical meatoplasty 10 patients (90.9 %) developed complete symptomatic improvement , Only one patient (9%) who not respond to surgical correction has sings of neurogenic bladder on cystoscopy and get batter on ditropan syrup .

Above results indicates that surgical meatoplasty is curative in (90.9 %)

of patients and the only one patients (9%) who was symptomatic post surgery had obstructive cause other than meatal stenosis .

While periodic dilatation produce temporarily symptomatic relief in 2 patients (16.6%) , however , their stenosis recur soon .

We can concluded that there were no role in topical hydrocortisone in decreasing the intensity of meatal inflammatory reaction after each dilatation session , more than this , there is no role at all in periodic dilatation in definitive management of meatal stenosis in children .

Many study that focus on surgical meatoplasty most of them advice the surgical meatoplasty other than dilatation .

Ming-Hsien Wang in 2010 they concluded that Surgical meatoplasty is the curative therapy for children with meatal stenosis...(1)* .

Brown et al 2008 reported excellent results following 130 office meatotomies (meatoplasty) with only 2 recurrences of meatal stenosis and 1 patient with bleeding requiring stitches , He conclude that serial dilatation results in small tears of the meatus, which are followed by secondary

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healing. In the long term, this creates a tighter stricture at the tip of the penis; therefore, this procedure is discouraged. And he advice that meatoplasty is the definitive treatment for meatal stenosis..(2)*.

Radojicic ZI, Perovic SV, Stojanoski KD asses 19 boys (median age 19 months, range 12-28) had a proximal hypospadias repair using a tubularized skin island-flap urethroplasty developed re stenosis after surgery . The neourethra was calibrated every 7-15 days for 3 months starting 7-10 days after surgery. The patients with meatal stenosis were treated by dilatation using topical 0.05% betamethasone cream daily (twice per day) for 3 months . After treatment, Stenosis persisted in five patients who did not respond to the treatment; while , 14 child

had adequate urethra ,he concluded that dilatation with topical corticosteroid is effective in meatal stenosis in hypospadias repair only ...**(6)*** .

Conclusion:

From above studies, a periodic meatal dilatation of the urethra should not be considered as a permanent curative therapy in children with meatal stenosis as more than 90% of them will have recurrent stenosis .

Dilatation could be used as temporarily procedure just for symptomatic relief .

In other hand surgical meatoplasty is curative permanently in more than 90% of patients .

Finally surgical meatoplasty should be considered other than conservative meatal dilatation in treatment of meatal stenosis in children .

References :

1. Ming-Hsien Wang, M. Surgical Management of Meatal Stenosis with Meatoplasty. *J. Vis. Exp.* (45), e2213, doi:10.3791/2213 (2010)..
2. Wein AJ, Kavoussi LR, Novick AC, Partin AW, Peters CA. *Campbell-Walsh Urology*. 9th ed. 2007. pp. 1044–1045.
3. Persad R, Sharma S, McTavish J. Clinical presentation and pathophysiology of meatal stenosis following circumcision. *Br J Urol*. 1995;75(1):91–93.
4. Frank JD, Pocock RD, Stower MJ. Urethral strictures in childhood. Department of Paediatric Surgery and Urology, Royal Hospital for Sick Children, Bristol. *Br J Urol*. 1988;62(6):590–592.
5. Oxford handbook of urology ,2nd edition by john Reynard , ,Simon brewster ,suzzan biers.
6. Radojicic ZI, Perovic SV, Stojanoski KD. Calibration and dilatation with topical corticosteroid in the treatment of stenosis of neourethral meatus after hypospadias repair. *BJU Int*. 2006 Jan;97(1):166-8. Paediatric Urology, University Children's Hospital, Belgrade, Serbia, Yugoslavia. zotiogiv@eunet.yu