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EVALUATION OF MATHIEU'S REPAIR FOR PRIMARY DISTAL HYPOSPADIAS WITHOUT CHORDAE IN 45 CASES.

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ABSTRACT

Objective: To evaluate the results of Mathieu's repair for distal hypospadias without chordae.
Study Design: Prospective analytical
Material and Methods: 45 patients with an age range from 2 to 26 years, with mean age 7.5 years were included. Patients were divided into six groups G1-G6 according to their age. Urethroplasty with Mathieu's method was carried out in all patients, using Vicryl 3/0 and 4/0 as suture material. Stents were placed in all patients for 10-15 days.
Results: The overall success rate was 82.22 % (n=37) and major complication rate was 17.77 % (n=8). The major complications were fistula formation, severe infection, skin necrosis and total disruption. Minor complications were observed in 35.5% (n = 16).
Conclusion: The reason for poor results was high mean age in our study, which is much higher than international data. Results can be improved by better selection of patients, improving sterilization, operative and postoperative care.
Keywords: Distal Hypospadias, Mathieu's repair, Reverse flap urethroplasty.

INTRODUCTION

Hypospadias is the most common congenital malformation of the urethra [1], in which the urethra opens on the ventral surface of penis, proximal to its usual position. Opening may be anywhere along the line of the urethra a few millimeters short of its usual position at the tip of the penis to the perineum. [2] A blind depression marks the normal site of the meatus. This is classified as glandular, coronal, sub-coronal, penile, penoscrotal and perineal with split scrotum .[3] Hypospadias occurs in 1 in 300 live male births .[4] The glandular and coronal variety is in 85% of patients and the penoscrotal variety alone is found in 1 in 1000 patients .[5] It results from failure of fusion of the urethral folds on the under surface of the genital tubercle. In hypospadias with meatus positioned proximal to corona, the prepuce is not forming a complete cylinder due to a ventral defect .[6] Identification of the anomaly at birth is important in order to advise the parents that circumcision is contraindicated and that reconstructive surgery will be required [5].Urine is sprayed between the legs during micturation or dips along the penile shaft. [4]There is an increased incidence of undescended testis without significant increase in upper urinary tract abnormalities [7]. Other associated abnormality is inguinal hernia [8]. Not all cases require surgery. Surgery is indicated to improve sexual function and for cosmetic reasons. The operation is best performed by a specialist pediatric surgeon or by surgeon with experience and training in exacting area .[9] Aesthetic functional reconstructions by the early age of 2 - 4 years has an excellent long term prognosis with little residual psychological upset. Present day technique carry 7% complication rate, including ventral glandular disruption, meatal stenosis, fistula formation and rarely total break down of the reconstruction.[10] The surgical goal in hypospadias patients is to construct a straight penis with the urethral meatus as close as possible to the normal site, to allow forward directed urine and normal coitus. Surgical repair of hypospadias is no longer dubious, unreliable or extremely difficult. If properly tried and proven methods are followed, good results can be obtained in every case .[11] There have been over 200 reported methods of urethral reconstruction mentioned in literature including the one with vascularized skin flap by leaving dartos tunica attached to mobilized skin[12]. These are applied to different levels like anterior, middle and posterior urethra, but today's most published series of tubularized incised plate urethroplasty

concern distal repairs only.[13-15] But anecdotal mention of this procedure for more proximal defects in recent publications by several surgeons is also seen .[16-18] Despite many surgical procedures described for correcting hypospadias, there is no generally accepted system for assessing the surgical results.[19]

The aims of our study was to evaluate the results of Mathieu's repair for distal hypospadias without chordae,in Saidu Teaching Hospital, Saidu Sharif.

MATERIAL AND METHODS

This prospective study was carried out in the department of general and urological surgery at Saidu Teaching Hospital, Swat over a period of 3 years from 1st April 2004 until 31st Mar 2007. A total of 45 patients were included in the study. They were selected from out patients department at hospital and private clinics. A proforma was devised for the same to get the results quickly. The proforma contained, name, age, address, family history, reason for asking the procedure, surgeon name, suture material used, size of the stent and the removal time, complications thereof, cosmetic appearance and urine spraying etc. All those patients with primary distal hypospadias without chordae were included. Patients with history of urethroplasty, evident chordae or abnormal external genitalia were excluded from the study. Patients were evaluated by taking detailed history, clinical examination and baseline investigations including full blood count, urinalysis, Urea and electrolytes, coagulation and hepatitis profile. All patients were subjected to abdominal ultrasonography. All the selected patients underwent reverse flap urethroplasty (Mathieu's) repair. Every patient selected was given bath on the morning of operation with antiseptic soap. Surgeon's selection was random. Most of the surgeons used Vicryl no. 3/0 and 4/0. Horton test was performed on every patient during anesthesia,[20] by applying a rubber tube around the base of the penis and injecting saline into corpora to produce an erect penis, so a chordae if present may become evident. Stents in the form of feeding tube were used and secured with glans by suture. The new urethra was constructed around this feeding tube. The caliber was between 4 to 10 Fr, as per size and age of the patient. The stent was removed between 10 to 15 days postoperatively. Injectable antibiotics were used in every patient with induction and continued for 2-3 days after operation. Although antibiotics were left to the choice of surgeon, most of the surgeons used Cefuroxime, with dose titrated for patient weight. They were then converted to oral antibiotics of the same type. Follow up was done for six months at 2 weeks, 6 weeks, 3 months and six months interval and complications such as failure of repair, infection, edema, narrowing of the tube and fistula formation were recorded. Surgery was defined as successful when patient voided urine through the new meatus at the time of catheter removal. Narrow meatus and slight deformed shape of penis were not considered to be failure of surgery.

RESULTS

The age range was between 2 to 26 years (mean age 7.5 years). They were divided into six groups G1-6. **Fig-1,** on the basis of age.

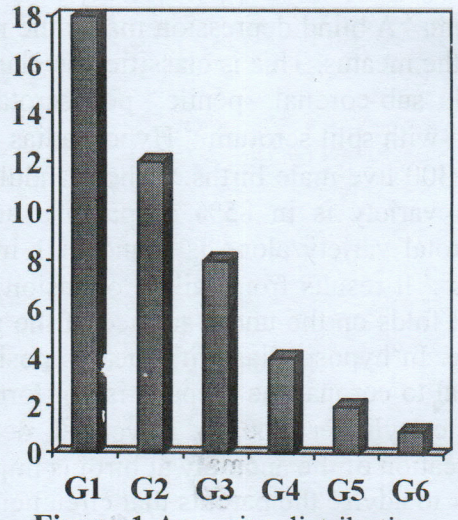


Figure 1 Age wise distribution

Legend: G1=2-5yrs, G2 = 5-10yrs, G3 = 10-15yrs, G4=15-20yrs, G5 = 20-25yrs, and G6 = 25-30yrs
Majority 40 % (n=18) were in group 1, next 26.66% (n=12) were in group 2. In group 3 patients were 17.77 % (n=8) and in group 4 8.88 % (n=4). Group 5and 6 had 2 (4.44%) and 1(2.22%) patients respectively.

Majority of the patients 80 % (n=36) presented for down going stream, scattering of stream and wetting of clothes while voiding. 8 (17.77%) patients presented for cosmetic while one (2.22%) patient for social reason when the wife asked him to get the operation done. The good success rate 86.66 % (n=26) was noted in group 1& 2 while it was 73.33 % (n=11) in group3-6. The reason for the difference in the results may be frequent erection of penis which disrupted the anastomosis and required re surgery, in the later group.

The over all success rate was 82.22 % (n=37). All patients voided well postoperatively. Outcome in respect to appearance among all 37 patients with successful surgery was analyzed. 64.8 % (n=24) had normal appearance, 27 % (n=10) had slightly different shape while 8.1 % (n=3) had fairly different shape of the penis. 14 patients (37.83%) had occasional showering of urinary stream and it was persistent in 3 patients (8.1%) till the end of our study. No surgical intervention was done as these patients had good caliber of urinary stream. 8 patients (17.77%) had complications that led to the failure of the procedure. **Fig-2**

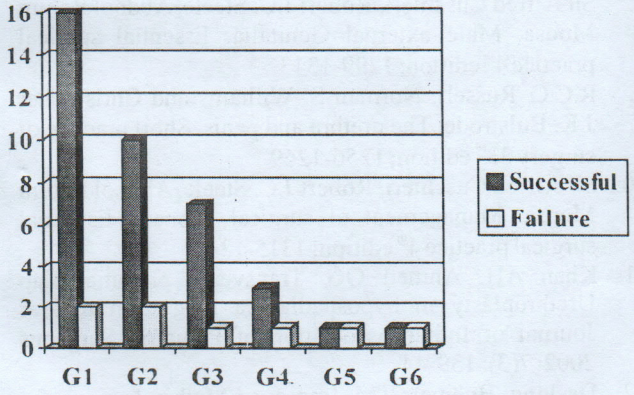


Figure 2 Age wise functional results

Details of these complications is shown in **Table 1.**

S.No	Complication	No of patients	Percentage
1	Fistula formation	3	6.66%
2	Severe infection	2	4.44%
3	Total disruption	2	4.44%
4	Superficial skin necrosis	1	2.22%
	Total	**8**	**17.77%**

Table-1 Complications leading to total failure

Minor complication were noted in successful cases which is shown in **Table-2**

S.No	Complication	No of patients	Percentage
1	Mild infection	4	10.8%
2	Edema	3	8.1%
3	Different shape of penis	3	8.1%
4	Dislodgment of tube	2	5.4%
5	Bladder spasm	2	5.4%
6	Narrowing of meatus	2	5.4%
	Total	**16**	**43.24%**

Table-2 Minor complications in successful cases.

DISCUSSION

Age: We noted differences in our study as compared to international data. In most centers mean age at surgery was 20.6 months, ranging 1-11 years. [21] In our setup mean age is 7.5 yrs and range is 2-26 yrs. This age range is high as compared to international mean, due to late referral, lack of awareness among parents and patients. Poverty is an important factor that cannot be ignored in our part of the world. These factors are the usual causes of delay in consultation. In our series one patient was asymptomatic but convinced by his wife for surgery.

The authors have the experience of an elderly patient coming for prostatectomy at the 83, with three wives, seventeen children and a coronal hypospadias. On questioning he told, that he had no need for surgery as he coped with down going stream of urine, although having normal sexual life. [8]

Success Rate: The overall success rate in our study was 82.22%. This is low as compared to

percentage reported in international literature[22], which is as high as 95%. [23] but if only Group 1 & 2 are considered then success rate is 86.66%, which is nearer to the success rate published.

Best results were achieved when early surgery was carried out as in Group 1 & 2. These groups had young patients 2-10yrs age. In later age the erection was the problem[24]. The failure rate in our study of 17.77% may be explained as, due to poverty, lack of adequate facilities for such a plastic procedure, inadequate surgical plan, surgeon to surgeon variation and delayed presentation.

Complications: Major complication in our study was fistula formation in 6.66% of patients while international rate is 7%[25]. All the three patients who had this complication in our study were of older age as compared to the latest recommendations regarding surgery for hypospadias[25]. other causes were infection, postoperative erection and sometimes non availability and non affordability of the proper suture material by the patient. Superficial skin necrosis was the cause of failure in one case. The overall complication rate, which include some minor complications such as edema, tube dislodgment, narrowing of the meatus and fairly different shape of the penis was 40 % (n=18) which is slightly higher in our study as compared international literature[22]. Tube dislodgment cases were two. In one case the tube secured to glans that gave way as the urine bag was pulled accidentally and in the other, the knot of silk opened up and dislodged the tube. One case of edema, out of the three, required drainage of sero sanguinous fluid without anesthesia.

Cosmetic Results: Cosmetic results following surgery calculated among successful patients were comparable to published data [26]. Majority of boys and parents (91.4%) considered the appearance of penis postoperatively as normal or near normal compared with 90% mentioned by Elbakry A in 2002 [25].

Urine spraying: Urine spraying did not occur in 62.17% of our patients compared to 46% in literature, similarly occasional spraying of urine was 37.83% in our study as compared to 44% and always spraying of stream was 8.1% in our research as compared to 7% in literature [27]. These results are better than the world literature.

CONCLUSION

Mathieu's repair for distal hypospadias without chordae gives good results if performed at early age. However complications can be minimized by better patient selection and improving surgical technique by proper training.

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