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## MEATAL STENOSIS; FREQUENCY OF MEATAL STENOSIS AFTER TWO STAGE BRACKA PROCEDURE FOR DISTAL PENILE HYPOSPADIAS

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**ABSTRACT... Background:** Hypospadias is one of the most common congenital anomalies occurring in males. It is a condition in which the urethral opening, called urinary meatus, does not form completely to the tip of the penis. Instead, this opening may be located anywhere along the penis. Incidence rates of hypospadias differ greatly by urologic centres. Studies reported 0.4% (1/250) to 0.8% (1/125) incidence rates in all newborn male infants. This study will help us finding the complications, mainly meatal stenosis, after repairing distal hypospadias as well as the surgical procedures preferred by our Pakistani surgeons for it. **Objectives:** To determine the frequency of meatal stenosis after two stage Bracka's technique procedure repair for distal penile hypospadias. **Study Design:** Descriptive study. **Setting:** Department of Plastic Surgery, Hayatabad Medical Complex, Peshawar. **Period:** 1st June 2014 to 31<sup>st</sup> May 2015. **Methodology:** All male patients ranging from 1-20 years old, patients with distal penile hypospadias without chordae since birth were included. Along with meatal stenosis after Bracka repair procedure for distal penile hypospadias was recorded on a predesigned proforma. **Results:** In this study 53.4% patients were in age range 1-5 years, 34.7% patients were in age range 6-10 years, 10.2% patients were in age range 10-15 years. Mean age was 6.17 years with SD  $\pm$ 3.34. In which 11.4% patients had meatal stenosis while 88.6% patients didn't had meatal stenosis. **Conclusion:** Our study concludes that the frequency of meatal stenosis in our setup was 11.4% after two staged Bracka repair for distal penile hypospadias.

**Key words:** Bracka Technique, Complications, Distal Penile Hypospadias, Hypospadias, Meatal Stenosis, Two Stage Repair.

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### INTRODUCTION

One of the most common congenital anomalies occurring in males is hypospadias.<sup>1</sup> The urethral opening is malformed in this condition as because the urethral plates do not close properly, leading to much proximal opening of urethra. The urethral opening may be located anywhere along the penis.<sup>2</sup> Incidence rates of hypospadias differs greatly by urologic centers. Studies reported 0.4% (1/250) to 0.8% (1/125) incidence rates in all newborn male infants.<sup>3</sup> Hypospadias may be distal, in which the urethral opening is most often found near underside the head, or it may be proximal, in which the middle of the penile shaft to the base of the penis or even behind the scrotum. Over Most prevalent type of hypospadias is the distal urethral hypospadias (80% of total cases).<sup>2</sup> One retrospective study

found distal penile hypospadias in 87% cases.<sup>4</sup> The cause of hypospadias is largely unknown; however, current epidemiology and laboratory studies have shed new light into the etiology of hypospadias. With recent advancements in molecular biology and microarray technology, it appears that hypospadias is potentially related to disrupted gene expression.<sup>1</sup>

Over the years, different procedures have evolved for hypospadias repair. Surgeons have been repairing hypospadias since the late 1800s with the primary goal to reconstruct the urethra that ends at the penile tip. Due to the advancement of medical technologies, today distal hypospadias repair is possibly accomplished in about a 90 minute surgical operation.<sup>5</sup> The Aivar Bracka (AB repair) procedure is a technique of choice for distal

hypospadias repair because of its reliability and high success rate. Two staged repair can be done in almost all hypospadias.<sup>6</sup> It is reliable and has low complication rate. It can even be done in redo surgeries.<sup>6</sup> Overall complications observed after distal hypospadias repair after AB repair include meatal stenosis, fistula, dehiscence, recurrent ventral curvature, and hematoma.<sup>5</sup> Two stage repair is easy to learn and reliable technique for plastic surgeons with broad range of interest.<sup>7</sup> A study observed the overall rate of complications, including meatal stenosis, after Bracka's repair for distal hypospadias repair ranging 0%-23%.<sup>8</sup>

The current study is designed to determine the frequency of meatal stenosis after correcting surgically the penile hypospadias through two stage Bracka's repair found in distal condition. One other major reason of this study is that no research has been conducted before over this issue in Pakistan, and fewer studies have been found in other parts of the world. This study will help us finding the complications, mainly meatal stenosis, after repairing distal hypospadias as well as the surgical procedures preferred by our Pakistani surgeons for it. A proper protocol will be defined to overcome the meatal stenosis complication after Bracka's repair for distal hypospadias and the results will be shared with other health care center in order to reduce the complications rate after repairing hypospadias.

## OBJECTIVE

To determine the frequency of meatal stenosis after two stage Bracka's technique procedure repair for distal penile hypospadias.

## METHODOLOGY

This descriptive study was conducted at Hayatabad Medical Complex, Peshawar. Study duration is one year, from 1st June 2014 to 31<sup>st</sup> May 2015. Non probability consecutive sampling was used for sample collection. All the male patients of age ranging 2-15 years, patients with distal penile hypospadias without chordee since birth were included while patients who had previously repair for hypospadias, patients with severe chordee i.e. muscle chordee, and patients who were operated for repair outside our unit

were excluded.

This study was conducted after approval from the ethical and research review committee of the hospital. All patients meeting the inclusion criteria were included through in-patient, out-patient and emergency department. The purpose and benefits of study was explained to the parents/guardians/attendants of the patients and informed consent was obtained from them. All patients were subjected to detailed history and clinical examination. Detailed clinical information was obtained in all cases either from the parent(s) or attendant of the patients. Family history was especially inquired about cousin marriage and other genetic problems in the family. All the clinical investigations/examinations and surgery was carried under the supervision of a senior surgeons who was the fellow of CPSP and was having experience more than 10 years in his specialty. All the above mentioned information was recorded with great care. The demographic details like name, age, address and contacts along with meatal stenosis after Two stage procedure for distal penile hypospadias was recorded on a predesigned proforma. Exclusion criteria had strictly followed to control confounders and bias in the study results. The data collected was analysed in SPSS. Mean  $\pm$  SD was calculated for continuous variable like age. Frequencies and percentages were calculated for categorical variable like distal penile hypospadias and meatal stenosis. Meatal Stenosis was stratified among the age and Bracka repair for distal penile hypospadias to see the effect modifications. Final results were presented as tables and graphs / charts.

## RESULTS

Age distribution among 176 patients was analyzed as 94(53.4%) patients were in age range 1-5 years, 61(34.7%) patients were in age range 6-10 years, 18(10.2%) patients were in age range 11-15 years, and 3(1.7%) patients were older than 15 years. Mean age was 6.17 years with SD  $\pm$ 3.34 (Table-I) Repair for distal penile hypospadias Meatal stenosis distribution among 176 patients was analyzed as 20(11.4%) patients had meatal stenosis while 156(88.6%) patients didn't had

meatal stenosis. (Table-II). Stratification of meatal stenosis with age is given in Table-III.

| Age                 | Frequency | Percentage |
|---------------------|-----------|------------|
| 1 to 5 years        | 94        | 55.4%      |
| 6 to 10 years       | 61        | 34.7%      |
| 11 to 15 years      | 18        | 10.2%      |
| Older than 15 years | 3         | 1.7%       |
| Total               | 176       | (100%)     |

**Table-I. Age distribution (n=241): Mean age was 6.17 years with SD  $\pm$  3.34**

| Meatal Stenosis | Frequency | Percentage |
|-----------------|-----------|------------|
| Yes             | 20        | 11.4%      |
| No              | 156       | 88.6%      |
| Total           | 176       | 100%       |

**Table-II. Frequency of meatal stenosis (n=241)**

| Meatal Stenosis | 1-5 years | 6-10 years | 11-15 years | More than 15 years | Total |
|-----------------|-----------|------------|-------------|--------------------|-------|
| Yes             | 9         | 6          | 4           | 1                  | 20    |
| No              | 85        | 55         | 14          | 2                  | 156   |
| Total           | 94        | 61         | 18          | 3                  | 176   |

**Table-III. Stratification of meatal stenosis with age (n=241)**

## DISCUSSION

Hypospadias surgery is continuously evolving since its description by Celsus and Galen in the first and second centuries AD to improve suboptimal functional and cosmetic results. In spite of the achievements made in terms of establishing surgical protocols and improvements of short term results over the past 2 decades, the long term results are yet to be established. In the current study we evaluated the protocols, results, and effect modifiers of hypospadias repair at our centre.

Our study shows 53.4% patients were in age range 1-5 years, 34.7% patients were in age range 6-10 years, 10.2% patients were in age range 11-15 years and 1.7% of patients were older than 15 years. Mean age was 6.17 years with SD  $\pm$  3.34. 11.4% patients had meatal stenosis while 88.6% patients didn't had meatal stenosis.

Complication rate after distal hypospadias repair

has been reported <10%.<sup>2</sup> A study observed the overall rate of complications, including meatal stenosis, after Bracka's repair for distal hypospadias repair ranging 0%-23%.<sup>8</sup>

In a study conducted by Khan et al,<sup>5</sup> 428 patients were followed, in whom Bracka repair was performed in 120 patients. On follow-up the patients were examined for the position of meatus, urethrocutaneous fistula and meatal stenosis. The mean age of presentation was 8.12  $\pm$  5.04 SD. Meatal abnormalities were reported in 9.6% of total 428 patients. Other complications included urethrocutaneous fistula and post-operative edema.

In another study conducted by Yang et al<sup>9</sup> had shown that meatal stenosis generally occurs in 0-7% of patients after hypospadias repair as seen in different case series. In another case series meatal stenosis was seen in 2 patients (5%). Complications usually occur in the first year after the second stage and are higher in secondary repairs. Complications tend to decrease as the experience increase and use of additional water proofing layer contributes to reduce the fistula rate significantly.

Faustin et al<sup>10</sup> showed studied the two stage repair in 100 cases over a five year period. The mean age in their study was 11.5 years. Most common complications were surgical site infection, chordee, wound dehiscence, and urethrocutaneous fistula. They concluded that the rate of meatal stenosis is much lower when the graft is taken from the buccal mucosa.<sup>10</sup>

In another study conducted by Price et al<sup>7</sup> the mean meatal stenosis rate was 1.2%. In contrast, other series have shown a surprisingly high rate of meatal stenosis, ranging from 6 to 20%. This has been a controversial topic and considered to be possibly related to the surgical technique (i.e., carrying the urethral plate incisions far too distal), as the drawings from the original technique implied that the urethral tubularization should include all the extension of the incisions to the tip of the glans. The high rates of meatal stenosis may reflect strict adherence to this description

by Aiver Bracka. On the other hand, Bracka had excellent aesthetic outcome and low complication rates during his 600 cases of two staged repair.<sup>11</sup> These findings support the thinking that urethral strictures or meatal stenosis should not occur after two staged repair for distal hypospadias, as long as the surgeon does not tubularize the incisions in the urethral plate too distally into the glans.

## CONCLUSION


Our study concludes that the frequency of meatal stenosis in our setup was 11.4% after two stage Aiver Bracka repair for distal penile hypospadias.

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