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Glanular Approximation Procedure in Megameatus Intact Prepuce: A Mini Review

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Abstract

The megameatus intact prepuce (MIP) is a rare variant of hypospadias. It is diagnosed either early at the time of circumcision or later as the foreskin is retracted. The purpose of this study is to provide a brief discussion about its anatomy and surgical treatment options of this entity. Good cosmetic result is usually obtained in all of the patients. GAP procedure is a simple technique with good cosmetic results and patient satisfaction. Except for more severe MIP cases, GAP procedure is useful in MIP variant of hypospadias especially in glanular and coronal meatus.

Keywords: *Megameatus Intact Prepuce; Glanular Approximation Technique*

Megameatus and intact prepuce (MIP) is an unusual hypospadias variant. Although MIP is associated with large variation in the appearance of the urethral meatus, its characteristics include widely splayed coronal or subcoronal meatus, a deep glanular groove, a normal prepuce without chordee (Figures 1 and 2). No other urological anomalies are associated with MIP. The techniqal details of the procedure include U-shaped incision around the megameatus and urethral plate followed by wide dissection of glanular wings. After degloving of the penile skin, urethroplasty is accomplished with 7/0 polydioxanone (PDS®) over a dripping 8Fr ventriculoperitoneal (V-P) shunt catheter in a subcuticular running uninterrupted fashion as described before [1] (Figure 3). The purpose of this study is to provide a brief discussion about its anatomy and surgical treatment options of this entity.

Since the first description of MIP by Juskiewenski., *et al*. in 1983, few articles have focused on this form of hypospadias [2]. Later Duckett and Keating described this anomaly in detail [3]. The reported incidence of MIP in the literature is 3 - 6% of hypospadis cases [3-5]. Although the embryological origin of MIP is unclear, it has been suggested that MIP is a variant of megalourethra [6,7]. Suggestion of origin of MIP as the result of a possible consequence of neonatal circumcision by some authors has been dispelled as noted by Peretz and Westreich [7]. MIP is not a uniform variant but rather a spectrum of different combinations of its various characteristics [5]. The distinct anatomical features of MIP include a spatulated glans with a distal, wide patulous meatus located at the glans penis or at the deep subcoronal groove, an intact foreskin, a very thin corpus spongiosum and no ventral chordee and if chordee is present it is invariably dorsal [3]. There are no other urological anomalies associated with MIP so no radiological evaluation is needed in these patients.

Figure 1: *Megameatus intact prepuce (MIP) variant of hypospadias in a boy with typical wide mouth glandular meatus.*

Figure 2: *Megameatus intact prepuce (MIP) variant of hypospadias in a 7-year-old boy. Note the characteristic wide mouth coronal meatus.*

Figure 3: *Postoperative ventral view of penis after GAP technique.*

Careful clinical examination is important in diagnosing MIP. Before any circumcision, it is recommended that the foreskin should be fully retracted and the glans with urethral meatus inspected. There are conflicting opinions of the effcet of circumcision in patients with MIP. Some researchers state that circumcision limits the surgical options in patients with MIP [8-13]. Others think that the retention of the prepuce is not a factor in the repair of MIP [3,14,15]. It has been stated that circumcision did not seem to be associated with a high complication rate in MIP patients [15]. It is commonly admitted that when MIP is discovered during circumcision, the circumcision should be abandoned and the parents should be informed about this [16,17].

With respect to the timing of surgical treatment in MIP variant of hypospadias, similar to the other forms of hypospadias, the surgical intervention should be performed between the ages of 6 and 18 months. The aims of surgery in MIP include to have a normal conical appearance of glans, a normal caliber urethral meatus, normally urinary stream without any symptoms [18].

Several surgical approaches have been suggested for the treatment of MIP including glanular approximation procedure (GAP), the pyramid procedure, cutaneous advancement procedure, subcutaneous frenulum flap with many modifications, perimeatal based flaps, meatal advancement and glanuloplasty (MAGPI) technique and tubularized incised plate urethroplasty [3,5,8-14,19,20]. In the presented series, GAP has been our choice of surgical treatment with excellent results. The GAP technique is a simplified version of the Thiersch-Duplay method with no requirement for large flaps [19,21]. Except for more severe cases, the GAP technique should be the first choice of surgical treatment in MIP patients.

Conclusion

In conclusion, due to wide spectrum of locations of urethral meatus, MIP may pose a surgical challenge for attending pediatric surgeon dealing with these patients. GAP technique should be a choice of surgical treatment in most of cases with MIP producing good cosmetic results and patient satisfaction with conical appearing glans penis, vertically slit urethral meatus having straight urine stream. In GAP technique complications are rare and satisfactory functional outcomes are usually achieved.

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