The most preferable method for distal hypospadias surgery: TIPU Technique

Mehmet Şerif Arslan*, Ersin Köksalb, Turan Yıldızd, Leyla Tekşan Özlpe, Cengiz Kayae

* Department of Pediatric Surgery, Obstetrics&Gynecology and Children’s Hospital, Samsun, Turkey
b Department of Anesthesiology and Reanimation, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey
c Department of Anesthesiology and Reanimation, Obstetrics and Gynecology and Children's Hospital, Samsun, Turkey
d Department of Pediatric Surgery, Faculty of Medicine, Sakarya University, Sakarya, Turkey
e Department of Anesthesiology and Reanimation, Faculty of Medicine, Ondokuz Mayıs University, Samsun, Turkey

ARTICLE INFO

ABSTRACT

The purpose of this study is to demonstrate the efficiency of tubularized incised-plate urethroplasty (TIPU) method and the complication rates with postoperative early periodical urethral dilatations. Hypospadias is one of the most common congenital anomaly in male genital system. Retrospectively 45 case’s records which had distal hypospadias and undergone surgery were studied in Samsun Obstetrics and Gynecology and Children’s Hospital. The ages of the patients, their meatus locations, cordi existence, suture materials, stenting times, complication incidences after surgery, were evaluated. None of the patients had urethrocutaneous fistule, meatal stenosis, or wound place infection. In all cases, the cosmetic results satisfied both the patient’s family and the doctor. TIPU is the most outstanding treatment alternative in distal hypospadias, when its advantages, such as less complication ratios, perfect cosmetic and funtional results are considered.

1. Introduction

Hypospadias is one of the most common congenital anomaly of male genital system. Various studies in our country demonstrate that frequency of hypospadias varies between 0.39% and 0.83% (Kayıkçı et al., 2005). Hypospadias is defined as an anomaly which begins with an embryological development disorder of urethral corpus spongiosum and ventral prepucium and leads to an abnormality in penile curvature (Baskin and Ebbers, 2006). The level of hypospadias is defined as the location of incomplete closure of the penis tissue that forms the urethra and it can be found anywhere between perineum and glans (Snodgrass et al., 2007). It is classified as distal and proximal hypospadias according to the localization of urethral opening. Nearly, 70 to 80% of the cases have distal hypospadias (Hadidi and Azmy, 2004). Whereas the basic principals do not show significant variability in its treatment, different healing methods are proposed for distal hypospadias. Some of the most widely applied techniques for this abnormality in today’s medicine, are Meatal Advance-
stentosis and infection. Distal hypospadias were classified as glanular, coronal, subcoronal and mid-penile according to the localization of urethral opening. TIPU method was used as the surgical technique, which was defined by Snodgrass in 1994. De-epithelialized tissue was used to support urethroplasty in all cases except for glanular types. Penile degloving was applied successfully to 8 patients (17.7%) with cordi. Eight french silicon catheter was used as urethral stent, and 6/0 PDS in urethroplasty. In postoperative 2nd day wound dressings were removed. Stent removal was performed at 3rd to 5th days (4±1). Hospitalization times varied between 4 to 6 days. At the 2nd, 4th, 8th and 16th weeks after surgery, patients were evaluated by urination calibrations, urethral calibration control with 6-8f dilatators and cosmetic result in physical examination (Fig. 1).

3. Results
The average age of the patients was 3.2 years (7 months to 7 years old). Regarding their external urethral meatus localization, the results can be listed as; 5 cases (11.1%) glanular, 14 cases (31.1%) coronal, 21 cases (46.6%) subcoronal and 5 cases (11.1%) midpenile. None of the patients developed urethrocutaneous fistula, meatal stenosis, or wound infection (Table 1). The cosmetic results of all patients satisfied both the patient’s family and the doctor. The patients were followed for 4 months to 2 years.

4. Discussion
What causes hypospadias is not exactly known. However, it can be defined as a genital pathology, in which some factors play crucial roles. Some of these factors are environmental, enzymatic, natural endocrinological causes and local tissue anomalies. Hypospadias can be a result of one of these factors or many of these factors at the same time. Although frequency of its occurrence varies, nearly 70-80% of the cases are recorded as those which have urethral opening with distal location (Hadidi and Azmy, 2004). In treating this relatively common anomaly TIPU, MAGPI, and Mathieu techniques are most accepted ones regarding their consequences in surgical procedures (Küçükaydın et al., 1996; Baskin and Ebbers, 2006).

The goal in the hypospadias surgery is to achieve a functionally and cosmetically normal penis in just one surgical intervention. A successful treatment should bring about a vertically slit glandular meatus, a conical glans, a straight penis during erection, and a decent and firm skin (Cooper and Snyder, 2000). In urethroplasty, absorbable sutures such as 6-0, 7-0 polydixanone (PDS; Ethicon Inc., Somerville, NJ, USA), polyglactine (Vicryl; Ethicon Inc., Somerville, NJ, USA) are used. Urethral stents, used in this treatment are 6 F, 8 F feeding, latex and silicon catheter.

Today, appropriate surgical techniques have decreased the occurrence of complications to very low levels. The optimal time for full recovery for cases with hypospadias, is accepted as 6-15 months (Söylet, 2010). We had cases with distal hypospadias, as young as 7 months old, which had undergone surgery. Snodgrass recorded 328 cases in 1999. 2% of these cases had fistula and 1% had meatalstenosis (Snodgrass, 1994). Their cosmetic appearances were found satisfactory. Similarly, none of our cases developed urethral fistula or meatal stenosis.

When we search other surgical methods, in various studies Mathieu method were recorded with complication incidences with frequencies as 0% to 18.75% (Hadidi and Azmy, 2004; Yesildag et al., 2004). In a study which compared Mathieu with TIPU, it was found that TIPU technique had a shorter operation time and a lesser complication frequency. The cases that were applied Mathieu technique, reported two patients with fistula and one patient with indemeatal stenosis. One patient among the cases with TIPU had glans widening. The cases that were applied TIPU technique have been reported to have better cosmetic results (Oswald et al., 2000).

As to MAGPI technique, it was found that it was applied more easily. However, this technique can be applied only when meatus is near to glans end, and urethral meatus is mobile (Duckett and Synder, 1992). Park et al. (1994) reported that they had 100 cases, all underwent MAGPI method. Six cases among them were reoperated due to cosmetic results and cordi adjustment. Uygur et al. (2002) reported 7.7% of 91 MAGPI cases had meatalstenosis. We preferred TIPU method to apply to all our patients. None of them needed reoperation.

It is reported that suture material which is used in hypospadias surgery could lead fistula development (Snodgrass, 1999b). Ulman et al. (1997) found that in urethroplasty with 6/0 vicryl exact fold continued repairing had higher frequency of occurrence fistula development, than in urethroplasty with 7/0 PDS subcuticular continued repairing. When urethroplasty surgery is made with PDS subcuticular continued repairing less complication ratios have been determined. We have applied 6/0 subcuticular continued repairing in our cases. None of our patients had complications.

Elbakry and Snodgrass showed in their studies that regular urethral dilatation after Snodgrass surgery can decrease the development of narrow meatus and occurrence of fistulas.

Table 1. The frequency of cordi, type of surgery and complication rates according to meatus location

<table>
<thead>
<tr>
<th>Meatus localization (n)</th>
<th>Complication (n/%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cordi</td>
<td></td>
</tr>
<tr>
<td>Glanular</td>
<td>5</td>
</tr>
<tr>
<td>Coronal</td>
<td>14</td>
</tr>
<tr>
<td>Subcoronal</td>
<td>21</td>
</tr>
<tr>
<td>Midpenile</td>
<td>5</td>
</tr>
<tr>
<td>Surgery (TIPU)</td>
<td></td>
</tr>
<tr>
<td>Glanular</td>
<td>0/0</td>
</tr>
<tr>
<td>Coronal</td>
<td></td>
</tr>
<tr>
<td>Subcoronal</td>
<td></td>
</tr>
<tr>
<td>Midpenile</td>
<td></td>
</tr>
</tbody>
</table>

Fig. 1. View with urethral dilator in postoperative 4th week.
(Elbakry, 1999; Snodgrass, 1999a). We checked our patients’ urination calibrates postoperatively in the 2nd, 4th, 8th, and 16th weeks and dilated the meatus with 6f and 8f urethral dilator. As we have foreseen, none of our patients had narrow meatus. To minimize the edema and bleeding after hypospadias surgeries compressed coverings are suggested (Borer and Retik, 1999). We applied postoperative coban bandage and compressed dressing to our patients. None of our patients had bleeding or edema that needed medical intervention.

5. Conclusion
It is significant that the doctor involved in hypospadias surgery must be capable of applying various surgical techniques because of the anatomopathological characterics of this disorder. TIPU operation is an easy and practical technique that can be applied to all kinds of distal hypospadias cases. The necessity for reoperations is less in this method, when compared with others. TIPU is the most outstanding treatment alternative in distal hypospadias with its advantages such as less complication, perfect cosmetic and functional results. We also believe that less complication rates and reoperation necessity can even be decreased by using PDS suture in urethroplasty and silicon stent, and applying periodical urethral dilatation during the early postoperative period.

REFERENCES
Oswald, J., Körner, I., Riccabona, M., 2000. Comparison of the perimeatal-based flap (Mathieu) and the tubularized incised-plate urethroplasty (Snodgrass) in primary distal hypospadias. BJU International. 85, 725-727.
Snodgrass, W., 1999b. Suture tracks after hypospadias repair. BJU Int. 84, 843-844.