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Effect of Cystofix Device on Postoperative Complications in Distal Hypospadias Repairs

Distal Hipospadias Onarımında Sistofiksin Post-Operatif Komplikasyonlar Üzerine Olan Etkisi

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Abstract

Objective: Hypospadias is the most common congenital anomaly of the penis, which is occuring in about 1/250 to 1/300 live births. Although there are many techniques for hypospadias repair, tubularized incised plate urethroplasty (TIPU) is the most commonly performed method. We aimed to investigate the effect of suprapubic diversion on postoperative complications in distal hypospadias repair performed with TIPU.

Material-Method: Twenty-three patients with distal hypospadias who were treated with TIPU in Van Training and Research Hospital were evaluated retrospectively. Patients were divided into two groups as follows; Group I consisted of patients with urethral catheter while Group II was consisted of patients with both anterior urethral catheter and suprapubic diversion. Post-operative complications were documented and statistically compared thereafter.

Results: Eleven patients who had only urethral catheter constituted Group I, while 12 patients with anterior urethral catheter and suprapubic diversion formed group II. Statistical analysis revealed less early and late post-operative complications in the suprapubic diversion group compared to only urethral catheter group.

Conclusions: We think that suprapubic diversion in distal hypospadias cases treated with TIPU is a method that can be preferred in terms of less complication rates and more patient comfort than urethral stent alone.

Keywords: Hypospadias, Suprapubic Diversion, Complication, Urethral Catheter

Özet

Amaç: Hipospadias, yaklaşık 250 ile 300 canlı doğumdan birinde görülen penisin en sık konjenital anomalisidir. Tedavisinde farklı cerrahi teknikler uygulanabilmesine rağmen, tübülarize insize plak üretroplasti (TIPU) en sık kullanılan yöntemdir. Bu çalışmamızda TIPU ile yapılan distal hipospadias onarımlarında suprapubik diversiyonun post operatif komplikasyonlar üzerine olan etkisini incelemeyi amaçladık.

Materyal-Method: Van Bölge Eğitim ve Araştırma hastanesi üroloji kliniğine distal hipospadias nedeniyle başvurup TIPU yöntemi ile tedavi edilen 23 hasta retrospektif olarak incelenerek üriner diversiyonu olan ve olmayanlar olarak 2 gruba ayrılmış ve post-operatif komplikasyonlar dökümente edilerek istatiksel olarak kıyaslanmıştır.

Bulgular: Sadece üretral kateter takılan 11 hasta Grup I'i oluştururken, anterior üretral kateter ile birlikte üriner diversiyon yapılan 12 hasta Grup II'yi oluşturdu. Yapılan istatiksel analizde suprapubik diversiyonu olan grupta daha az erken ve geç post-operatif komplikasyonların geliştiği gözlenmiştir.

Sonuç: TIPU ile tedavi edilen distal hipospadias olgularında suprapubik diversiyonun sadece üretral kateter takılan hastalara göre daha az komplikasyon oranları ve daha fazla hasta konforu açısından tercih edilebilecek bir yöntem olduğunu düşünüyoruz.

Anahtar kelimeler: Hipospadias, Suprapubik Diversiyon, Komplikasyon,Üretral Kateter

Introduction

Hypospadias is one of the most common congenital anomalies in males (1/250-300) (1). Hormonal, genetic and environmental factors are held responsible in etiology however, regardless of etiology, surgery is the only option for the treatment. The development of surgical instruments and suture materials and the introduction of anesthesia in surgical procedures have led to develop many surgical methods, but none have been widely accepted because of the high rates of complications seen (2). The approach to the hypospadias surgery has changed considerably since the description of Snodgrass's Tubularized incised plate urethroplasty (TIPU) method (3). Complications such as fistula and meatal stenosis, which were seen to be higher, have decreased considerably after introduction of TIPU. However, fistula formation after TIPU is observed in 5-8%, while the rate of meatal stenosis can be seen up to 17% in the long term (4, 5)

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In parallel with the development of surgical techniques, postoperative urine drainage has also undergone a significant transformation in recent years. Today, various catheters are used for hypospadias repair. Some pediatric urologists prefer not to use urethral catheters to prevent pain and bladder spasms, but others suggest that using catheters for 5 to 7 days reduces the complication rate to a minimum (6, 7). In addition, some studies have suggested that suprapubic diversion in single-stage hypospadias surgery reduces fistula formation and meatal stenosis risk (8). However, due to the fact that the studies were conducted before the introduction of TIPU, literature information about the effect of suprapubic urinary diversion on complications after TIPU is insufficient. We, therefore, aimed to evaluate the effects of suprapubic diversion on complications after TIPU surgery.

Material-Method

A retrospective analyses was performed on patients admitted to outpatient clinic of urology with hypospadias and undergone an TIPU repair by two surgeon at Van Training and Research Hospital. Informed consent were obtained from all patients before the procedures. After approval of ethics committee (no: 2018/07), data from 23 patients who underwent primary distal hypospadias repair by TIPU between 2015 and 2017 were concluded in the study. Patients with a minimum follow-up period of 6 month were included in the study. Exclusion criteria were non-distal hypospadias and non-primary repairs. In each case, the technique described by Snodgrass et al. was used (3).

Patients were divided into two groups. In group I (n=11), only urethral catheter (Plastimed Urethral Catheter, Turkey) was used for the diversion of urine; while in group II (n=12) we used suprapubic diversion (Plastimed Suprapubic Catheter Set, Turkey) with a small catheter in the anterior urethra only. For infants less than 1 year old 6F urethral catheter was used while it was 8F for older. 6/0 absorbable monofilament suture was used for urethral plate closure. A slightly compressive dressing with antibacterial ointment was used at the end of the operation.

Urethral catheters were removed 2 days after operation in group II, while suprapubic catheters were removed 5-7 days after operation. In the patients in whom only urethral catheters were used it was 5-7 days for catheters removal. The incidence of fistulas and meatal stenoses were compared and analyzed statistically. All patients were examined by the surgeon after catheter removal every 2 weeks in the first month and then every month thereafter. The Chi square ($\chi 2$) test is used for statistical analysis and and P values less than .05 were considered significant.

Results

A total of 23 patients underwent TIPU repair with a mean age of 4.7±1.6 included in this study. The mean age of group 1 was 5.1±2.6 years; the mean age of group 2 was calculated as 4.9±2.5 and no statistical difference was observed. The duration of hospitalization for both groups was 4.4±1.9 and 4.6±2.0, respectively, and no statistical difference was shown. Considering the early complications, while the local infection is not observed at all, mild edema and/or bruising was seen in nearly all patients. Bladder spasms were observed in half of the patients in group I, whereas painful voiding was observed in 33%. These findings did not occur in patients with suprapubic diversion ($p<0.05$). In addition, one patient in group I experienced urine retention during his hospital stay, however none of patients with suprapubic diversion showed uriner retension ($p>0.05$).

As regard the late postoperative complications, fistula formation was observed in 3 (27%) patients of group I, while it was 2 (12%) patients in group II ($p<0.05$). Meatal stenosis was evaluated clinically and observed in 3 patients in both groups and there was no statistical difference observed ($p>0.05$).

Discussion

Today, TIPU is the most used technique to repair hypospadias among surgeons due to low complication rates and better cosmetic results. Nevertheless, complications including fistula formation and meatal stenosis still can be seen within 6 months (9, 10). Therefore, selection of the most appropriate method for urinary diversion appears to be an important step in avoiding complications. However, debates over the use of diversion methods continues. Some authors advocate urine drainage should be done with catheters or suprapubically, while others claim there is no need for stenting. In this paper, we speculated the use of concomitant suprapubic catheter use with urethral catheters.

Generally, the main reason for drainage is to make the anastomosis line dry. Recently, Li et al. showed one-stage noncathetered TIPU could reduce the post-operative pain and complications compared to cathetered patients (11) Similarly, in a study evaluating the use of urethral catheters after distal hypospadias surgery demonstrated that avoiding a catheter likely reduce post operative complication rates and needs shorter follow up (12). The common point of the authors who objected to drainage is that the drainage of the urine does not have any effect on surgical outcomes but extends the length of stay in the hospital (13, 14). This idea was supported by an animal study that indwelling catheters are not essential for normal epithelization of urethral reconstruction (15). On the other hand, several studies showed that urethral cathetering does reduce the risk of postoperative complications such as fistula formation, and causes only a insignificant increase in morbidity (16, 17). In our study, we also showed the use of catheters has no association with complication rates however, there is no consensus yet and most of the surgeons still use catheters for repairs (18).

In the pre-TIPU area there is a report showing the benefits of suprapubic drainage in hypospadias repairs. Demirbilek et al. demonstrated less early and late complication rates such as bladder spasm, severe pain during voiding, fistula formation and meatal stenosis in patients with suprapubic diversion compared with only cathetered patients after hypospadias repairs (8). These findings are similar to ours however tecniques used in that study were Mathieu, Duckett

and Thiersch, while we performed TIPU in all cases.

In a more recent study, Radwan et al. evaluated the efficacy of urinary diversion and urethral cathetering in distal penile hypospadias repair using a tubularized incised plate. They demonstrated that suprapubic diversion had a prominent role in hypospadias repair as it provides a better success rate with a significantly lower rate of occurrence of fistula (19) However, the addition of a stent in the anterior urethra to suprapubic diversion avoids the development of meatal stenosis and also avoids the bladder spasm observed with a urethral catheter. This results also similar with our findings although we found no significant difference in terms of meatal stenosis rates.

Inherit limitations of this study its retrospective nature and small sample size. Although our results are comparable with other studies, a well organized prospective studies with larger sample sizes are needed to confirm our findings.

Conclusion

We believe that suprapubic diversion in hypospadias repair is a important step as it provides a better success rate with significantly lower rate of complications and is more comfortable for children during the postoperative period.

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