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Dribbling Diversion in Y-V Glanuloplasty Modified Mathieu Repair

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Key words
- hypospadias
- urethra
- catheter
- stent

Abstract

Introduction: Aim of the study was to determine the impact of an indwelling transurethral catheter on surgical outcome and postoperative micturation in Y-V glanuloplasty modified Mathieu repair for primary hypospadias.

Materials and Methods: Fifty-nine consecutive boys underwent Y-V glanuloplasty modified Mathieu repair for primary distal hypospadias in our institution. The first 37 patients (group A) had catheterless repair. Due to significant painful postoperative urination, the next 22 children (group B) had an indwelling transurethral catheter (5 Fr feeding tube) for 24–48 hours. Adjunct caudal analgesia and penile block was given in both groups. Pain during postoperative voiding, urinary retention, meatal stenosis and fistula formation was statistically analysed with Wilcoxon's signed rank test.

Results: All patients in group A had distressing painful first micturation ($p < 0.05$). Eight children did not pass urine for more than 8 hours. Five (13.5%) patients had urinary retention, 3 of whom required catheterisation ($p < 0.05$). Six (16%) boys developed meatal stenosis and a further 5 (13.5%) had urethrocutaneous fistula. In group B all patients had easy micturation after removal of the catheter. Only 1 boy developed a urethrocutaneous fistula and none of the boys in this group presented with meatal stenosis.

Conclusion: An indwelling transurethral catheter obviates urinary retention and avoids distressing postoperative micturation. It minimises the chance of urethrocutaneous fistula and meatal stenosis in Y-V glanuloplasty modified Mathieu repair.

Introduction

Hypospadias is a congenital anomaly in which the urethral meatus is abnormally located anywhere from the glans to the perineum. Various surgical techniques have been used for the repair of distal hypospadias with varying results. Meatal based flap repair as originally described by Mathieu produces an excellent result for distal hypospadias with minimal complications. Mathieu initially performed the procedure without catheter drainage [6]. However the role of a urethral stent in Mathieu repair remains controversial. Unstented repair has been reported: it overcomes the morbidity associated with urethral stents such as infection, bladder spasm and migration [5,8,9]. Nevertheless, despite these findings, others argue the need for a urethral catheter or stent, as unstented repair has higher complication rates [1,5,9]. We report our results of catheterless repair compared to short-term (temporary) indwelling transurethral catheter in Y-V glanuloplasty modified Mathieu repair.

Materials and Methods

Between October 2002 and March 2006, a total of 59 consecutive boys underwent Y-V glanuloplasty modified Mathieu repair for primary distal hypospadias as described by Hadidi [2]. A Y-shaped incision is made on the glans with the centre of the Y where the tip of the neo-meatus will be located. The Y sutured as V, U-shaped flap is elevated, taking care to preserve its fascia. Urethroplasty is performed in two layers followed by meatoplasty and glanuloplasty [2]. The first 37 patients, comprising group A, had catheterless repair. Due to significant distressing and painful postoperative voiding, the next 22 children, group B, had an indwelling transurethral catheter for 24–48 hours as a dribbling diversion into the

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Table 1 Incidence of postoperative complications of Y-V glanuloplasty modified Mathieu repair in catheterless group A versus indwelling transurethral catheter group B. Painful voiding and urinary retention were statistically significant.

	Number of patients (n)	Painful voiding (%)	Urinary retention (%)	Fistula (%)	Meatal stenosis (%)
Group A	37	37 (100)	5 (13.5)	5 (13.5)	6 (16)
Group B	22	0 (0)	0 (0)	1 (4.5)	0 (0)
Total	59	37 (62.7%)	5 (8.4%)	6 (10.1%)	6 (10.1%)

nappy in non-toilet trained patients or attached to a urinary bag in older toilet trained boys. The repair was made over an 8–10 Fr feeding tube, and at the end of procedure, a 5 Fr feeding tube was passed through the tube used for the repair. Adjunct caudal analgesia or penile block with 0.25% bupivacaine as decided by the anaesthetist was given in 30 and 29 cases respectively, followed by 2–5 days of oral diclofenac for postoperative pain management. Meatal stenosis was assessed clinically and with uroflowmetry. Postoperative painful voiding, urinary retention, meatal stenosis and fistula were statistically analysed in the 2 groups with Wilcoxon's signed rank test. SPSS 11.5 (SPSS, Chicago, IL, USA) was used for statistical analysis; $p < 0.05$ was considered to be significant.

Results

Group A consisted of 37 boys; the median patient age was 25 months (range 17–168 months). All patients had a distressing painful first micturation postoperatively. Eight children did not pass urine for more than 8 hours. Five patients (13.5%) had urinary retention and presented with palpable bladder, pain and distress; three required catheterisation. Of these 5 children, 2 were given a caudal block and 3 a penile block of 0.25% bupivacaine for postoperative pain control. Furthermore, 6 (16%) boys developed meatal stenosis as determined by uroflowmetry which resolved on dilatation. Urethrocutaneous fistula was seen in 5 (13.5%) patients.

In group B, all patients had painless micturation after removal of the indwelling transurethral catheter. Only 1 (4.5%) boy had urethrocutaneous fistula and none presented with meatal stenosis (**Table 1**). A comparison of the 2 groups found postoperative painful voiding and urinary retention to be statistically significant ($p < 0.05$). Although there was a higher rate of meatal stenosis and urethrocutaneous fistula in group A, this did not achieve statistical significance.

Discussion

The role of catheter and stent placement for urinary diversion in modified Mathieu distal hypospadias repair remains debatable. In 1987, Rabinowitz reported catheterless Mathieu hypospadias repair on an outpatient basis with good results, no fistulae and few complications. According to this report, catheter and urinary diversion are unnecessary in a watertight urethroplasty [8]. Unstented Mathieu hypospadias repair has been reported by other authors independently, with good results [1,5,9]. In a retrospective study comparing stented versus unstented Mathieu repair, Hakeem et al. reported no difference in the outcomes with regard to the use of stents [3]. In a prospective randomised study comparing the outcome of Mathieu hypospadias repair with or without stent, Joshi and Surana advocated that Mathieu hypospadias repair could be safely carried out without a stent on a day case basis [4]. In contrast, Buson et al. reported higher complication rates (18.9% unstented vs. 4.6% stented repair) and advocated the use of a stent in Mathieu repair [1]. The use of a stent can reduce the incidence of fistula formation while adding only minimal morbidity [7].

To reduce the morbidity associated with catheters, we initially performed Y-V glanuloplasty modified Mathieu repair without a catheter. All patients experienced distressful postoperative voiding in spite of adequate analgesia. Eight patients had delayed postoperative micturation (> 8 hours). Five boys developed urinary retention, 3 had a penile block and 2 a caudal block of 0.25% bupivacaine and subsequently 3 needed catheterisation. There was no correlation between the type of anaesthetic block used for postoperative pain control and the incidence of urinary retention. Five patients developed urethrocutaneous fistula, including 1 boy who needed postoperative catheterisation for urinary retention. Six boys presented with clinical symptoms of meatal stenosis supported by uroflowmetry, which were subsequently resolved by dilatation. In order to overcome these complications, particularly painful voiding, we left a smaller calibre indwelling transurethral catheter at the end of procedure as a dribbling diversion for 24–48 hours. This provided drainage and at the same time, the smaller calibre tube allowed space for the development of a postoperative oedema without increasing tension on the suture line or damaging the urethral mucosal blood supply. All boys had smooth painless voiding after removal of the indwelling catheter and only 1 had urethrocutaneous fistula.

Conclusion

Our results suggest that the short-term (temporary) use of an indwelling transurethral catheter in modified Mathieu hypospadias repair reduces postoperative complications such as distressing painful postoperative voiding and urinary retention. In addition, it reduces the incidence of meatal stenosis and urethrocutaneous fistula. Nevertheless, a larger number of patients in each group will be required to determine a significant difference in outcomes in relation to fistula rate. We continue to advocate the use of a small calibre indwelling transurethral catheter as a dribbling diversion for 24–48 hours in Y-V glanuloplasty modified Mathieu hypospadias repair.

Conflict of Interest: None

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