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Application of MAGPI or modified MAGPI as a salvage procedure for complications following distal hypospadias repair

Mustafa KÜÇÜKAYDIN, Hamit OKUR, Mehmet İÇER, Muzaffer ZORLU, Ahmet KAZEZ

Department of Pediatric Surgery, Erciyes University, Faculty of Medicine Kayseri, Turkey

Summary

During 3 years period, 13 patients with complications after hypospadias repair, underwent a MAGPI or modified MAGPI (Arap) procedure. Of 13 patients with complications, 7 developed meatal regression following repair of their distal hypospadias (urethral advancement) and 2 with MAGPI procedure.

Four coronal urethrocutaneous fistulae developed after Mathieu procedures. All had undergone surgery by other urologist or pediatric surgeon except one with MAGPI performed by us.

Excellent cosmetic and functional results have been achieved in all except one with minimal meatal stenosis. This technique is recommended as an procedure of choice for the retracted urethral meatus or distal fistula after hypospadias repair.

Key words: *Failed hypospadias repair, MAGPI procedure*

Introduction

In 70 % of patients with hypospadias the abnormality is considered to be distal, the external urinary meatus being subcoronal, coronal, or glanular [2,3,4,5]. Complication rates following the distal type hypospadias repair has been reported to occur in 3 to 9 % of the patients. Meatal regression, fistula formation and meatal stenosis have all been reported [2,8,14,16,18,23].

Many operative procedures are available to correct distal hypospadias [8,9,11,12,23]. The MAGPI procedure has proved to be the best treatment for management of anterior hypospadias [3,4,7]. Duckett [4] modified the Allen Spence technique to repair the glanular meatus (meatal advancement and glanuloplasty, or MAGPI repair). Arap and associates [1] modified the MAGPI procedure to advance the central aspect of the urethra better and to improve cosmesis [20].

Nishumara and associates [17] used the MAGPI or modified MAGPI technique to repair retracted urethral meatus following two stage hypospadias repair.

Address: Dr. Mustafa Küçükaydın, Erciyes Üniv. Tıp Fakültesi Çocuk Cerrahisi Anabilim Dalı, Kayseri-Turkey

In this study we presented our experience with MAGPI or modified MAGPI procedure to correct 13 complicated cases.

Materials and Methods

Between May 1988 and April 1991 a MAGPI or modified MAGPI (Arap) procedure was performed on 13 boys with complications following distal hypospadias repair. Their ages ranged from 2 to 12 years (mean 6 years). In 7 of these 9 patients meatal regression had developed following repair of their anterior hypospadias with urethral advancement technique and 2 with MAGPI procedure. Four patients had fistulae which developed following Mathieu operation (Table 1).

On physical examination, meatal regression was evident in 9 patients; three had a minor degree (granular 2, coronal 1) and 6 had more marked regression of the meatus proximal to the corona (subcoronal 5, distal shift 1). Of these patients, four had presented coronal fistulae.

A MAGPI procedure was performed on the three boys with minor degrees of meatal regression and a

Table 1. Presenting signs and first operative procedures in 13 patients with complications following anterior hypospadias repair

Signs	No	First operative procedure	No
Meatal regression	9	Urethral advancement	7
		MAGPI	2
Fistula	4	Mathieu	4

modified MAGPI (Arap) procedure performed on 6 patients with more marked regression. Four patients with coronal urethrocutaneous fistulae have been repaired successfully by first incising the bridge between the meatus and the fistula and then closing the resultant defect as described by Arap [1] (modified MAGPI). None had chordee on intra-operative artificial erection. A thin plastic infant feeding tube (4F) was left in the urethra in all patient. A light pressure dressing were removed and the patient discharged home.

Results

The mean follow-up period was 23 months (range 3-34 months). Except for one patient with minimal meatal stenosis, all the cases had a satisfactory cosmetic results as judged by their parents and the surgeon. In all, the urethral meatus was at the tip of the penis and all were voiding a singular urinary stream. The patient with meatal stenosis did well after only one dilatation.

Discussion

The reported incidence of hypospadias in approximately 1:125 live male births, of whom 70 % have glanular, coronal or subcoronal meatus [2,3,4,13].

Previous operations using the techniques described by Mathieu [15], Devine and Horton [3] and King [10] were mostly effective but perhaps more liable to fistula formation and often these techniquese provide less acceptable cosmetic than the MAGPI [3,16,21,22].

The common complications of distal type hypospadias repair are meatal stenosis, urethrocutaneous fistula and meatal regretion [2,7,9,13]. The current effort to place the meatus in the normal position at the tip of glans increases the risk of meatal stenosis [2,19].

Some fistulae will close spontaneously, and a period of observations is recommended before closure is attempted. Closure of distal urethral fistulae, particularly in the region of the corona, has been more challenging [2,8,19]. Scherz et al [20] used by modified MAGPI (Arap procedure) to repair a coronal urethrocutaneous fistula after MAGPI. In our series, four coronal urethrocutaneous fistula with Mathieu technique were repaired successfully by modified MAGPI.

Complications following the MAGPI and urethral advancement procedure, although rare, do occur. Meatal regression following the MAGPI procedure has been reported to occur in 3 to 6 % the patients [1,4,5,6,7,13,18]. Five patients with mild degree meatal regression following MAGPI procedure were repaired by Issa and Gearhart [9] with a repeat MAGPI. In our series, there were two meatal regression with MAGPI which was treated with MAGPI repair. Nishumara et al [17] used MAGPI or modified MAGPI technique to repair retracted urethral meatus two-stage hypospadias repair in 6 patients.

We performed a MAGPI procedure in three patients with a minor degree meatal regression and modified MAGPI (Arap repair) procedure to repair 6 patients with more marked regression (subcoronal 5, distal shaft 1) with urethral advancement procedure. Excellent cosmetic and functional results were achieved in all cases without any complications except in one patient (minimal meatal stenosis).

In conclusion we recommend that the MAGPI or modified MAGPI procedures, which are both simple to perform, are used as the operative procedure of choice for the retracted urethral meatus and urethrocutaneous fistula after distal type hypospadias repair.

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