Glanuloplasty Experiences in the Distal Hypospadias Surgery: A Prospective Comparative Study Focusing on the Patients and Parents

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ABSTRACT

Aim: We aimed to investigate whether there was any difference between the postoperative complications of distal hypospadias patients undergoing MAGPI procedure whose urethral stents were left or removed and to determine pre and post-procedure anxiety levels of patients' parents regarding the current congenital penile disease of their children.

Materials and Methods: Patients with urethral stents (group A) was hospitalized for one day. Patients without urethral stents (group B) were discharged on the same day. Patients were evaluated postoperatively regarding the characteristics of the patients and surgical complications. Health anxiety level affecting attitudes towards parents (group A1, B1 and C1) of children with hypospadias and circumcision were assessed with the Beck Anxiety Inventory (BAI) in the first admission and at the first postoperative month. Parents whose children underwent circumcision as a control group were compared with parents of the study groups. Results: Meatal regression and chordee were not observed in any patients, postoperatively. Urethral fistula encountered occurred in 2 (0.83%) and 2 (0.71%) patients in group A and B, respectively. For meatal stenosis, the same ratios and numbers were also present in the groups. Reoperation was performed in 8 (1.53%) patients in both groups. Parents of study groups in the first admission and postoperatively had a high BAI score when compared with parents of the control group, which was statistically significant (p = 0.00). Conclusions: Follow-up without a postoperative urethral catheter in cases of distal hypospadias corrected by MAGPI modifications seems to be more appropriate. Complications may diminish over time with different MAGPI modifications. Hypospadias, a congenital anomaly, has significant psychosocial effects on both the patient and the parent. These effects may be reduced for parents by psychosocial support and training which begins immediately after the birth of their babies.

Keywords: Hypospadias; MAGPI; urethral stent; child; parent; anxiety

1. INTRODUCTION

The urethral meatus in the hypospadias can develop anywhere from the glans to the perineum along the ventral side of the penis. The aim of the surgical correction, for which over 300 different techniques have been reported, is to correct any curvature or chordee, ensuring that the penis is straight, to create a functional neourethra to direct the urine in a forward direction, and also to compose of the normal penile appearance [1]. It has been reported previously that men undergoing hypospadias have had afraid of being ridiculed by others regarding their penis cosmetic

appearance. Moreover, some researchers have shown that patients with hypospadias experienced troubles with some sexual issues such as erectile dysfunction, ejaculatory difficulties, lower self-esteem, and teasing [2, 3].

In a recent trial comparing with MAGPI and Snodgrass procedures in distal hypospadias repair, patients who underwent surgery with the meatal advancement and glanuloplasty incorporated (MAGPI) technique was found to have shorter hospital stays and less morbidity [4]. Recent studies have investigated the psychosocial status of adult hypospadias patients, or the complications and cosmetic results of children who underwent surgery for hypospadias [1-4]. However, the psychosocial status of parents with children having hypospadias has not been usually investigated by practitioners.

This study had two goals focused on the patient and parent. First, we aimed to investigate whether there was any difference between the postoperative complications of distal hypospadias patients undergoing MAGPI procedure whose urethral stents were left or removed. Secondly, it was aimed to determine pre and post-procedure anxiety levels of patients' parents regarding the current congenital penile disease of their children.

2. METHODS

Ethics Committee approval was obtained before the initiation of the study (reference number, 23.03.2015/45). Informed consent was obtained from the parents of patients included in the study. The inclusion criteria were patients with glandular, coronal and subcoronal hypospadias. Between April 2015 and June 2018, 42 boys undergoing MAGPI repair at a University Hospital Pediatric Surgery Clinic were prospectively evaluated. All surgeries under general anesthesia were performed by a surgical team consisting of two experienced surgeons. The more proximal hypospadias subjects than the subcoronal type were not taken into the study.

The surgical technique was applied according to MAGPI with additional minimal variations. An adrenaline solution (1:100,000) was usually applied at the incision line before the procedure and a tourniquet around proximally the penile shaft, if necessary, for control of bleeding. After insertion of a 6-8 French nelaton catheter to the urethra and fixation suturing on the glans, initially, if there was an excess tissue between the meatus and the tip of the glans, in which is the navicular fossa, it was excised entirely. Then, an incision vertically was performed on the ventral surface of the glans between the meatus and the tip of the glans and then, closed by suturing transversely. This incision made at distal ventral glans was extended around the posterior aspect of the hypospadiac meatus. For glanuloplasty, the incisions were laterally deepened to develop two glandular flaps being able to be rotated outward. The incisions are deepened down to the corpora cavernosa. Remaining on the plane of the corpora, the two lateral dissections were carried forward proximally for about one third of the length of the penile shaft. The advanced meatus was sutured to fix to the glans with 4 sutures having 6-0 polyglactin (Vicryl, Ethicon) sutures. The developed glandular wings were sutured with mattress sutures having 6-0 polyglactin. A routine circumcision was then performed. Simple penile dressing with was carried out.

Patients were separated into two groups from randomly selected subjects according to patients whose urethral stents at the appropriate diameter were left (Group A) and removed (Group B), postoperatively. Patients with urethral stents stayed in pediatric surgery clinic for one day and discharged after their stent was removed by the practitioner. Patients without urethral stents were discharged on the same day, postoperatively. Patients in both groups were evaluated postoperatively regarding the characteristics of the patients, the success of the procedure together with fistula, meatal stenosis, poor cosmesis, persistent chordee, and the need for reoperation. Patients who underwent circumcision as a control group (group C) were not compared with the study groups because they had no surgical problems, but their parents were included in the second part of the study as follows.

Health anxiety level affecting attitudes towards parents of children with hypospadias were evaluated with the Beck Anxiety Inventory (BAI) in the first admission and at the first postoperative month. BAI test measures the severity of experienced anxiety in adolescents and adults and was developed by Beck et al [5]. BAI is a self-evaluating 21-item scale. Every item is scored between 0 to 3 points, and as the score points increases, the severity of anxiety increases as well. Consisting of (0-21), (22-35), (36-above) scores show low, moderate and a worryingly high level of anxiety, respectively. At this stage, the BAI scores of the A1 and B1 groups were compared with the BAI scores of the parents of the patients who had no other health problems and were applied circumcision (Group C1, control group).
Statistical analysis was done using the SPSS Statistics for Windows, Version 18.0 (Chicago, IL, USA). As the number of variables is less than fifty, the Shapiro–Wilks test was used for normality of distribution concerning the data evaluation. We applied Levene’s test to assess the equality of variances and a two-sided 95% confidence interval for all measures. For independent groups, parametric tests, such as One-Way ANOVA test, were used as normality of distribution was present in the groups. As post hoc test; Tanhane’s test was used if there was not present in homogeneity of the variances in the groups. Tukey test was used in case of a presence in the homogeneity of variances.

3. RESULTS

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<th>Table 1. Distribution of postoperative complications, and demographic characteristics in the group A and B</th>
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<td>n (%)</td>
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<td>P (A versus B)</td>
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Group A (A): patients with a urethral stent following up for 24 hours in the inpatient clinic after the MAGPI procedure. Group B (B): patients, without a urethral stent, discharging in the same day after the MAGPI procedure.

The mean age of the parents whose BAI scores were determined was 33.52 ± 6.74 years old, and there was no significant difference in age among the groups (A1, B1, and C1). The majority of parents (82%) about hypospadias did not have any predictions in the first admission. After the BAI scores were taken, the classic hypospadias information was told to them. When detecting the scores, we interviewed the mother or father who brought the patient to our outpatient clinic. 91% of these scores belonged to the mother. Average scores of BAI in the first admission were 20.45 ± 4.73, 21.96 ± 5.59 and 3.64 ± 1.46 for group A1, B1, and C1, respectively. There was no significant difference in BAI scores between groups A1 and B1 (p = 0.43). These two groups had a high BAI score when compared with the control group, which was statistically significant (p = 0.00, Table 2).

Average scores of BAI postoperatively were 10.12 ± 2.34, 8.89 ± 1.93 and 2.56 ± 1.08 for group A1, B1, and C1, respectively. There was no significant difference in BAI scores between groups A1 and B1 (p = 0.59). These two groups had a high BAI score when compared with the control group, which was statistically significant (p = 0.00). Postoperative BAI scores for each group were lower than BAI scores in the first admission of the parents, and this decrease was statistically significant (p = 0.00, Table 2).

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<th>Table 2. Comparison of BAI scores between the study groups and control group at first admission and postoperatively</th>
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4. **DISCUSSION**

From the most common complication taken place in 15% - 22% of cases applied MAGPI [6], the meatal regression did not occur in any of our patients. Of all hypospadias, patients with anterior (distal) types are about at a rate of 65%. To repair anterior hypospadias so far has been applied several procedures including Snodgrass, Mathieu, MAGPI techniques and others, which has been present together with their modifications. The MAGPI technique being one of the most made procedures is applied beginning with the Heineke-Mikulicz principle, by which a longitudinal incision is closed by suturing transversely, then advancing the urethra to the tip of the glans [7]. In this, we also applied a modified technique under the guidance of the MAGPI procedure. Duckett employed two layers of sutures for glanuloplasty to prevent meatal retraction and also, used a deep glandular incision to prevent meatal stenosis. The author has stated that owing to this approach, the reoperation rate dropped by 1% [8]. In our patients, meatal stenosis occurred in 2 (0.83%) and 2 (0.71%) patients in group A and B, respectively. The rate of these 4 re-operated cases (0.87%) was nearly the same as that of Duckett and satisfactory result for us (Table 1).

As applied by Taneli during MAGPI procedure in which a tag-shaped piece of glandular tissue was removed [9], if there was an excess tissue between the meatus and the tip of the glans during our operations it was excised. Thus, satisfactory functional and cosmetic results were provided, as in the operated cases of Taneli.

We postoperatively corrected the encountered fistulas at the coronal margin by redoing the glans plasty and urethroplasty. Harrison encountered 2.1% fistula after urethral advancement and glanuloplasty in 43 patients. This rate was 0.87% in our operations. Fistula complication has no longer seemed almost present in most series, depending on the different MAGPI procedures [10, 11].

According to the practitioners, the near-perfect results of the MAGPI variants have been so far both published and discussed. In recent years, in addition to outcomes and complications of the hypospadias surgery; a lot of research has been done on psychosocial adjustment, health-related quality of life, and psychosexual development of boys and adult with hypospadias. However, it has been believed by some authors that many studies were deprived of design quality due to small sample sizes, the absence of control groups or standards and the application of nonvalidated measures, particularly concerning psychosexual outcome. In a review, it was addressed that the guidelines for surgical treatment were partly focused on psychological allegations that were not empirically confirmed. That is, psychological and aesthetic problems of adults or boys who completed verbal development have been evaluated by authors with various questionnaires and methods while assessed these subjects [1-4, 12]. Matza has recommended that it was made both self- and proxy-ratings when measuring health-related quality of life. Namely, both the child’s and the parents' perspective should be evaluated [13]. As the hypospadias patients who do not yet reach the verbal growth have no chance of self-evaluation, their parents' opinions seems to be important. Our study has actually seemed to be compatible with the subject according to this point of view. When we evaluated the psychosocial status of parents of hypospadias patients in the first admission, BAI scores in the study groups were significantly higher than the control group (p = 0.00). Even if the operation was successful, the parents' BAI scores of study groups were still high postoperatively, but the
postoperative BAI scores decreased significantly compared with those of at first admission (p = 0.00, Table 2).

The original MAGPI practitioner Duckett discharged his patients without a urethral catheter postoperative at the same day in a series of 1111 cases; the postoperative complication with the fistula in 5 patients and the mental regression in 7 patients occurred, and in this series, reoperation rate was at the rate of 1.8%. Moreover, there was postoperatively no meatal stenosis in this study, while the chordree developed in 1 patient [14]. Harrison using a modification of MAGPI used a urethral catheter for 48 hours postoperatively in his patients, and there was present at the rate of 2.1% fistula and 6.4% meatal retraction in this series, postoperatively [15]. Reoperation at 1.53% of our cases is lower than Duckett's, but with a low patient count, our study does not provide an advantage for this comparison. On the other hand, Harrison, who used the urethral catheter, had a higher complication rate than ours. When we compared these studies with the current study, we showed that there is no statistical difference between MAGPI with and without urethral catheterization in a modification procedure. Thus, we suppose that it is better not to use a postoperative urethral catheter to provide a more comfortable postoperative period.

For the first time in the literature using the BAI score, we investigated the psychosocial attitudes of parents having children aged 50 months or less with hypospadias. Previous studies for example regarding congenital heart disease have addressed that parent education programs reduce stress and rising up life satisfaction and quality of life [16, 17]. This critical situation can certainly be valid for parents with a hypospadias child. Once a child with hypospadias was born, parents should be regularly trained about the disease and their future problems and approaches to their children. The instructors here can be an urologist and a psychiatrist. Although the advantageous aspect of this study was prospective; the low subject number, the lack of comparisons of long-term outcomes and the use of a single surgical technique and a scoring system were significant limitations of the work. Therefore, there is a need for further research to overcome these limitations.

5. CONCLUSIONS

Follow-up without a postoperative urethral catheter in cases of distal hypospadias corrected by MAGPI modifications seems to be more appropriate. Complications may diminish over time with different MAGPI modifications. Hypospadias, a congenital anomaly, has significant psychosocial effects on both the patient and the parent. These effects may be reduced for parents by psychosocial support and training which begins immediately after the birth of their babies.

REFERENCES