ORIGINAL ARTICLE

Assessment of postoperative cosmetic outcomes of distal form hypospadias repair with the Hypospadias Objective Scoring Evaluation (HOSE)

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ABSTRACT

Aim A standardized assessment for the optimal repair of hypospadias remains elusive. The aim of this study was to assess a postoperative cosmetic outcome of hypospadias repair using a validated questionnaire, Hypospadias Objective Scoring Evaluation (HOSE).

Methods During the period between January 2016 and May 2019, 40 patients who underwent hypospadias repair were identified and they agreed to a follow-up using the HOSE. Distal hypospadias repairs underwent a cross-sectional assessment of the cosmetic outcome. Cosmetic assessment was performed by an independent physician using the HOSE scoring system.

Results The native meatus was coronal in 10 (25%), subcoronal in eight (20%), and distal penile in 22 (55%) patients. Mean follow-up was 35.90 months (SD ±29.58) postoperatively (range 12–162 months). Complications occurred in one (2.5%) patient. Out of 40 uncomplicated repairs, 39 (97.5%) were satisfactory. A vertical slit-like meatus located at the distal glans was created in 33 (82.5%) boys, and at the proximal glans in seven (17.5%). The urinary stream was single and straight in 39 and spray in one patient. A straight erection was observed in 39 (97.5%) boys. The median HOSE score was 16 (range 12–16). One patient had a small, single coronal fistula. The technique used included tubularised incised plate urethroplasty.

Conclusion The HOSE score is simple, easy, non-invasive and non-expensive tool for objective assessment of long-term outcomes of hypospadias repair.

Key words: hypospadias, tubularised incised plate, urethra, urethroplasty

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INTRODUCTION

Hypospadias is a developmental defect of the male urethra, either treated or untreated, and it can have functional, cosmetic and psychosexual consequences extending into adulthood (1,2). The assessment of the cosmetic results after hypospadias repair remains a problem due to published studied showing possible significant differences between the patients´ judgement and surgeons´ opinion (3). Traditionally, successful repair of hypospadias was defined as straight penis in erection and a good calibre urethra with a slit-like urethral meatus at the tip of the glans, allowing micturition in a single coherent urinary stream and allowing sexual intercourse (3). The goal of the modern surgical treatment is to create a functionally and cosmetically normal penis.

Distal hypospadias repair is one of the procedures most commonly performed in paediatric urology (4). Hypospadias is one of the most frequently occurring birth defects in males, that affects 1 in 200 to 300 newborn males (4). The total prevalence of hypospadias in Europe is approximately 18.6/10,000 births (5).

Despite more than 200 different repair techniques for hypospadias described in the literature, there is no completely satisfactory technique in terms of complications and cosmesis (6). Snodgrass repair (7) was introduced in 1994 and has revolutionised the management of distal hypospadias, and is considered the procedure of choice by most surgeons. The technique relies on an incision of the urethral plate to permit a tension-free tubularisation of the neourethra (8). According to Snodgrass et al, in the standard technique as there is risk of meatal stenosis (9,10). Thus, the neourethra is reconstructed to the mid-glans level, and the neomeatus should be generously sized and oval at the same time. This resulted in a higher rate of achieving a slit-like meatus, but a lower rate of locating the meatus in the glans tip (11). Histopathological studies under the urethral plate have shown a healthy, vascularised connective subepithelial tissue (12). Thus, incising the apical part of the glans could be safe, to assign the neomeatus more to the tip of the glans, and reconstruction the neourethra more distally. Normally, the meatus is located at the glans apex in 94% of boys (13) and the ventral glans closure is equal to or slightly less than the meatal length (14).

Many studies have so far focused on the complication rates (3,9,10). Cosmetic results, instead, have been studied less extensively (3) probably because of evaluation of this kind of results is generally considered difficult to standardize and it is subjected to wide variability among observes (9). Nevertheless, cosmesis remains a key point, as in distal hypospadias patients surgery is often undertaken mainly to improve cosmesis and prevent a potential psychological burden of the malformation (3,4,8).

Validated scales, such as the Hypospadias Objective Scoring Evaluation (HOSE) (15) give the advantage of allowing surgeons to more objectively assess postoperative outcomes, as well as provide a platform for surgeons to discuss outcomes (3). The HOSE is underused, although the use of such a system is recommended by others (10,15).

In Bosnia and Herzegovina there are only scarce investigations relating to hypospadia.

The aim of this study was to assess outcomes of one-stage hypospadias repair at a paediatric tertiary centre in Bosnia and Herzegovina using HOSE.

PATIENTS AND METHODS

Patients and study design

During the period between January 2016 and May 2019, 40 patients with primary distal hypospadias repaired with the Snodgrass technique at the Clinic for Paediatric Surgery of the Clinical Centre, University of Sarajevo, were included in this prospective study. Patients with proximal hypospadias, megameatus intact prepuce, and those with a previously failed repair were excluded from the study. All patients received preoperative local androgen therapy, 2.5% dihidrotestosteron (DHT).

Prior to participation, an informed consent was obtained from all patients by their parents. This study was conducted in compliance with the ethical principles originating in or derived from the Declaration of Helsinki and in compliance with all International Council for Harmonisation (ICH) Good Clinical Practice (GCP) Guidelines.

A formal approval for the medical records review was obtained from the Ethics Committee of Clinical Centre, University of Sarajevo.

Methods

Selection of the technique was based on physician's preference and a surgical technique; we used tubularised incised plate (TIP) (7). Multiple-layer coverage of the urethroplasty was achieved using local dartos flaps. Penile curvature was always addressed by Nesbit plicatio (3).

All patients were invited by a telephone call to their parents after three months to attend a consultation clinic for a follow-up of their hypospadias repair. Follow-up was defined as the time between the date of operation and three months after surgery. Patients included in the study were boys with distal type of hypospadias form. Cosmetic evaluation was made by an independent paediatric urologist not previously involved in the care of these patients.

The boys were interviewed and examined in the presence of their parents by a surgeon; self-assessment and quality of life questionnaires were then completed with an independent interviewer to avoid bias when answering the questionnaires. Parents were asked to complete the questionnaire. The HOSE (15) was used in the follow-up**.** The HOSE has been validated as a paediatric objective scoring system for evaluating the outcomes of hypospadias repair and incorporates the outcomes of meatal location and shape, urinary stream, the straightness of erection and any urethral fistula: the minimum total score of 5 corresponding to a lowest score for each variable, to a maximum total of 16 as equivalent to the highest score for each variable. A score of 14-16 was suggested (15) to infer an acceptable outcome with the meatus at least at the proximal glans, a single urinary stream and only moderate angulation of the penile shaft. These patients, whose score was 14-16 would require further follow-up and additional diagnostics (uroflowmetry in order to detect obstruction of the urethra and the appearance of a fistula, as surgical complications). A score a below 14 was considered not acceptable (15).

Statistical methods

Mean and median were used as a measure of central tendency and standard deviation and range as measures of dispersion for continuous variables. The values of categorical variables were presented as numbers or percentages.

RESULTS

Of the total of all patients recruited in the study, the mean age at surgery was 35.90 months (29.58± SD) with a range 12-162 months.

Of the initial 40 patients, one (2.5%) developed surgical complications including fistula formation. Of the remaining 39 patients without complication, all were contacted and they agreed to participate in the study. The native meatus was coronal in 10 (25%) patients, subcoronal in eight (20%) and distal penile in 22 (55%) patients.

Preoperatively, nine patients were reported to have meatal stenosis at first presentation, with six having chordee. The procedure used included tubularised incised plate (TIP) repair (7) in 40 patients.

The HOSE outcome data were obtained for all 40 patients: 39 (97.5%) had an acceptable score, and one (2.5%) had a non-acceptable score.

Thirty eight (95%) patients achieved a vertical meatal shape, 2 (5%) achieved circular meatal shape, 39 (97.5%) achieving a single stream, 1 (2.5%) achieving spray, 33 (82.5%) achieving distal glanular meatal location and 7 (17.5%) achieving proximal glanular. All patients except one, achieved a straight erection with one patient experiencing mild angulation. One boy had a total HOSE score of 12, with a subcoronal fistula (Table 1).

Table 1. Outcome of hypospadias repair according to the Hypospadias Objective Scoring Evaluation (HOSE)

HOSE variable	No (%) of patients	HOSE score
Meatal location		
Distal glanular	33 (82.5)	4
Proximal glanular	7 (17.5)	3
Coronal	0	2
Penile shaft	0	1
Meatal shape		
Vertical slit	38 (95.0)	2
Circular	2 (5.0)	1
Urinary stream		
Single stream	39 (97.5)	2
Spray	1 (2.5)	1
Erection		
Straight	39 (97.5)	4
Mild angulation (<10)	0	3
Moderate angulation (>10 but <45)	1 (2.5)	2
Severe angulation (>45)	0	1
Fistula		
None	39 (97.5)	4
Single-sub coronal	1 (2.5)	3
Single proximal	0	2
Multiple or complex	0	1
Total	40	

According to the HOSE score, one (2.5%) patient had the score of 12, two (2.5%) had the score

of 14, three (7.5%) had the score of 15, and 34 (85%) patients had the score of 16 (Table 2).

The median HOSE score was 16 (range 12–16) out of a maximum score of 16.

Table 2. Frequency distribution according to the Hypospadias Objective Scoring Evaluation (HOSE) score

HOSE score	No (%) of patients
12	1 (2.5)
14	2 (5.0)
15	3 (7.5)
16	34 (85.0)
Total	40 (100.0)

DISCUSSION

In this study, we systematically assessed cosmetic results of TIP repair, and found that 97.5% had satisfactory appearance. In distal hypospadias, surgery is mainly undertaken to improve cosmesis and functional results, and we believe that the correction of distal hypospadias is not a cosmetic surgery and would recommend that all children with hypospadias, regardless of the severity, should be referred to a specialist paediatric urologist.

From the clinical point of view, continuous assessment of the outcome represents quality control and is a part of clinical governance. Continuous re-evaluation may have a major impact on future clinical practice.

Most paediatric surgeons now prefer to use the TIP to repair distal and mid-shaft hypospadias defects (8,9). Postoperative outcomes have been emphasized to include functional, cosmetic, as well as psychosocial outcomes, with longer term review deemed to be necessary for adequate evaluation of surgical success (3,16). Validated scales could more objectively assess postoperative outcomes, as well as long-term outcomes; moreover, they can also be used as a screening tool, emailed as an online survey or posted to evaluate which patients require further clinical consultation (17,18). The lack of studies on the cosmetic results of distal hypospadias surgery may partly account for difficulties in its standardization and being subjected to wide variability among observes (3).

Mureau et al. were one of the first to apply a standardized approach to evaluate both patient's and surgeon's satisfaction with the cosmetic surgical result, and the relation among penile length, meatal position, and patient satisfaction using a genital perception questionnaire for hypospadias patients. Not surprisingly, there was hardly any agreement between patient and surgeon satisfaction with the patient's penile appearance (19). Afterwards, Holland et al. introduced the HOSE system where paediatric surgeons, a nurse, and one of the child's parents independently evaluated each patient (15).

Refinements like using digital photography with macro mode in a standardized fashion and with more external expertise in judging outcome are used (3). The assessment of cosmesis in hypospadias surgery was thought to be more objective when several health non-surgeon professionals compared various methods of repair (18). The most recent attempt for objective assessment of postoperative outcome is the Pediatric Penile Perception Score (PPPS), which seems to be a reliable instrument to assess cosmetic and functional results in children after hypospadias repair (20).

The Hypospadias Objective Penile Evaluation Score (HOPE) introduced by a national study group from the Netherlands established objectivity by using standardized photographs, anonymously coded patients, and independent assessment by a panel (21).

Thirty nine (97.5%) of our patients had an acceptable HOSE outcome with a total score of 14 to 16, and one patient (2.5%) had an unacceptable outcome with a total score of 12. It is difficult to compare our HOSE scores with others as the majority of published studies have used this method to assess the outcome of anterior hypospadias repair (22). The meatal location, shape and fistula are easy for objective evaluation, but the main drawback of the HOSE in our study arose in relation to the necessity of objective evaluation of the straightness of the penis. Nevertheless, Holland et al. stated that erection can be gauged after an erection is witnessed by an assessor or can be based on parental evaluation (15).

The most appropriate postoperative follow-up period for hypospadias has been debated in the literature: routine follow-up periods appear to vary widely — from schedules of 3 months, 6 months and 1 year to longer (at 3 and 6 years) (23). In our institution routine follow-up is every three months in the first year, and every 6 months in the second year; after 2 years following the surgery the patients come to control examination every year (if uroflow is normal).

In a meta-analysis, complications rate form hypospadias surgery have been reported in up to 33.3% of cases (24), in our study 2.5% complications rate (wound infection, haematuria, fistula, meatal stenosis, wide meatal opening and urethral stricture have also been observed).

Surgical correction of distal hypospadias carries minor risks, complication rates are relatively low, but despite some variations among different techniques, outcomes in the majority of cases are successful (25). The most significant advantage of tubularised incised plate urethroplasty (TIPU) is the excellent postoperative cosmetic appearance, which is an important factor in choosing the technique for hypospadias repair. In this procedure the urethral plate can be preserved, and the tissue used for the neourethra is well vascularized. The procedure can be easily learned and performed and can be used in secondary and/or proximal cases with satisfactory cosmetic outcome. When the long-term success rate and the advantages of the technique are taken into consideration, TIPU may be accepted as having an important role in hypospadias treatment (26,27).

In conclusion, distal hypospadias can be associated with cosmetic problems that may be underestimated at birth and generate symptoms at an older age.

The validated HOSE questionnaire revealed generally good cosmetic outcomes after hypospadias repair. The use of validated questionnaires in routine follow-up sessions may facilitate objective assessment and patient satisfaction.

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TRANSPARENCY DECLARATION

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