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Is objective assessment of cosmetic results after distal hypospadias repair superior to subjective assessment?

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Abstract *Objective:* To evaluate whether systematic scoring of pictures is really superior to subjective evaluation in the assessment of cosmetic results of distal hypospadias surgery, and whether any differences exist in subjective evaluation among the operating surgeon, the parents of the child, and a third party not previously involved in the care of the patient.

Patients and methods: Twenty-seven patients undergoing distal hypospadias repair by either the Snodgrass or Mathieu technique were enrolled. Cosmetic results of surgery were scored from 0 to 10 by one of each child's parents and by three surgeons. The latter assessed the results blindly on pictures taken during the outpatient visits; one used a systematic scoring system while the other two including the operating surgeon used subjective scoring. The four scores were compared using the Kendall W coefficient of concordance.

Results: Overall, there was excellent concordance among the four observers ($P < 0.0001$). The Snodgrass repair allowed for significantly better cosmetic results overall.

Conclusion: In distal hypospadias, subjective evaluation of overall penile appearance can be as reliable as an evaluation made using a systematic scoring system. There seems to be excellent concordance among the subjective evaluations of different observers.

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Introduction

In distal hypospadias repairs, achievement of a normal-looking penis is an essential aim of surgery, and surgery is

often undertaken mainly to improve penile appearance. Nevertheless, information about cosmetic results after distal hypospadias repairs is limited. Cosmetic results are generally considered difficult to evaluate, and studies have shown that a significant disparity might be present between the judgments of the patient and the operating surgeon [1,2]. More recently, attempts have been made to achieve objective assessment of results by use of structured scoring

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systems and evaluation of photographs [3,4]. In these studies, specific aspects of penile appearance are systematically evaluated or scored, and the use of photographs taken in a standard fashion during follow up allows for blind assessment. In the study by Ververidis et al., the photographs of 32 patients were evaluated by a panel of five health professionals other than the surgeon [4]. The authors showed a general trend to better scoring of the results of one of the surgical techniques used for reconstruction over the others, but failed to evaluate the degree of agreement among assessors.

In the present study, our aim was to evaluate if systematic scoring of pictures is really superior to subjective evaluation, and if any difference exists in subjective evaluation among the parents of the child, the operating surgeon and another physician not previously involved in the care of the patients.

Materials and methods

Twenty-seven patients undergoing surgery for distal hypospadias were enrolled in the study. These represent a group of cases undergoing distal hypospadias repair during the study period without urethroplasty complications or other complications requiring additional surgery, and who agreed to participate in the study. Of these 27 cases, 15 underwent a standard Mathieu and the remaining 12 a Snodgrass repair. Preputial reconstruction was performed in 15 cases: eight of 15 (53%) Mathieu and seven of 12 (58%) Snodgrass repairs. The same surgeon performed all the procedures, and the choice of technique and whether to reconstruct the prepuce was based only on physician preference.

All these patients were enrolled in the study at the 6-month follow-up visit. A surgeon other than the operating surgeon performed all the visits. During the visit, one of the parents was asked to score the overall penile appearance between 0 (the worst score) and 10 (the best score), with half points allowed.

During the outpatient visit, two photographs were taken for each patient, one on the ventral surface and the other laterally. When preputial reconstruction had been performed, two additional pictures were taken with the prepuce upright and retracted. These pictures were initially assessed by a surgeon not previously involved in the care of the patients (MGS) using a scoring system. The latter included five items: prepuce configuration (completely open ventrally = 0; partially open ventrally = 1; normal looking or circumcised = 2), glans shape (completely open ventrally = 0; partially open ventrally or cylindrical = 1; normal-looking = 2), meatal shape (fish-mouth = 0; round = 1; slit-like = 2) and position (coronal or more proximal = 0; glanular hypospadias or not in the mid-line = 1; at the tip of the penis = 2), and shaft appearance (visible curvature, rotation or scarring = 0; mild scarring = 1; normal-looking cylindrical shaft = 2). Each item could be scored from 0 (the worst score) to 2 (the best score) for a maximum score of 10.

The same photographs were thereafter blindly assessed by two surgeons, the operating and an independent surgeon. Both were asked to give a subjective score from

0 (the worst score) to 10 (the best score) for each case, with half points allowed.

Results were quoted as median and ranges. Non-parametric tests were used throughout. Agreement among assessments was evaluated using the Kendall W coefficient of concordance. Scores were compared between the Mathieu and Snodgrass repairs using the Mann–Whitney U-test. A *P*-value less than 0.05 was considered significant.

Results

Overall, there was excellent concordance among the four observers ($P < 0.0001$). Results of the evaluation are summarized in Table 1. The subjective scores given by the parents, the operating surgeon and the independent surgeon differed by more than 1 of 10 points from the objective score in eight (30%), three (11%) and 10 (37%) cases, respectively (Table 2).

Comparing the two kinds of repair, median scores were statistically different ($P = 0.02$) considering the evaluations overall: 7.25 (5–10) for the Mathieu vs. 8 (5–10) for the Snodgrass repair. Considering each observer separately, scores were not statistically different for the two techniques (Table 3).

Discussion

This study shows that subjective assessment can be as reliable as an objective one in the evaluation of cosmetic results of hypospadias.

Attempts have been made to achieve more objective evaluations by scoring of pictures. Baskin compared pictures taken at standard intervals before and after surgery [3]. Ververidis et al. added the use of a scoring system including four aspects (meatus, glans, shaft and overall appearance), each of which could be scored from 1 to 4. The authors concluded that an ideal scoring would be made by an independent assessor using a systematic scoring system [4]. Our data point against this conclusion. We observed a high degree of concordance among the objective evaluation made by an independent observer using a systematic scoring system, and the subjective assessments made by the operating surgeon, an independent observer, and/or a parent of the child. We acknowledge that the high degree of concordance among surgeons might be due to the fact that they all evaluated the same aspects although in a more or less systematic manner. This, however, was certainly not the case for the parents.

Our results point also against the observation that a significant difference might exist between surgeon and

Table 1 Overall evaluation of different observers.

	Mean	SD	Median	Range
Objective observer	7.4	1.5	7	5–10
Operating Surgeon	7.4	1.2	7	5–10
Independent surgeon	7.6	0.9	7.5	6–9.5
Parent of child	7.9	1.3	8	5–10

Table 2 Agreement of subjective evaluations with the objective evaluation made by a surgeon using a structured scoring system.

	Consistent	Better scoring	Worse scoring
Parent of patient	19	7	1
Operating surgeon	24	1	2
Independent surgeon	17	6	4

The subjective evaluation was considered consistent with the objective one when the difference was within 1 out of 10 points.

parents' perspectives in the evaluation of cosmetic results [1,2]. Data in the literature are quite controversial about this point. Mureau et al. reported that the surgeon's evaluation tends to be more optimistic than that of the patients [1], whereas Weber et al. observed an opposite trend [2]. Our results, instead, are in keeping with those of a recent study by Snodgrass et al. [5]. These authors administered the same questionnaires to parents of children undergoing hypospadias repair and to the operating surgeon, and found that when parents and surgeon gave a different response, the difference was generally within 1 point.

Patients in the current series were subjected to either Snodgrass or Mathieu repair. Comparison of the two techniques showed a statistically significant difference only taking all the evaluations together. This might partially be explained by the fact that three of the four observers gave a subjective evaluation. The latter takes into account the overall penile appearance and may reduce the effect of a slit-like meatus that seems to be the major reason accounting for the better cosmetic results of the Snodgrass repair [4,6,7]. Meatal shape is considered paramount in the literature, and modified techniques have been devised to achieve a slit-like meatus with many kinds of hypospadias repair including the Mathieu technique [8,9]. In fact, Mureau et al. observed that especially from the parents' and patient's perspective some features are indeed minor and often overlooked. For instance, the patient and parents tend to be more concerned about the overall penile size or the absence of the prepuce, rather than about the meatal shape [1,10]. This makes the results of the present study more consistent with everyday clinical practice, although this observation is partially in contrast with other data from

Table 3 Comparison of scores for the two techniques among observers.

		Mean	SD	Median	Range
Objective observer	Mathieu	7	1.4	7	5–10
	Snodgrass	7.9	1.6	8	5–10
Operating surgeon	Mathieu	7.2	1.1	7	5–9.5
	Snodgrass	7.6	1.2	7.5	5–10
Independent surgeon	Mathieu	7.5	0.9	7.5	6–9
	Snodgrass	7.8	0.9	7.8	6–9.5
Parent of child	Mathieu	7.6	0.9	7.5	6–9.5
	Snodgrass	8.2	1.7	8	5–10

the literature. Indeed, Ververidis et al. reported better results with the Snodgrass technique for all the four features they assessed, suggesting that other aspects rather than simple meatal shape might account for the better penile appearance after the Snodgrass repair [4].

Limitations of the study include that it concerns a small cohort of patients. This may imply that it is underpowered to detect differences in objective vs. subjective outcomes in distal hypospadias where an experienced surgeon is generally capable of achieving good cosmetic results. Consistently, differences between the techniques proved significant considering all the evaluations together, but not for each single observer. Moreover, cases undergoing either circumcision or preputial reconstruction were included. Finally, intra-observer variability was not assessed by test-retest and the study does not include controls, such as normal children or children without hypospadias undergoing routine circumcision [5].

Strengths include that it is one of the few studies published comparing different observers and different methods in the evaluation of cosmetic results after hypospadias surgery. Moreover, all the patients presented a similar extent of hypospadias, were operated on by the same surgeon, and were evaluated at the same postoperative time point, 6 months, when the results of surgery are stabilized.

In conclusion, this study shows that, in distal hypospadias, subjective evaluation of overall results can be as reliable as an evaluation made using a systematic scoring system. Moreover, there seems to be excellent concordance among the subjective evaluations of different observers.

Conflict of interest

None.

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