The Penile Perception Score: An Instrument Enabling Evaluation by Surgeons and Patient Self-Assessment After Hypospadias Repair

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Purpose: Studies of the outcome of hypospadias repair must document quality, including assessment of complications and appraisal of appearance. To our knowledge the Pediatric Penile Perception Score is the first validated instrument for the outcome assessment of hypospadias repair in prepubertal males by surgeons and patients. We validated the instrument for adult genitalia.

Materials and Methods: Standardized photographic documentation was prepared for 19 men after hypospadias repair and 3 with normal genitalia after circumcision. This was sent to 21 urologists, who rated the outcome with a questionnaire comprising items on the penile meatus, glans, shaft skin and general appearance. Each item was rated with a 4-point Likert scale. The Penile Perception Score is a sum score of all items. Patients were asked to provide a self-assessment with the same instrument.

Results: When calculated with the ICC and the rank correlation using Kendall W, concordance among urologist scores was fair and good (0.46 and 0.64, respectively, $p < 0.001$). Instrument stability was 0.78, indicating good reproducibility. Using the Spearman rank correlation coefficient general appearance correlated well with single items, including the meatus ($r = 0.93$, $p = 0.000$), glans ($r = 0.92$, $p = 0.000$) and shaft skin ($r = 0.89$, $p = 0.000$). No significant differences were found between patient and urologist Penile Perception Scores.

Conclusions: The Penile Perception Score is a reliable instrument for urologist assessment and self-assessment of postpubertal genitalia after hypospadias repair. The instrument can be recommended for all age groups because it was previously validated for the pediatric population.

Key Words: urethra, penis, hypospadias, treatment outcome, questionnaires

Abbreviations and Acronyms

PPS = Penile Perception Score

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EVALUATING the result of hypospadias surgery merely by the lack of complications such as fistula is insufficient.[1] Most patients who undergo surgery for hypospadias have distal forms that would produce no relevant impairment in micturition or sexual function without surgery.[2] Even in proximal forms of hypospadias the postoperative appearance of the penis is of paramount importance. Therefore, the outcome of hypospadias surgery must be assessed by cosmetic surgery standards and objective outcome parameters are needed.

Many groups have attempted to objectively assess the surgical outcome of hypospadias repair.[3–8] Mureau et al were among the first to realize that assessment quality is improved if an observer analyzes various items and rates each single item using a stan-

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dardized questionnaire.[4] However, direct observation of the patient by a single urologist remains subjective. Standardized photography of a surgical result allows for comparison among various observers. Therefore, the introduction of photography with a systematic score by Baskin was a major step forward, although his study did not include multiple observers.[5] Holland et al were the first to use a questionnaire that was completed by several health care professionals to score the outcome of hypospadias repair.[6] However, items in that study were chosen to assess the functional outcome. Furthermore, fistulas, which we regard as complications, are included in the score. Therefore, we do not consider that hypospadias objective scoring evaluation to be an appropriate instrument for assessing the cosmetic outcome of hypospadias repair.

The Pediatric PPS was the first validated instrument to objectively assess the cosmetic outcome of hypospadias repair.[9] It consists of 4 items that are evaluated with a 4-point Likert scale, ranging from very dissatisfied to very satisfied. Three relevant statistical criteria contributed to the validation process. Interobserver reliability demonstrated that various urologists rated the outcome similarly. Stability confirmed that each urologist rated the outcome similarly when the same patients were presented repeatedly. Intercorrelation of the single items with general appearance analyzed the internal consistency between single items and general appearance. Furthermore, the concordance of opinion between urologists and patients regarding the outcome was tested.

The main limitation of this instrument is that it was validated for prepubertal hypospadias only. Nevertheless, the instrument has found acceptance and has also been used to assess outcomes of hypospadias repair in adults.[10]

We validated the PPS for postpubertal men after hypospadias repair.

MATERIALS AND METHODS

Patients

Patients older than 18 years treated with surgery for hypospadias at our institution were eligible for this cross-sectional study. Adult patients with normal male genitalia who were circumcised in childhood served as a control group. Study exclusion criteria were other signs of a sexual development disorder besides hypospadias and noncorrected complications after genital surgery, such as fistula. Patients with a nonrelated relevant malformation or chronic disease were also excluded.

A total of 218 men in whom hypospadias was corrected in childhood at our institution were selected at random from our database, of whom 19 agreed to participate. There were distal hypospadias in 8 patients and proximal hypospadias in 11. The technique applied was the Mathieu in 5 cases, MAGPI (meatal advancement and glanuloplasty) in 4, Denis Browne in 4 (including some patients with meatotomy in the neonatal period), onlay flaps in 2 and other in 4. In 10 patients only 1 surgical procedure was performed, while 2, 3 and 4 were done in 6, 1 and 2, respectively. The initial surgery was done between 1974 and 1994 at an average patient age of 32.5 months (range 0 to 82). Mean age at study participation was 25.4 years (range 19 to 39).

A total of 328 patients with normal circumcised genitalia were selected at random from our database, of whom 12 were willing to participate and 3 were selected at random for participation. Age at study participation was 24.3 years (range 22 to 28).

Methods

All patients underwent urological examination and were then sent to the medical photographer. The photographer took 4 standardized views of the nonerect penis, including an anteroposterior and an oblique view, and 2 of the penis held by the patient so that the meatus and ventral side of the penis were visible (see figure).

Patients were asked to complete the PPS to express satisfaction with 4 items referring to their penis, including meatal position and shape, glans shape, shaft skin shape

Photograph chart presented to urologists