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A Review of Follow-Up Questionnaires After Hypospadias Repair

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Abstract

Introduction

Hypospadias is the second most common congenital anomaly, with a frequency of about 1 in 250 newborn males. Currently, there is no universal approach to hypospadias surgical repair, with more than 300 corrective procedures reported. The main goal for hypospadias repair is to achieve both cosmetic and functional normality.

Objective

The purpose of this paper is to analyse of the

questionnaires for long-term follow-up. Our goal is to gain knowledge about long-term follow-ups and to describe and set a protocol for following up with our patients.

Materials and methods

We have selected four main questionnaires **PPPS, HOSE, HOPE and PedsQL**. These questionnaires assess perceptions of patients, parents, and surgeons about postoperative results of hypospadias surgery and evaluate the quality of life of children who underwent hypospadias correction.

Discussion

Hypospadias surgery remains a difficult challenge, including variation in the ‘healing ability’ among patients. A long-term follow-up of these patients appears crucial in assessing and validating the various techniques currently available. The problem is how to follow these patients. Clinical examination of the penis is highly subjective. Therefore, several questionnaires have been created.

Using different questionnaires will allow us to assess objective and perceptive aspects of hypospadias surgery as well as emotional, social, and school functioning.

Conclusions

The patient’s penile self-perception could be reliably assessed with **PPPS**. The instrument proved to be practical to use and the good internal consistency is an indication of its reliability. The **HOPE** score incorporates all relevant surgically correctable items in hypospadias and uses important elements of objectivity and demonstrates good reliability and validity, supporting its use as an objective measure after hypospadias surgery. The **PedsQL** is not hypospadias or penile specific, but the authors believed that the general quality of life scale was appropriate as a screening tool for the age group of patients studied.

Introduction

Hypospadias is the second most common congenital anomaly, after the undescended testicle, with a frequency of about 1 in 250 newborn males.¹ It is manifested by the opening of the external meatus of the urethra in the most distal parts of the penis, on a wide range, from the tip of the penis to the perineal region. We also have a recurvation of the penis and a lack of ventral part of the foreskin, being hypertrophic in the dorsal part.

The moment of birth of an infant with such anomalies is difficult for the parents because they are often not informed about the existence of this disease in their baby. Even more serious is the fact that anomalies related to sexual organs are “taboo”, especially in this part of Europe, in our Balkan region.

Hypospadias can be defined as hypoplasia of the tissues that form the ventral aspect of the penis beyond the division of the corpus spongiosum.²

Three typical anatomical features define hypospadias: ectopic location of the urethral meatus,

irregular distribution of the foreskin, and abnormal ventral curvature of the penis.³

The etiology of hypospadias is multifactorial. The main cause is the defect in androgenic stimulation of penile development and this may come from deficient androgenic production by the testes and placenta, failure to convert testosterone to dihydrotestosterone by the enzyme 5-L reductase, or androgen receptors deficiency in the penis.

The adequate classification of hypospadias still does not exist to this day. The major division is in the proximal and distal hypospadias (Table 1).

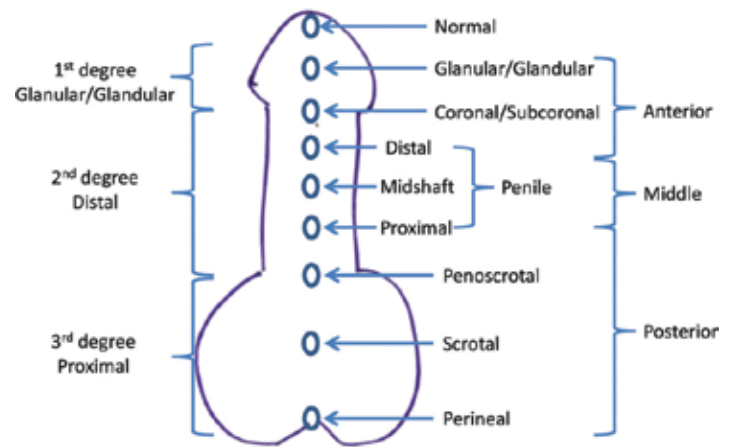


Table 1: The classification of the hypospadias

Therefore, a definite classification can only be completed during surgery (Table 2).⁴

A universal approach to hypospadias surgical repair appears to be missing, with more than 300 corrective procedures described in the current literature.⁵⁻⁶

The main goal for hypospadias repair is to achieve both cosmetic and functional normality.⁷

Current guidelines consider the optimal age for hypospadias repair somewhere between 6 and 18 months, depending on the severity and the need for multiple procedures.^{8,13}

There are 5 surgical objectives in hypospadiology: orthoplasty, meatoplasty, glanuloplasty, urethroplasty, and the cosmetic appearance of the penis.²




Despite the many surgical approaches and advancements in materials used in performing these surgical procedures, such as fine instruments, magnifiers, suture materials, urinary catheters, etc., the challenge remains to achieve satisfactory functional, cosmetic, and especially psychological results.³

Name of the patient:



Date of birth:

Relevant personal details:

1. Site of urethral meatus (before chordee correction)

Glanular Hypospadias  Distal Penile Hypospadias  Proximal Hypospadias 

2. Site of urethral meatus (after chordee correction)

Glanular Hypospadias  Distal Penile Hypospadias  Proximal Hypospadias 



3. Prepuce

Complete  Incomplete 

4. Glans

Cleft  Incomplete cleft  Flat 

5. Chordee

No chordee  Superficial chordee  Deep chordee 

6. Urethral plate width

<1cm  ≥1cm 

7. Penile torsion

No torsion  Present 

8. Scrotal transposition

No transposition  Present 

Table 2: Form sheet of classification of hypospadias during surgery

GPS	very satisfied	satisfied	dissatisfied	very dissatisfied
Meatal position and shape	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shape of the glans	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Shape of the penile skin	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Penile axis	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
General cosmetic appearance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Table 3: a standardized questionnaire regarding their penile self-perception, including the following items: meatus, glans, skin, penile axis and general appearance

Objective

The purpose of this paper is the systematic analysis of the published literature, to explain the pathology, classification, and surgical approach, as well as the degree of complications and outcome. Our attention will be especially on the analysis of the questionnaires for long-term follow-up. Our goal is to gain knowledge about long-term follow-ups and to describe and set a protocol for following up with our patients.

Material and method

A preliminary study was conducted for the purpose of this study literature review. Papers were selected, and published until November 2021 which were available in full and in English. Papers were systematically reviewed to explore and analyze, classification, treatment, complications, and questionnaires. We have selected four main questionnaires, which assess perceptions of patients, parents, and surgeons (not the same surgeon who performed the surgery) about postoperative results of hypospadias surgery, which are objective, and evaluate the quality of life of children who underwent hypospadias correction.

PPPS is the most used questionnaire and it is an instrument that allows us to assess and compare the penile perception of patients, parents, and surgeons. In the study, the **PPPS** allowed them to assess the following items: meatus, glans, skin, and general appearance. The results were compared with a control

group of age-matched boys after inguinal hernia repair. Documentations were done by standardized photos and their pictures were sent for the **PPPS** evaluation to independent surgeons. Evaluation will be done by a Likert scale ranging from 0 points (very dissatisfied) to 3 points (very satisfied). Patients will be asked without the presence of their parents. However, a parent will be asked to fill out the same questionnaire immediately, after their children (Table 3).⁹

Then, the boys will be examined by a surgeon who will obtain photographs of the penis in four standardized views: oblique, lateral, anteroposterior with the penis against the abdominal wall, and anteroposterior with the penis up straight.

Photos will be sent for the evaluation of the four blinded surgeons, who are not involved in the treatment of the patients. They will rate the photos according to the same criteria and with the same scale as the patients.

HOSE is an objective instrument, to assess the postoperatively results of hypospadias surgery. It has five points scoring system, and each of them is evaluated with certain points, giving at the end the final result.¹⁰

In this scoring system, there are incorporated the location and the shape of the meatus, urinary stream, straightness of erection, and presence of the fistula. The use of the **HOSE** system to assess surgical outcomes will facilitate the impartial evaluation of operations used in hypospadias surgery (Table 4).

HOSE - Hypospadias Objective Scoring Evaluation

Assessor:

Patient:

Date:

Variable	Score	Diagram
1. Meatal location		
Distal glanular _____	4 _____	
Proximal glanular _____	3 _____	
Coronal _____	2 _____	
Penile shaft _____	1 _____	
2. Meatal Shape		
Vertical slit _____	2	
Circular _____	1	
3. Urinary Stream		
Single stream _____	2	
Spray _____	1	
4. Erection		
Straight _____	4	
Mild angulation (<math>< 10^\circ</math>) _____	3	
Moderate angulation (> 10° but <math>< 45^\circ</math>) _____	2	
Severe angulation (> 45°) _____	1	
5. Fistula		
None _____	4	
Single - subcoronal or more distal _____	3	
Single - proximal _____	2	
Multiple or complex _____	1	
Total		

Table 4: HOSE-Hypospadias Objective Scoring Evaluation

The **HOPE** scoring system incorporates all surgically-correctable items: the position of the meatus, the shape of the meatus, the shape of the glans, the shape of penile skin, and the penile axis. Objectivity was established with standardized photographs, anonymously coded patients, independent assessment by a panel, standards for a “normal” penile appearance, reference pictures, and assessment of the degree of abnormality.¹¹

In developing and validating the HOPE score they set three basic goals. First, it should incorporate all relevant and surgically correctable items of the penile appearance. Second, the items should refer to well-established standards for a “normal” cosmetic appearance. Third, it should introduce objectivity

through reference pictures helping to score the degrees of abnormality of the HOPE-score items, standardized photographs, anonymous patients, and independent assessment by a panel of health professionals. The HOPE score incorporates all relevant surgically correctable items in hypospadias and uses important elements of objectivity. The HOPE score demonstrates good reliability and validity, supporting its use as an objective measure of cosmetic appearance after hypospadias surgery (Table 5).

PedsQL was developed as a validated pediatric quality of life scale, with sunsets dependent on age. It includes 4 domains: physical, emotional, social, and school functioning. Likert scales from zero to 4, with

1. Position meatus: assess the position of the meatus?
See HOPE-score reference pictures

- Position 1 (10 points)
- Position 2 (8 points)
- Position 3 (5 points)
- Position 4 (3 points)
- Position 5 (1 point)

2. Shape meatus: what is the shape of the meatus?
See HOPE-score reference pictures

- Normal (10 points)
- Slightly abnormal (7 points)
- Moderately abnormal (4 points)
- Severely abnormal (1 point)

3. Shape glans: what is the shape of the glans?
See HOPE-score reference pictures

- Normal (10 points)
- Slightly abnormal (7 points)
- Moderately abnormal (4 points)
- Severely abnormal (1 point)

4. Shape Skin: what is the shape of the penile skin?
See HOPE-score reference pictures

- Normal (10 points)
- Slightly abnormal (7 points)
- Moderately abnormal (4 points)
- Severely abnormal (1 points)

5.1 Torsion: is there a torsion of the penis?
See HOPE-score reference pictures

- 0–30° (10 points)
- 30–50° (7 points)
- 50–70° (4 points)
- >70° (1 points)

5.2 Curvature in penile erection: is there a curvature of the penis in erection?
See HOPE-score reference

- No erection observed (5.2 does not account for the HOPE-score)
- 0–30° (10 points)
- 30–50° (7 points)
- 50–70° (4 points)
- >70° (1 point)

Hypospadias Objective Penile Evaluation (HOPE)-score = mean number of points question 1–5.



Figure 2 Continued.

Table 5: HOPE- Hypospadias Objective Penile Evaluation

scores then linearly transformed to a 0 to 100 scale were utilized. These were completed separately by both the patient and his parents. The PedsQL is not hypospadias or penile specific, but the authors believed that the general quality of life scale wasn't appropriate as a screening tool for the age group of patients studied (Table 6).¹³

Previous publications suggest that psychosexual function and quality of life in patients with distal hypospadias may be impaired. However, it is unclear which factors influence this outcome and to which extent the surgical result contributes to it.¹²

A detailed analysis of the psychosexual effects of hypospadias would seem more appropriate for these patients as adults, and such questionnaires were not considered for this study.¹³⁻¹⁴

Discussion

Hypospadias surgery remains a difficult challenge, as several factors contributing to success remain unknown. One of the most intriguing is the variation in the 'healing ability' among patients.²

A long-term follow-up of these patients appears to be crucial for assessing and validating the various techniques currently available. The problem is how to follow these patients. Clinical examination of the penis is highly subjective. Therefore, several questionnaires have been created.¹⁴


The significance of this research is that it will provide us with the aspects of the operative procedure that need critical attention, enabling surgeons to adopt techniques associated with optimal cosmetic outcomes and the mixing of different questionnaires will allow us to assess objective and perceptive aspects of hypospadias surgery as well emotional, social and school functioning one.

Conclusions

The patient's penile self-perception could be reliably assessed with the PPPS. The instrument proved to be practical to use and the good internal consistency is an indication of its reliability.⁹

HOSE is an objective instrument, to assess the postoperative results of hypospadias surgery, and it

ID# _____
 Date: _____



PedsQL™
 Pediatric Quality of Life
 Inventory
 Version 4.0

PARENT REPORT for CHILDREN (ages 8-12)

DIRECTIONS

On the following page is a list of things that might be a problem for **your child**. Please tell us **how much of a problem** each one has been for **your child** during the **past ONE month** by circling:

0 if it is **never** a problem
1 if it is **almost never** a problem
2 if it is **sometimes** a problem
3 if it is **often** a problem
4 if it is **almost always** a problem

There are no right or wrong answers.
 If you do not understand a question, please ask for help.

PedsQL 2

PHYSICAL FUNCTIONING (problems with...)	Never	Almost Never	Sometimes	Often	Almost Always
1. Walking more than one block	0	1	2	3	4
2. Running	0	1	2	3	4
3. Participating in sports activity or exercise	0	1	2	3	4
4. Lifting something heavy	0	1	2	3	4
5. Taking a bath or shower by him or herself	0	1	2	3	4
6. Doing chores around the house	0	1	2	3	4
7. Having hurts or aches	0	1	2	3	4
8. Low energy level	0	1	2	3	4

EMOTIONAL FUNCTIONING (problems with...)	Never	Almost Never	Sometimes	Often	Almost Always
1. Feeling afraid or scared	0	1	2	3	4
2. Feeling sad or blue	0	1	2	3	4
3. Feeling angry	0	1	2	3	4
4. Trouble sleeping	0	1	2	3	4
5. Worrying about what will happen to him or her	0	1	2	3	4

SOCIAL FUNCTIONING (problems with...)	Never	Almost Never	Sometimes	Often	Almost Always
1. Getting along with other children	0	1	2	3	4
2. Other kids not wanting to be his or her friend	0	1	2	3	4
3. Getting teased by other children	0	1	2	3	4
4. Not able to do things that other children his or her age can do	0	1	2	3	4
5. Keeping up when playing with other children	0	1	2	3	4

SCHOOL FUNCTIONING (problems with...)	Never	Almost Never	Sometimes	Often	Almost Always
1. Paying attention in class	0	1	2	3	4
2. Forgetting things	0	1	2	3	4
3. Keeping up with schoolwork	0	1	2	3	4
4. Missing school because of not feeling well	0	1	2	3	4
5. Missing school to go to the doctor or hospital	0	1	2	3	4

In the past ONE month, how much of a problem has your child had with ...
 PedsQL 4.0 - Parent (8-12) Not to be reproduced without permission. Copyright © 1998 JW Varni, PhD, All rights reserved 01/00

Table 6: Pediatric Quality of Life Inventory

seems to be an impartial evaluation, according to a study reviewed during our research.¹⁰

The HOPE score incorporates all relevant surgically correctable items in hypospadias and uses important elements of objectivity and demonstrates good reliability and validity, supporting its use as an objective measure after hypospadias surgery.¹⁰

The PedsQL is not hypospadias or penile specific, the authors believed that the general quality of life scale was appropriate as a screening tool for the age group of patients studied. A detailed analysis of the psychosexual effects of hypospadias would seem more appropriate for these patients as adults, and such questionnaires were not considered for this study.

This study will contribute to increased knowledge related to hypospadias surgery, and it will be the beginning of a protocol definition for long-term follow-ups with our patients in the future.

Finally, this study may contribute to setting specific protocols, in order to predict the appropriate surgical method, for specific cases.

A long-term follow-up of these patients appears to be crucial for assessing and validating the various techniques currently available.

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