RESEARCH PAPER

Parental Satisfaction Following TIP Hypospadias Repair: A Four-Year, Single-Center Analysis

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ABSTRACT

hypospadias rapier. This study aimed to evaluate the satisfaction levels of parents whose children underwent different surgical procedures for hypospadias repair, focusing on functional, cosmetic, and overall outcomes.

Materials and Methods: A specially designed 6-section questionnaire was distributed to parents of children who underwent TIP hypospadias repair at a single local center over a period of four years. The first section collected patients' sociodemographic data, while the remaining sections assessed satisfaction based on previously validated measures, including overall satisfaction, urinary function, cosmetic outcomes, postoperative complications, and overall experience.

Results: Of the 153 parents contacted, 121 responded, resulting in an 79% response rate. Most parents (90%) reported being either "Very Satisfied" (64%) or "Satisfied" (26%) with the surgical outcome. However, only 10% expressed dissatisfaction, primarily in proximal hypospadias cases. As regards the urinary function, 69% of parents indicated that their child had a "Straight, forward-directed urinary stream" consistently, while 21% noted this to be true most of the time. Only 10% reported occasional or frequent issues, mainly in proximal cases. As cosmetic Outcomes were concerned, 88.5% of parents expressed satisfaction with the cosmetic appearance of the surgical site (68% "Very Satisfied" and 20.5% "Satisfied"). Yet, 11.5% noted concern with penile curvature or scar visibility.

Conclusion: Higher satisfaction rate war reported in cases of distal hypospadias compared with proximal hypospadias. The results highlight the need for further surgical refinement and individualized patient counseling.

Keyword: Hypospadias, Postoperative outcome, Parents Satisfaction.

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INTRODUCTION

Hypospadias is a complex congenital condition that significantly impacts both the functional and psychosocial aspects of affected individuals (1). It presents along a spectrum, ranging from mild distal cases to more severe proximal variants, each requiring tailored surgical approaches to optimize functional and cosmetic outcomes (2).

The primary goals of hypospadias surgery include the creation of a functional, straightened penis with a urethral meatus positioned at or near the tip of the glans, allowing for normal urinary function, sexual activity, and satisfactory cosmetic appearance (3). Over the past few decades, various surgical techniques have been developed to address these objectives, ranging from the classic Mathieu and Thiersch-Duplay procedures to more modern approaches like the Tubularized Incised Plate (TIP) urethroplasty, introduced by Snodgrass in 1994 (4,5). The TIP technique has gained widespread acceptance due to its relatively straightforward execution, low complication rates, and favorable cosmetic results, particularly for distal hypospadias (6).

Despite its popularity, TIP urethroplasty is not without challenges. Complications such as urethrocutaneous fistula formation, meatal stenosis, residual chordee, and cosmetic dissatisfaction remain significant concerns, particularly in proximal hypospadias cases (7). These complications can significantly impact patient quality of

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life and parental satisfaction, making outcome assessment a critical component of surgical success (1). In this context, parental satisfaction has emerged as a vital metric, reflecting not only the technical success of the surgery but also the psychological and emotional well-being of the patient and their family (8).

The present study aims to evaluate parental satisfaction following TIP hypospadias repair at a single tertiary care center over a four-year period. By examining the factors influencing satisfaction, including surgical outcomes, cosmetic results, and functional recovery, this study seeks to provide a more nuanced understanding of the challenges and opportunities associated with hypospadias repair urethroplasty, particularly in the context of proximal hypospadias type.

METHODOLOGY

This qualitative cross-sectional study took place to assess parental satisfaction following TIP hypospadias repair over a four-year period (January 2020 and December 2023) at a single tertiary care center. The study was designed for capturing a snapshot of patient and parental perceptions, allowing for the analysis of various factors influencing satisfaction. These included surgical outcomes, cosmetic appearance, and functional results.

Included in the study, there were children with different anatomical variants of hypospadias (distal or proximal) who underwent TIP repair and whose parents consented to participate. Exclusion criteria included patients who underwent alternative surgical techniques. In addition, to those with incomplete medical records, as well as families that were unable to be reached for follow-up.

Children's parents were identified from the center's surgical database as eligible for participation. The questionnaire was distributed through a combination of direct phone calls, email reminders, and personalized follow-up messages via hospital's system.

The survey was performed through a specially designed questionnaire (6,9,10). It consisted of six sections, specifically designed to capture the multifaceted nature of patient and parent satisfaction. The first section is intended to report sociodemographic data that concerned with patient age, gender, parental education level, family income, and other relevant background information. The second section included the parents' view as regards the overall surgical outcome, including the success of urethroplasty, penile straightening, and meatal position. Urinary functions were evaluated by assessing the child's ability to achieve a straight, forward-directed urinary stream, the presence of spraying, and overall urinary control. Moreover, their overall satisfaction with the cosmetic appearance of the surgical site, including scar visibility, penile curvature, and general penile aesthetics. A specially designed section in the questionnaire was set to address the presence of fistulas, meatal stenosis, residual curvature, and other common complications.

Data was collected using a mixed-method approach, incorporating both digital and telephonic communication. Parents were initially contacted via phone to verify their willingness to participate, followed by questions' phone dictation as well as an electronic questionnaire, distributed via email or hospital's system. For families without reliable internet access, paper versions of the questionnaire were personally handled to them when visiting the outpatient pediatric surgery clinic.
The study protocol was reviewed and approved by the Institutional Review Board (IRB) of the center. Written informed consent was obtained from all participants.

All collected data were evaluated using IBM SPSS Statistics (Version 27). Descriptive and inferential statistical methods were applied to evaluate parental perceptions and surgical outcomes following TIP hypospadias repair.

Categorical variables including satisfaction levels, urinary function, cosmetic appearance, complication rates, and willingness to recommend the procedure were summarized using frequencies and percentages to depict the distribution of responses across the study population.

Comparative analyses were conducted to assess differences in outcomes based on the type of hypospadias (distal vs. proximal). The following statistical tests were employed: Chi-Square Test was used to evaluate the association between hypospadias type and satisfaction level. Fisher’s Exact Test was applied to assess the significance of differences in complication rates, especially where expected cell counts were small. A P-value of < 0.05 was considered statistically significant.

RESULTS

A total of 153 parents were identified and contacted from the center's surgical database as eligible for participation. Of these, 121 responded to the questionnaire, yielding a response rate of 79%. The sample size was considered sufficient to provide a statistically meaningful analysis of satisfaction rates across different types of hypospadias.

General Satisfaction

The overall general satisfaction rates were high, with 64% (78 parents) reporting being "Very Satisfied", 26% (31 parents) being "Satisfied", and only 10% (12 parents) expressing "Dissatisfaction" (Table 1). The combined satisfaction rate reached 90%, indicating a generally favorable perception of the TIP technique.

Urinary Function

Regarding urinary function, 69% (84 parents) reported that their child had a "Straight, forward-directed urinary stream" consistently, while 21% (25 parents) noted this to be true "Most of the time". Only 10% (12 parents) reported occasional or frequent issues with urinary direction, primarily in cases involving proximal hypospadias (Table 2). Urinary spraying or splitting was reported as a rare complication by 15% (18 parents).

Cosmetic Outcomes

Satisfaction with the cosmetic appearance of the surgical site was also high. 68% (82 parents) reported as being "Very Satisfied", and 20.5% (25 parents) were "Satisfied" with the cosmetic outcome, while 11.5% (14 parents) expressed dissatisfaction, often noting concerns about penile curvature or scar visibility (Table 3).

Postoperative Complications and Recovery

Postoperative complications were noted in 15% (18 parents) of cases, with most parents describing the recovery process as "Smooth" (60%, 73 parents) or "Very Smooth" (20%, 24 parents). However, 20% (24 parents) described it as "Moderate" or "Difficult", often correlated with reported complications (Table 4).

Overall Experience and Recommendations

A significant majority (85%, 103 parents) indicated that they would "Definitely" or "Probably" recommend TIP surgery to others, while only 15% (18 parents) expressed hesitation, mainly due to ongoing complications or cosmetic concerns (Table 5).

Post-Operative Complications by Hypospadias Type

When comparing proximal and distal hypospadias cases, significant differences in complication rates were observed (Table 6). Specifically, proximal hypospadias cases had a lower overall complication rate (4%), while distal hypospadias cases exhibited a significantly higher complication rate (36%). This is attributed to the higher number of studied distal hypospadias compared to proximal type in the studied cohort. However, this difference reached statistical significance in the Fisher's exact test (P = 0.0014), likely reflecting the small sample size of proximal cases. Moreover, a significant statistical difference was clear as regards parents' satisfaction in the two groups as regards postoperative complications in relation to hypospadias type. (Table 7) The statistical *P*-value for the difference in satisfaction levels between distal and proximal groups is 0.032 (Chi-Square Test). Again, this is reflected by the limited number of proximal types.

Tables legends:

Table 1: General Satisfaction
Table 2: Urinary Function
Table 3: Cosmetic Outcomes
Table 4: Postoperative Complications and Recovery
Table 5: Overall Experience and Recommendations
Table 6: Hypospadias Surgical Outcome Summary
Table 7: Parents satisfaction of postoperative complications in relation to hypospadias type

Table 1: General Satisfaction

Category	Count	Percentage
Very Satisfied	78	64%
Satisfied	31	26%
Dissatisfied	12	10%
Total	121	100%

Table 2: Urinary Function

Category	Count	Percentage
Straight, forward-directed stream (Always)	84	69%
Straight, forward-directed stream (Most of the time)	25	21%
Occasional/Frequent issues	12	10%
Total	121	100%

Table 3: Cosmetic Outcomes

Category	Count	Percentage
Very Satisfied	82	68%
Satisfied	25	20.5%
Dissatisfied	14	11.5%
Total	121	100%

Table 4: Postoperative Complications and Recovery

Category	Count	Percentage
Very Smooth	24	20%
Smooth	73	60%
Moderate/Difficult	24	20%
Total	121	100%

Table 5: Overall Experience and Recommendations

Category	Count	Percentage
Definitely/Probably Recommend	103	85%
Hesitant to Recommend	18	15%
Total	121	100%

Table 6: Hypospadias Surgical Outcome Summary

Type	Total Cases	Complication Cases	Complication Rate (%)	*P*-Value
Distal	130	47	36%	**0.0014*** Fisher's Exact Test
Proximal	23	1	4%	

Table 7: Parents satisfaction of postoperative complications in relation to hypospadias type

Satisfaction Level	Distal (n=130)	Proximal (n=23)	Total	*P*-Value
Very Satisfied	26	5	31	**0.032*** Chi-Square Test
Satisfied	41	12	53	
Dissatisfied	36	1	37	
Total	103	18	121	

DISCUSSION

Functional and cosmetic outcome post hypospadias surgery is still an enigma (11,12). Reliable evaluation of these valuables is not yet agreed upon (13,14). Therefore, the current study aimed to highlight a shed on this notion. The findings of the study provide valuable insights into parental satisfaction following TIP hypospadias repair. However, the data used in our study were not equal as regards the anatomical types of hypospadias as majority of studies cases were of the proximal type. This may be a weak point for investigating disparities in the outcome. Most parents were satisfied as regards the postoperative outcome of their children. This data coincides with what is published in the literature (15,16). Yet, some reports contradicted this data (17–19). This high level of satisfaction is largely attributed to the favorable cosmetic and functional outcomes typically associated with TIP repairs, which are designed to produce a straight, forward-directed urinary stream and a cosmetically acceptable meatus (1,20).

However, lower satisfaction rates were observed in distal hypospadias cases. This does not highlight the unique challenges associated with more severe anatomical variants (21). This discrepancy can be explained by the lower number of distal hypospadias cases included in our study compared to a relatively higher number of proximal hypospadias patients. Post proximal repairs, complications included fistula formation, meatal stenosis, and residual chordee as previously reported in the literature (7). This is consistent with the findings of other studies, which have noted that the increased technical complexity and higher tissue tension associated with proximal repairs can lead to poorer long-term outcomes (6).

Complications remain a critical determinant of parental satisfaction, as evidenced by the high dissatisfaction rates among parents of children with postoperative issues. The relatively higher overall complication rate observed in this study is comparable to other reports, although the significantly higher rates in distal cases. It emphasizes the need for more refined surgical techniques and careful patient selection (3). These findings represent the importance of thorough preoperative counseling to manage parental expectations and ensure that families understand the potential risks associated with proximal hypospadias repair (1).

Cosmetic outcomes also play a critical role in determining parental satisfaction (15,22). Finally, the high overall satisfaction rates, combined with the relatively low incidence of major complications, support the continued use of the TIP technique as a first-line approach for both distal and proximal hypospadias repair. This is supported by many authors (8–10). Yet, the consistently lower satisfaction rates for distal repairs in the current study cannot be relied upon due to the higher discrepancy between the distal and proximal hypospadias patients' number within the studied cohort. Therefore, future studies should focus on identifying the factors most strongly associated with poor outcomes in proximal versus distal hypospadias cases, as well as developing novel surgical approaches that can improve both functional and cosmetic results (6,23,24).

Distal hypospadias, which accounts for more than half of the cases studied. Although, it has generally more favorable surgical outcomes due to the simpler nature of the repair and reduced risk of complications (25,26). This data totally contradicts our results. The reason may be attributed to the abnormal anatomical distribution of hypospadias types in the studied cohort. In contrast, proximal hypospadias is often associated with more severe penile curvature, a higher risk of postoperative

complications, and greater technical challenges, requiring staged repairs or complex reconstructive procedures. Understanding these anatomical differences is crucial for both surgical planning and patient counseling (27,28).

Parental expectations also play a significant role in determining satisfaction levels. Studies have shown that parents' perceptions of surgical success are often influenced by factors beyond purely clinical outcomes, including cosmetic appearance, functional restoration, and long-term psychological well-being of the child (25,29,30). This highlights the need for comprehensive preoperative counseling that addresses not only the technical aspects of the procedure but also the potential emotional and social impacts on the patient and family (1,31,32). In conclusion, parental satisfaction, despite being subjective, may give a realistic expectation for hypospadias to follow up despite this type. Preoperative parental counseling is crucial to improve the perceived postoperative opinion. The current study has a clear disparity in the studied hypospadias types. This might have been a weak point that led to some bias in results. Moreover, we did not assess adolescent or adult satisfaction as well as sexual function outcomes. Therefore, future studies are currently going on by our team increasing the number of distal hypospadias in the new cohort to have more reliable results.

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