

Cosmetic Results Using Penile Perception Scores in Proximal Hypospadias with Ventral Corporal Grafting

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Abstract

Introduction: The purpose of this study was to evaluate parents' perception of cosmetic appearance after proximal hypospadias repair including SIS grafting.

Methods: Patients were prospectively identified during routine clinic visits. Patients included in the study had a primary complete proximal hypospadias repair, including SIS grafting at least 4 months prior to the date of the survey. Parents were asked to assess their child's genitalia with the PPS questionnaire at a routine clinic visit.

Results: A total number of 34 patients were enrolled in the study after genital surgery. The study group, patients with proximal hypospadias repairs with SIS grafting, consisted of 11 patients with 14 questionnaires. On average the total score of the study group was 16.5 (range 13- 18). The highest score (18), indicating the very satisfied in all six categories, was reported in 8 of the 14 surveys (57%). When assessing individual categories on the PPS, the lowest average was associated with penile length at 2.64, while the highest average was the shape of the penile skin at 2.85. The control group, the patients after circumcision, enrolled 23 patients. The average total score was 16.5 (range 12 - 18). The highest score was reported in 12 surveys (52%). The lowest score tabulated (12) was reported in three patients.

Conclusion: This study demonstrated good early cosmetic results of two stage proximal hypospadias repairs with SIS grafting for ventral chordee, and are comparable to the control group. Future studies are needed evaluating patient satisfaction in long-term follow up.

Keywords: *Cosmetic; Penile; Proximal Hypospadias; Ventral Corporal Grafting*

Introduction

Hypospadias is a congenital anomaly that occurs in every 1 in 250 male live births, and can range from distal hypospadias, which primarily is a cosmetic issue to proximal hypospadias, which affects functionality along with cosmesis. Proximal hypospadias with severe ventral chordee is preferentially reconstructed early in childhood, and occasionally will require a staged approach. Although chordee greater than 40 - 45 degrees can be approached in multiple ways, one ply Small Intestine Submucosa (SIS) grafting is the preferred approach at the authors' institution. From a reconstructive standpoint, ventral penile grafting with SIS does not negatively affect penile length. At the authors' institution, SIS grafting has been associated with relatively low rates of secondary chordee repairs (4%).

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As proximal hypospadias repairs are aimed both for a good functional and cosmetic result, it is important to illicit patient satisfaction in regards to cosmetic outcomes. Since many of these repairs are done on young boys, it is the parents, after the initial repairs, who should be asked to report cosmetic results.

A standardized questionnaire, the Pediatric Penile Perception Score (PPS) has been developed to allow both patients and parents to assess the perception of the male genitalia [1]. The purpose of this study was to evaluate the cosmetic results of patients, as reported by parents, after proximal hypospadias repair including SIS grafting, at least 4 months after their last staged reconstructive procedure

Materials and Methods

After IRB approval was obtained, patients were prospectively identified. Patients included in the study had a complete proximal hypospadias repair, including SIS grafting at least 4 months prior to the date of the survey. Patients were identified in clinic during regular clinic follow up. Patient who had started puberty or had secondary repairs were excluded from the study. Parents were asked to assess their child's genitalia with the PPS questionnaire at a routine clinic visit at least 4 months after their last staged procedure.

The PPS asks the parent to rate six different cosmetic aspects of the male genitalia including penile length, position and shape of the urethral opening, shape of the glans, shape of the penile skin, penile axis and general appearance of the penis. Each one can be rated with a number score indicating very satisfied (3), satisfied (2), dissatisfied (1), very dissatisfied (0).

Patients who underwent circumcisions were used as controls. These patients are not routinely followed after the first postoperative visit, unless there is a complication. The control group patients were asked to be in the study at the first postoperative visit. The enrollment period for both groups was 6 months.

The questionnaires from these two groups were then analyzed and compared to determine the cosmetic success, as assessed by parents, of patients undergoing proximal hypospadias repairs with SIS grafting when compared to those who underwent circumcision.

Results

A total number of 34 patients were enrolled in the study after genital surgery. The study group consisted of 11 patients with 14 questionnaires (Table 1). Some patients had more than one parent at clinic and both were asked to participate in the study. On average the total score of the study group was 16.5 (range 13 - 18). The highest score (18), indicating the very satisfied in all six categories, was reported in 8 of the 14 surveys (57%). When assessing individual categories on the PPS, the lowest average was associated with penile length at 2.64, while the highest average was the shape of the penile skin at 2.85. In all surveys, there were no dissatisfied (1) or very dissatisfied (0) responses, in any category. The penile length category yielded 64 % (9) very satisfied responses. Position and shape of the urethral opening yielded 79 % (11) very satisfied responses. The shape of the glans yielded 71 % (10) very satisfied responses. The shape of the penile skin yielded 86 % (12) very satisfied responses. Penile axis yielded 71% (10) very satisfied responses. The general appearance to the penis yielded 79% (11) very satisfied responses. These results indicate overall a satisfactory cosmetic result in patients undergoing proximal hypospadias repair with SIS grafting.

The control group had 25 patients, however 2 questionnaires were incompletely filled out; therefore, these two patients were excluded from the study. There were 23 completed control group questionnaires that were used in the analysis (Table 2). The average total score was 16.5 (range 12 - 18). The highest score was reported in 12 surveys (52%). The lowest score tabulated (12) was reported in three patients. In the individual categories on the PPS the lowest average was associated with both penile length and shape of glans 2.65, while the highest average was reported with general appearance of the penis 2.86. In the control group, there were also no dissatisfied or very dissatisfied responses. Overall the cosmetic results were satisfactory in the control group. T tests compared the results between control and study groups, and none were statistically significant.

	Very Satisfied (3)	Satisfied (2)	Dissatisfied (1)	Very Dissatisfied (0)
Penile length	9	5	0	0
Position and shape of the urethral opening	11	3	0	0
Shape of the glans	10	4	0	0
Shape of penile skin	12	2	0	0
Penile axis	10	4	0	0
General appearance of penis	11	3	0	0

Table 1: Study group questionnaire results: Number of responses for each category and satisfaction score.

	Very Satisfied (3)	Satisfied (2)	Dissatisfied (1)	Very Dissatisfied (0)
Penile length	16	7	0	0
Position and shape of the urethral opening	18	5	0	0
Shape of the glans	16	7	0	0
Shape of penile skin	18	5	0	0
Penile axis	15	8	0	0
General appearance of penis	20	3	0	0

Table 2: Control group questionnaire results: Number of responses for each category and satisfaction score.

Discussion

Proximal hypospadias are estimated to comprise around 20 - 25% of all hypospadias repairs. Ventral chordee of the penis exists to varying extents in proximal hypospadias. After degloving the penis, a small percentage of these patients still have higher degrees of ventral curvature (40 - 45 degrees or more). Different surgical techniques have been reported to repair severe penile chordee including, urethral plate transection, ventral lengthening techniques, or both.

SIS grafting for ventral chordee in proximal hypospadias repairs has been performed at the author’s institution for the past 15 years. It did not become the preferred method of reconstruction until about 5 years ago, and was adopted by all surgeons. When assessing cosmetic results for hypospadias, it is important to get both the parents and the patient’s assessment, but given the recent adoption of the reconstructive method most patients are not old enough to give an assessment of their own genitalia. Parents are more critical of hypospadias repairs than surgeons [2], therefore were used as a surrogate to assess early cosmetic results in this patient population. This study did not reveal a stark difference between the cosmetic results of those undergoing circumcision or proximal hypospadias repairs. Over half of both study and control groups, rated the cosmetic result in all categories as very satisfied. The lowest score in any category was a 2 (satisfied), in either group. Overall both groups indicated a similar level of satisfaction with the cosmetic result as qualified with the PPS questionnaire. When laypersons are asked to compare hypospadias repairs with a circumcised penis, the distal hypospadias repairs and circumcised penis are rated fairly similar in adults and it is the proximal hypospadias repairs that are rated less favorably [3]. The parents

were asked to evaluate only their son's genitalia and not asked to compare to a picture of a different reconstruction or a control. Since this study was done in comparing children's repairs versus adults who had childhood repairs, it is possible that pubertal growth and maturation itself changes the appearance of the reconstructed penis differently than the surgically less manipulated circumcised penis, which may affect the cosmetic assessment after puberty.

In this study group the lowest average, albeit still high, was with penile length. Penile length is always an issue with patients affected with hypospadias, and can be more pronounced in those with proximal hypospadias. All parents were at least satisfied with the penile length, and the majority was very satisfied, indicating the utility of ventral corporal grafting in this population. However, if there is an innate difficulty in the hormonal response at puberty in these patients, it may result in a negative perception of penile length in adulthood. Interestingly enough, the lowest average score in the control group was also penile length along with the glans shape.

A study out of Italy used PPS to compare techniques of proximal hypospadias repairs, and it demonstrated that two stage and repairs utilizing the urethral plate transection technique yielded the most favorable cosmetic results, when compared to other types of proximal hypospadias repairs [4]. All repairs in this study included both a urethral plate transection and a two-stage repair, which may help to explain the high satisfaction of the cosmetic results.

Although parental feedback of cosmetic results is important, long term follow up from the patients themselves is also essential. Ideally, follow up both during puberty and after puberty would be obtained to assess the perception of cosmesis during both time periods. In this study given the recent adoption of the surgical method, a post pubertal population would be impossible to obtain after a primary repair. Adult men, who have hypospadias repairs in childhood, indicate short penile length as a complaint [5,6]. Proximal hypospadias more often than not is associated with ventral chordee, which results from a discrepancy in size of the ventral and dorsal tunica albuginea. Ventral corporal grafting, by elongating the shorter side, insures that the penile length is preserved to the best of the surgeon's ability. With future studies following up these patients as adults, hopefully these patients will be more satisfied with their penile length.

Exploring cosmetic results from adults reveals the results of hypospadias techniques practiced years earlier. Many surgeons have changed their clinical practice throughout their careers, exploring their own results, but long-term results are not available until years later. This study was designed to explore early results of a recent change in practice at the authors institution, however, the long-term results from the patient's themselves will not be available until these children reach adulthood. Another limitation of this paper is the small sample groups. Although the enrollment period was six months, the number of patients initially desired was not met in the study group. The inclusion criteria required the patients to have had their complete reconstruction and to be at least 4 months from the last surgical procedure. All patients are asked to follow up at this time routinely, however many are lost to follow up after the initial postoperative visit. This made it more difficult to enroll patients into the study. The authors did not feel it was appropriate to ask the parents to participate in the study at the initial postoperative visit, since the healing process is still underway, and the appearance of the genitalia has not stabilized.

Parents were given the option to participate in the study; therefore, it is possible that this led to a selection and potential reporting bias. The parents, who were unhappy with the repair, may have not come back to clinic or elected not to participate in the study.

Conclusion

This study demonstrated that the early cosmetic results, evaluated by PPS, of two stage proximal hypospadias repairs with SIS grafting for ventral chordee, are promising and comparable to the control group of circumcision patients. Long term follow of these hypospadias repairs is essential to understand the cosmetic outcomes after puberty, however the initial follow up is positive. One of the most common concerns of adult men with hypospadias repairs is penile length, and the ventral grafting technique may be the best to minimize these concerns in the future.

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