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Research done on patient and/or parent satisfaction among patients underwent hypospadias surgery at TASH and DMCSH;

Three years cross sectional, prospective study; Ethiopia, 2022

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I would like to appreciate continuous and ongoing constructive support by Dr Fisseha.

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Abbreviation and Acronym

DMCSH- Dagimawi Minillik Comprehensive specialized hospital

TASH- Tikur Anbesa Specialized Hospital

MD- Medical Doctor

PRO- Parental Related Outcome

PPPS- Pediatric Penile Perception Score

DSD- Disorder Sexual Disorder

UDT- Undescended Testis

UCF- Urethra Cutaneous Fistula

TIP- Tabularized Incised Urethral Plate

UK- United Kingdom

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Abstract

Introduction

Hypospadias is one of the most common congenital anomalies in boys, occurring in 1 in 150 to 300 live births (Elliott et al., 2011; Springer et al., 2015) followed by Down's Syndrome, Cleft Lip and Spinal bifida. Surgeon perspective of outcome assessment is vital; but it will not be complete without patient input. In spite of what surgeons may determine a successful repair, parental and patient perception of their outcomes may differ (Lorenzo et al., 2014; Mureau et al., 1996). Longitudinal studies following hypospadias repair are still rare and the real impact in adolescence and adult life remains uncertain.

This may be due to lack of condition specific validated patient-related outcome (PRO) measures and objective tools to evaluate young people and families The study was done determine the Parent reported outcome of hypospadias repair in our institution and to identify the effects of factors on post-operative PRO.

Objective

The objective of study was to assess patient and/or parent satisfaction among patients underwent hypospadias surgery for three years in TASH and DMCSH; 2022

Methodology

The study was conducted in TASH and DMCSH for children with hypospadias operated during January, 2019 – December, 2021. Data was collected in four major stages as chart retrieval, address identification, phone communication and data analysis.
The study design was hospital based cross sectional descriptive.

Result and Discussion

Potential variables identified for confound of association for post hypospadias surgery satisfaction includes age, location, type of hypospadias, type of first procedure, and total number of procedure. Bivariate and multinomial logistic regression was done with above variables showed that there is strong association of satisfaction level with localities from Addis Abeba (P=0.02, 95% CI)

Our study revealed that locality or address, type of hypospadias, and repeated procedures all shares major contribution in reducing our patients and parents level of satisfaction after hypospadias surgery.

We are also showed that it is possible to assess post-operative PRO and post-operative follow up by the use of mobile phones with consistency of operating team and strong network connection.

Conclusion and Recommendation

Parental and /or patient related outcome assessment and satisfaction level has paramount importance than surgeon oriented outcome assessment. We can use phone calls for post hypospadias surgery satisfaction assessment without much difficulty.

Key words: Satisfaction, Parent oriented outcome, Post hypospadias repair

Chapter One

Introduction

Background

Hypospadias is one of the most common congenital anomalies in boys, occurring in 1 in 150 to 300 live births (Elliott et al., 2011; Springer et al., 2015) followed by Down's Syndrome, Cleft Lip and Spinal bifida. Hypospadias is a broad term, however, and the severity of each component can vary greatly from boy to boy. The classical description was based on the location of the urethral meatus and divided into distal, mid shaft, and proximal hypospadias.

A classification based solely on the location of the urethral meatus oversimplifies the hypospadias phenotype and may even be misleading. Boys who have what appears to be a distal urethral meatus may have severe ventral curvature, hypo plastic tissue overlying a more proximal urethral meatus, and a lack of ventral penile shaft skin, increasing the complexity of the repair and the risk of complication. Thus defining hypospadias complexity simply based upon the location of the urethral meatus underestimates the severity, in some boys.

A classification system that includes the location of the urethral meatus as well as the degree of penile curvature after degloving leads to a more definitive and relevant diagnosis. The most common anomalies associated with hypospadias are inguinal hernia and/or hydrocele and cryptorchidism. Hypospadias is multifactorial in origin, including genetic and environmental concerns. Risk factors include premature birth, infant's small for gestational age.

The goals of surgical reconstruction in boys with hypospadias include correction of penile curvature to ensure a long, straight erection, advancement of the urethra to ensure normal passage of urine and semen through the glans, and the creation of a cosmetically pleasing penis. The surgeon must assess the potential long-term significance of the defect and have an objective discussion with the boy's parents as to whether a surgical repair should be performed. Achievement of this goal includes preparation of the family and patient for the proper procedure, accurate anatomic assessment, and an honest discussion about surgical outcomes and potential complications.

To capture PRO, several hypospadias specific scoring systems have been developed; like The Hypospadias Objective Scoring Evaluation (HOSE), Pediatric Penile Perception Score (PPS), Genital perception Score (GPS), and the Hypospadias Objective Penile Evaluation (HOPE) score are scoring systems that have been generated and validated in children (Holland et al., 2001; Mureau et al., 1995; van der Toorn et al., 2013; Weber et al., 2008;) with all short coming that need to consider more like psychosocial and sexual factors.

Statement of the problem

Much of the discussion in many of texts and majority of articles focused mainly on surgical procedures of hypospadias repair and their outcomes as observed by the surgeon. Although surgeon perspective of outcome assessment is vital; it will not be complete without patient input. In spite of what surgeons may determine a successful repair, parental and patient perception of their outcomes may differ (Lorenzo et al., 2014; Mureau et al., 1996).

Analyzing issues that contribute to parental decisional regret include the development of complications, parental hesitancy regarding the potential surgery, and the desire for circumcision while improved parental education and understanding of hypospadias repair decreased conflict about repair (Lorenzo et al., 2012, 2014).

Longitudinal studies following hypospadias repair are still rare and the real impact in adolescence and adult life remains uncertain. This may be due to lack of condition specific validated patient-related outcome (PRO) measures and objective tools to evaluate young people and families (Sullivan KJet.al., 2017, Thirty S et.al. 2015)

The study has assess patient or parents reported outcome or level of satisfaction after hypospadias repair and it also addressed factors that influence level of satisfaction after hypospadias repair.

Finally the study has determined the perceived satisfaction level from patient or parents perspective.

Significant of the study

The study will assess the patient or parent reported out come by using modified Pediatric Penile Perception Score (PPPS) as collection tool with direct interview technique to the patient or parents.

The study will add to scholarly research and it will to contribute for the improvement of hypospadias surgery by conducting complete post hypospadias surgery outcome assessment by including patient and /or parents.

In this study, we aimed to determine the Parent reported outcome of hypospadias repair in our institution and to identify the effects of factors on postoperative PRO.

The study will establish strong and positive relation between patient or parents and operating surgeon; it will also be an input for further study and improvement on patient and parent involvement on post-operative outcome assessment.

The study will contribute much by assessing our circumstance of patient care by patient and family centered care which is one major principle of pediatric surgery

Data from this study can be used to improve pre-operative counselling during the consent process and improve patient and family centered care. Smart mobile phone technology can be used successfully to distribute and collect parent-reported outcomes.

Chapter Two

Literature Review

There is a paucity of research done locally and internationally considering patient or parent input in assessing post hypospadias repair outcome. There are only few papers done on hypospadias and no research done on patient or parent reported outcome so far.

According to the retrospective study done at TASH, of 246 patients operated for hypospadias in 5 year period, 202 included in the study and result show 80% operated after age 18months, many of them come from outside of Addis Ababa (capital city of Ethiopia) which is 41.6% presented at later than 5years of age and follow up time shows 0-2years. Type of hypospadias was anterior, posterior and middle show 52%, 31.7%, and 16.3%, respectively. Associated anomaly shows UDT (9.9%), DSD (4.5%) and inguinal hernia (2%). The most common performed procedure was single stage (78.6%) and two stage procedure (9.4%). There was a high rate of major postoperative complications (44.1%) requiring further surgical intervention. The most common complications were UCF occurring in 31.2% of patients, followed by meatal stenosis and glans breakdown in 7.4% each. Thirty seven percent of the patients underwent repeat procedures, while 7% are still waiting for surgery. The procedures were UCF repair, meatoplasty and redo urethroplasty. In total, 23.8% underwent two procedures, 9.9% three, 2.5% four and 1% five surgeries (Tihitena N. et al., 2018).

As shown by a Review of Techniques and treatment outcome done in Mekelle over three years; there were 67 patients who underwent hypospadias repair, all in Mekelle Hospital. The age of repair ranged from 8 months to 32 years of life. Majority of our cases had distal hypospadias which accounted for 42 (62.7%) followed by mid penile shaft hypospadias in a rate of 18 (26.9%) and the least seen was proximal hypospadias in 7(10.5%) of the cases. The optimal window recommended for repair of hypospadias is in ages between 6 to 18 months. Indicating that this urogenital anomaly still remains a taboo in the study area, an inhibition that results from social custom. In this review, the overall complications encountered were urethrocutaneous fistula 4(6.0%), partial/complete neourethral dehiscence 3(4.5%), neourethral stricture 1(1.5%), hematoma with skin maceration 1(1.5%) and mild oedema 9 (13.4%). parents and patients were advised to observe their urinary stream and evaluate the adequacy of the repair. patient satisfaction rate that exceeded 51 (87.9%) was achieved in this study ensuring that TIP repair technique is the best treatment option for most of the distal, middle penile shaft hypospadias, in selected cases of proximal hypospadias and in cases of re-operations with fewer rates of complication. (Mekonnen Hagos. Ethiop Med J, 2017).

After hypospadias surgery, approximately half of the parents experience decisional regret, with postoperative complications as risk factor for regret according to Lorenzo et al., but not according to Ghidini et al. An objective perspective of the complication risk may improve preoperative parental counseling and help parents make better informed decisions on whether or not they will have their son operated upon (Dokter et al., 2020)

The results of surgery for hypospadias patients are often unsatisfactory, with reported rates of complications reaching 40% and even more (Appeadu-Mensah et al., 2015; Mammo et al., 2018). For distal hypospadias, the highest complication reported reaching 33% (Klijn, Dik, & de Jong, 2001; Stein, 2012). Postoperative hypospadias complications are divided into mild and severe complications. Minor complications include bleeding, hematoma, edema, and severe complications, including wound infection, wound dehiscence, skin necrosis, flap necrosis, fistula, and penile torsion (Agrawal & Misra, 2013; Bhat & Mandal,2008).

The overall complications encountered were urethrocutaneous fistula 4(6.0%), partial/complete neourethral dehiscence 3(4.5%), neourethral stricture 1(1.5%), hematoma with skin maceration 1(1.5%) and mild oedema which accounted for 9 (13.4%) as shown in Table 4, but in only 7(12.1%) of the cases with TIP repair technique. Re-operative surgery was typically performed no sooner than 6 months after the initial repair, mainly for urethrocutaneous fistula, partial/ complete neourethral dehiscence and neourethral stricture which were all dealt using different techniques without major events.

Surgical reconstruction is the only means of correction. Many surgical techniques have been described reflecting the need for versatility during reconstruction and the ultimate goal of repair is to create a cosmetically appealing penis with terminally situated conical meatus and to insure a well-directed straight and attain full urinary stream in the standing position (Snodgrass W. et.al).

Satisfactory achievement of both functional and cosmetic result is critical in the repair of hypospadias. Hence, failure to achieve both may have profound implication for the patients. Recent studies suggested that hypospadias may have a significant effect on future psychosexual development and patients with hypospadias in the age of 9 to 18 years had a more negative genital appraisal most of the patients desiring functional or cosmetic improvement (Devine CJ.et.al./1-3).

Hypospadias is one of the most common congenital anomalies standing second among common human birth defect in some studies. It occurs 1 out of 250-300 male live births. The main reason of hypospadias repair is to enable urination in standing position, have a good cosmetic appearance and an effective insemination.

There are multiple complications after hypospadias repair, more than 300 procedures were attempted and newer methods continue to evolve. The outcome of the procedure is judged by their early complications and short-term functionality. Common complications after hypospadias repair include urethrocutaneous fistula (UCF), meatal stenosis, failed glanuloplasty, failed urethroplasty, urethral strictures, infection and others less common ones.

Multiple factors affect the outcome of hypospadias repair, including the site of the meatus, severity of chordee, adequacy of dorsal preputal skin and genital anomalies. Other factors are age of the patient and experience of the surgeon.

Boys undergoing surgery for proximal hypospadias in childhood have an overall good urological long-term outcome, although reoperations are common, especially after the Duckett procedure. In

adolescence, the patient satisfaction with penile appearance was not dependent of number of reoperations and a retracted meatal position was not a reason for dissatisfaction. However, patients were dissatisfied with the short penile length. Many reoperations were performed late, which illustrates the need for follow-up through adolescence (Andersson M, et. al., 2020).

The National Outcomes Audit in Hypospadias database was commissioned by the British Association of Pediatric Surgeons to capture clinical information from hypospadias repair and study done on Parental decisional satisfaction after hypospadias repair in the United Kingdom. One method of measuring parental satisfaction is decisional regret (DR). DR is a validated measure of the medical decision-making process that is not disease specific according to G S Bethell et al.

In distal hypospadias, DR has been studied previously in single institution outside of the UK. Lorenzo et al. initially surveyed parents using the DR scale (DRS) following pre-operative counselling for distal hypospadias repair and then followed these parents up at one year after repair. An element of decisional conflict pre-procedure was experienced in 28% of participants, with 50% of parents experiencing an element of DR after the operation. Factors associated with DR were a high pre-procedure decisional conflict score and postoperative complications.

A desire for circumcision was associated with a lower DRS score. Ghidiniet al. also studied DR in distal hypospadias and found that only 8.1% of respondents demonstrated no regret. Factors associated with DR include an initial desire to avoid surgery, younger age at follow-up, presence of lower urinary tract symptoms following surgery and a lower pediatric penile perception score (PPPS). The PPPS was developed to assess patient- and parent-perceived outcomes of hypospadias surgery focusing on the appearance of the penis including shape of the penis and position of urethral meatus.

On multivariate analysis, a distal meatus, a small glans and developing complications requiring repeat surgery were all associated with increased levels of regret. There was no association between DR and cases performed per surgeon (G S Bethell et al. J Pediatric Urol. 2020 Apr).

The study done on Hypospadias-clinical approach, surgical technique and long-term outcome for which 187 children and their families agreed to participate in the study. 46 patients (24.6%) presented at least one complication after the repair, with a median elapsed time of 11.5months (6.5–22.5). Longitudinal differences in surgical corrective procedures ($p<0.01$), clinical approach ($p<0.01$), hospitalization after surgery ($p<0.01$) were found. Cosmetic data from the PPS were similar among children and parents, with no significant differences in child's age or the type of hypospadias: 83% of children and 87% of parents were satisfied with the cosmetic result. A significant difference in functional outcome related to the type of hypospadias was reflected responses to HOSE amongst all groups of respondents: children ($p<0.001$), parents ($p=0.02$) and surgeon ($p<0.01$). The child's HOSE total score was consistently lower than the surgeon ($p<0.01$). The HOSE satisfaction rate on functional outcome was 89% for child and 92% for parent respondents (Ceccarelli et al. BMC Pediatrics, 2021).

Snodgrass and Lorenzo reported 33 patients who had severe hypospadias in which they were operated using his technique with dorsal plication. He reported an incidence of 21% fistula, 6% complete repair dehiscence, and 3% meatal stenosis with a total complication rate of 33%.

Parents' degree of satisfaction post hypospadias repair is very rarely highlighted in the pediatric surgery literatures, although it is a very good landmark for the cosmetic appearance of the procedure used from the parents' point of view. Pope et al. showed an excellent parents' satisfaction with the use of dermal graft to correct the chordae in severe hypospadias. Snodgrass et al. used a standardized questionnaire to parents and operating surgeon to determine their opinion regarding outcomes from tubularized incised plate hypospadias repair.

Telephone questionnaire for parents' satisfaction for both types of repair was conducted after completing all the surgical procedures including postoperative complications. There were statistically significantly more parents' satisfaction for the two-stage versus single-stage repair. This result of parents' satisfaction indicates that the main concern for parents of hypospadias children is the cosmetic appearance regardless of the time required to reach this target (Mohamed E.Hassen. Annals of Pediatric Surgery 2014, and 10:125–129).

Chapter Three

Objectives

General Objective

The objective was to assess post hypospadias surgery patient and/or parent satisfaction among patients underwent hypospadias surgery for three years in TASH and DMCSH; 2022

Specific objectives

The specific objectives were:

I. To determine patient and/or parent overall level of satisfaction following hypospadias surgery
II. To assess post hypospadias surgery position of urethral meatus on patient and /or parent perspective
III. To assess shape of penis and glans following hypospadias surgery on patient and/or parent perspective
IV. To assess level of collaboration of parent and /or patient as health care team member

Chapter Four

Methods and Materials

Study Area and Period

The study was conducted at Tikur Anbesa Specialized Hospital and Minilik II Comprehensive Specialized Hospital, which are the biggest hospitals in Ethiopia and Addis Abeba; TASH is the only pediatric surgery unit in our country and DMCSH is one major site where pediatric urologic cases have been done during January 1st, 2019 and December 31st, 2021.

Study Design

Multi centered hospital based cross sectional prospective study was done over the course of two months, all charts of patients operated at TASH and DMCSH over a period of three years were retrieved from OR log book, patient chart, and I-care system. The time period chosen because majority of the post hypospadias complication developed during first post-operative year.

Population

Source population - all pediatrics surgical patients during study period
Sample population - children with hypospadias during study period
Study population - children with hypospadias who underwent hypospadias surgery during the study period

Criteria

Inclusion criteria - Boys of any age less than 18years
- Diagnosis of hypospadias of any severity
- Complete chart (age, address, diagnosis, operation note)
- Minimum of one year after hypospadias surgery
- Willingness to participate in the study

Exclusion Criteria
-Doesn't fulfil the inclusion criteria
-Non responders

Sample Size Calculation and Sampling Procedure

Sample size was estimated
Parents was approached by phone call and was invited to participate after socio-demography data reviewed from chart.
Identification number was given to each child/family: responses were collected from children, parent/attendants.

Data Collection tool and procedure

The Data collection was conducted in four major stages like; chart retrieval, address identification, phone communication with parents and/or patients, and data analysis done over two months period.

Parents and /or patients interviewed with phone call about post-operative circumstances and level of satisfaction, data was entered in to document and completeness checked regularly.

We tried the best to obtain accurate and confidential telephone information for each patients, then all questioner items forwarded via phone including free space to comment other issue other than operative outcome.

Each and every information from every respondent was documented accurately and separately.

We had tried multiple times to access via phone call for non-respondents (at least three times) to increase response rate.

After two months we had closed the study and start to analyze data collected.

Data Quality Management

Data entry and editing was accomplished using Excel and imported to SPPS version 25 and was analyzed.

Study Variables

Dependent Variables

-Post hypospadias surgery parent and/or patient satisfaction

Independent Variables

- Address
- Age of 1st operation
- Type of hypospadias
- Associated Anomaly
- Number of Re-operation
- Post operative complication
- post operative location of urethral meatus
- post operative shape of penis and glans

Data process and Analysis

Non parametric statistical analysis (IBM SPSS Statistics software version 25) was used for data entry, process and analysis.

Ethical Clearance

Confidentiality was maintained and Ethical clearance was requested and approved from research ethics committee of department of surgery, as well as the institutional review board (IRB) of college of health sciences, Addis Ababa University.

Plan for Dissemination of Finding

Finding of the study will be summited to AAU, College of Medical Science, Department of surgery, Pediatric surgery unit. It will be published on peer reviewed journals.

Chapter Five

Result

Socio-demographic Characteristics of the respondents

In the study, a total of 159 individuals who fulfils the eligibility criteria with Hypospadias and underwent hypospadias surgery were participated. All charts were retrieved and reviewed and summarized as below.

In our study, of 159(100%) individuals 106(66.7%) responded to our phone communication and remaining 53(33.3%) were not accessible due to different reasons. The mean reported age was found to be 4.649 years with SD of 0.28; since majority of patients were in first five years of life and they was assessed by asking their parents. And all participates were male children. The address of study subject was assessed and found to be majority was coming from Addis Abeba 56 %(89/159) as seen below (table 2)

Table: 1 showing age characters is of study subjects (N=159)

Mean	4.649
Std. Error of Mean	.2831
Median	3.000
Mode	3.0
Range	13.9
Minimum	1.1
Maximum	15.0

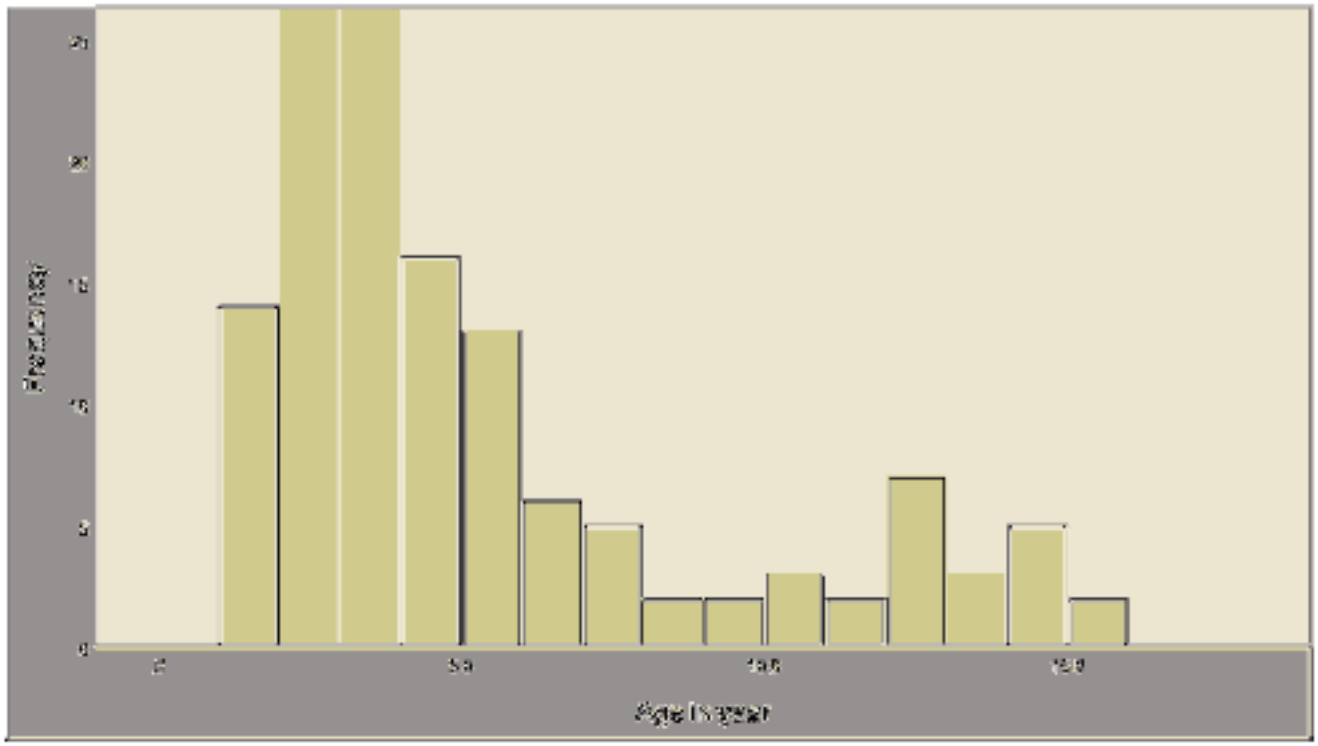

Figure: 1 Age distribution among study subjects (N=159)

Table: 2 Location of residency and type of hypospadias (N=159)

Criteria	*Address*		*Type of Hypospadias*	
	Addis Abeba	*Outside Addis Abeba*	*Proximal Hypospadias*	*Distal Hypospadias*
Frequency(N)	*89*	*70*	*62*	*97*
Percentage (%)	*56.0*	*44.0*	*39.0*	*61.0*

Clinical characteristics of respondents

About two third of study subjects was having distal hypospadias 61% (97/159); and remaining was having proximal hypospadias. Distal hypospadias considered for granular hypospadias, coronal hypospadias, sub coronal hypospadias, distal and mid penile hypospadias was included, the remaining was counted as proximal hypospadias. (Table-3)

Procedures done was analyzed and; TIP taken priority in 50.9% (81/159) followed by stage repair in 20.1 %(32/159). Rare procedures done was isolated chordae release and scrotoplasty for only four cases (2.5%).

The study analysis revealed that single stage procedure or one time operation was done in 62.9%(100/159) participants but multiple procedures done for one fifth of the whole participants with minimum of one additional procedure and maximum of four extra procedures. (Table -4)

Table: 3 Clinical Variables		Frequency	Percent
Type of hypospadias	*proximal hypospadias*	62	39.0
	Distal Hypospadias	97	61.0
	Total	159	100.0
Last operation done	*TIP*	81	50.9
	STAG repair	32	20.1
	GAP,MAGPI, Mathieu	14	8.8
	Re-do procedures	28	17.6
	Others- isolated chordae, scrotoplasty	4	2.5
	Total	159	100.0
Total number of procedures done	*single stage procedure*	100	62.9
	Stage repair	28	17.6
	multiple procedures	31	19.5
	Total	159	100.0

Determinants of Post Hypospadias surgery Satisfaction

In our study, potential variables identified for confound of association for post hypospadias surgery satisfaction includes age, location, type of hypospadias, type of first procedure, and total number of procedure.

Bivariate and multinomial logistic regression was done with above variables showed that there is strong association of satisfaction level with localities from Addis Abeba (P=0.02, 95% CI) (Table- 5)

Table: 4 Levels of satisfaction

		Frequency	Percent	P-value
Meatal status	very satisfied	36	34.0	P = 0.161
	satisfied	44	41.5	
	dissatisfied	22	20.8	
	disappointed	4	3.8	
	Total	106	100.0	
Glans status	*very satisfied*	*50*	***47.2***	P = 0.016
	satisfied	*46*	***43.4***	
	dissatisfied	*8*	***7.5***	
	disappointed	*2*	***1.9***	
	Total	*106*	***100.0***	
Penile status	**very satisfied**	**28**	**26.4**	P = 0.109
	satisfied	**45**	**42.5**	
	dissatisfied	**31**	**29.2**	
	Disappointed	**2**	**1.9**	
	Total	**106**	**100.0**	
Stream status	*very satisfied*	*38*	***35.8***	P = 0.309
	satisfied	*32*	***30.2***	
	dissatisfied	*32*	***30.2***	
	disappointed	*4*	***3.8***	
	Total	*106*	***100.0***	
General satisfaction level	satisfied	52	***49.1***	P = 0.415
	dissatisfied	54	***50.9***	
	Total	106	***100.0***	
Missing .		53	33.3	

Table: 5 Factors that determine satisfaction (N=106)

		N	Percentage	Chi-square
General satisfaction level	*Satisfied*	*52*	*49.1%*	
	Dissatisfied	*54*	*50.9%*	
Patient address	*Addis Abeba*	*60*	*56.6%*	P= 0.020
	Out Side Addis	*46*	*43.4%*	
Type of hypospadias	*proximal hypospadias*	*45*	*42.5%*	P= 0.810
	Distal Hypospadias	*61*	*57.5%*	
Last operation done	*TIP*	*54*	*50.9%*	
	STAG repair	*23*	*21.7%*	
	GAP,MAGPI, Mathieu	*9*	*8.5%*	P= 0.669
	Re-do procedures	*18*	*17.0%*	
	Others- isolated chordae, scrotoplasty	*2*	*1.9%*	
Total number of procedures done	*single stage procedure*	*64*	*60.4%*	
	Stage repair	*20*	*18.9%*	P= 0.823
	multiple procedures	*22*	*20.8%*	
Valid		*106*	*100.0%*	
Missing		*53*	*33.3%*	
Total		*159*	*100%*	

Table: 6 Effect and association of factors with level of satisfaction

Effect	-2 Log Likelihood of Reduced Model	Likelihood Ratio Tests		
		Chi-Square	df	Sig.
Intercept	50.804	.000	0	.
patient address	56.239	5.435	1	.020
Type of hypospadias	50.862	.058	1	.810
Last operation done	53.170	2.366	4	.669
Total number of procedures done	51.194	.390	2	.823

Chapter Six

Discussion

Hospital based prospective study was conducted to assess satisfaction level after hypospadias surgery and identified factors that affects it. According to our study and with chart review; we found that two third contributes to distal hypospadias and one third proximal distribution similar to Canadian study. (*Hoag et al, 2008,* G S Bethell et al. J Pediatric Urol. 2020 Apr)

In this study age at first operation was 4year and 8months which is older or later in comparison with other studies. (*Hoag et al, 2008,* G S Bethell et al. J Pediatric Urol. 2020 Apr*)* We had get only one single case of hypospadias with associated anomaly with Hirsch sprung disease. We found acceptably lower re-do hypospadias operation rate in comparison with other studies which are higher re-do operation rates. (*Hoag et al, 2008*) Majority of our patients managed with single stage TIP or Stage repair in more than 80% of cases which is similar to current recommendations of many studies in the word (*Hoag et al, 2008,* G S Bethell et al. J Pediatric Urol. 2020 Apr*)*

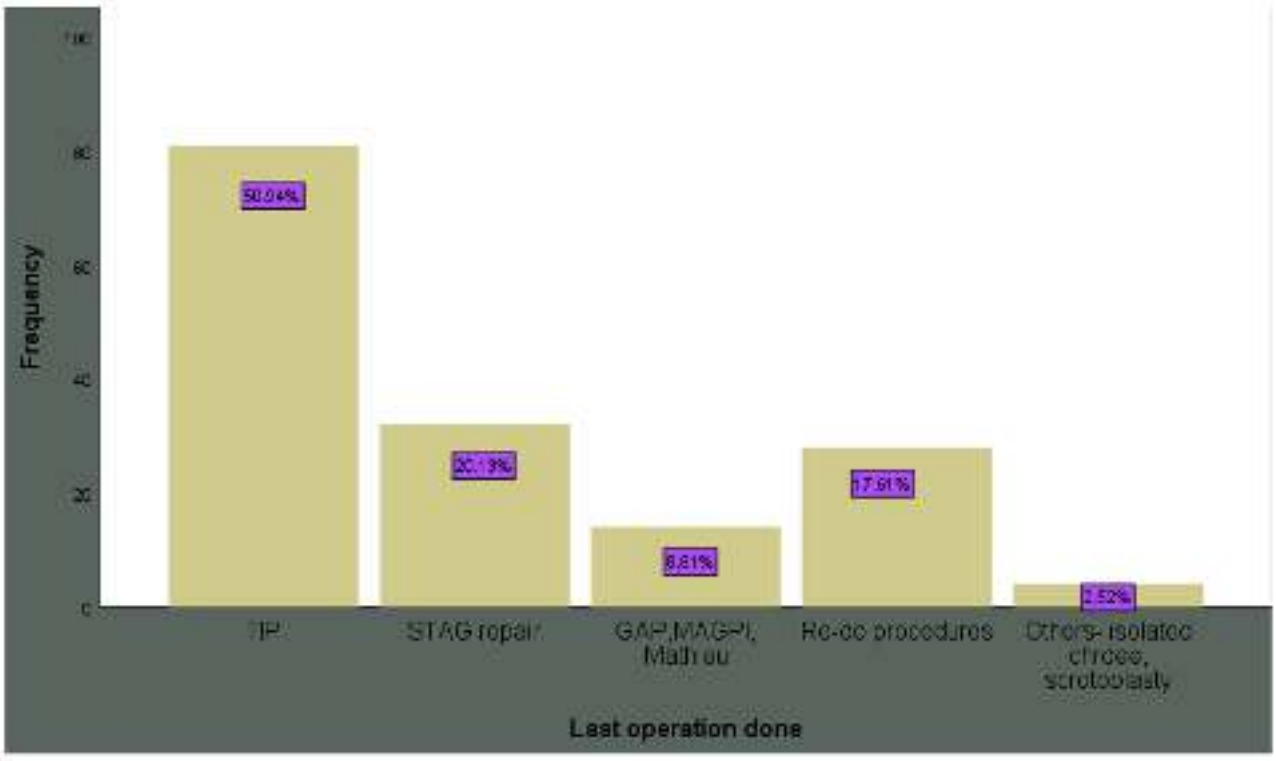

Figure: 2 shown operation done

We did found significantly higher response rate as compared to Canadian study of having only 28% except that we have assessed relatively short duration than their long-term out come and satisfaction assessment. (*Hoag et al, 2008*) Only few published study in the world focused solely on satisfaction whereas majority of pediatric urology papers done directly on surgeon oriented outcome assessment. (Hoag et al) Patient response rate range from 23.4% to 87% in the word and majority of authors comment on difficulty in tracing patient data especially on long-term assessment study. Our study response rate falls in upper range with contributing factors be assessed for shorter time in comparison to papers. Factors that hinders or response rate includes huge catchment area from all corners of our country served by TASH and DMCSH (with a population of over 120 million of residential), geographic remoteness with unstable and weak network infrastructure, lower understanding habit of our community for mobile technology.

As of our understanding; Patient assessment completed when only patient reported out come and satisfaction considered and come to side to surgeon oriented outcome assessment.

As a result, multi variable analysis was done after independent variable was clearly identified; address or location was identified as one of the significant source of dissatisfaction that affects post hypospadias surgery satisfaction. So those who was coming from Addis Abeba was found to be five times dissatisfied than coming from outside Addis Abeba. The possible reason will be higher expectation, low understanding about anomaly and inadequate counselling but still needs further study to confirm. Type of hypospadias and number of repeated operations also have negative effect on satisfaction level which showed association in our study. Reason are time , money, and energy expenditure will be increased significantly as number of operation increased and severity of hypospadias increase in addition to contribution of expectation, understanding, and counselling effects.

As of today; there is no similar study our country, Africa and in the world to compare but our study has good response rate, and encouraging study participant involvement with such limited network infrastructure and lower community understanding about congenital anomaly and mobile technology.

To best of our knowledge, this is the first prospective study done in our country done to assess post hypospadias operation outcome and satisfaction level via phone call communication. In addition to mentioned problems related to network; lack of continuous communication with operating team, in availability of validated post hypospadias surgery PRO assessment tool causes unknown and unpredictable satisfactions level of our patients and parents after hypospadias surgery.

Our study revealed that locality or address, type of hypospadias, and repeated procedures all shares major contribution in reducing our patients and parents level of satisfaction after hypospadias surgery. We are also showed that it is possible to assess post-operative PRO and post-operative follow up by the use of mobile phones with consistency of operating team and strong network connection.

We had encountered many inaccessible study participants despite our greater effort to trace and involve in assessment study by different ways like tried repeated phone call in different time line of a day including using weekends to increase response rate.

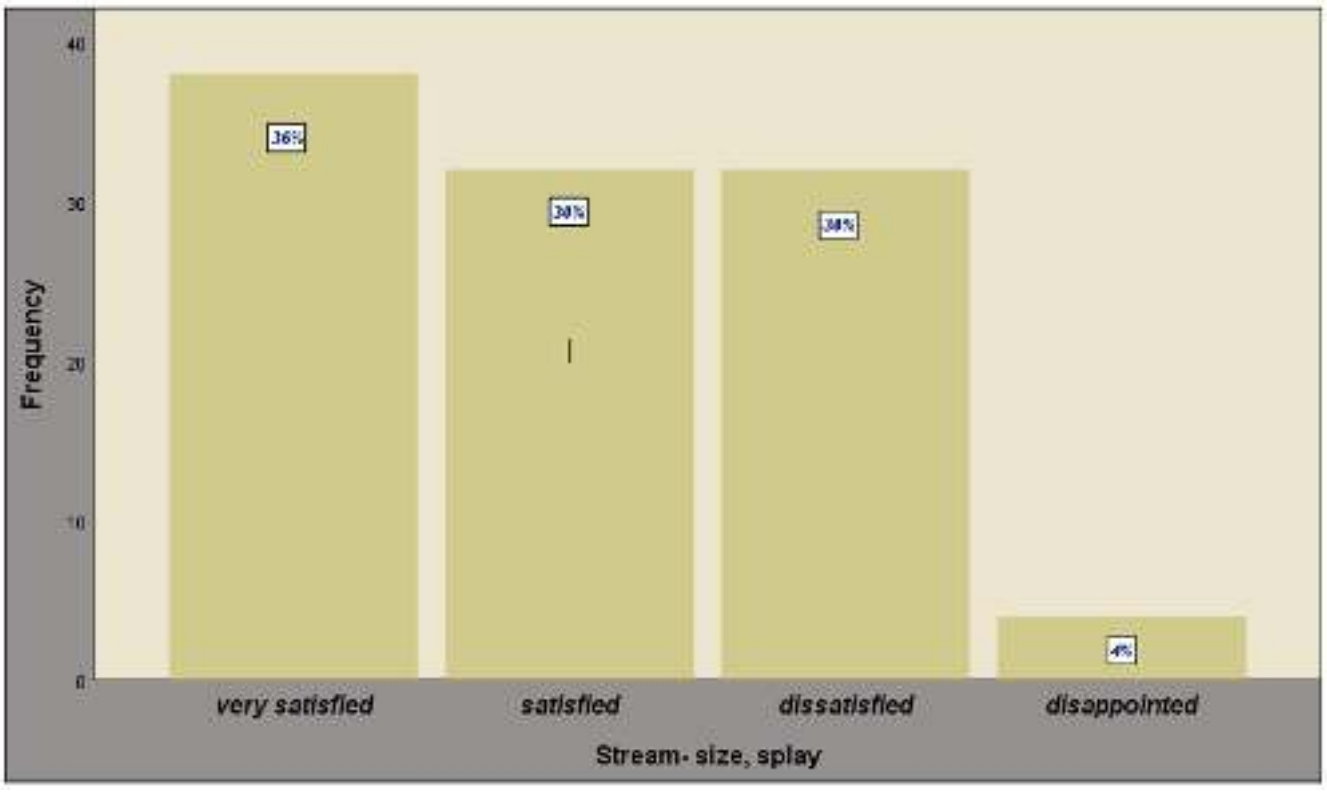

Fig: 3 level of satisfaction regarding stream

The most common cause of dissatisfaction identified in our study was stream (32%), and meatal status including shape and location (24%). Over all response rate (66.7%) and satisfaction level (49%) were acceptable that nearly half of the respondents' were found to be satisfied.

There were two respondents who were disappointed by the hypospadias operation done while we were assessing them they were re-operated more than four times and they develop fear of surgery and they discontinued their follow up to any hospital.

Respondents were also asked about any other issue that affects their satisfaction during operation and after operation that they mention factors as incidence of coronal epidemics (mentioned by six respondents), ware zone in our country (mentioned by ten respondents), and economic issue (mentioned by four individuals). Majority of our respondents discontinued their follow up thinking that they have finished their follow up once operation done.

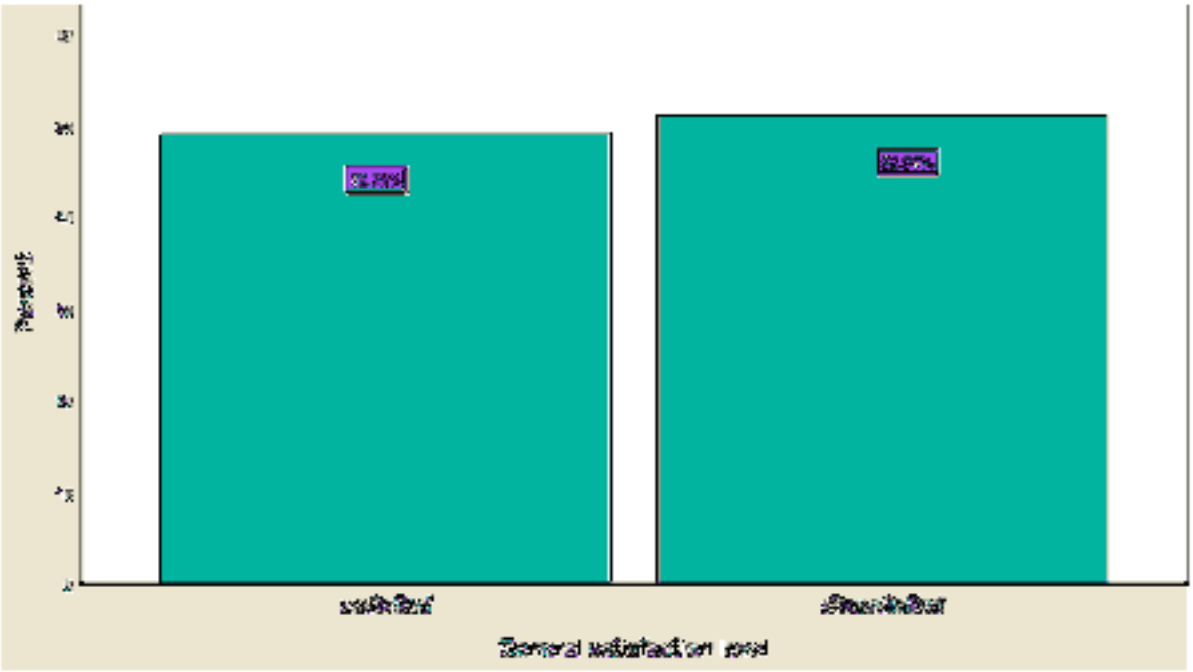

Fig: 4 Shows level of general satisfaction level

Chapter Seven

Strength and limitation of the study

Strength of the study:

- quite adequate sample size for selected study design
- use of direct communication with single PI to obtain accurate and quality data
- use of back up of consistent recording of interview for cross checking for data entry
- being prospective method of study
- higher response rate
- repeated trial of phone call considering weekends and rest time of the week
- reflect satisfaction of newer techniques

Limitation of the study:

- unstable and week network infrastructure in our country
- new way of assessing by phone call by our community
- response depends on individual ability to remember
- response bias
- subjective miss-interpretation
- relatively short duration

Chapter Eight

Conclusion

In this study, independent and dependent factors was identified and analyzed, majority of study subjects respond to phone communication, and response amazed. We found significantly higher response rate among study subjects. Address, type of hypospadias and repeated operations have negative impact on post hypospadias surgery satisfaction level.

The most common cause of dissatisfaction being from Addis Abeba, type of hypospadias, and Re-do procedures take majority source of dissatisfaction shown after multi variable analysis was done. Parental and /or patient related outcome assessment and satisfaction level has paramount importance than surgeon oriented outcome assessment. We can use phone calls for post hypospadias surgery satisfaction assessment without much difficulty.

Chapter Nine

Recommendation

Incorporate PRO or parental enrolment as component of post hypospadias surgery assessment

Smart phone can be used successfully to assess post-operative satisfaction level and can be used for post-operative follow up

Adequate counselling parents and/or patients with hypospadias of any type regarding post-operative status and expected complications during follow up preoperatively

Avoid faulty ideal expectations by explaining the exact figure

This study can be a plat form to assess and evaluate degree of regrets for any post-operative patients

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Data collection tool

1. **Socio-demographic features: from the chart**
   1.1. Current Age _____
   1.2. Sex _____
   1.3. Address A. Addis Abeba B. Out Side Addis Abeba
   1.4. Type of Hypospadias

   _____
   1.5. Associated Anomaly

   _____
   1.6. Age of first operation

   _____
   1.7. Number of Re-operation

   _____

2. Patient and /or parent perception :

To be filled by patient or parent with assistance of interviewer
Mark on most appropriate choice by tick or X

Sr. No	*Criteria*	*Very Satisfied*	*Satisfied*	*Dissatisfied*	*Very Dissatisfied*
2.1	Penile length				
2.2	Meatal status				
2.3	Glans shape				
2.4	Penile skin appearance				
2.5	Penile straightness on erection				
2.6	Stream (appearance, strength)				