

Surgical Outcome of Adult Hypospadia Repair

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COLLEGE OF HEALTH SCIENCES, SCHOOL OF MEDICINE,
DEPARTMENT OF SURGERY, UROLOGY UNIT

**SURGICAL OUTCOME OF ADULT HYPOSPADIA REPAIR
AT TERTIARY HOSPITAL, ADDIS ABABA, ETHIOPIA**

BY

DR. BURHAN MOHAMMED (UROLOGY FELLOW)

AUGUST 2024, ADDIS ABABA



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A **RESEARCH THESIS** SUBMITTED TO UROLOGY UNIT DEPARTMENT
OF SURGERY SCHOOL OF MEDICINE, COLLEGE OF HEALTH SCIENCE,
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SIGNATURE

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I. STATEMENT OF DECLARATION

I confirm that this thesis presented for fellowship fulfilment has been composed solely by myself and the result of my own work not been submitted in whole or in part in any previous application for degree of professional qualification, except were stated otherwise by reference or acknowledgement, the work presented is entirely my own.

Name of Investigator: Dr Burhan Mohammed

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II. STATEMENT OF CERTIFICATION

This is to certify that after awarded by TASH surgery department IRB on July 22,2024 that the research paper submitted by me is an outcome of my independent and original work. I have duly acknowledged all the sources from which the ideas and extracts have been taken. The project is free from any plagiarism and has not been submitted elsewhere for publication.

III. APPROVAL SHEET AND PANEL OF ORAL EXAMINORS FOR RESEARCH DEFENCE

The research entitled by Surgical Outcome of Adult Hypospadias Repair in Tertiary Hospital, Addis Ababa, Ethiopia, a five-year retrospective study, prepared and submitted by Dr Burhan Mohammed, in partial fulfilment of requirements for fellowship had been and recommended for acceptance for oral examination.

Name of Advisor: Dr Fitsum Solomon (Consultant Urologist)

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Dr Messay Mekonnen (Consultant General and urologic Surgeon):

Head of urology unit, department of surgery

Signature

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ACRONYMS AND ABBREVIATIONS

AAU ____ Addis Ababa University

AOR ____ Adjusted Odd Ratio

CI ____ Confidence Interval

COR ____ Crude Odd Ratio

EFY ____ Ethiopian Fiscal Year

ETB ____ Ethiopian Birr

MIH ____ Menelik II Hospital

LMICs ____ Low- and middle-income countries

NGO ____ Non-Governmental Organization

PI ____ Principal Investigator

SPSS ____ Statistical package for Social Science

TASH ____ Tikur Ambessa Specialized Hospital

Y12H ____ Yekatit 12 Hospital

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SUMMARY

Introduction: One of the urogenital anomalies that can occur at birth is hypospadias, which affects the ventral side of the penis and involves an abnormal opening of the urethral meatus on the underside, sometimes accompanied by a ventral curvature of the penis (chordee) and improper distribution of the foreskin on the ventral side. [10,12,13]. The condition is reported to affect one out of every 300 boys and is regarded as the second most commonly occurring congenital anomaly in boys.

Factors that increase the risk of hypospadias include maternal age extremes (>35 years and <18 years), maternal alcohol and drug consumption, and infection during pregnancy. The exact mechanism behind the link between hypospadias and these risk factors is still not fully understood [16].

The surgical reconstruction of hypospadias is generally advised to be performed around the age of one due to psychological, social, and technical considerations [4]. The age at which the repair is carried out may or may not have an impact on the outcome of the surgical correction of hypospadias, and typically, patients spend one night in the hospital after the surgery [11,18].

Objective: This study aims to describe the surgical outcome of adult hypospadias repair from January 2011 E.C to December 2016 E.C at Tertiary Hospital, Addis Ababa, Ethiopia.

Methods: The study plans to conduct a five-year retrospective study on all operated adult patients with hypospadias at Tertiary Hospital, Addis Ababa, Ethiopia from January 2011 to December 2016 EC. The questionnaires will be used to extract data about the study population from patients' charts by data collectors to collect the necessary information. I will input the data into EpiInfo and then transfer it to SPSS version 26 for analysis. I will use the Odds Ratio (OR) and 95% Confidence Interval (CI) to assess the strength of the relationship between independent variables and the dependent variable.

Work Plan and Budget: The duration of the study will be from January 2011 EC to January 2016 EC with a total budget of **64,020 Eth birr**.

Key Words: Adult, complications, hypospadias, surgery

CHAPTER ONE: - INTRODUCTION

1.1 Background

During birth, hypospadias is a urogenital anomaly that affects the ventral side of the penis. This condition is characterized by an ectopic ventral opening of the urethral meatus, with or without ventral curvature of the penis (chordee) and defective ventral distribution of the foreskin [10,12,13]. It is the second most common congenital anomaly in newborn males, occurring after undescended testis, with an incidence of 1 in 300 and varying between 0.4–8.2 per 1,000 newborns. [11].

Hypospadias is characterized by three main features: a meatus that is displaced towards the underside, division of the corpus spongiosum, and underdevelopment of tissues on the bottom side following this division. The causes of hypospadias are considered to be complex, involving genetic factors, maternal influences, and environmental influences. The primary approach to managing hypospadias is through surgical repair [7,8]. Most patients are diagnosed during childhood and undergo surgical repair. However, some patients are diagnosed in adulthood, either because they have never received treatment before or because they are experiencing complications from previous repairs. [8].

Early surgical correction of hypospadias is generally advised, but there is disagreement regarding the differences in surgical success and complication rates between adults and children. Some researchers have noted a higher complication rate in adult hypospadias surgery, while others have found no significant variance when using the same surgical methods in both age groups.[18]

The most common treatment for hypospadias is surgical correction, which generally yields positive results for the majority of patients. Certain individuals may require multiple surgeries and may experience issues such as scarring, curvature, urethral fistulas, or strictures. The success of hypospadias surgery may or may not be influenced by the patient's age at the time of the procedure, and typically, patients stay in the hospital overnight after the operation [16].

Several factors influence the outcome of surgical repair, including the location of the meatus, the extent of chordee, the adequacy of dorsal preputial skin, and any genital anomalies present. Additional considerations include technical factors such as the type of surgery performed, the use of a second layer, the duration of antibiotic treatment, and the length of time a stent is in place. [14,15,17].

As to our knowledge, there has been no study done regarding the outcome of adult hypospadias repair in Ethiopia. Our goal in this research was to assess the results of hypospadias repair in adults at our facility.

1.2 Statement of the Problem

Much of the discussion in many of the texts and the majority of articles focused mainly on surgical procedures of hypospadias repair and their outcomes in pediatric patients.

This study will assess surgical outcomes of hypospadias repair in adolescents and adults and it will fill the gap regarding outcomes of adult hypospadias repair in our setup.

There has been significant research on the results of hypospadias repair in childhood, but there is a lack of investigation into the outcomes of reconstructive surgery in adult patients.

As a result, the objective of this study is to evaluate the results of hypospadias surgery in adult patients and to juxtapose these outcomes with the existing literature on children.

1.3. Significance of the Study

This study will add to scholarly research and it will allow to improve the outcome of hypospadias surgery by contributing to the post-operative outcome assessment completeness.

Our goal in this research was to assess the results of hypospadias repair at our institution and to examine the influence of various factors on postoperative complications.

The study will be an input for further study and improvement on post-operative outcome assessment.

CHAPTER TWO: OBJECTIVES

3.1 General Objective

- To assess the outcome of hypospadias repair in adults operated at Tertiary Hospital, Addis Ababa, Ethiopia between January 2011 to December 2016 EC

3.2 Specific Objectives

- Analyse the socio demographic data of patients with hypospadias operated at Tertiary Hospital, Addis Ababa, Ethiopia
- To determine the success rate and complications of hypospadias repair operated at Tertiary Hospital, Addis Ababa, Ethiopia
- To know the factors that affect the outcome of hypospadias repair operated at Tertiary Hospital, Addis Ababa, Ethiopia

CHAPTER THREE: LITERATURE REVIEW

3.1 Introduction

Assessing the foreskin, detecting chordee, and localizing the meatus site are all part of the evaluation process for patients who have hypospadias at presentation.

Making the penis straight for effective sexual relations and positioning the meatus as far distal as feasible to produce a forward-directed urine stream are the goals of surgically correcting hypospadias. We employ five operations to accomplish this goal: scrotoplasty, meatoplasty/annuloplasty, urethroplasty, orthoplasty, and skin covering.

In general, there are four types of surgical repairs for hypospadias: urethral advancement procedures, urethral plate tubularization, urethral plate replacement or supplementation with local tissue or skin flaps, and urethral plate replacement or supplementation with grafts.[6]

Different approaches are currently being used in the demanding field of reconstructive surgery to control hypospadias. However, a penis that is both aesthetically pleasing and functionally normal can be achieved. [1,2]

Prolonged outcome assessment and reevaluation could have a significant influence on clinical practice in the future. Complication rate, penile cosmetic look, functional outcome (micturition, sexuality), and psychological aspects like quality of life and psychosexual life are all considered in the examination and assessment of surgery outcomes. [1,13,17]

The result of hypospadias correction depends on the location of the hypospadias (proximal vs. distal) and the existence or absence of chordee. Dorsal plication can be used to fix minor chordee (less than 30 degrees); however, a staged repair is necessary for severe chordee (more than 60 degrees). This approach increases the risk of problems such as fistula formation because many repairs must be made at the same time. [13,17].

Research indicates that repairs made when a person is still a youngster have a high success rate. Little is known about these patients' post-sexual maturity in terms of information. Individuals who have surgery beyond the age of six report lower levels of satisfaction and a worsening of their genital view compared to younger individuals (<6 years old). [1, 13]

Patients who have surgery as children and later become adults may exhibit delayed problems such as infertility, poor aesthetic appearance, urinary difficulties, psychological disorders, and sexual dysfunction. [1]

When hypospadias original repair fails and secondary repair is needed to rectify the primary repair, up to 40% of cases must be redone, and issues may not show up for up to 20 years after the initial repair.

It is reported that primary hypospadias correction ²⁵ performed before the age of 12 months had the highest rates of reintervention. [9] Reintervention may be necessary to repair issues such as meatal stenosis, urethral stricture, chronic chordee, and urethral fistulae.

While some individuals may undergo up to 23 procedures in their lifetime, the usual number of reoperations per patient is five [1,13]. The majority of problems (up to 65%) are discovered during the initial postoperative follow-up appointment after surgery. The majority of research indicate that it takes an average of six months to diagnose problems such as strictures, diverticula, meatal stenosis, and fistulae [1,7].

3.2 Timing of Repair

The majority of authors advise surgically correcting hypopadias in early childhood. Numerous research revealed that adult patients have fewer successful outcomes overall, with respect to wound healing, infection, and complication rates [7,10,17].

Numerous studies have found a correlation between adult hypospadias correction and an increased risk of complications.

Research findings indicate that adult repairs have approximately 40% greater complication rates than childhood repairs, even though the technical techniques employed in adult repairs are similar.

The disparity in infection and wound healing rates is the reason for the increased complication rates. Age-related histological alterations in the skin could account for adults' surgical outcomes being less than ideal [10,17].

Penile erection and hematoma formation are additional risk factors associated with high complication rates in adult patients that approach 50% [13,15,16].

According to a research by Waleed, the use of a Foley catheter bag, which pulled on the repair, and powerful nocturnal erections caused greater suture and fistula failure. Patients were treated with antiandrogen bicalutamide ¹⁷ for two weeks prior to surgery and one week following surgery in order to reduce this factor and prevent nocturnal erections. [14,17].

Notwithstanding the aforementioned conclusions, some recent research [13,17] revealed no distinction between adult and pediatric repair.

Sharma found that there is no difference in TIP repair in children and adults in terms of wound healing, infection, complication rates, and overall success, despite the limited sample group of 13 adult patients. [13,17].

3.3 Variability of Surgical Technique

Despite numerous attempts to standardize surgical correction of hypospadias, each surgeon has their own, sometimes strongly held, beliefs. It is evident from the existence of several approaches that none of them is perfect. [15].

Adult hypospadias can be repaired using a variety of methods, including the Mathieu treatment, Thiersch Duplay repair, island pedicle tube graft, bladder mucosal tube, buccal mucosal tube, and buccal mucosal onlay. 52.3% is the predominant complication rate linked to these treatments [17].

Skin flap, one-stage oral mucosa transplant, and fistula closure were frequently performed techniques used for single-stage repair. This age group's patients made up 78.8% of the entire series, which had an 88.1% success rate overall [1,13,17].

Waleed conducted a study with a 60% success rate following the initial operation, repairing primary and secondary hypospadias whenever it was possible. This contrasts with evidence that, when utilized for primary repair, TIP repair can have success rates of over 92% in a small group of adults [15, 17].

TIP urethroplasty is a surgical procedure that can be done to repair hypospadias during a reoperation. If the urethral plate looked supple, a prior incision was not contraindicated; however, if the plate has been resected or is scarred, TIP repair should not be performed during a subsequent hypospadias procedure [16, 17].

CHAPTER FOUR: RESEARCH METHODOLOGY

4.1. Study area and period

The study will be conducted from January 2011 to December 2016 EC at Tikur Ambessa Specialized Hospital, Menelik II Hospital, and Yekatit 12 Hospital, Addis Ababa Ethiopia. The data will be collected from the operation log book, patient charts, and phone communication.

4.2. Study design

A five-year retrospective cross-sectional descriptive study will be conducted on all operated patients with Hypospadias repair from January 2011 to December 2016 EC.

4.3. Study population

4.3.1. Source Population

All patients who were operated on for hypospadias repair at Tikur Ambessa Specialized Hospital (TASH), Menelik II Hospital, and Yekatit 12 Hospital from January 2011 to December 2016 EC.

4.3.2. Study Population

All patients who were operated on for hypospadias repair at Tikur Ambessa Specialized Hospital (TASH), Menelik II Hospital, and Yekatit 12 Hospital from January 2011 to December 2016 EC.

4.3.3. Inclusion criteria

All patients who were operated on for hypospadias repair at Tikur Ambessa Specialized Hospital (TASH), Menelik II Hospital, and Yekatit 12 Hospital from January 2011 to December 2016 EC.

4.3.4. Exclusion criteria

- Hypospadias cases below 14 years of age
- Hypospadias cases with isolated penile torsion
- Hypospadias after failed childhood repair
- Patients who are not willing to be included
- Those with incomplete registration are excluded from the study.

4.4. Data collection procedure

Data was collected using structured questionnaires prepared in English and reviewed by the research adviser before the actual study. The contents of the questionnaire included socio-demographic characteristics, information on hypospadias, and treatment patients received.

Medical record number of patients operated for hypospadias repair during the specified study period was taken from the operation theatre logbook of the urology unit and the charts were collected. Data was collected from the charts and the Hospital's electronic medical record system. The principal investigator collected the data.

4.5. Operational definitions

Success after hypospadias repair: we will use the functional definition of success which is either no complications and freedom from secondary procedures and/or the position of the meatus at the glans tip

Good urinary Outcome: defined as by a fistula-free, patent, orthotopic meatus.

Good sexual outcome: defined as a straight erection (less than 30 degrees of curvature) and the absence of ejaculatory or erectile dysfunction.

Primary Repair: surgical procedure done for the first time during adulthood

Secondary Repair: surgical procedure done during adulthood after failed childhood procedure.

4.6. Study Variables

4.6.1. Dependent variable

- The outcome of adult hypospadias repair

4.6.2. Independent Variable

- Socio-demographic variables
- Patient-related factors
 - ✓ Age at repair
 - ✓ Site of the meatus
 - ✓ Associated chordee

4.7. Data processing and analysis

Every questionnaire is visually inspected, coded, input into EPINFO®, and then sent to the SPSS® version 26.0 software program for analysis. The data were evaluated using the two-tailed Fisher's Exact test, and a value of $P < 0.05$ was deemed statistically significant.

The study population was described in relation to pertinent factors using frequencies and summary statistics like mean, standard deviation, and percentage, which were presented in the form of tables, figures, and text.

4.8. Ethical consideration

The research committee of the Addis Ababa University College of Health Sciences and the urology unit of the Department of Surgery examined and approved the proposal.

The research committee of the Addis Ababa University College of Health Sciences and the urology unit of the Department of Surgery examined and approved the proposal.

Before the patient's chart was reviewed, each study participant gave their informed consent. The goal of the study, which is to provide policymakers and other relevant entities with vital information, was explained to the study subject.

4.9. Dissemination plan of results

The findings of this research are shared by publication and by being presented at yearly conferences, seminars, and scientific meetings. A copy of it is being offered to the urology unit of the Addis Ababa University Department of Surgery and the research directorate of the college of health sciences at Addis Ababa University.

CHAPTER FIVE: PROPOSED RESEARCH SCHEDULE

Table 1: Work plan for research thesis of surgical outcome of adult hypospadias repair at Tikur Anessa Specialized Hospital, Menelik II Hospital, and Yekatit 12 Hospital, Addis Ababa, Ethiopia, 2016 EC.

S. N	Activity	R.B.	Feb	March	April	May	June	July
1	Topic Selection & Approval	P.I.+R.AV	X					
2	Literature Review	P.I.	X	X				
3	Develop proposal	P.I.		X				
4	Proposal Presentation & Feedback	P.I.+R.AV			X			
6	Data collection	PI+RA+DC			X			
7	Data entry and cleaning	PI+RA+DEC				X		
8	Data analysis	PI				X		
9	Write up Report	PI					X	
10	circulation for comments	P.I.+R.AV					X	
11	Presentation, feedback, and Publication	P.I.+R.AV						X

R.B. = *Responsible Body*

P.I. =Principal Investigator

R.AV= Research Advisor

R.A. = Research Assistant

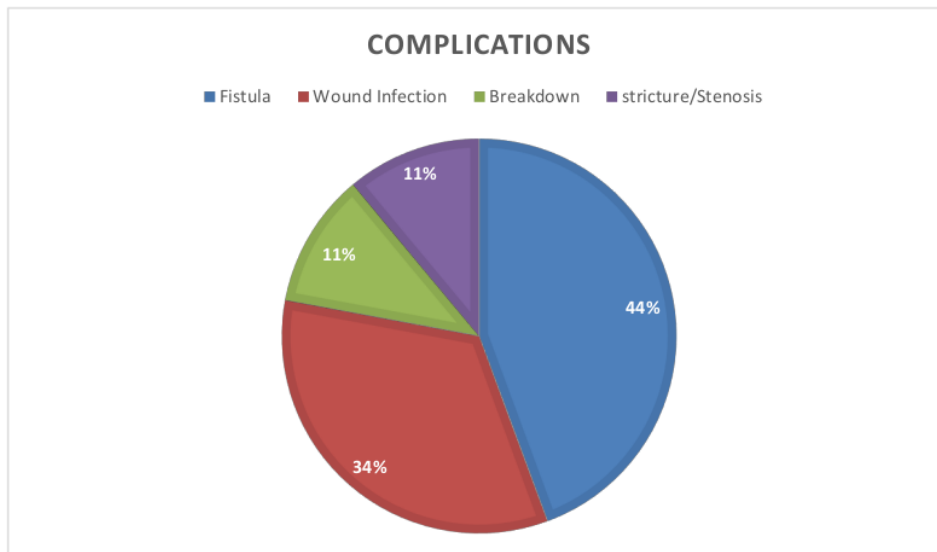
D.C. = Data Collectors

DEC = Data entry clerk

CHAPTER SIX: RESULT, DISCUSSION, CONCLUSION AND RECOMMENDATION

6.1 RESULT

Thirty-nine patients were included in the study based on the inclusion criteria and analysed. At the time of surgery, the patients' median age was 24 years old (standard deviation [SD] = 6.8, range 15–45). Thirteen months was the median follow-up period (range: 3 to 30; standard deviation [SD] = 6). The most prevalent kind was distal hypospadias (53.8%), which was followed by mid-penile (15.4%) and proximal (penoscrotal) (30.8%) hypospadias (Table 1). Most of the patients had chordee (59%). For distal hypospadias, TIP urethroplasty was the most often performed treatment, while two-stage correction was used for proximal hypospadias. 1. The study showed an overall success rate of 53.8% with a complication rate of 46.2%. (Figure 1).



There was a statistically significant association between the use of postoperative antiandrogen and postoperative complications. Those patients who did not take antiandrogen postoperatively had higher rates of complication (71.5%) than patients who took antiandrogen (16.7%) ($p = 0.001$). (Table 2)

Table 1: Types of Hypospadias and Types of Repairs

Type of Hypospadias	Type of Repair		
	TIP	Two Stage	Total
Distal	20/21(95.2%)	1/21(4.8%)	21/39(53.8%)
Mid penile	2/6(33.3%)	4(66.7)	6/39(15.4%)
Penoscrotal	0/12(0%)	12/12(100%)	12/39(30.8%)
Total	22/39(56.4%)	17/39(43.6%)	39/39(100%)

Table 2: Use of Antiandrogen and Repair Outcome

Antiandrogen Use	Success	Failure	Total	P Value
Yes	15/18(83.3%)	3/18(16.7%)	18/39(46.2%)	0.001
No	6/21(28.5%)	15/21(71.5%)	21/39(53.8%)	
Total	21/39(53.8%)	18/39(48.8%)	39/39(100%)	

The study also showed an association between postoperative complication and the was the presence of associated chordee. Patients with associated chordae have a higher rate of complication (60.8%), compared with patients without associated chordae (25%) ($p = 0.027$). Of the complications, UCF is the most common complication occurring in 20.5% of patients, followed by wound infection (15.5%).

Table 3: The Presence of Chordae and Hypospadias Repair Outcome

Outcomes	Presence of Chordae			P Value
	Yes	No	Total	
Success	9/23(39.2%)	12/16(75%)	21/39(53.8%)	0.027
Failure	14/23(60.8%)	4/16(25%)	18/39(46.2%)	
Total	23/39(59%)	16/39(41%)	39/39(100%)	

6.2. DISCUSSION

A cosmetically acceptable penis with an erect penis and a conically formed glans with a urethral meatus at the tip is the goal of hypospadias correction [17]. Despite the adoption of many treatment techniques, the rate of problems after hypospadias correction remains high [17].

Our study showed a success rate of 53.8% in hypospadias repair. The outcome of this study is slightly lower than the previously published literature [16,17,18]. A study done by Waleed et al. showed a success level of 60% for the first surgery [18]. Another study done by Tihina et al in pediatric repair showed a success level of 55.9% [17]. Numerous studies showed that TIP Urethroplasty is the most effective technique for hypospadias repair [16,17,18]. The presence or absence of a chordee also affects the outcome negatively.

We have seen that there is an increased risk of complications when proximal hypopadias and severe chordee are present. In contrast to previous research such as Waleed et al.'s (23%) and our own, the prevalence of proximal hypospadias was significantly greater (30.8%). The most often performed surgery for distal hypopadias was TIP repair. TIP and two-stage fixes were done for middle hypopadias. The most common treatment for treating severe hypopadias was two-staged correction.

We had a small sample size because the study was retrospective, but comprehensive data was nonetheless collected. Certain areas, such as the degree of chordae, which was subjectively described as light, moderate, or severe, and the intraoperative description of the urethral plate, require more explanation and objective research.

6.3. CONCLUSIONS

A significantly lower success rate of 53.8% is often linked to adult hypopadias correction. TIP Urethroplasty is considered as the most effective technique of hypospadias repair with better outcome. Patients who are going to undergo hypospadias repair shall be counselled about the outcome and associated complications.

6.4. RECOMMENDATION

Larger-scale, longer-term follow-up studies are required to ascertain the true success rate of adult hypospadias repair and the impact of variables on outcome, if feasible, using prospective research.

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ANNEXES

Annex I: Consent for Participation on study about surgical outcome of adult hypospadias repair at Tikur Ambessa Specialized Hospital (TASH), Menellik II Hospital and Yekatit 12 Hospital, Addis Ababa, Ethiopia from January 2011 to January 2016 EC

Consent form

7 Hello! My name is _____ member of a team that is collecting some information on surgical outcome of adult hypospadias repair at Tikur Ambessa Specialized Hospital (TASH), Menellik II Hospital and Yekatit 12 Hospital. You are kindly requested to be included in the study, which will have importance in understanding surgical outcome of adult hypospadias repair. The interview will take about 30minutes. No information concerning you, as individual will be passed to another individual or institution without your agreement. Your participation is voluntary and you have the right to not participate fully or partially. If you agree to be included in the study, I will start my questions by asking general identification points. Only honest answers would contribute to improvement in existing knowledge gap on surgical outcome of adult hypospadias repair.

2 The study has approval from Addis Ababa University, college of Health Sciences, department of surgery.

2 . "May I continue?"

If yes, continue interviewing

If No, thank and stop interviewing

Name of the interviewer _____ Sign. _____ Date _____

Name of the supervisor _____ Sign. _____ Date _____

Annex 2: Questionnaire for the research on surgical outcome of adult hypospadias repair at Tikur Ambessa Specialized Hospital (TASH), Menellik II Hospital and Yekatit 12 Hospital, Addis Ababa, Ethiopia from January 2011 to January 2016 EC

Part I: Socio-demographic Information

Code _____

Date _____

Items no	Items	Response
101	Age	1.15-25 2, >25
102	Marital status	1.Single 2.Married 3.Widowed 4.Divorced
103	Educational status	1. Illiterate (can't read &write) 2. Primary 4. Secondary 5.Tertiary education
104	Occupation	1. Unemployed 2. Employed 3. Merchant 4. Student
105	Religion	1.Orthodox 2. Muslim 3. Protestant 4. Others(specify)
106	Residential area	1.Urban 2.Rural

Part II: Preoperative Finding

Code _____

Date _____

Items no	Items	Response
201	Location of Meatus	1. Distal 2. Mid penile 3. Proximal(penosrotal)
202	Presence of Chordae	1. Yes 2. No
203	Degree of chordae	1. < 30 2. 30 to 60 3. > 60
203	Quality of urethral plate	1. Good 2. Fair 3. Poor
204	Type of Repair	1. Primary 2. Secondary

Part III: Laboratory Findings

Code _____

Date _____

Items no	Items	Response
301	CBC	1. Normal 2. Leucocytosis 3. Anemia 4. Other(specify)
302	U/A	1. Unremarkable 2. Suggestive of UTI
303	RFT	1. Normal 2. Abnormal (Specify) 3. Not done
304	Urine Culture	1. Negative 2. Positive(treated) 3. Not done
305	Electrolyte	1. Normal 2. Abnormal (Specify)

Part IV: Intraoperative Data

Code _____

Date _____

Items no	Items	Response
401	Type of Anesthesia	1. SA 2. GA
402	Prophylactic antibiotics	1. Given 2. Not Given
403	Preoperative use of antiandrogen	1. Yes(specify) 2. No
404	Techniques of Repair	1. TIP 2. Two stage repair 3. Other (specify)
405	Type of tissue(graft/flap) used	1. Buccal mucosa 2. Dartos fascia 3. Other (specify)
406	Catheter size used	1. 12Fr 2. 14Fr 3. 16 Fr 4. Other (specify)

Part V: Postoperative Data

Code _____

Date _____

Items no	Items	Response
501	Length of hospital stay	22 1. <3 days 2. 3-5 days 3. > 5 days
502	Immediate complications	1. Bleeding 2. Wound infection 3. UTI 4. Other (Specify) 5. No Complication
503	Postoperative use of antiandrogen	1. Yes 2. No
504	Postoperative antibiotics	1. Yes 2. No
506	Duration of antibiotics	1. Short course (before catheter removal) 2. Up to catheter removal 3. After catheter removal
507	Follow up schedule (followed at least for)	1. 3 to 6 Months 2. 6 to 12 Months 3. > 12 Months
508	Late complications	1. Wound infection 2. Fistula 2. Break down 4. Stenosis/Stricture 5. Other/specify 6. No complication

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