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Evaluation of Holmium Laser versus Cold Knife in Optical Internal Urethrotomy for the Management of Urethral Stricture

Thesis

Submitted for Partial Fulfillment of Master Degree in **Urology**

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Tist of Contents

Title	Page No.
List of Tables	4
List of Figures	5
Introduction	1 -
Aim of the Work	9
Review of Literature	
The Urethra	10
Urethral Stricture	14
• Treatment Modalities of Urethral Stricture	21
Cold Knife and Laser used for Treatment of Uret Stricture	
Patients and Methods	38
Results	45
Discussion	54
Summary	59
Conclusion	60
References	61
Arabic Summary	

List of Tables

Table No.	Title Page No.	
Table (1):	Incidence of different causes of urethral stricture.	. 16
Table (2):	Causes of urethral stricture	. 46
Table (3):	Site ofurethral stricture	. 47
Table (4):	Comparison between holmium group and cold knife group regarding pre-operative and post operative PFR at 1, 15, 30, 90 days after catheter removal	
Table (5):	Comparison between holmium group and cold knife group regarding pre-operative and post operative mean PFR at 1, 15, 30, 90 days after catheter removal	. 49
Table (6):	Complications	. 52

List of Figures

Fig. No.	Title	Page No.
Figure (1):	Characteristics of urination	18
Figure (2):	Typical uroflowmetry in obstruction, showing extendime and low, plateauing m	nded urination
Figure (3):	Urethro-cystogram of a b stricture about 3 cm in leng	
Figure (4):	Cystoscopy showing urethra	al stricture20
Figure (5):	Stricture urethra view on so	no-urethrogram21
Figure (6):	Optical internal urethrotocold knife	· ·
Figure (7):	Anastomotic Urethroplasty	27
Figure (8):	Anterir urethroplasty mucosal onlay graft	
Figure (9):	Urethroplasty using penile	skin flap28
Figure (10):	Bulbar urethral strictures .	29
Figure (11):	Penile urethral stricture technique)	
Figure (12):	Absorption spectrum hemoglobin and water for wavelengths	specific laser
Figure (13):	Urethro-cystoscopy	
	Cold knife technique	
	Holmium laser technique	
	Comparison between conholmium regarding inflar catheterization, traumatic unknown.	ld knife and nmatory, post- stricture and

Tist of Figures cont...

Fig. No.	Title	Page No.
Figure (17):	Comparison between regarding technique and	number of cases d site of stricture48
Figure (18):	Comparison between holmium regarding pre 15, 30, and 90 days	
Figure (19):	Comparison between holmium regarding ominutes	
Figure (20):	Complications of group	1 (holmium)52
Figure (21):	Complications of group	2 (cold knife)53
Figure (22):	Visual analog pain score	e53

Introduction

rethral stricture is one of the most difficult urological problems to cure adequately and is known to mankind since ages (*Das*, 2007).

Different techniques have been employed for the treatment of urethral strictures, depending on the stricture length, location, and depth of scar, which include simple dilatation, urethrotomy, urethroplasty and perineal urethrostomy (Myers and McAninch, 2011).

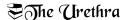
Optical internal urethrotomy (OIU) is one of the most commonly used procedures for treatment of urethral stricture. Data from the National Health Service in the UK during 2006 showed that the OIU or urethral dilatation was used in 93% of cases of short anterior urethral stricture and urethroplasty in 7% of cases of short anterior urethral stricture(*Ghosh et al.*, 2013).

Optical internal urethrotomy has the advantage of ease, simplicity, speed, and short convalescence. In 1957, Ravasini described internal urethrotomy under direct vision and used electrocautery to incise the stricture with success rate 50%, but it was not until 1971 that Sachse introduced the sharp-bladed cold-knife urethrotome under direct vision, reporting 80% success rate with this procedure in 1974 (*Sachse*, *1974*).

Laser has been used for the treatment of urethral strictures since 1977. The types of laser that have been used for urethrotomy include carbon dioxide, Nd: YAG, the KTP, the Argon, the Ho: YAG and excimer lasers. No superiority of one type of laser has been demonstrated (Herrmann et al., 2012).

AIM OF THE WORK

The aim of our study is to evaluate and compare the outcomes of Ho: YAG laser urethrotomy with the conventional cold-knife technique as regards treatment outcomes, efficacy and complications.



Review of Literature _

THE URETHRA

Anatomy of the urethra

Male Urethra

The male urethra is approximately 15-20cm long. In addition to **urine**, the male urethra provides an exit for **semen**.

Anatomically, the urethra can be divided into two main parts:

Posterior urethra divides into:

• Prostatic urethra:

The prostatic urethra is the portion of the urethra that traverses the prostate. It originates in the region of the bladder neck, courses roughly 2.5 cm inferiorly, and terminates at the membranous urethra. It lies in a retropubic location and is bordered proximally by the bladder neck and supported distally by the sphincter urethrae externus muscle and the perineal membrane (formerly called the urogenital diaphragm). It is invested in the prostate, a glandular and fibrostromal organ that secretes seminal fluids and has clinical relevance (*Georg*, 2012).

The urethra runs through the prostate eccentrically, with most of the prostatic tissue in a posterior and inferior location. The prostatic urethra is surrounded by an inner circular layer and an outer longitudinal layer of smooth muscle. The urethra forms an angle of roughly 45° (range, 0-90°) at the midpoint of