

Sachse Laser in post-trauma urethral stricture: a valid alternative before Urethroplasty.

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Received 24/March/ 2018: Accepted 30/June/ 2018: Published online: 20 July 2018:

<https://doi.org/10.32391/ajtes.v2i2.8>

Abstract

Introduction: The most commonly used treatment modality for urethral strictures is the direct visual internal urethrotomy method according Sachse cold knife, but with low long-term success rate. Alternative method after failure is isurethroplasty with preputial flap or Buccal mucosa. The aim of this presentation is to report the efficacy of the Internal Urethrotomy with Holmium Laser (Sachse laser).

Material and methods: We report three cases of urethral stenosis after trauma which treated with Internal Urethrotomy with Holmium Laser (Sachse laser) after failure of multiple treatments with Sachse cold knife. We evaluated and compared the uroflowmetry parameters before and after Sachse laser.

Results: The average of uroflowmetry parameters before incision were: Q max 4.5 ml/sec, Q med 3 ml/sec. Voided Volume 323 cc, while after incision with Sachse laser were: Q max 30 ml/sec, Q med 12 ml/sec. Voided Volume 363 cc. No patients relapsed during follow-up time from 3 to 24 months.

Conclusion: Even though these are only a few cases, we think that Sachse laser is a valid alternative after unsuccessful Sachse cold knife and before Urethroplasty, even in patients with urethral stricture after trauma.

Keywords: Treatment modality, urethral strictures, alternative method

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Introduction

Urethral stricture is one of the most difficult urological problems to cure adequately and is known to mankind since ages as it has been documented in ancient literature of the Hindus,[1] Egyptians and Greeks.[2] Minimally invasive surgical approaches are utilized efficiently and safely in the treatment of various disorders in urological practice. However, treatment options for urethral strictures have been limited both in number and level of success, as judged by the high recurrence rates. Treatment options for urethral strictures include self-catheterization, bougie dilation, balloon dilation, cold-knife optical internal urethrotomy (OIU), laser urethrotomy methods and open reconstructive urethroplasty, which is generally reserved for cases which did not benefit from endoscopic approaches [2]. OIU, described by Sachse in 1974, is still the preferred method due to the practical and minimally invasive nature of the procedure [3]. One of the alternative approaches is the correction of the stricture using laser energy, which was first used in urology in 1984 and established as a common method in internal urethrotomy since the nineties [4].

The aim of this retrospective study is to report our experience with the treatment by Holmium Laser Internal Urethrotomy (HIU) of three cases of urethral stricture after trauma multi treated before by cold-knife optical internal urethrotomy (OIU), and compare the pre- and post-operative uroflowmetry results.

Materials and Methods

This is a retrospective study of 3 patients who presented to our Clinic for urethral

stricture disease after trauma multi treated before by cold-knife optical internal urethrotomy (OIU), between 2013 - 2016.

We extracted data from medical records and our Medarchiver system on uroflowmetry and cystoscopy findings, including the site and length of stricture, number of previous urethrotomies or other surgeries for the treatment of urethral stenosis.

All patients with symptoms or signs suggestive of urethral stricture underwent uroflowmetry (UFM) and cystourethroscopy to confirm the diagnosis and determine urethral stricture length.

One urologist performed the urethrotomies using a single incision at the 12 o'clock position or using a modified procedure including multiple radial incisions at the 3, 9, and 12 o'clock positions; the incisions were made with a cold knife and laser.

Follow-up data included subjective and objective results as Uroflowmetry parameters and whether subsequent intervention was needed. All patients underwent a uroflowmetry after 3, 6, and 12 months from surgery.

Symptoms of recurrence included decreased force of the urine stream, feelings of incomplete bladder emptying, or recurrent urinary tract infections.

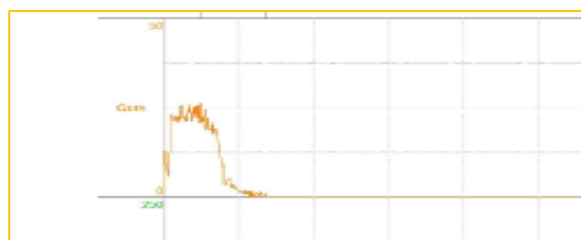
Signs of recurrence were a significant increase in postvoid residual urine on bladder ultrasound or bladder scan, decreased urine flow rate (<15 mL/second), or stricture as determined by diagnostic cystoscopy or retrograde urethrogram. Absence of symptoms or signs of recurrent stricture in any patient at last follow-up defined the success of the procedure. The end point of the follow-up was the last visit that showed failure of treatment or being recurrence-free for minimum 24 months.

Results and Discussion

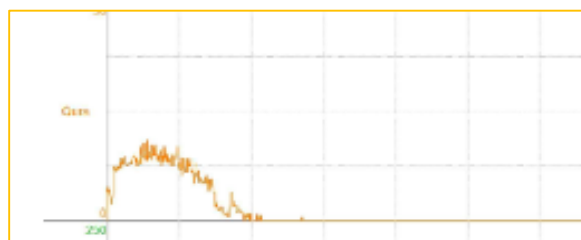
The mean age was 48 years (range: 44-53). Three male patients with urethral stricture disease after trauma were treated from 2013-2016.

Patient 1: 53 years old, after a car incident and urethral rupture he had a termino-terminal anastomosis of the bulbar urethra. For urethral stenosis after surgery, he underwent a Cold knife sachse incision in another hospital which failed and 6 months after it presented at our hospital in urinary retention.

We decided to do a Holmium Laser Internal Urethrotomy (HIU).



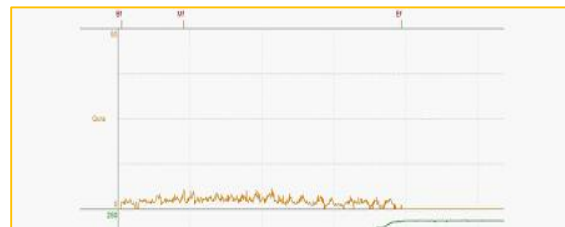
UFM after 1 month from the Incision: Q max 24 ml/sec, Q med 13 ml/sec. Voided Volume 175 c



UFM after 6 months from the Incision: Q max 14 ml/sec, Q med 9 ml/sec. Voided Volume 180 c

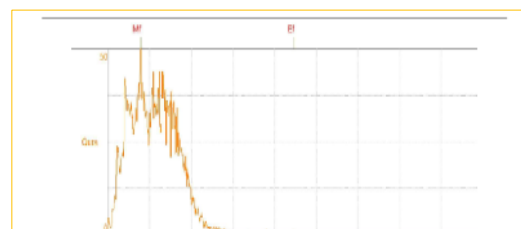
Patient 2: 44 years old, after a car incident and bulbar urethral stenosis he had 3 cold-knife optical internal urethrotomy (OIU) in three different European Centers (Spain, Italy, France) from September 2014 to September 2015. He presented to us with LUTS, sensation of non-emptying his

bladder after micturition, reduction of the urinary stream. We performed a uroflowmetry and this is the result before surgery.



UFM before Incision Q max 2 ml/sec, Q med 1 ml/sec. Voided Vol 233 cc.

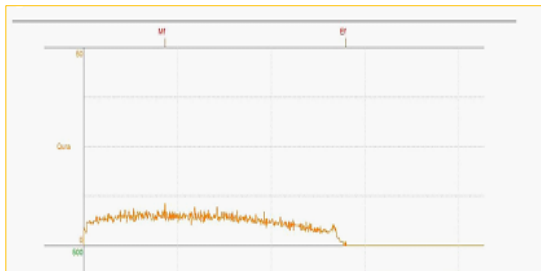
After a Holmium Laser Internal Urethrotomy (HIU) of a pre sfinteric annular stenosis of 3 mm long this is the result of the uroflowmetry.



UFM after 3 months from the Incision: Q max 38 ml/sec, Q med 19 ml/sec. Voided Vol 550 cc.

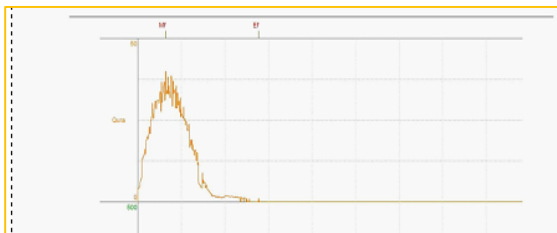
We don't have any other information of this patient after three months.

Patient 3: 48 years old, 5 years before he underwent different urethral dilatation for urethral stenosis. He presented to us with LUTS, sensation of non-emptying his bladder after micturition, reduction of the urinary stream. We performed a uroflowmetry and this is the result before surgery.

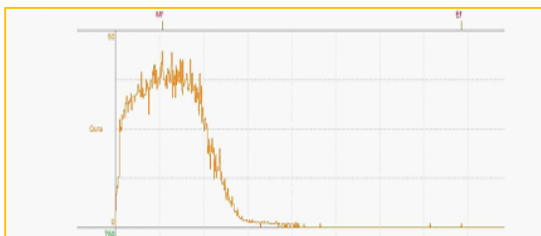


UFM before Incision Q max 7 ml/sec, Q med 5 ml/sec. Voided Vol 422 cc.

The urethroscopy evidenced multiple stenosis of the penile urethra from two cm from the external meatus until the internal sphincter where we performed a Holmium Laser Internal Urethrotomy (HIU). These are the results of uroflowmetry after the surgery.



UFM after 1 month from the removal of the catheter: Q max 35 ml/sec, Q med 13 ml/sec. Voided Volume 311 cc



UFM after 1 year from the Incision: Q max 40 ml/sec, Q med 17 ml/sec. Voided Vol 600 cc

In our results the average of uroflowmetry parameters before incision were: Q max 4.5 ml/sec,

Q med 3 ml/sec. Voided Volume 323 cc, while after incision with Sachse laser were: Q max 30 ml/sec, Q med 12 ml/sec. Voided Volume 363 cc. No patients relapsed during follow-up time from 3 to 24 months.

Urethral strictures are often treated with urethrotomy, most commonly direct visual internal urethrotomy [5]. With the introduction of lasers, holmium laser urethrotomy was subsequently used in many centers with equal recurrence outcomes as achieved with VIU [6, 7, 10, 11].

Many urologists prefer VIU over urethral reconstruction because of its ease to perform, low cost, short hospital stay, and perceived low complication rate. They may opt to repeat VIU several times to avoid complex urethral reconstruction, which requires significant surgical experience. This trend continues despite the moderate success rate reported in the selected patients.

Several studies have examined the cost-effectiveness of managing anterior urethral strictures. Urethroplasty as the primary therapy was cost-effective only when the expected success rate of the first VIU was less than 35% [8], whereas VIU became more favorable when the long-term risk of stricture recurrence was less than 60% [9]. If a repeat urethrotomy is required, open urethroplasty is the treatment of choice for recurrent urethral stricture.

Conclusions

Both, cold knife and holmium laser, have been effective in providing immediate relief to patients with urethral strictures. Holmium laser is technically more demanding than cold knife for internal urethrotomy. The complications of both modalities

are low and easily manageable. Lack of a significant difference between recurrence rates and complication rates of HIU and OIU suggests that both are safe and effective treatment methods in urethral strictures.

Even though we report only a few cases, we think that Sachse laser is a valid alternative after unsuccessful Sachse cold knife and before Urethroplasty, even in patients with urethral stricture after trauma. Larger studies encompassing cases with different characteristics may help to identify the variables that may favor or discourage the use of either method in future studies

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