

## Internal Urethrotomy of Urethral Stricture Under Vision – a Five-Year Report

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**Summary.** This report deals with experience with the method of transurethral incision of urethral strictures under vision in 547 patients involving 662 internal urethrotomies between Nov. 1972 and Aug. 1977. Follow-up examinations showed good results in 79,3% of the patients. Transurethral incision of urethral strictures can be recommended as the method of choice for the treatment of urethral strictures.

**Key words:** Internal urethrotomy - Urethral stricture.

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The multitude of procedures in use for the treatment of urethral stricture indicates that none is fully satisfactory. Dilatation brings only temporary relief, carries the risk of urinary infection and subjects the patient to regular treatment and supervision. The operative methods for the treatment of urethral strictures are complicated and subject to complications. In particular there is the risk of impotence if the operation is performed from the perineum.

As early as 1854 an urethrotome had been developed by Maisonneuve and later by Otis in 1872, which are still used in their original form. Transurethral urethrotomy has been frequently criticized mostly because it was made without direct vision. The consequence was often an incomplete incision of urethral strictures as well as secondary injuries. Most of the authors who reported the procedure (1-5, 11, 14)-slit the strictures to 28 Ch. and 34 Ch., then introduced a Foley-type catheter from 22 Ch. to 28 Ch. for a subsequent period of two or three weeks (Gray and Bjorn 2 weeks, Katz and Waterhouse 3 weeks, Davis 12 days). To avoid the complications of "blind" urethrotomy, the incision of strictures under vision was tried very early. Ravasini (12) reported this method in 1957, using transurethral diathermy incision

for circular strictures. We have used the cold knife method of transurethral incision of strictures, under direct vision as described in 1961 by Kaitzer et al. (6)

Transurethral incision is indicated for every kind of urethral stricture (even with children) and it is also suitable for the treatment of total urethral obstruction, as is occasionally observed after complete urethral rupture.

This paper reports on operative experience in 518 patients and long term follow-up in 429 of these cases.

### METHOD

Pre-operative preparations included an excretion urogram with a post micturation bladder film, urethrogram, measurement of urinary flow rate and preliminary urethroscopy. Before the patient's discharge from hospital the urine was cultured, urinary flow rate recorded and an urethrogram performed.

The first 44 patients had either general or spinal anaesthesia. Later, operations were performed mostly under local anaesthesia. Only in children, very anxious patients or patients suffering with extensive urethral strictures was a general anaesthetic re-

Table 1. Aetiology of urethral stricture

	n	%	
<u>Infection</u>			
Gonorrhoea	40	7.7	} 24.9
Unspecific	89	17.2	
<u>Trauma</u>			
External	22	4.3	} 35.6
Iatrogenic	162	31.3	
Congenital	12	2.3	
Unknown	193	37.2	
Total number of patients	518		

Table 2. Age of patients

Age	n	%	
< 30	30	5.8	
30 - 39	64	12.4	
40 - 49	33	6.4	
50 - 59	67	12.9	} 75.4
60 - 69	177	34.2	
70, > 70	147	28.3	
Total number of patients	518		

Table 3. Type of urethral stricture

	n	%
Multiple	230	44.4
Excessive	56	10.8
Singular, Circular, Short	232	44.8
Total number of patients	518	

quired. We have also occasionally performed transurethral incision under local anaesthesia on out-patients.

The instrument used was our own modification of the visual urethrotome made by Storz with a cold knife. The stricture was usually incised towards the septum of the penis, i. e. at 12 o'clock and only in exceptional cases also at 6 o'clock. It is mandatory that the stricture should be completely slit and we were not afraid of cutting deeply into the septum of the penis. The incision should preferably be made alongside an ureteric catheter introduced through the stricture. Sterile isosmolar irrigating solutions were used throughout. At the end of the operation a gel containing cortisone and antibiotics was instilled and a self-retaining 18 Ch. catheter was inserted into the urethra. This may require an introducer. The catheter was withdrawn on the third post-operative day. Postoperative hydraulic dilation was not used (7) since we considered it may cause extravasation of infected urine and lead to recurrence of the stricture. Particular attention was paid to the control of post-operative urinary infection. Patients were in hospital for between four and seven days.

#### Patients

Transurethral incision of urethral strictures under vision has been performed since Nov. 1972 (8, 9, 10) involving 662 operations on 547 patients up to Aug. 1977. 518 operations have been reviewed and follow-up obtained in 429 patients.

The aetiology of the strictures is shown in Table 1. 35.6% of the strictures were traumatic, 24.9% infective and 2.3% congenital. In 37.2% a specific cause could not be determined. The age distribution shows that 75.4% of the patients were over the age of 50 (Table 2). Among the strictures operated upon there were nearly as many circular or short strictures, as there were multiple strictures. 62% of the strictures involved the posterior third of the urethra, 26.6% were extensive. Only 5.4% and 6% of the strictures were located in the anterior third and in the middle third of the urethra respectively (Tables 3 and 4).

#### RESULTS

The result of an operation was considered good if the patient postoperatively passed urine without difficulty with a peak urinary flow rate of over 18 ml/sec. and the urethrogram showing no abnormalities. The postoperative result was considered un-

satisfactory if the urinary flow was less than 18 ml/sec.

The immediate postoperative results were classified as good in 407 (78.6%) of 518 patients. The result was unsatisfactory in 111 patients (21.4%) (Table 5). Postoperative complications are detailed in Table 6.

Of the 429 patients who were followed up the postoperative result remained good in 340 patients (79.3%) and unsatisfactory in 89 patients (20.7%) (Table 7). 78 of the 429 patients (18.2%) underwent one or more further operations. 57 patients of these (73.1%) had one, 12 patients (15.4%) had two and 6 patients three repeat procedures. One patient had four procedures and 2 patients underwent six urethrotomies (Table 8).

The first repeat procedure was required mostly during the first nine months postoperatively and mainly between the fourth and the sixth months (Table 9). Multiple procedures were also mostly required in the same period.

## DISCUSSION

In considering the necessity for multiple procedures by percentages it must be remembered that further transurethral incision is not nearly as serious as operation for recurrence of a stricture after an open operation. Further operative repair for recurrences is difficult and complicated.

The complications of urethroplasty may be very serious and include impotence, infection, calculi caused by hairs in the urethra, and unsatisfactory cosmetic results. In addition, urethroplasty is taxing for the patient involving long periods of anaesthesia and hospitalisation, especially with two-stage procedures. By comparison the complications of transurethral incision are quite insignificant and this fact should be adequately considered. Having practiced this method of transurethral incision of urethral strictures under vision for several years it appears to be an alternative to surgical methods, and is now our treatment of choice for urethral strictures because of its simplicity, speed and absence of risks.

This procedure is now widely used with encouraging results (13). Despite the simplicity of transurethral incision, skill and the surgeon's familiarity with transurethral operative methods are prerequisites for this procedure which also requires a great deal of personal experience with the method. The most frequent mistake during a transurethral incision that leads to failure is failure to cut deeply enough through the stricture.

Table 4. Location of urethral stricture

	n	%
Inferior third	28	5.4
Middle third	31	6.0
Posterior third	321	62.0
Excessive and multiple location	138	26.6
Total number of patients	518	

Table 5. Postoperative results  
(Total number of patients = 518)

	good	unsatisfactory
n	407	111
%	78.6	21.4

good = Uroflow greater 18 ml/sec  
normal urethrogram

unsatisfactory = Uroflow 18 ml/sec or less

Table 6. Postoperative complications  
(Total number of patients = 518)

Haemorrhage	17	
Septic temperatures	16	
Local Haematoma	7	
Extravasation of irrigation solution	3	
Other	14	
Total	57	11.0%

Table 7. Results of follow-up examination  
(Number of patients = 429)

	good	unsatisfactory
n	340	89
%	79.3	20.7

Table 8. Recurrence of urethral strictures  
(Total number of patients = 429)

	Total	1x rec.	2x rec.	3x rec.	4x rec.	5x rec.	6x rec.
Number of patients operated on	78	57	12	6	1	0	2
for recurrence	18.2 %	73.1 %	15.4 %	7.7 %	1.3 %	0 %	2.5 %

Table 9. Time between first operation and first follow-up operation  
(Total number of patients = 78)

Number of patients	12	21	13	8	7	5	4	1	7
%	15.3	26.9	16.7	10.3	9.0	6.4	5.1	1.3	9.0
Month	<4	4-6	7-9	10-12	13-15	16-18	19-21	22-24	>24
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