# ENDOSCOPIC P E RIURETHRAL TEFLON INJECTION

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## Abstract

Endoscopic Pen-urethral Teflon injection offers a simple form of treatment with a low morbidity rate for some patients with urinary incontinence. It is particularly useful in patients with stress incontinence, post-prostatectomy incontinence and in some cases of neuropathic incontinence. Findings in a group of ten patients who underwent this technique are presented. Seventy percent of patients improved by this procedure (JPMA 38: 231 , 1988).

## 1NTRODUCTION

Teflon (Polytetrafluoroethylene) has been in clinical use for a long time. It was first used to bulk out the vocal cords in Paralytic Dysphonia. [1]. Later on, it was introduced into Urological practice for the management of urinary incontinence due to sphincter insufficiency. In the first large series Poiltano reported a success rate of 75% in 165 patients with stress incontinence using Pen-urethral Teflon injection[2]. Since then many more series have been published reporting reasonable success following Periurethral Teflon injection particularly in women with stress incontinence[3-4].

## PAT IENTS AND METHODS

### Diagnostic Work-up

Ten patients with urinary incontinence were selected for endoscopic peri.urethral Teflon injection either because they were unfit for major surgery for stress incontinence due to obesity, heart disease, cerebro vascular accident or advanced rheurnatod arthritis or it was considered the treatment of choice particularly for post.prostatectomy and neuropathic incontinence. Five male and five female patients, mean age 58.6 years (Range 27-75 years) underwent this procedure. They had stress incontinence (5 patients), post-prostat tomy incontinence (4 patients) and neuropathic incontinence (1 patient). Pre-operative evaluation consisted of renal function tests, urinalysis, urine culture, intravenous urogram and urodynamic studies (Table I).

**TABLE I. Findings of Preoperative Urodynamic Studies.**

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| Distal sphincter weakness. |
| Moderate to marked cystocele. |
| Hypersensitive bladder. |
| Poorly compliant bladder. |
| Detrusor hyper-reflexia. |
| Large capacity bladder. |
| Stable bladder. |

All patients underwent the same technique described below and repeat injections were also performed by the same technique.

**Technique of Injection**

A purpose made Endoscopic Needle and a high pressure metal gun (STORZ; Figure)

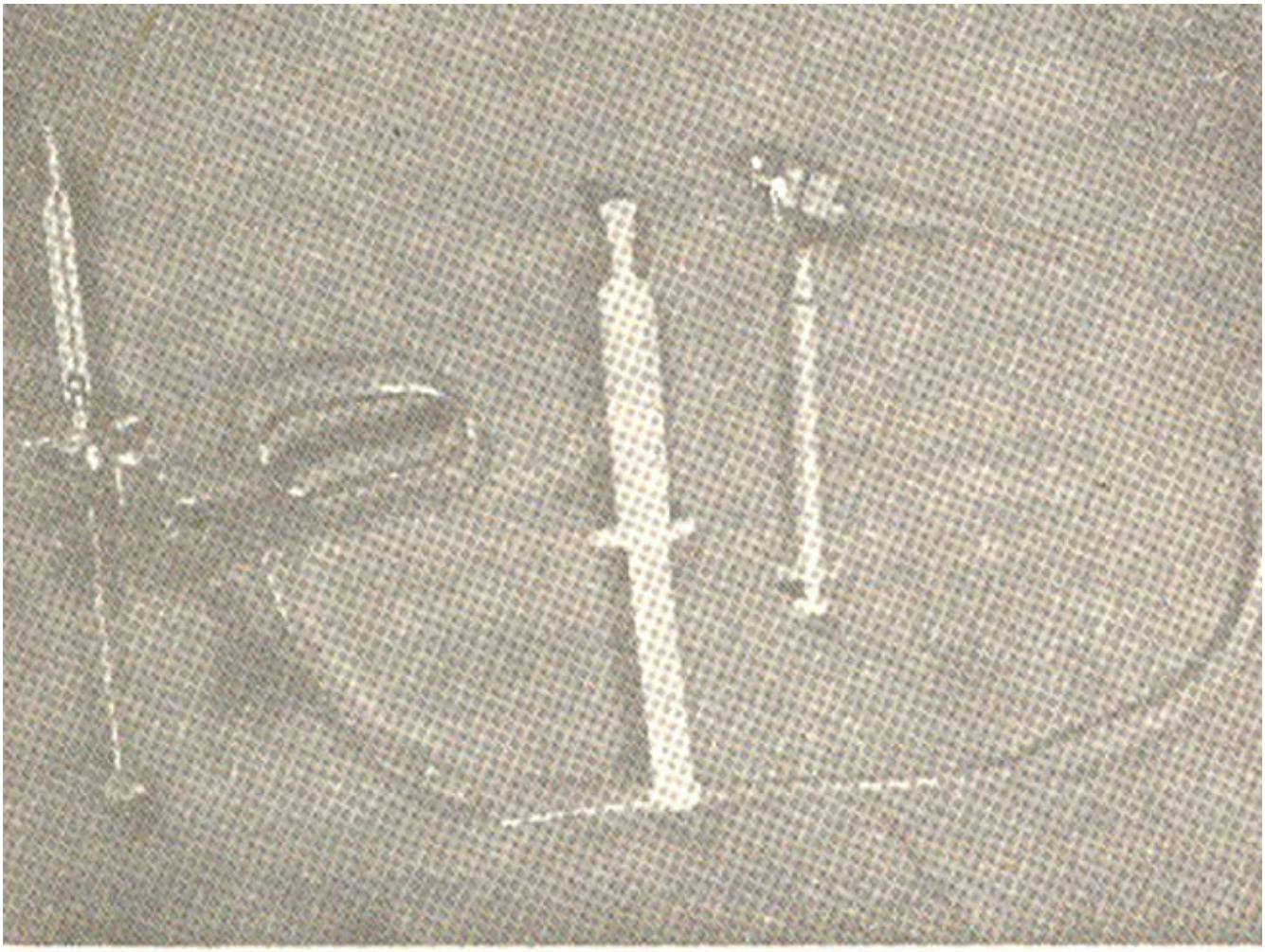

Figure. High Pressure Metal Gun (Storz), a tube dispenser containing Teflon paste, a loading plastic syringe and an Endoscopic needle.

were used. The procedure was covered by pen-operative parenteral antibiotics. The patient was placed in lithotomy position under general or epidural anaesthesia. Preliminary cystoscopy was performed to exclude any intravesical pathology. An 8 Ch endoscopic needle was passed through the operating channel of the cystoscope. A plastic syringe filled with Teflon paste was then loaded onto the metal gun and Teflon injected.

In male patients, the needle was pushed into the submucosal tissue at end distal to the distal sphincter and Teflon paste injected. Three large cushions of Teflon were thus raised at 3°, 6° and 9° clock positions. A total of 10—15 ml of Teflon paste was injected.

In female patients, three similar cushions of Teflon were raised extending from the bladder neck upto approximately one cm proximal to the external urethral meatus so that the bladder neck appeared to be almost closed. The bladder was not drained with a catheter postoperatively.

**RESULTS**

Mean follow up period was 9.7 months (range 2-18 months). The success of the procedure as judged subjectively by the patients was graded as cured when it was completely dry, improved when there was

good control of continence with minimal leakage, and failed when no change was found.
Five out of 10 patients (50%) were cured, 2 (20%) improved and 3 (30%) failed to respond. All patients experienced some discomfort on voiding postoperatively. Three patients developed urinary tract infection which responded to appropriate antibiotic therapy. One patient went into urinary retention. She voided satisfactorily following urethral dilatation. In one patient Teflon injection was repeated three times but he failed to improve and ten days after the last injection he passed the Teflon per-urethrum. Another patient who failed to improve declined repeat injection and underwent colposuspension. None of the patients went into chronic urinary retention as assessed by follow-up bladder ultrasonography. There was no death in this series.

## DISCUSSION

Female patients with stress incontinence would normally be treated with colposuspension but to undertake open pelvic surgery in the presence of multiple medical problems could be risky. Insertion of an artificial urinary sphincter would be indicated to treat male urinary incontinence due to sphincter weakness. But this device is not free from problems. Endoscopic Peri-urethral Teflon injection, because of its simplicity, low morbidity and minimal complications, seemed a reasonable alternative form of treatment in this group of patients. Prior to undertakin
Endoscopic Teflon injection, different pharmacological agents were tried to augment bladder outflow resistance but the response was disappointing.
All patients tolerated Endoscopic Teflon injection very well and an improvement rate of 70% in this small series compared favourably with 53.6—71% reported in other studies.[4-5] Teflon had also been used to treat urinary incontinence in children with poor external sphincters and 50-85% success rate was achieved[6]. Six female patients with neurogenic bladder disease were incontinent inspite of intermittent catheterization and drugs for detrusor hyper-reflexia. Teflon was injected peri-urethrally and all these patients became dry in between catheterization[7]. Vicente achieved 65% cure rate by treating 26 women with stress incontinence using this technique.[8-
Three patients in this series failed to improve following Teflon injection. One patient had poorly compliant bladder as a result of previous radiotherapy for bladder tumour. Moreover previous prostate and urethral stricture surgery markedly compromized his outflow tract. The second patient with marked degree of cystocele failed to improve and later underwent colposuspension. The third patient also had marked degree of cystocele and after initial improvement her incontinence recurred within a month.
Repeat injections of Teflon can achieve better results[2]. If partial improvement occurs, Teflon injection can be repeated without difficulty after six to eight weeks once inflammation has resolved4 but repeat injections failed to imprOve the outcome in one of my patients.
Detrusor instability seems to mitigate the successful outcome of this procedure[3] and good results are also associated with high preoperative cystometric capacity and lower maximal urethral pre ssure. [3]
Endoscopic Teflon injection carries minimal complications. Patients usually experience some discomfort on voiding. The main risk of this procedure is to induce bladder outflow obstruction, but in Schulman's series of 56 patients, only one patient went into persistent urinary retention who was successfully managed with internal urethrotomy [4].
One patient in this study voided satisfactorily after urethral dilatation and none of them developed chronic urinary retention. Sarramon evaluated his 12 female patients with stress incontinence following Endoscopic Teflon injection using urodynamic studies and voiding cystourethrography. He noticed an increase in urethral length and bladder capacity, improved abdominourethral transmission and reduction in posterior vesico-urethral angle associated with elevation of the bladder neck[9]
Spontaneous extrusion of Teflon paste does occur postoperatively. One patient passed the Teflon paste

perurethrum ten days after the injection. In another series of 26 patients, 6 passed the Teflon paste perurethrum at variable intervals after the injection. [8]

Distal embblization of Teflon particles has been demonstrated in experimental animals[10] and Teflon embolization from Teflon pledgets used in repairing ventricular septal defects has occurred[11].

Widespread interstitial pulmonary granulomas have been seen in a case who had periurethral Teflon injection few years prior to committing suicide; however this was an incidental finding unrelated to the cause of death[12] Nevertheless after having used Teflon injection in more than one thousand patients in twenty years, Politano has not encountered any case of malignancy attributable to Teflon[13].

Teflon particles have been found to be carcinogenic in 0; therefore a caution has been expressed against the use of Teflon injection in long term effects are young children until its fully known[14]

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