

AMBULANT FLEXIBLE CYSTOSCOPY FOR FOLLOW-UP OF Ta-T1 UROTHELIAL CARCINOMA OF THE URINARY BLADDER: PAIN PERCEPTION AND COST EFFECTIVE

By

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Abstract

Ambulant flexible cystoscopy is the standard procedure in the urological practice for follow-up of Ta-T1 urothelial carcinoma (UC) due to its ability to survey the bladder for a variety of indications. It is the principal means of diagnosis and surveillance of bladder tumors. The follow-up of patients treated for Ta-T1 UC is of great importance because of the high incidence of recurrence and progression of the disease, whereby patients with Ta-T1 UC undergo cystoscopy every three months. The aim of this study to evaluate the procedure of ambulant flexible cystoscopy in proper diagnostic follow-up of Ta-T1 UC, patient's acceptance in regard to pain tolerance, non-hospital stay and expenses.

Twenty one patients (18 male and 3 female) were diagnosed before as Ta-T1 UC by rigid cystoscopy and transurethral resection of bladder (TURB) lesion scheduled for follow up by flexible cystoscopy under local anesthesia using 20 ml 2% lidocaine gel on an ambulatory bases. Comparison was done using a cohort of 32 patients who underwent the procedure of follow-up of Ta-T1 cystoscopy and TURB using rigid cystoscopy and resectoscope.

Seventeen patients 80.9% (16 male and 2 female) proved to be bladder free from recurrent lesion, 4 patients {19.1%} (3males and one female) which revealed recurrent lesions in spite of that the urinary bladder was free in pelvic ultrasonography. Cold cup biopsy from the lesions sent for histopathological examination which revealed recurrence of the tumor in 3 patients (two patients with Ta and one patient T1. TURB was done to have complete resection in 4 patients, the histopathological examination revealed ulcerating mucosa and free lamina propria in 3 specimens, and T2 in the fourth specimen. Comparison between the 2 groups revealed more patient's acceptance for the flexible cystoscopy group as regard pain tolerance, non-hospital stay and expenses.

Ambulatory flexible cystoscopy with 20 ml of 2% lidocaine gel anesthesia is tolerated well by patients, with advantage of no hospital stay in the regular follow up of Ta-T1 tumors, pain perception was accepted by all patient provided delayed cystoscopy after lidocaine-gel instillation.

Key words: Flexible cystoscopy, Urothelial carcinoma, Urinary tract pathologies, Pain perception.

Introduction

Flexible cystoscopy is the standard armamentarian in diagnosis and follow-up of urinary bladder tumours, it is done on in ambulatory bases, and the cost- effective was valuable. Comparing economic burden of managing patients with office-based flexible cystoscopy, biopsy and fulguration vs. TURB for follow-up the Ta-T1 tumor recurrence. The office- based cystoscopy & fulguration was more cost-effective than TURB for treating recurrent low-risk non-

muscle invasive bladder cancer (NMIBC). Adherence to an office-based treatment plan can lead to significant cost savings with a decreased therapeutic burden over the lifetime of a patient with NMIBC (Al Hussein *et al*, 2015). In a prospective multi-institutional study analyzing pain perception of flexible and rigid cystoscopy in men, A total of 300 cystoscopies were analyzed (150 rigid and 150 flexible). Men undergoing flexible cystoscopy were more frequently free of pain (58.7% vs. 24%;

P <.0001). Mild pain (54% vs. 30.7%; P <.0001) and moderate pain (18.7% vs 9.3%; P = .02) were more common with rigid devices. No significant differences were prevalent in severe pain perception (3.3% vs. 1.3%; P = .25), concluded that flexible diagnostic cystoscopy caused less pain than rigid cystoscopy in men. Patient's previous experience with cystoscopy did not influence pain sensation. (Seklehner *et al*, 2015). In a large caliber institutional study to assess value of flexible cystoscopy in diagnoses of for urinary tract pathology 1500 patients were included, 810(54%) were females and 690 (46%) were male. Lower urinary tract pathologies were found in 480 (32%) patients. Urothelial carcinoma was in 57(3.8%) patients having haematuria with inconclusive ultrasound and intravenous urography. All patients tolerated the procedure well. The study concluded that Flexible cystoscopy is an effective, well-tolerated and easy way of detecting lower urinary tract pathologies among outpatients (Sajid *et al*, 2015).

Comparing sensitivity and specificity of flexible cystoscopy vs. compared tomography urography (CTU), on 435 patients, 55 patients were diagnosed with bladder tumors. CTU detected bladder tumors in 48 patients (87%). Five CTU examination reports were false positive. With CTU, sensitivity for finding bladder tumors was 0.87, specificity 0.99, positive predictive value (PPV) 0.91 and negative predictive value (NPV) 0.98. Cystoscopy detected bladder tumors in 48 patients (87%) and one false-positive finding, resulted in sensitivity of 0.87, specificity 1.0 and it was concluded that the detection rate of bladder tumors for the CTU was high compared to flexible cystoscopy. The results could be used to assess the bladder as primary investigation using flexible cystoscopy (Helenius *et al*, 2015; Gandrup *et al*, 2015).

Flexible cystoscopy had the advantage over rigid urethrocystoscopy in terms of

less time spent in patient positioning and preparation, with the use of less invasive anaesthesia, improved patients' satisfaction and less morbidity and complication, it is often preferred for outpatient or office practice (Popoola *et al*, 2013).

Although the operation of this instrument is vastly different from that of its rigid counterpart, with practice, the technique can be learned. After experience is obtained with diagnostic flexible cystoscopy, the urologist will likely prefer this new instrument for bladder inspection, as it provides for a more thorough yet less morbid and less expensive examination. The advance of flexible cystoscopy has significantly decreased the pain and discomfort associated with the procedure, due to that the caliber of it is 9 Ch so it is smaller than the rigid one. So now the flexible instrument is currently considered the standard tool to perform cystoscopy.

There are debates regarding waiting after insertion of topical anaesthetic lubricant whether it will improve patient comfort?.It was concluded that

There is no benefit in waiting a short time after the administration of intraurethral lubrication with a local anesthetic in flexible cystoscopy in men (Panach-Navarrete *et al*, 2015; Losco *et al*, 2011; McFarlane *et al*. 2001)

Patients, Materials and Methods

During the period from April 2013 through March 2015 in department of Urology, Theodor Bilharz Research Institute, 42 patients were selected randomly from the patients who were operated upon before by transurethral resection of bladder lesion (TURB) and they were in the period of follow up after resection. The patients were had Ta-Ti urothelial carcinoma, size of tumour was less than 3cm in diameter with low risk grade. The patients were divide in 2 groups; The first group were followed up by flexible cyctoscopy every 3 months throw first year of follow-up, they were 21 patients (18 males and 3 females)

with age range from 51 to 67 years old and the flexible cystoscopy was done on an ambulatory bases under local anesthesia using 20 ml 2% lidocain gel. The second groups was 21 patients (16 males & 5 females) with the age range from 47 years to 64 years and they were followed up with the same protocol, every 3 months through the first year, cystoscopy was done with rigid cystoscopy under general anesthesia in the inpatients department. Comparatively was done between the 2 groups regarding the patient tolerance, hospital stay, post cystoscopy dysuria, patient awareness during procedure, and cost-effective factors.

Procedure of flexible cystoscopy: Patients lied in prone position with legs separated apart; 20ml of 2% lidocaine gel was instilled in the urethra after sterilization of the external meatus, massage of the urethra to spread the gel and using piece of sterile gauze and towel clamp to hold the gel for one minute. Chip tip camera flexible cystoscope Pentax 9ch in diameter, was introduced into the urethra asking the patient to relax allowing smooth passage of the cystoscope via the urethral sphincter. The urinary bladder was inspected, while it was continuously filled with 500ml in normal saline as irritant fluid. The whole bladder was examined in all sites by changing the angle of vision in the flexible

cystoscope hand and changing the angle of deflection (Fig. 1).

The flexible cystoscope permitted exploring the trigone and the so called blind area in the anterior bladder wall. Whole bladder is inspected thoroughly. By the bulding up camera, the cystoscope will register the picture of every lesions, Flexible cystoscope would be connected to video player and record the procedure as video clip. At the end, the patient is instructed to receive oral ciprofloxacin for five days, oral analgesic was described to be taken when needed. Patients went home after the procedure. During flexible cystoscopy when a suspicious lesion was detected, cold cup biopsy was taken, and sent for histopathological examination. In cases where pathology showed recurrent urothelial tumor, the patient was informed about appointment for admission where he would be operated upon by trans urethral resection of bladder tumors (TURB) aiming at complete resection of the lesions and treat them according to pathological results.

Using rigid cystoscope in second group, patient was admitted in the inpatient section and scheduled for TURB under regional or general anesthesia. Pain tolerance to rigid cystoscopy was assessed by a questionnaire of patient after recovery from anesthesia.

Results

Table 1: Patients characteristics in both groups of flexible cystoscopy and rigid cystoscopy: techniques, pain tolerance, and patient's acceptance.

	Variables	Flexible cyctoscope		Rigid cyctoscope		
		Patients No	Percent	Patients No	Percent	
1	Sex (male/female)	18/3	80.9/19.1	16/5	76/24	
2	Previous stage of the tumor	Ta/T1	19/2	90.5/ 9.5	17/4	81/19
3	Pain score during and after procedure	Mild (0-3)	10/21	47.6	5/21	23.8
		Moderate (4-6)	9/21	42.9	10/21	47.6
		Sever (7-10)	2/21	9.5	6/21	28.6
4	Patients had recurrent lesions		4/21	19.1	5/21	23.8
5	Reults of the biopsies	TaUC	3/21	14.2	3/21	14.2
		Inflammatory	1/21	4.8	2/21	9.5
6	Histopathological results for TURB for recurrent lesions	TaUC	2/21	9.5	2/21	9.5
		Inflammatory	2/21	9.5	3/21	14.2
7	Patient tolerance & acceptance		19/21	90.5	12/21	57.1

A total of 21 patients (18 male & 3 female) were diagnosed before as Ta-T1 UC by

rigid cystoscopy and transurethral resection of bladder (TURB) lesion scheduled

for follow up by flexible cystoscopy under local anesthesia using 20 ml 2% lidocaine gel on an ambulatory bases. Comparison was done using a cohort of 32 patients who underwent the procedure of follow-up of Ta-T1 cystoscopy and TURB using rigid cystoscopy and resectoscope. 17 patients 80.9% (16 male and 2 female) proved to be bladder free from recurrent lesion, 4 patients (19.1%; 3 males & 1 female) that revealed recurrent lesions in spite of that the urinary bladder was free in pelvic ultrasonography. Cold cup biopsy from the lesions sent for histopathological examination which revealed recurrence of tumor in 3 patients (two patients with Ta and one patient T1. TURB was done to have complete resection in 4 patients, histopathological examination revealed ulcerating mucosa & free lamina propria in 3 samples, and T2 in the 4th one. Comparison between the 2 groups showed more patient's acceptance for the flexible cystoscopy group as regard pain tolerance, non-hospital stay and less expense.

Discussion

Flexible cystoscopy was applied on an ambulant bases where the patient left the hospital in the same day of the procedure, this event had an impact on the cost effective values, our data are in accordance with (Al Hussein *et al*, 2015) whom demonstrated that adherence to an office-based treatment plan can lead to significant cost savings with a decreased therapeutic burden over the lifetime of a patient with NMIBC. The flexible diagnostic cystoscopy caused less pain than rigid cystoscopy in men. Patient's previous experience with cystoscopy did not influence pain sensation. (Seklehner *et al*, 2015), in the present series pain tolerance to flexible cystoscopy was high with no consequent complaint compared to rigid cystoscopy. In the present work flexible cystoscopy permitted exploring the trigon and so called blind area in the anterior bladder wall. Whole bladder is inspected thoroughly.

By the building up camera, the cystoscope will register the picture of every lesions, these data are in accordance with other studies that proved that flexible cystoscopy is superior the computed tomography urography in the diagnosis of bladder tumours (Helenius *et al*, 2015; Gandrup *et al*, 2015). CTU detected bladder tumors in (87%). With CTU, sensitivity for finding bladder tumors was 0.87, specificity 0.99, positive predictive value (PPV) 0.91 & negative predictive value (NPV) 0.98. The flexible cystoscopy detected bladder tumors in (87%) and had no false-positive data, resulting in sensitivity of 0.87, specificity 1.0 (Helenius *et al*, 2015; Gandrup *et al*, 2015).

The debates regarding waiting after insertion of topical anesthetic lubricant whether it will improve patient comfort? It was concluded that there is no benefit in waiting a short time after the administration of intraurethral lubrication with a local anesthetic in flexible cystoscopy in men (McFarlane *et al*, 2001; Losco *et al*, 2011; Panach-Navarrete *et al*, 2015). The present work did flexible cystoscopy immediate after instillation of lidocaine gel, patient tolerance for pain was high.

Conclusion

Ambulant flexible cystoscopy had the advantage of low cost compared to rigid cystoscopy that demands overnight hospital stay, it has high sensitivity and specificity in the diagnosis of bladder lesion that is higher than computed tomography urography. Follow-up and fulguration of Ta-T1 bladder tumor could be done with high success on ambulant bases with flexible cystoscopy.

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Fig. 1: Flexible cystoscopy procedure. A) Instillation of 20 ml 2% lidocaine gel in t urethra. B) introducing the flexible cystoscope into bladder and inspecting bladder mucosa on monitor. C) pappillaruy urothelial tumor. D) Cold cup biopsy of bladder lesion.

