Original Article

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Surgery Section

Post Procedure Effects of Diagnostic Rigid Cystoscopy

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ABSTRACT

Introduction: Cystoscopy is an important diagnostic tool in the field of urology. It may be performed with either rigid or flexible endoscopes. However, post procedure complications are more commonly observed after rigid cystoscopy.

Aim: To assess the post procedure effects and complications of diagnostic rigid cystoscopy.

Materials and Methods: This prospective observational study consisted of 150 patients, who underwent diagnostic cystoscopy. Evaluation of these subjects included evaluation of anxiety and apprehension by Global Anxiety-Visual Analogue Scale (GA-VAS), pain assessment by Visual Analogue Scale (VAS), evaluation of lower urinary tract symptoms by International Prostate Symptom Score (IPSS), erectile dysfunction by Erectile Dysfunction Intensity Score (EDIS), health performance by ECOG or WHO or Zubrod score and quality of life by Short Form health survey with 36 questionnaire (SF-36). Evaluation of these parameters was done before the commencement of the procedure and was repeated on day 1, day 2 and after two weeks.

Results: As per GA-VAS score assessed in our study, females were found to be more anxious. The mean baseline VAS was 0.52±2.18. Females had more post procedure pain than males. Following cystoscopy, the change in the mean of average urine flow showed a slight improvement on day 1 and day 2, and it was found to be statistically significant ($p<0.001$, $p=0.016$). Urine infection rate, change in IPSS and EDIS were not significant before and after the procedure. The change in the value of SF-36 score before and after cystoscopy was not found to be significant.

Conclusion: Cystoscopy has a minor impact on quality of life of the patient; mental component being affected more than the physical component. Considering the usefulness of rigid cystoscopy, it should be liberally performed, whenever indicated, as it has only minor impact on the quality of life.

Keywords: Complications, Diagnostic procedure, Quality of life

INTRODUCTION

Cystoscopy also called as urethrocystoscopy is an important diagnostic tool in the field of urology [1]. This procedure may be used to directly visualise the macroscopic pathology in the lower urinary tract, access to the upper urinary tract for diagnostic and therapeutic interventions and to obtain material for pathological examinations. Furthermore, cystoscopy is ubiquitous throughout all the sub specialities of urology, whether it is for the paediatric patients, the oncology patients, or the patients with kidney stones [2]. It may be performed with either rigid or flexible endoscope [3]. Advantages of rigid cystoscopy include better optics because of the use of the rod lens system, a larger working channel that allows passage of accessory instruments and a larger lumen for water flow, thus improving visualisation and ease of manipulation and maintaining orientation during inspection within the bladder [4]. Therefore rigid cystoscopy does offer some advantages over the flexible one, but more often patients find it as a painful or an uncomfortable procedure [5,6].

This study was undertaken to review the post procedure effects of diagnostic rigid cystoscopy, its impact on patient's quality of life and associated morbidity; as patients in our set up frequently warrant a cystoscopic examination for diagnosis.

MATERIALS AND METHODS

This prospective observational study was conducted in University College of Medical Sciences and GTB Hospital, Delhi, India, from November 2014 to March 2016. During this period 150 patients, more than 18 years of age, presented to us for diagnostic cystoscopy and they were included in this study. Indications for which cystoscopy was performed in this study included Benign Prostatic Hyperplasia (BPH), haematuria, partial passable urethral stricture, bladder calculus, cystitis not responding to medication, and carcinoma cervix–for urinary bladder involvement. Subjects who have undergone cystoscopy in the past, those requiring therapeutic cystoscopic intervention like ureteral stenting in the same sitting and those requiring meatotomy for cystoscopic evaluation of the lower urinary tract were excluded from this study.

Written informed consent was taken of all the patients; the nature of the study was explained to the patient or his/her nearest adult relative and notified that their findings will be included in a clinical data collection study and that neither their identity would be disclosed nor treatment criterion would be compromised. Approval for the study was taken from the Ethical Committee of the University College of Medical Sciences, Delhi.

Pre procedure evaluation of these subjects included evaluation of anxiety and apprehension by GA-VAS score [7], pain assessment by VAS [8], evaluation of lower urinary tract symptoms by IPSS [9], urinary flow by uroflowmetry, erectile dysfunction by EDIS [10] in combination with history of any effect on the libido. Health performance by ECOG or WHO or zubrod score [11] and quality of life by SF-36 questionnaire [12-14].

Cystoscopy was performed in dorsolithotomy position with legs suspended in stirrups. After preparing and draping the genito perineal part, 2% lignocaine jelly was instilled into the urethra. In males, the penis was clamped, and gentle massaging was done to uniformly dissipate the local anaesthetic throughout the urethra. In female patients after having instilled the jelly, the thumb was placed on the meatus to prevent the spillage, and a light pressure massage was done over the terminal 1 cm of the vaginal wall that was abutting the external urethral meatus. After five minutes cystoscopy was performed using 16.5 F rigid cystoscope. The urethrocystoscopic findings, duration of the procedure and any other intervention done during the procedure were noted. All the cystoscopies were performed by the same surgeon, who was

experienced and conversant with this procedure. Post procedure evaluation regarding the acceptability of the procedure, pain by VAS, episodes of urinary retention, haematuria, change in urinary flow by means of uroflowmetry, change in IPSS, EDIS, ECOG scale and the effect on quality of life (SF-36), were obtained on day 1, day 2 and after two weeks. Urine culture examinations were obtained before the procedure and on day 2. As per case record form before commencing the procedure history regarding erectile dysfunction and digital rectal examination and serum PSA, whenever indicated, was done.

STATISTICAL ANALYSIS

Statistical analysis was performed using SPSS Statistics version 20.0 computer software. Descriptive analysis was performed to assess the complications of the procedure. Freidman test was performed to evaluate the scores used for various parameters like pain, anxiety wherever applicable. McNemar's test was performed to assess symptoms before and after the procedure, wherever applicable.

RESULTS

Studied patients were 18 to 80 years of age, and their mean age was 50.23±15.92 years. This study consisted of 129 male patients and 21 female patients. Out of 150 patients, 66 (44%) had BPH, 30 (20%) had haematuria, 23 (15.3%) had passable stricture urethra, 14 (9.3%) had calculus in the lower urinary tract, and 17 (11.3%) had other miscellaneous conditions. In 23 patients cystoscopy could be done with 12 F cystoscope because of the partially passable urethral stricture. These 23 patients were included in this study as they met the inclusion criteria and not studied as a separate group. Most of the examinations required more than 15 minutes. Cystoscopic examination in females took lesser time than in males ($p<0.001$).

After explaining the procedure, anxiety was assessed by GA-VAS. 137 patients had a score of 0 to 5, of which 120 had a score of zero. Among the remaining 17 patients, 11 were females. Therefore, females were found to be more anxious.

Pain was assessed by VAS ranging from 0 to 10. Baseline pain due to disease for which cystoscopy was to be performed was noted in each patient. Pain perceived after cystoscopy was maximum on day 1 and the difference in the level of pain in males and females was found to be statistically significant ($p<0.05$). Females had more post procedure pain than males. Out of 150 patients, 138 (92%) patients were willing to get the procedure done again if required. Twelve patients refused to undergo the procedure again; pain being the deterrent factor. Though pain became negligible by two weeks, still these patients were reluctant for a second cystoscopy due to the pain they had perceived during the procedure.

Before undergoing cystoscopy, 27 patients had a history of haematuria and out of these 13 had gross haematuria on day 1 after cystoscopy, 16 had gross haematuria on day 2, and 18 had gross haematuria after two weeks. Among the rest of the 123 patients who did not have haematuria before cystoscopy,16 perceived haematuria on day 1, which reduced to two patients on day 2 and one patient at two weeks. There was a significant difference in haematuria before cystoscopy and on day 2 and two weeks ($p<0.001$).

Urine culture examinations were done on urine samples of all the 150 patients before proceeding to cystoscopy. Out of these 150 patients, 142 had sterile cultures, whereas 8 had positive cultures. Out of 142 patients who had a sterile urine culture before the procedure, six patients showed a positive culture in the urine sample taken on day 2 after cystoscopy (4.0%). These six patients had an indwelling Foleys catheter. No significant difference was found in urine cultures before and after cystoscopy ($p=0.125$). Eight patients who had the positive culture in the urine sample taken before cystoscopy were found to be positive even after cystoscopy as seen in a urine sample taken on day 2. Out of these four patients, 4 had Foley's catheter before cystoscopy. Prophylactic antibiotics were not given to the patients in our study; however, those found to be suffering from urinary tract infections were treated appropriately as per their culture reports.

There was no development of procedure related urinary retention. A total of 135 patients did not have a history of urinary retention before the procedure and none developed it after the procedure. 15 patients had an indwelling catheter before cystoscopy, and they were catheterised at the termination of the procedure.

Urine flow was assessed by uroflowmetry. The average urine flow was observed in 135 patients before cystoscopy, on day 1, day 2 and two weeks [Table/Fig-1]. The change in urine flow was found to be statistically significant on day 1 ($p<0.001$) and day 2 ($p=0.016$). Symptoms of the lower urinary tract were assessed by the IPSS in 135 patients (114 males and 21 females) [Table/Fig-1]. Fifteen male patients who were catheterised were not assessed. The difference in mean IPSS before and after the procedure was statistically not significant ($p=0.074$).

Eighty six male patients were assessed for erectile dysfunction by EDIS out of 129 male patients [Table/Fig-1]. The remaining 43 were either catheterised or not sexually active. There were no significant changes in EDIS before and after the procedure ($p=0.478$).

The effect of the health of the patient in his daily life was assessed by WHO Health performance score (ECOG) [Table/Fig-2]. The score runs from 0-5, with 0 denoting perfect health and 5 denoting death. Mean ECOG score before the procedure was 0.09, at day 1 was 0.10, at day 2 was 0.066 and at two weeks it was 0.033 [Table/Fig-2]. There was a significant difference in ECOG score when pre procedure was compared with the score at two days ($p=0.021$) and after two weeks ($p<0.001$).

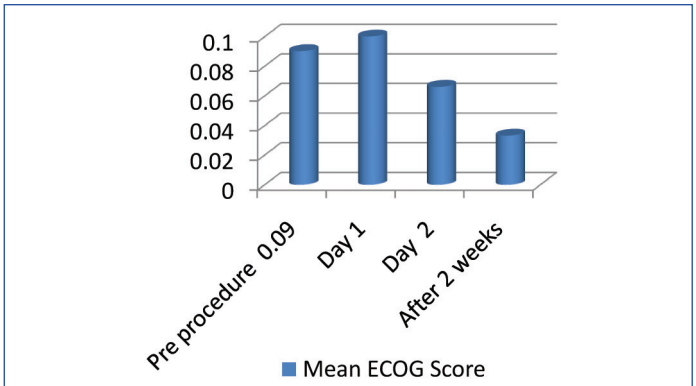
The quality of life of the patient was assessed through the SF-36 scale in all patients. Two scores were obtained; one each for physical health and mental health [Table/Fig-1]. The change in the value of SF-36 score before and after cystoscopy was not found to be significant ($p=0.84$).

DISCUSSION

Diagnostic rigid cystoscopy is a commonly performed procedure in the field of urology. In this study, we found that men undergo cystoscopy more frequently than females with a ratio of 6.1:1. The most common indication for diagnostic cystoscopy was BPH followed by evaluation of haematuria, stricture urethra, bladder calculus, and other conditions. The common age

Parameters	VAS (Male)	VAS (Female)	Average flow	IPSS	EDIS	ECOG	SF-36 (Mental)	SF-36 (Physical)
Pre procedure	0.37±1.41	0.52±2.18	9.25±4.03	20.31±6.81	23.59±1.912	0.90	36.4	46.1
Day 1	1.53±2.58	3.00±2.60	9.87±3.90	21.08±6.24	22.55±1.843	0.10	34.8	46.4
Day 2	0.60±1.41	0.81±1.80	9.50±3.70	20.26±6.22	24.15±1.953	0.066	31.6	45.7
After 2 weeks	0.06±0.48	0.48±2.10	9.31±3.20	20.02±6.12	23.45±1.969	0.033	32.6	44.8

[Table/Fig-1]: Pre procedure, day 1, day 2 and after 2 week results of various parameters.



[Table/Fig-2]: Mean ECOG score.

group undergoing cystoscopy was 40-60 years, mean being 50.23±15.92.

Cystoscopy is essentially performed as an office procedure. However it is invasive. This can be related to the causation of some side effects which often results in patients finding the procedure to be uncomfortable [6]. Cystoscopy may be performed with either a flexible or rigid cystoscope. The rigid cystoscope has some advantages over flexible cystoscopy owing to its low cost, better optics because of the rod lens system, sizeable working channel and wider lumen for water flow and ease of handling and maintaining positioning while inspecting within the bladder. However, post procedure morbidities seem to be more frequent with rigid cystoscopy. Bruke DM et al., in their study reported 76% complication rate of rigid cystoscopy as compared to flexible cystoscopy in which only 33% patients showed postoperative symptoms [15]. Some of the commonly described complications encompass post procedure pain and discomfort, haematuria, dysuria, erectile dysfunction, urinary tract infection and fever lasting for a varying time following the procedure.

Pain due to cystoscopy is one of the most common complaints of the patient undergoing cystoscopy. In our study, it was maximum on day 1 (mean VAS– 3±2.6), and gradually decreased over the next two weeks. Females perceived more pain than males in our study, the difference in pain being significant on day 1 ($p<0.05$). However, other studies have found that pain following cystoscopy is more commonly observed in males [16] and some have attributed this phenomenon to longer and narrower urethra in males [5]. Although in a study conducted by Greenstein A et al., they found that information provided to men before urodynamic study enhances their expectation of pain especially in those who have had previous instrumentation of urethra [17]. However, in our study, female patients were found to be more anxious and they perceived more pain as compared to male patients.

Regarding the acceptability of the procedure, out of 150 patients, 12 patients (8%) refused to undergo the procedure again–pain being the deterrent factor. Though the pain became negligible after two weeks, still these patients were reluctant to undergo a repeat procedure. In a study conducted by Stav K et al., [18], 96% reported that the procedure was less or as painful as expected, and 98% said they would undergo the procedure again if necessary and the level of pain decreased progressively during the two weeks after cystoscopy. Haematuria occurring after cystoscopy in this study can be attributed to trauma sustained during the procedure. In the study conducted by Stav K et al., the incidence of haematuria was reported to be 19% [18].

As evident from our study, cystoscopy did not lead to increased incidence of urinary tract infection when done under sterile precautions. But the presence of foley's catheter predisposed the patient to urinary tract infection. There was no significant difference in urine culture before and after cystoscopy. Thus, if sterile conditions are maintained, and cystoscopes are sterilised adequately, then the risk of positive cultures is less. Also, foley's catheterisation predisposes to urinary tract infection. Lytton B in 1961 [19] conducted 110 cystoscopic examinations on male patients and assessed for urinary infection. He reported that in 88% the urine was sterile before and after the procedure. In two instances (<2%), urine which was sterile before the procedure was found to be infected after cystoscopy. Bacteraemia was not seen in any of the patients. Stav K et al., reported that positive cultures were observed in two patients out of 100 patients (2%) undergoing diagnostic cystoscopy [18]. Prophylactic antibiotics were not given to the patients in our study; however, those found to be suffering from urinary tract infections were treated appropriately as per their culture reports.

Urine flow was assessed by uroflowmetry in 135 patients, and following cystoscopy, the change in the mean of average urine flow showed a slight improvement on day 1 and day 2, and it was found to be statistically significant ($p<0.001$, $p=0.016$). No literature was retrieved that has depicted this phenomenon where the effect of rigid cystoscopy on uroflowmetry was assessed. One published study conducted by Tessier J and Schick E who studied the effect of Foleys catheterisation on uroflowmetry on 129 patients (82 male and 47 females) with a mean age of 53 years reported that there was a significant decrease ($p<0.001$) in the maximum and mean flow rates after urethral catheterisation [20]. As the following cystoscopy, the urethra gets widened due to instrumentation, which could be the reason for an improved average flow.

Symptoms of the lower urinary tract were assessed by the IPSS. These symptoms can be seen in many conditions like BPH, urinary tract infection, overactive bladder, bladder carcinoma, uterine prolapse, vesicovaginal fistula. In our case, there was no significant difference in the IPSS score before and after two weeks following cystoscopy ($p=0.074$). There are not many studies to validate this finding of our study, however in a study conducted by Stav K et al., to assess the adverse effects of cystoscopy and its impact on patients quality of life and sexual performance, it is stated that the mean IPSS score was significantly higher on day 2 and it returned to baseline level two weeks later [18]. No correlation was found between the rise in mean IPSS score and duration of the procedure or the presence of BPH. The findings of this study that IPSS score falls to baseline level after two weeks are similar to our study.

A rare but known complication of cystoscopy is erectile dysfunction. However, in our study, we did not notice any subject with a complaint of erectile dysfunction at two weeks after the procedure. In a study conducted by Stav K et al., they noticed EDIS score decreased during the first two weeks [18]; however, it returned to baseline levels after one month.

The health performance status of the patient was assessed by ECOG score. It showed that the well-being of the patient improved following cystoscopy, which could be due to the psychological impact of the intervention which may be considered to relieve the symptoms in the patients undergoing cystoscopy. Effect on quality of life was assessed by SF-36 scale form which showed that cystoscopy had a minor impact on the quality of life of the patient.

LIMITATION

Limitation of this study includes the absence of the long term follow up of these patients. Hence based on these data it is difficult to comment on the late and long term complications of diagnostic rigid cystoscopy.

CONCLUSION

Cystoscopy has a minor impact on the quality of life of the patient and mental component being more affected than physical component. Considering its usefulness in the management of the patient, it should be liberally performed whenever indicated, as it has only minor impact on the patients' quality of life.

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