

An Assessment of Correlation between IPSS and Post Operative Urinary Retention in Groin Hernia Surgery under Spinal Anesthesia

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Abstract

Introduction: We assessed the correlation between the International Prostate Symptom Score (IPSS), patient age and postoperative urinary retention in patients undergoing inguinal hernia repair. *Methods:* 84 male patients admitted for inguinal hernia repair between January 2016 and December 2016 were included. Preoperatively patients were scored by the IPSS (0-35) according to the severity of their urinary symptoms. Patients were categorized into three symptom groups (mild, moderate and severe based on scores of 0-7, 8-18 and >18 respectively) and 2 age groups (<50 and > 50 years). All patients with postoperative urinary retention were catheterized per urethra. *Results:* 16 (19.04%) patients needed catheterization postoperatively. The average (median) IPSS value in non-catheterized patients were 4 whereas in catheterized patients were 9. 87.5% of catheterized patients had an IPSS > 8. Statistical analysis showed significant association between moderate IPSS (>8) and catheterization risk in male patient (chi square $p < 0.005$). There was also a significant relation between age (>50 years) and incidence of catheterization (chi square $p < 0.05$). *Conclusion:* Considering our results, it seems that IPSS score is useful in the prediction of those patients who are likely to develop postoperative retention after inguinal hernia repair.

Keywords: Post Operative Urinary Retention; IPSS; Spinal Anesthesia; Hernia.

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Introduction

Urinary retention is a commonly known postoperative complication and one that is routinely dealt with post operative care unit in patients undergoing procedures who have not been catheterized intraoperatively. While bladder catheterization is a standard procedure during major surgery that allows monitoring of urine output, guides intra and post operative fluid replacement, and serves as an indirect marker of hemodynamic stability, it also has many potential disadvantages like urinary tract infections, urethral injury in inexperienced hands and urethral stricture in near future [1]. Thus it is imperative to spare urinary bladder catheterization in patients who are undergoing relatively minor procedures and who are unlikely to develop post operative urinary retention. The ERAS (Enhanced Recovery After Surgery) protocol which is gaining acceptance worldwide also envisages the concept of minimum invasion. The desirability of a validated tool which could reliably distinguish between patients who are most likely to develop post operative urinary retention (POUR) and thus who should be catheterized intraoperatively while sparing those who had low probability of post operative urinary retention was highly appreciated. It would also result in avoidance of emergency catheterization by not so well trained staff in post anesthesia care unit.

The IPSS (International Prostate Symptom Score) is a validated semi quantitative assessment of the lower urinary tract symptoms (LUTS) in patients suffering from bladder outlet obstruction likely due to prostatic enlargement [2]. It has been suggested that preoperative IPSS scoring of any patient scheduled for surgery under anesthesia can be a predictor of the likely hood of post operative urinary retention [3]. A

few studies regarding the predictive value of preoperative IPSS vis a vis post operative urinary retention have been reported in literature, however most of them are on orthopedic or ophthalmic procedures. The present study analyzes the association between preoperative IPSS and post operative urinary retention in patients undergoing groin hernia surgery under spinal anaesthesia. Since groin hernia surgery is one of the commonest procedures world wide a strong positive correlation could make a significant impact on the practice of pre operative urinary bladder catheterization in such patients.

Materials and Methods

Eighty four male patients admitted for inguinal hernia repair under spinal anesthesia between January 2016 and December 2016 were included. The children below the age of 14 yrs were excluded. The patients requiring intra operative urine output monitoring from anesthesia point of view were also excluded. The patients having cardiac or renal co morbidities necessitating customized fluid replacement in the post anesthesia care unit were excluded. Preoperatively patients were scored by the IPSS (0-35) according to the severity of their urinary symptoms and were categorized into three symptom groups (mild, moderate and severe based on scores of 0-7, 8-18 and >18 respectively). All the patients underwent Lichtenstein tension free hernioplasty and operating times were recorded. The post operative fluid replacement was standardized at 1ml/kg/hour. All patients with postoperative urinary retention were catheterized per urethra, which was defined as either a painful sense of bladder fullness or a painful bladder lump. The time to spontaneous micturition or Foleys catheterization was recorded along with

volume of urine drained in urobag in case of latter. Those responsible for observation and catheterization in the post anesthesia care unit were blinded to preoperative IPSS score of the patient to minimize bias.

Results

Age and Site Distribution

The 84 patients ranged from 17 to 73 yrs of age with the highest no. of them being greater than 50 yrs of age (33.3%). The median age of the group of patients studied was 44 yrs. Out of the 84 cases 40 were of right groin hernia and the remaining 44 had left groin hernia.

Type of Hernia Repair

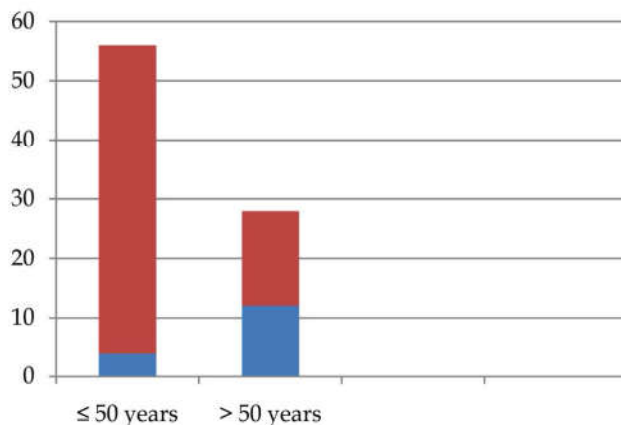
The Lichenstein tension free hernioplasty was performed in all 84 patients under spinal anesthesia and the median operating time was 50 minutes (skin to skin).

Spontaneous Micturition vs Catheterization

Out of 84 patients studied 68 patients underwent spontaneous micturition while 16 patient developed postoperative urinary retention and needed urinary bladder catheterization.

Patients Requiring Bladder Catheterization and Age Group Distribution

Out of the 84 patients studied only 16 patients needed catheterization. Of these 16 patients 4 patients were ≤ 50 years and 12 patients were > 50 years of age. (Table 1, $\chi^2 = 15.4$, $df = 1$, $p = 0.0000$ at confidence interval 95% $p < 0.05$).



■ Catheterization not needed
■ Catheterization done

$\chi^2 = 15.4$, $df = 1$, $p = 0.0000$ at confidence interval 95% $p < 0.05$

Graph 1: Patients requiring bladder catheterization and Age group distribution

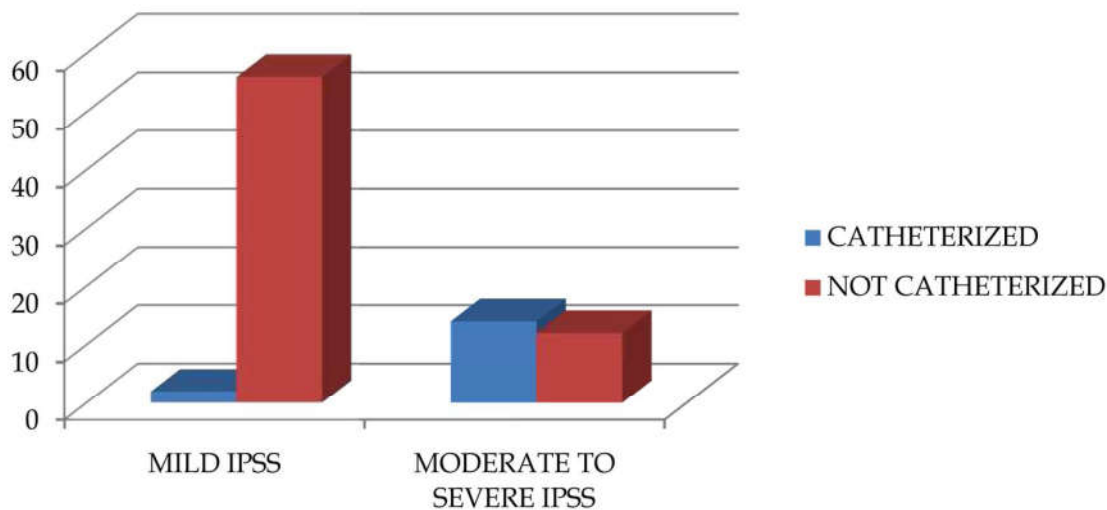
Table 1: IPSS and Time Taken For Spontaneous Micturition

IPSS	Time for Spontaneous Micturition (Minutes) Mean ± SD	t-test
Mild	532.85 ± 141.81	p = 0.468
Moderate	428 ± 241.26	

Z = 1.96, p = 0.468 at confidence interval 95%, p < 0.05

Table 2: Comparing POUR across different studies.

IPSS	Post OP Urinary Retention Rates		
	WKM Kieffer, TPC Kane et al.,(2012)	Faramaz FAZELI et al.,	Current Study
Mild	27.1%	0%	3.44%
Moderate	63.0%	5.3%	53.84%
Severe	83.3%	15.8%	-----



X² = 29.57, df = 1, p = 0.0000 at confidence interval 95%, p<0.05

Graph 2: IPSS and catheterization

Stratification of Patients on the Basis International Prostate Symptom Score (IPSS)

Out of the 84 patients studied, 58 patients was of mild IPSS and 26 patients was of moderate IPSS.

IPSS and Time Taken for Spontaneous Micturition

Out of 84 patients 68 patients underwent spontaneous micturition. Individual patient took own time for spontaneous micturition. The difference in time to spontaneous micturition between mild to moderate IPSS group patients did not reach statistical significance (Table 2).

IPSS and Catheterization

Out of 84 patients studied 58 patients were of mild IPSS and 26 were of moderate IPSS.

Of these 58 patients of mild IPSS, 2 patients required bladder catheterization and 56 underwent spontaneous micturition. In the cohort of 26 patients having moderate IPSS, 14 patients underwent bladder catheterization and 12 patients underwent spontaneous micturition. (Table 3.)

Discussion

19.04% of patients in our study developed postoperative urinary retention which is low compared to a study reported by Sarasin et al [4]. The reported rates of post operative urinary retention varies widely between 10% to 60% (Hozack et al.,1998; Waterhouse et al.,1993) [5,6].

In a study performed by J.J. Cronin et al, 118 patients (28 for knee arthroplasty and 90 for hip arthroplasty)

were enrolled and the IPSS questionnaire was completed for patients preoperatively. Forty five patients developed urinary retention postoperatively and the the mean pre-operative IPSS score was 8.73 for those who went into retention, compared to 4.315 for the other patients who had spontaneous micturition ($P < 0.01$). The current study compares well to these observations where the mean pre operative IPSS scoring stood at 4 and 9 between the two groups respectively ($P < 0.02$). These results show that IPSS could be used to predict the development of postoperative urinary retention in patients presenting for surgery under spinal anesthesia (Cronin et al., 2007) [7].

In a study by Elkhodair S et al(2006), a strong correlation between moderate to severe preoperative IPSS score and the probability (about 50-100%) of developing post operative urinary retention was demonstrated [8].

The different rates of post operative urinary retention across the three IPSS groups among three studies have been drawn into Table 4. The remarkable similarity between Kieffer et al and current study is appreciable while the sharp contrast with Faramaz et al can be attributed to the fact that this study was done on patients undergoing cataract surgery under different anesthesia protocol (as compared to spinal anesthesia in the former two studies) [9,10].

A prospective study performed by Sarasin et al(2006), investigated 182 patients undergoing lower limb arthroplasty under spinal anesthesia in order to explain whether postoperative urinary retention can be predicted preoperatively using the IPSS. Sixty nine percent of males and thirty nine percent of females required catheterization postoperatively. Following logistic regression analysis there was 0.85 predicted probability that males over 70 years would require catheterization. The IPSS score was not useful in predicting retention in either sex at any age.^[4]In our study of 84 patients, 56(66.66%) patients were of $d < 50$ years and 28 patients were of > 50 years. Of these 56 patients of age ≤ 50 years only 4(7.14%) patients developed POUR and rest 52(92.86%) underwent spontaneous micturition. Of the 28 patients > 50 years of age, 12(42.85%) patients developed POUR and required bladder catheterization and 16(57.15%) patients underwent spontaneous micturition. A chi-square test for the trend equals to 15.4 and at 5% confidence interval $p = 0.0000$ and tells that it is statistically significant that patients of age > 50 years can undergo POUR in comparison to < 50 years.

The median IPSS was 4 (range: 0–35). Of the mildly symptomatic patients, 2(3.44%) patients developed POUR while the majority of patients undergone

spontaneous micturition. While 14(53.84%) patients of moderately symptomatic patients developed POUR and required bladder catheterization. Overall, those patients who developed POUR had a median IPSS of 9 while those who did not had a median score of 4. A chi-squared test for trend showed that there was a statistically significant association between increased IPSS and rate of POUR at the 5% level ($p=0.000$).

Conclusion

This study concludes with statistical significance that males aged 50 years or over undergoing spinal anaesthesia for inguinal hernia repair are likely to develop postoperative urinary retention, therefore male patients of age 50 years or over should be catheterized preoperatively.

Considering our results, it seems that IPSS score is useful in the prediction of those patients who are likely to develop postoperative retention after inguinal hernia repair.

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