A Randomized-Controlled, Prospective Study on the Effect of Dorsal Penile Nerve Block after TURP on Catheter-Related Bladder Discomfort and Pain

Abstract

Purpose: In the present study, the impact of penile nerve block(PNB) on postoperative pain and CRBD in transurethral resection of prostate(TURP) patients were evaluated.

Methods: Participants of the present study were selected from patients who performed TURP under spinal anesthesia for benign prostatic hyperplasia(BPH) between January 2018 and July 2020. The present study was planned as a single center, randomized-controled prospective study in which the patients were divided into two groups. Group 1 was administered Control (n:40), and Group 2 ultrasonography(USG) guided PNB(n:40). The patients were included in the Groups respectively. Visual analogue scale(VAS) scores were questioned and recorded in order to evaluate the postoperative pain complaints of the patients after the operation. In addition, in order to evaluate the CRBD, VAS scores were questioned and recorded as 0^{th}, 0-1th hour, 1st-2nd hour, 2nd – 4th hour, 4th-8th hour, 8th-12th hour, and 12th-24th hour. In addition, postoperative pain and analgesic need were recorded. Tramodol was given to patients with moderate to severe CRBD. The findings was compared between to the Groups.

Results: There was no statistical difference between Group 1 and Group 2 between demographic and per-operative data. The CRBD and pain-related VAS scores was significantly higher in Group 1 between the 0-8th hours. There was no difference between VAS scores in the postoperative 8-24 hours. In total 24 hours, Group 2's need for tramodol for CRBD and pain was significantly less than Group 1. On examining the factors affecting CRBD in the multivariate analysis, age, body mass index(BMI), prostate volume, operation time do not affect CRBD statistically, only PNB reduces CRBD(p: 0.029). While less drug-related complications were observed in Group 2, no serious complications related to PNB were observed.

Conclusion: PNB is the effective method for the decrease pain and CRBD after urological surgery. It will also reduce the need for analgesics, and provide the painless patients in postoperative period.

Key Words: Postoperative pain, penile nerve block, TUR-P, CRBD

What's already known about this topic?

1. Catheter-related bladder discomfort (CRBD) is commonly seen secondary to an indwelling urinary catheter and may be caused after many endourological surgery.

2. These symptoms are generally resistant to medical treatments and lead to serious complaints.

3. So, we aimed in this study to evaluate the effectiveness of PNB on postoperative pain and CRBD in TURP patients.

What does this article add?

1. This study evaluated the effect of PNB to postoperative pain and CRBD after TURP surgery.

2. The result of this study that the PNB is the effective method for the decrease pain and CRBD after urological surgery. It will also reduce the need for analgesics, and provide the painless patients in postoperative period.

Introduction

International Association for the Study of Pain defines pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage.” (1). More than 80% of the surgery patients experience postoperative pain. Undertreatment of postoperative pain may lead to various negative consequences and is an important problem throghout the world (2). In a study, comparing urological surgeries, 20% of the patients descibed pre surgery pain with an average VAS score of 1.6, increasing up to 4.2 in the postoperative period (3).

Transurethral resection of prostate (TURP) is the standard procedure in the surgical treatment of benign prostatic hyperplasia (BPH). Although TURP does not lead to postoperative pain, some symptoms can occur from bladder spasms and the presence of a urethral catheter. It is commonly seen after TURP, especially in patients who have not had catheterization before (3,4).

Catheter-related bladder discomfort (CRBD) secondary to an indwelling urinary catheter is defined as a burning sensation at urethra with an urge to void, and painful discomfort in the suprapubic region (4,5,6). CRBD is seen in 40–90% cases after endourological surgery (7). These symptoms are generally resistant to medical treatments (anticholinergic, nonsteroidal anti-inflammatory drugs (NSAIDs) etc.) and lead to serious complaints in the patients during the postoperative period (7).

CRBD is mediated by type 3 muscarinic receptor activation, which increases acetylcholine release and then maked the detrusor muscles of the bladder to contract uncontrolled (8). Therefore, agents with anticholinergic properties, including solifenacin (9), butylscopolamine (6,10), oxybutynin (11), and tolterodine (12), analgesics including tramadol, paracetamol, NSAIDs (13,14,15) antiepileptics such as gabapentin and pregablin (16,17), anesthetics containing ketamine and dexmedetomidine (18,19) and atropine (20) have been used. It has been reported to be effective in preventing and reducing the effects of CRBD compared to placebo. However, when these drugs are administered in elderly patients, they can often

cause some side effects such as facial flushing, dry mouth, impaired renal function tests, blurred vision, and sedation (11,12,16,18). Moreover, since it has comorbidities such as accompanying systemic diseases, strict monitoring and dose adjustment may be required in the administration of drugs.

Penile nerve block (PNB) is a type of block that is frequently used in circumcision and hypospadias surgery, especially in children. It reduces postoperative pain and the need for analgesics (21,22,23). In adults, penile prosthesis and penile surgeries have been used to reduce pain and the amount of analgesic. It has also been used in the treatment of premature ejaculation (24,25,26).

According to anatomy, the branches of sacral somatic nerves form the afferent nerves of the urethra and bladder triangle (8) deriving from the ventral rami of the second to fourth sacral spinal nerves, innervating the urethral muscles and sphincter of the perineum and pelvic floor; as well as providing the sensation to the penis and clitoris in males and females including the urethra and bladder triangle (8,27,28). Song et al. performed autopsies on male cadaver and found that the dorsal nerve of the penis (DNP), the terminal branch of the pudendal nerve, innervates the membranous urethra in 53.3 % of specimens (29). In addition, the urethral mucosa is innervated by branches of DNP (30).

Hence, a prospective study has been planned taking all these information into consideration. Hereby the primary aim of the study is to evaluate the effectiveness of PNB on postoperative pain and CRBD in TURP patients. The secondary aim is to evaluate the effectiveness of PNB in reducing postoperative analgesic need in patients.

Study design

The present study was planned as a single center, randomized-controled prospective study in which the patients were divided into two groups. The analysis and data collection were performed following the after written informed consent was obtained from all patients. The institutional human research ethics committee approved the protocol 2020/2658.

The participants of the present study were male patients with an unsuccessful medical treatment history, aged 55 years and over, and classified as low and moderate according to the International Prostate Symptom Score (IPSS) and finally performed TURP under spinal anesthesia.

Exclusion criteria were unsuitability for spinal anesthesia (lumbal scoliosis, etc.), allergy to local anesthetics, coagulopathy or bleeding disorder (n: 12), pre-existing infection at the site of injection, mental disorders (n: 4), anticholinergic drug patients using (n: 13), patients with bladder dysfunction (n: 11), patients with previous penile or prostate surgery (n: 18),, end-stage renal disease (urine output < 500 ml per 24 h) (n: 6), morbid obesity (n: 4), previous or current catheterization (n:15), chemical substance abuse, chronic pain, and high risk cardiovascular, hepatic or any psychiatric disease (n: 12) and lack or unwillingness for giving consent to the study (n: 9). 80 patients were included in the study. Patients who accepted the consent form were selected according to the operation order, with odd numbers in Group 1 and even numbers in Group 2.

Spinal anesthesia was used in all patients with the same anesthesiologist and same method. It was performed in the sitting or lateral decubitus position 15 mg (3cc) bustecin hydrochloride 0.5% was injected for all patients after the determining middle line and intervertebral spaces of the L3–4 and L4–5 use by a spinal needle 25G (B. Braun Melsungen, Germany). Surgery was initiated when the block increased T6. At the end of the TURP, patients were transferred to the Postopertaive Anesthesia Care Unit (PACU). When

the block level of the patient in PACU decreased to the T10-T12 level, the patient was transferred to the urology service.

TURP was performed all of the patients. For clinical standardization, 20 fr 3-way Foley catheter was used in all patients, and the catheter balloon was inflated to 40 cc at the end of the procedure. The patients were divided into two groups according to the postoperative analgesia method applied. Group 1 was administered control (n: 40), and Group 2 was administered ultrasonography (USG) guided PNB (n: 40). No additional procedure was applied to the patients in Group 1, while the patients in Group 2 were applied PNB under USG guidance. PNB was subsequently performed using a high-frequency linear probe placed vertically over the pubic symphysis at the base of the penile shaft. Sagittal views identified the penile shaft, corpus cavernosum, urethra, and superfacial and deep fascia (Figure 1). DPN block was performed under US guidance (Esaote S.p.A,MyLabSix, Genoa, Italy) with a 50 mm block needle (Ultraplex, 22G; B. Braun, Melsungen, Germany) using out-of-plane method, preserving vascular and neural structures, passing through the deep fascia. Then, 10 mL of 0.25% bupivacaine was injected in fractionated doses, with intermittent aspiration.

Preoperative age, body mass index (BMI), laboratory findings, and prostate volume (PV) were measured in both groups. Operation times of the patients in both groups were recorded. Visual analogue scale (VAS) scores were questioned and recorded in order to evaluate the postoperative pain complaints of the patients after the operation. In addition, in order to evaluate the CRBD, VAS scores were questioned and recorded as 0th (first received in the urology service), 0-1th hour, 1st-2nd hour, 2nd – 4th hour, 4th-8th hour, 8th-12th hour, and 12th-24th hour. In addition, postoperative pain and analgesic need were recorded. Tramadol was given to the groups with high and moderate pain and CRBD according to the analgesic requirement of the patient (Contramal, i.v. 1.5mg / kg).

Demographic Parameters, postoperative pain, CRBD, VAS scores, requirement of analgesic and were compared between to the Groups.

Statistical Analyses

The data obtained in the present study was analyzed using version 23.0 of the Statistical Package for Social Sciences (SPSS®, IBM in Armonk, New York, USA). In particular, Independent T-test was used to obtain parametric data, Mann – Whitney U test to obtain non-parametric data, Chi-square test for a univariate analysis of the groups. Finally, a logistic regression analysis was used for multivariate analysis. In the multivariate analysis, the formula used for the evaluation of the factors affecting CRBD included operation time, PV, BMI, age, and penile block. Confidence interval of 95% and a p values of less than 0.05 was considered for a statistically significant threshold level.

Results

We included 80 patients in this prospective study. The mean patients' age was 69.08 ± 6.44 in Group 1 and 69 ± 8.87 in Group 2 (p: 0.966). The mean BMI was 29.88 ± 3.44 in Group 1 and 28.7 ± 4.01 in Group 2 (p: 0.586). Prostate volume was 54.75 ± 13.4 in Group 1 and 56 ± 18.72 in Group 2 (p: 0.732). The mean operation time was 50.63 ± 18.05 min and 50.38 ± 24.19 in Group 2 (p: 0.958). The characteristic features of the groups are presented in Table 1.

In the examination of VAS scores between groups according to postoperative hours, postoperative VAS scores between 0-1th hour, 1-2th hour, 2-4th hour, 4-8th hour were observed to be higher in favor of Group 1 (1st hour: Mann-Whitney U: 313, z: 4.906, p <0.001), (2nd hour: Mann-Whitney U: 196.5, z: 5.952, p <0.001) (2-4th hours: Mann-Whitney U: 275.5, z: 5.137 , p <0.001) (4-8th hour: Mann-Whitney U: 528.5, z: 2.655, p: 0.008). There was no difference between the postoperative 8-12 hours and postoperative 12-24 hour VAS scores (8-12 hours: Mann-Whitney U: 712.5, z: 0.867, p: 0.386), (12-24 hours: Mann-Whitney U: 714, z: 0.849, p: 0.396). The VAS scores between groups is presented in Table 2.

The distribution of VAS score severity within the groups is presented in Table 3.

When postoperative pain was evaluated with the VAS score, it was observed that the VAS score was higher in Group 1 (Mann-Whitney U: 572.5, z: 2.285, p: 0.022) (Table 2).

While 40% of the patients in Group 1 (16 patients) had postoperative pain complaints, 17.5% of the patients (7 patients) in Group 2 reported postoperative pain. Among the groups, postoperative pain complaints were higher in Group 1 (chi-square: 4.943, df: 1, p: 0.026).

A total of 6 (7.5%) patients needed analgesics in the first postoperative hour and all of them were in the group without PNB (Fisher's exact test, p: 0.026). In the postoperative first and secong hours, 15% of the patients (12 patients) needed analgesic. While 25% of the patients (10 patients) without PNB were given analgesics during the postoperative 1st and 2nd hours,

only 5% (2 patients) of the patients in the PNB group needed analgesic (chi-square: 6.275, df: 1, p: 0.012). Analgesics were administered to 19 patients (23.8%) between the postoperative second and fourth hours, and 14 (35%) of these patients were in Group 1, while 5 (12.5%) were in Group 2 (chi-square: 5.591, df: 1, p: 0.018). When the postoperative 4th-8th hour analgesic need of the patients was evaluated, analgesic was administered to a total of 18 patients (22.5%), while 13 (32.5%) of these patients were in the group without PNB, 5 (12.5%) were in the PNB group. Analgesic requirement in this time zone was higher in the group without PNB, and this difference was statistically significant (chi-square: 4.588, df: 1, p: 0.032).

A total of 13 patients (16.2%) needed analgesics between the postoperative 8th and 12th hour. While 4 (10%) of the patients were in Group 1 at this time, 9 (22.5%) were in Group 2. There was no no statistically significant difference between the groups (chi-square: 2.296, df: 1, p: 0.130).

When the analgesic need of the patients within 24 hours after the postoperative 12th hour was evaluated, 30 (37.5%) of the patients were given analgesic. Out of these, 17 (42.5%) were in Group 1 and 13 (32.5%) There was no statistically significant difference between the groups (chi-square: 0.853, df: 1, p: 0.356). Tramadol consumptions of both groups is seen in Table 4.

A total of 98 Tramadol admintration was required. Whereas 64 of them (65.3%) were administered to the patients without PNB, 34 (34.7%) were in the group with PNB (Mann-Whitney U: 396, z: 4.170, p <0.001). Table 5 presents total analgesic requirement between the groups.

Wheras 15 (37.5%) of the patients who underwent PNB did not need any Tramadol, 16 (40%) patients needed once, and 9 (22.5%) twice. Tramadol was needed once in 18 (45%) patients, 2 times in 20 (50%) and 3 times in 2 (5%) patients who did not have any PNB (Table 3).

In the postoperative PNB group, congestion and / or vomiting were seen in 2 (5%) patients in the PNB group and in 12 (30%) of the patients in the Tramodol group. The incidences of postoperative nausea and/or vomiting were significantly low in the PNB group compared to the Tramadol group (p: 0.013).

The multivariate analysis on the factors affecting CRBD determined that only penile block application reduces CRBD; other factors had no effect (p: 0.029). Table 6 presents the multivariate analysis results.

Discussion

In our study, CRBD was observed statistically less in patients who used USG-guided PNB after TURP, especially in the postoperative 8 hours. In addition, the analgesic requirement for pain and CRBD was less in the postoperative 24 hours in the PNB group. We believe that PNB is beneficial, especially in the first hours of postoperative complaints.

CRBD is an important clinical condition with an incidence ranging from 47% to 90%, especially in the postoperative period (7). CRBD is usually accompanied by behavioral responses, such as flailing limbs, strong vocal response, and attempting to pull out the urinary catheter. Therefore, relieving this discomfort as early as possible early is a requirement during the postoperative period. These responses may result in the increased incidence of postoperative complications, including bleeding, circulatory system instability, arrhythmia, pain and prolonged hospital stay (12,16,18).

Urethral and bladder epithelium are very rich in complex nerve endings, the mucous membrane reacts to various stimuli and send through the afferent nerve to reach the nerve center, leading to a variety of bladder and urinary tract irritation (7,31). The underlying reason of CRBD could be the stimulation of urethra by the urinary catheter as well as the bladder trigone area by the balloon of the catheter. CRBD can be dimnished by reducing the irritation of the urethra mucosa by blocking the nerve endings of the mucosa (4). In the present study planned according to this theory, it was aimed to reduce or prevent postoperative pain and CRBD with PNB in patients who performed TURP. Especially in both groups, the discomfort due to the cathater was 28.7% (23/80) and it was 40% in the group without PNB and was statistically higher (chi-square: 4.943, df: 1, p: 0.026).

Penile block is used in selected penile surgeries in both children and adults (21,22,23,24,25). It is recommended to be adminstered with USG guide (21,23,32). The advantages of using USG are to visualise the scarpa fascia, to enable the distribution of local anesthetic, and to help preventing intravascular injection. Moroever, through real-time evaluation, it helps to

prevent organ damages such as the corpora cavernosa or the urethra injury. Likewise, in the present study, USG was used to increase the effectiveness of the method and reduce the risk of complications.

Weinberg et al. investigated its effect on CRBD after prostate surgery. Patients' complaints of pain in the first 6 hours were lower in the PNB group, but no difference was observed between the control group afterwards (33). In addition, periurethral infiltration with local anesthetic before operation can also reduce immediate postoperative pain (34,35).

Jin li et al. have observed after elective surgery (liver and back surgery) CRBD to be lower in all hourly intervals in the first 6 hours in the PNB group (10.3% vs 37.9%, p: 0.015) (36). In the present study, CRBD was significantly lower in the PNB group in the first 12 hours. Based on these findings, CRBD could be caused by stimulation of urethra to some degree rather than the mechanism of overactive bladder and some patients' CRBD compliants could only be urethra discomfort.

In their study, Li Xiaoqiang et al. divided the patients who were operated under general anesthesia due to lower urinary tract symptoms (TURM and TURP) into 2 groups as control and as those with pudendal nerve block (8) and compared CRBD. VAS and CRBD were lower in patients with pudendal nerve block up to 12 hours. However, in their study, atropine was used for relaxation in both groups as the patients woke up. Atropine has been reported to have a significant effect on CRBD (20). In patients with pain, treatment protocols within 24 hours are not fully specified. Moroever, reporting of TURM and TURP patients may affect the objectivity of the study conducted. The effect of surgery type on CRBD is also important. Compared with urological surgery, patients who underwent any other types of operations have a lower incidence of CRBD. They stated that urological surgeries may be an important predictive factor in severe CRBD (7,37). In another study, the rate of CRBD was 40% after PNL, TURM, Prostate, upper and lower urinary tract surgeries, and most frequently seen after endourological surgeries and TURM (38). After endourological surgery, studies were carried out, especially after TURM, and the pain was higher with CRBD in these studies

(7,39). However, most studies were unclear in randomization sequence generation; hence, selection bias or confounding may be present (7,39). However, in the present study, to our best knowledge, PNB after TURP under spinal anesthesia has been evaluated for the first time with as homogeneous as possible group. In the present study, complaint of pain was significantly lower for the first 12 hours in the PNB Group. Likewise, CRBD was also significantly lower in the PNB group.

Especially in male patients, as the foley catheterization number increases postoperatively, the complaint of CRBD and pain becomes more. (39). In our study, all the patients have had a 20 F foley catheter inserted.

In additionIn our study, we used tramadol for CRBD and pain in both groups. Because Tramadol is a centrally acting, synthetic opioid analgesic routinely used to manage postoperative pain. The effects of tramadol include inhibition of noradrenaline (NA), serotonin (5HT) reuptake. It also provides inhibition of M1 and M3 receptors, which are effective in CRBD (40). Tramadol has been reported to be effictive in preventing the incidence and severity of CRBD (41,42). We used 1.5 mg/kg for moderate or severe CRBD, which is generally accepted in the literature (41,42). The PNB group needed less Tramadol than the control group (Mann-Whitney U: 396, z: 4.170, $p < 0.001$). In fact, 15 patients in the PNP group did not need analgesics.

The most common Tramadol driven side effects are postoperative nausea, vomiting, dizziness, and uncontrolled sedation (41,42). In the present study, nausea and vomiting was seen in 12 patients in the Group 1. However, in the PNB Group, only 2 patients had nausea and vomiting complaints.

In the multivariate regression analysis; no statistically signifcant relation was determined between age, BMI, operation duration, prostate volume, postoperative pain and CRBD. Only PNB was detemined to reduce pain and CRBD. It was determined that PNB, used by urologists in different surgeries frequently as a routine practices, has provided statistically significant results for postoperative pain and CRBD.

Analgesics to be applied after urological surgery in geriatric patients should be chosen with caution. Many factors, presency of systemic diseases and their comorbidities, affect the use of medical treatments in appropriate, effective, and sufficient doses. Particular attention should be paid to possible side effects. In anticholinergic treatments, side effects such as dry mouth, facial flushing, and blurred vision range from 10–54% (9,12,43). Other drugs such as Gabapentin, Pregabali, Ketamine, and Tramadol may also have many side effects such as nausea, vomiting, prolonged sedation, confusion, hallucinations, and headache (6,16,18,28,42). There have been no reports about serious complications in the literature regarding PNB except for bleeding and hematoma usually at the injection site (42, 43). One patient complained about weakness in levator ani muscle (8) during pudental nerve block. Likewise, no serious complication after PNB emerged in this present study.

There are several limitations inherent in the present study to be considered. First, as Tramadol administration in Group 1 and 2 differ (nerve block vs intravenously), the study design can not be considered as a double-blind study. Subsequent to PNB, 17% of the patients had catheter driven pain. Although this might quetion PNB efficiency in preventing pain as it is currently adminstered, further studies could focus on the efficacy of pudendal nerve block or caudal block, a full block of the afferent nerves of the urethra and bladder triangle, for CRBD prevention.

Conclusion

CRBD is a complex set of symptoms witnessed after urological surgeries. It causes serious problems for both the patient and the surgeon in the postoperative period. In the present study, it was determined that PNB decreased the complaints up to 8 hours after TURP, as well as the use of analgesic drugs. Moreover, PNB also reduces the analgesic need of the patients in the postoperative period. More randomized, controlled studies are needed.

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Table 1: Patients' characteristics.

Variables	Group 1	Group 2	*P* value
Age (years)	69.08±6.44	69±8.87	0.966
Mean PSA value (ng/ml)	4.79±4.33	3.31±2.48	0.066
Mean prostate volume (ml)	54.75±13.4	56±18.72	0.732
Mean operation time (min.)	50.63±18.05	50.38±24.19	0.958
Body Mass Index	29.88±3.44	28.7±4.01	0.586

Mean ± SD, *p* value < 0.05, min: minutes, min: minutes, PSA: prostate specific antigen

Table 2: VAS scores in Groups

	Group 1 (n:40)	Group 2 (n:40)	*P* values
VAS Scores-CRBD			
0-1st hour	2 (0-8)	0 (0-2)	< 0.001
1-2th hour	3 (0-8)	1 (0-6)	< 0.001
2-4th hour	3 (1-8)	1.5 (0-7)	< 0.001
4-8th hour	3 (0-8)	2 (0-8)	0.008
8-12th hour	3 (1-8)	3 (1-8)	0.386
12-24th hour	4 (1-8)	4 (2-8)	0.396
VAS Scores- Pain related to catheter	2 (0-10)	1 (0-10)	0.022

Data are presented as median (interquartile range) or patient numbers (n)

VAS = visual analogue scale

CRBD= Catheter-related bladder discomfort

p value < 0.05

Table 3: VAS scores severity in Groups

	VAS Scores Severity	Group 1 (n:40)	Group 2 (n:40)	Total
CRBD				
0-1st hour	None	7 (17.5%)	26 (65%)	33 (41.25%)
	Mild	27 (67.5%)	14 (35%)	41 (51.25%)
	Moderate	5 (12.5%)	0	5 (6.25%)
	Severe	1 (2.5%)	0	1 (1.25%)
1-2th hour	None	1 (2.5%)	15 (37.5%)	16 (20%)
	Mild	29 (72.5%)	23 (57.5%)	52 (65%)
	Moderate	8 (20%)	2 (5%)	10 (12.5%)
	Severe	2 (5%)	0	2 (2.5%)
2-4th hour	None	0	5 (12.5%)	5 (6.25%)
	Mild	26 (65%)	30 (75%)	56 (70%)
	Moderate	7 (17.5%)	5 (12.5%)	12 (15%)
	Severe	7 (17.5%)	0	7 (8.75%)
4-8th hour	None	2 (5%)	3 (7.5%)	5 (6.25%))
	Mild	24 (60%)	32 (80%)	56 (70%)
	Moderate	9 (22.5%)	4 (10%)	13 (16.25%)
	Severe	5 (12.5%)	1 (2.5%)	6 (7.5%)
8-12th hour	None	0	0	0
	Mild	34 (85%)	30 (75%)	64 (80%)
	Moderate	3 (7.5%)	7 (17.5%)	10 (12.5%)
	Severe	3 (7.5%)	3 (7.5%)	6 (7.5%)
12-24th hour	None	0	0	0
	Mild	23 (57.5%)	25 (62.5%)	48 (60%)
	Moderate	12 (30%)	13 (32.5%)	25 (31.25%)
	Severe	5 (12.5%)	2 (5%)	7 (8.75%)
Pain related to catheter	None	13 (32.5%)	21 (52.5%)	34 (42.5%)
	Mild	11 (27.5%)	12 (30%)	23 (28.75%)
	Moderate	9 (22.5%)	2 (5%)	11 (13.75%)
	Severe	7 (17.5%)	5 (12.5%)	12 (15%)

Patient number: n (%), VAS: visual analogue scale

Table 4: Tramadol Consumptions in Groups

	0-1st hour	**1-2th hour**	**2-4th hour**	**4-8th hour**	**8-12th hour**	**12-24th hour**
Group 1 (n:40)	6 (15%)	10 (25%)	14 (35%)	13 (32.5%)	4 (10%)	17 (42.5%)
Group 2 (n:40)	0	2 (5%)	5 (12.5%)	5 (12.5%)	9 (22.5%)	13 (32.5%)
Total (n:80)	6 (7.5%)	12 (15%)	19 (23.8%)	18 (22.5%)	13 (16.2%)	30 (37.5%)
***P* values**	0.026	0.012	0.018	0.032	0.130	0.356

Data are presented as patient numbers (n) and percents (%)

Table 5: Total analgesic requirement between groups

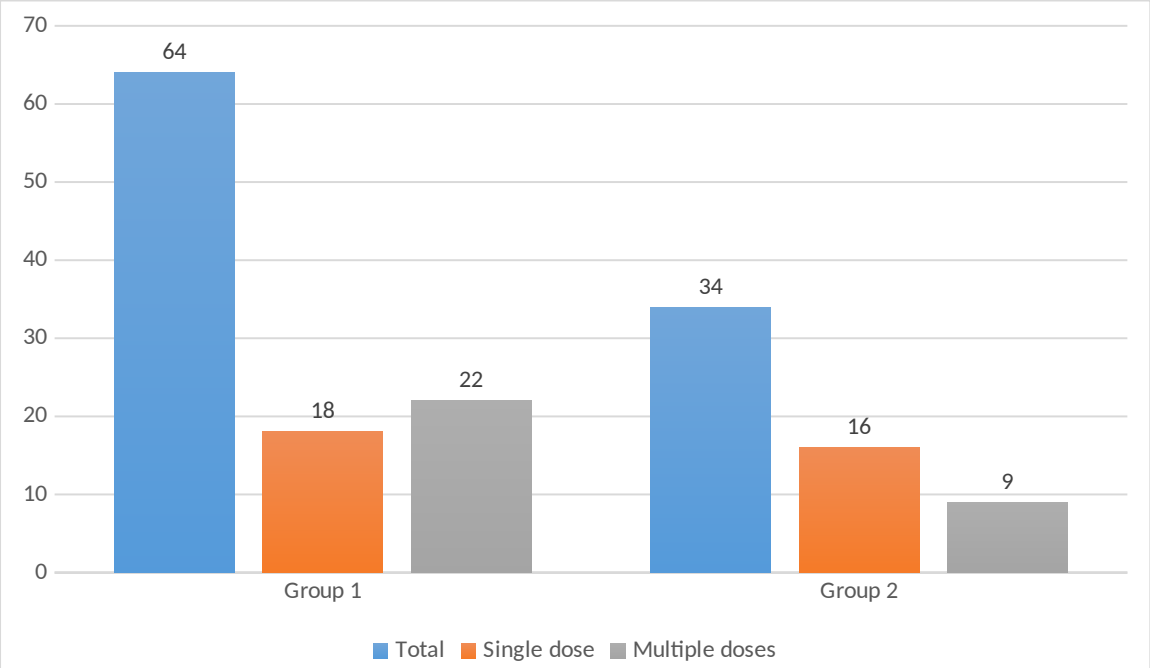

Table 6: Factors Affecting to CRBD in Multivariate Analysis

Variables	B	*P* values
Prostate volume	0.001	0.95
Operation time	-0.007	0.667
Age	0.014	0.687
BMI	0.009	0.234
PNB	1.162	< 0.05

BMI: Body Mass Index PNB: Penile Nerve Block

Figure Legend

Figure 1: Sagittal views identified the penile shaft, corpus cavernosum, urethra (U), and superfacial fascia (SF) and deep fascia (DF). DPN block was performed under US guidance with a 50 mm block needle (N) using out-of-plane method, preserving vascular and neural structures, passing through the deep fascia. Then, 10 mL of 0.25% bupivacaine (LA) was injected in fractionated doses, with intermittent aspiration.