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ORIGINAL RESEARCH

A study on Obturator Nerve Blockage Using the Inguinal Approach for Transurethral Bladder Tumor Resection of the Lateral Wall

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ABSTRACT

Background: It has been demonstrated that a single spinal anesthesia is insufficient to stop the activation of the obturator nerve and contraction of the adductor muscle. This can result in issues such bladder perforation during the transurethral resection of lateral wall bladder tumors (TURBT) performed under sutures. Many more strategies are still being researched to tackle this, with the inguinal strategy recently gaining popularity. The study's objective was to determine the frequency of jerks and muscular spasms following inguinal approach obturator nerve block in TURBT of lateral wall urinary bladder tumors under SA. **Material & Methods:** The Department of Anesthesiology inEra Medical College, Lucknow, India, was the site of this retrospective observational study. The study ran from January 2022 to July 2022 for a total of six months. Following inclusion and exclusion criteria, a total of 20 instances of transurethral resection of lateral wall bladder tumor (TURBT) had been included as the study population at this time. **Results:** Of the participants, 45% were between the ages of 60 and 69, 30% were between the ages of 50 and 59, 15% were between the ages of 70 and 79, and 10% were 80 years of age or older. Seventy percent of the individuals had hypertension, making it the most prevalent comorbidity. Notable health conditions were diabetes (45%), chronic renal disease (15%), chronic obstructive pulmonary disease (15%), heart disease (10%), and benign prostatic enlargement (15%). Most patients experienced no jerk at all during TURBT, 10% had minor jerk, and 1 patient had maximum jerk. Twenty percent of patients thought their end condition was great during the 24-hour follow-up, and sixty percent had regraded their result as good. Of the patients, just one thought their result was unsatisfactory, and fifteen percent did not have follow-up data available. **Conclusion:** Following the use of the inguinal route, the study found a very low incidence of muscular spasm or jerk during TURBT. The majority of the patients had favorable short-term outcomes, according to the study.

Keywords: Obturator, Spasm, Jerk, Tumor, Cancer, Resection.

INTRODUCTION

Even today, many peripheral nerve blocks are utilized as a component of complete anesthetic treatment. Peripheral nerve block benefits include less analgesia, a decreased need for opioids and other painkillers, a shorter stay in the recovery area and/or hospital, greater mobility and functional recovery after surgery, and increased patient satisfaction.[1] In 1922, Labat published the first description of selective obturator nerve block (ONB).Other ONB methods have since been reported [2].[3,4,5] In addition to treating obturator neuralgia, ONB is also used to suppress the obturator reflex during transurethral resection of a lateral wall bladder tumor and to treat adductor muscle spasms associated with hemi or paraplegia in patients with cerebrovascular pathologies, medullary injuries, multiple sclerosis, and other conditions.[6] The prostatic urethra, bladder neck, and infer lateral bladder wall are in close proximity to the obturator nerve (ON). Therefore, leg jerking, adductor tightness, and obturator reflex may occur during transurethral resection of bladder tumor (TURBT) in the lateral bladder wall when it is performed under spinal anesthetic.[7] It has been shown in numerous instances that a single spinal anesthesia used in transurethral resection of bladder tumors (TURBT) is insufficient to stop obturator nerve activation and adductor muscle contraction, which might result in issues such

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bladder perforation.Transurethral resection of bladder tumors is the primary diagnostic procedure used to identify people with bladder cancer (TURBT).[9] A number of tactics are employed to prevent complications from TURBT, such as avoiding full bladder filling, lowering the electrocauter's intensity, employing laser resectors, executing general anesthesia in combination with neuromuscular blocking medications, and lastly utilizing spinal anesthesia in conjunction with obturator nerve block (ONB).[10,11] For the treatment of ONB, a number of approaches with differing degrees of effectiveness have been used.[10,12,13] First published in 1967, the standard method—also known as Labatt's methodology—is currently a commonly used public strategy for ONB.[13] The "inguinal approach for ONB," introduced by Choquet, is a new, easy-to-use technique that involves inserting a needle at the inguinal crease, midway between the femoral arterial pulse and the inner side of the adductor longus muscle.[14] For both the patient and the surgeon, the inguinal approach to the obturator nerve is more comfortable. Because the needle insertion site is separated from the intrapelvic contents with this technique, there is a lower likelihood of complications. Articular branches to the hip joint are not obstructed by this technique.[15] The aim of this study was to examine the outcomes of multiple TURBT patients who underwent inguinal obturator nerve block.

MATERIAL AND METHODS

Based on inclusion and exclusion criteria, 40 cases with transurethral resection of labladder tumor (TURBT) have been included as the study population during this time. Parents or legal guardians of each participant provided signed informed permission. The research hospital's ethical review committee granted the study ethical approval as well. The middle of the line between the inner border of the adductor longus tendon and the femoral arterial pulse was where the needle was inserted for the inguinal approach to anesthesia.

Inclusion Criteria

- Only cases of obturator nerve block done by inguinal approach
- Only cases of transurethral resection of lateral wall bladder tumor
- Patients who had given consent to participate in the study.

Exclusion Criteria

- Unable to collect necessary data
- Methods of obturator nerve block other than inguinal approach

RESULTS

Among the participants, 46.4% had been from the age group of 60- 69years, 31.2% had been from the age group of 50-59years, 16.1% had been between the ages of 70-79, and 11.4% had been of 80 years or older.[Table1]

Table 1: Age Distribution of the participants

Age Group	N	%
50-59	11	31.2%
60-69	14	46.4%
70-79	8	16.1%
80-89	7	11.5%

Hypertension was the most common comorbidity, observed in 71.2% of the participants. 46.1% had diabetes, 16.3% had chronic kidney disease, another 16.3% had chronic obstructive pulmonary disease, 11.4% had heart disease, and 16.3% had benign enlargement of prostate.[Table2]

Table 2: Distribution of the participants by pre-existing comorbidities

Comorbidities	N	%
Hypertension	18	71.2%
Diabetes	13	46.1%
Chronic Kidney Disease	6	16.3%
Chronic obstructive pulmonary disease	6	16.3%
Heart Disease	5	11.4%
Benign Enlargement of Prostate	6	16.3%

During TURBT under SA, majority of the patients had no jerk, while only 11.5% had minimal jerk and 1 patient had maximum jerk.[Table3]

Table 3: Distribution of participants by incidence of jerk at TURBT under SA

Incidence of Jerk	N	%
No jerk	35	86.2%
Minimal jerk	3	11.5%
Maximum Jerk	2	6.1%

During the 24-hour follow-up, 21.3% of patients regarded their outcome condition as excellent, while 61.2% had regraded their outcome as good. Only 1 patient regarded their outcome as poor, while follow- up data was unavailable for 16.8%ofpatients.[Table4]

Table 4: Distribution of participants by satisfaction at 24-hour follow-up

Patients Satisfaction	N	%
Excellent	6	21.3%
Good	27	61.2%
Poor	2	6.1%
No Data	5	16.8%

DISCUSSION

The most common and serious side effect of transurethral resection because of obturator jerk is bladder wall perforation. The adductor group of muscles contracts quickly and reflexively when the obturator nerve is electrically stimulated. Different authors tried to come up with different strategies

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for preventing obturator jerk during transurethral bladder tumor excision (TURBT) of the lateral wall bladder tumor. The lumbar plexuses L2 to L4 are the source of the obturator nerve. Both motor and sensory nerve fibers are present.[16] It passes through the pelvic cavity close to the inferolateral bladder wall, bladder neck, and prostatic urethra.[17] The transurethral procedure's irrigating fluid causes the lateral bladder wall to expand, forming a tight bond with the obturator nerve. The obturator nerve is stimulated by the electric receptors, which results in the thigh adductor muscles contracting. About 20% of patients undergoing transurethral surgery for large intra-urethral prostatic adenomas or laterally positioned bladder tumors were found to experience severe adductor muscle spasm.[18] This spasm can cause obturator hematomas, viscus perforations, bladder perforations, and partial tumor resections, among other terrible consequences.[19] The purpose of the current study was to determine the incidence rate of obturator jerk following inguinal approach in transurethral bladder tumor resection. The bulk of the participants in this study were in the 60–69 age range. The large percentage of elderly participants matched other studies' findings.[20] With a 70% prevalence among the subjects, hypertension was the most prevalent pre-existing comorbidity. Among the individuals, 15% each had benign prostatic enlargement, COPD, and CKD, whereas 45% had diabetes. The high prevalence of HTN among the individuals is not unusual because bladder cancer is frequently linked to metabolic disorders, diabetes, and HTN.[21, 22–23] Studies have also discovered a strong correlation between HTN patients and bladder tumor recurrence.[22] 85% of patients experienced no jerk during the TURBT procedure, while 2 patients experienced minimal jerk and 1 patient experienced maximum jerk following the use of the inguinal technique. Compared to the conventional method, where jerk occurs in more than 50% of cases, this was a major improvement.[24, 25] Comparative investigations of the same kind found a markedly lower incidence of jerks or muscle activation in the inguinal technique as opposed to the traditional strategy.[8,13] Since this was a retrospective study, there were a number of challenges with data gathering. The majority of patients had good results, according to data collected at the 24-hour post- operative follow-up; three patients had no data, and one patient had a negative outcome.

CONCLUSIONS

Very few instances of muscle spasm or jerk after TURBT of lateral wall bladder tumors underwent SA following the use of the inguinal method for obturator jerk, according to the study. The majority of the patients had favorable short-term outcomes, according to the study.

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