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Obturator Nerve Block by Inguinal Approach in the Transurethral Resection of Lateral wall Bladder Tumor

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Abstract

Background: Single spinal anesthetic has been shown to be ineffective in preventing obturator nerve activation and adductor muscle contraction, which can lead to problems such as bladder perforation during transurethral resection of lateral wall bladder tumor (TURBT) under SA. To counteract this, numerous additional approaches are still being investigated, with the inguinal approach lately gaining traction. The aim of the study was to observe the incidence of jerk/ muscle spasm after obturator nerve block by Inguinal Approach in TURBT of lateral wall urinary bladder tumor under SA. **Material & Methods:** This retrospective observational study was conducted at the Department of Anesthesiology & ICU of National Institute of Kidney Diseases & Urology, Dhaka, Bangladesh. The study duration was 6 months, from January 2022 to July 2022. During this period, a total of 20 cases of transurethral resection of lateral wall bladder tumor (TURBT) had been included as the study population, following inclusion and exclusion criteria. **Results:** Among the participants, 45% had been from the age group of 60-69 years, 30% had been from the age group of 50-59 years, 15% had been between the ages of 70-79, and 10% had been of 80 years or older. Hypertension was the most common comorbidity, observed in 70% of the participants. 45% had diabetes, 15% had chronic kidney disease, another 15% had chronic obstructive pulmonary disease, 10% had heart disease, and 15% had benign enlargement of prostate. During TURBT, majority of the patients had no jerk, while only 10% had minimal jerk and 1 patient had maximum jerk. During the 24-hour follow-up, 20% of patients regarded their outcome condition as excellent, while 60% had regraded their outcome as good. Only 1 patient regarded their outcome as poor, while follow-up data was unavailable for 15% of patients. **Conclusion:** The study observed very few incidence of muscle spasm or jerk during TURBT after using the inguinal approach. The study also found positive short-term outcome in most of the patients.

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

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INTRODUCTION

Peripheral nerve blocks are still widely used as part of comprehensive anesthetic therapy. Decreased analgesia, reduced need for narcotics and other pain medicines, shorter recovery room and/or hospital stay, enhanced mobility and functional recovery following surgery, and improved patient satisfaction are all advantages of peripheral nerve block.[1] Labat originally described selective obturator nerve block (ONB) in 1922.[2] Since then, other ONB approaches have been published.[3,4,5] ONB is used to treat obturator neuralgia, adductor muscle spasms associated with hemi or paraplegia in patients suffering from cerebrovascular pathologies, medullary injuries, multiple sclerosis, and other conditions, as well as to suppress the obturator reflex during transurethral resection of a lateral wall bladder tumor.[6] The obturator nerve (ON) is located near the infer lateral bladder wall, bladder neck, and prostatic urethra. As a result, when conducted under spinal anesthesia, transurethral resection of bladder tumor (TURBT) in the lateral bladder wall may cause obturator reflex, adductor tightness, and leg jerking.[7] Single spinal anesthetic in transurethral resection of bladder tumor (TURBT) has been documented in many cases to be ineffective in preventing obturator nerve activation and adductor muscle contraction, which can lead to problems such as bladder perforation.[8] The major diagnostic method for determining if individuals have bladder cancer is transurethral resection of bladder tumor (TURBT).[9] To avoid TURBT complications, several strategies are used, including avoiding complete bladder filling, decreasing the intensity of the electrocauter, using laser resectors, performing general anesthesia in conjunction with neuromuscular blocking drugs, and finally spinal anesthesia in conjunction with obturator nerve block (ONB).[10,11] Various treatments with varying degrees of efficiency have been employed to treat ONB.[10,12,13] The standard method (Labatt's methodology) was first described in 1967; this public approach is now widely employed for ONB.[13] Choquet has presented a simple and dependable new method called the "inguinal approach for ONB," in which the needle is placed at the inguinal crease at the midpoint of the femoral arterial pulse and the inner side of the adductor longus muscle.[14] The inguinal approach to the obturator nerve is more convenient for the surgeon and more pleasant for the patient. With this method, the needle insertion site is distant from intrapelvic contents, resulting in a lesser chance of problems. This method does not obstruct articular branches to the hip joint.[15] The purpose of this study was to look at several patients of TURBT that had obturator nerve block via the inguinal method and see what happened.

Objective of the Study

To observe the incidence of jerk/ muscle spasm after obturator nerve block through Inguinal Approach in TURBT of lateral wall bladder tumor under SA.

MATERIAL AND METHODS

This retrospective observational study was conducted at the Department of Anesthesiology & ICU of National Institute of Kidney Diseases & Urology, Dhaka, Bangladesh. The study duration was 6 months, from January 2022 to July 2022. During this period, a total of 20 cases

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of transurethral resection of labladder tumor (TURBT) had been included as the study population, following inclusion and exclusion criteria. Informed written consent was obtained from each of the participants, parents or their legal guardian. Ethical approval of the study was also obtained from the ethical review committee of the study hospital. For the inguinal approach of anesthesia, the insertion point of the needle was at the midpoint of the line drawn between the femoral arterial pulse and the inner border of the adductor longus tendon.

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, 45% had been from the age group of 60-69 years, 30% had been from the age group of 50-59 years, 15% had been between the ages of 70-79, and 10% had been of 80 years or older. [Table 1]

Hypertension was the most common comorbidity, observed in 70% of the participants. 45% had diabetes, 15% had chronic kidney disease, another 15% had chronic obstructive pulmonary disease, 10% had heart disease, and 15% had benign enlargement of prostate. [Table 2]

During TURBT under SA, majority of the patients had no jerk, while only 10% had minimal jerk and 1 patient had maximum jerk. [Table 3]

During the 24-hour follow-up, 20% of patients regarded their outcome condition as excellent, while 60% had regraded their outcome as good. Only 1 patient regarded their outcome as poor, while follow-up data was unavailable for 15% of patients. [Table 4]

Table 1: Age Distribution of the participants

Age Group	N	%
50-59	6	30.0%
60-69	9	45.0%
70-79	3	15.0%
80-89	2	10.0%

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

Comorbidities	N	%
Hypertension	14	70.0%
Diabetes	9	45.0%
Chronic Kidney Disease	3	15.0%

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Chronic obstructive pulmonary disease	3	15.0%
Heart Disease	2	10.0%
Benign Enlargement of Prostate	3	15.0%

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

Incidence of Jerk	**N**	**%**
No jerk	17	85.0%
Minimal jerk	2	10.0%
Maximum Jerk	1	5.0%

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

Patients Satisfaction	**N**	**%**
Excellent	4	20.00%
Good	12	60.00%
Poor	1	5.00%
No Data	3	15.00%

DISCUSSION

Bladder wall perforation most prevalent and dangerous complications following transurethral resection due to obturator jerk. During electrical stimulation of the obturator nerve, a quick involuntary reflex contraction of the adductor group of muscles occurs. Various writers attempted to create various ways for controlling obturator jerk during TURBT of lateral wall bladder tumor transurethral excision. The obturator nerve originates from the lumbar plexus L2 to L4. It contains both motor and sensory nerve fibers.[16] It runs within the pelvic cavity near the prostatic urethra, bladder neck, and infero-lateral bladder wall.[17] The irrigating fluid used during the transurethral procedure distends the lateral bladder wall, resulting in a close relationship with the obturator nerve. The electric receptors stimulate the obturator nerve, causing the thigh adductor muscles to tighten. Severe adductor muscle spasm was found to occur in around 20% of individuals receiving transurethral surgery for big intra-urethral prostatic adenomas or laterally positioned bladder tumors.[18] This spasm can have disastrous effects such as bladder perforation, partial tumor resections, obturator hematomas, and viscus perforation.[19] The present study was conducted with the goal of observing the incidence rate of obturator jerk after inguinal approach in the Transurethral Resection of Bladder Tumor. Among the present study participants, majority had been between the ages of 60-69 years. This high incidence of old age participants was similar to the findings of other studies.[20] Among the pre-existing comorbidities, hypertension was the most common, with 70% prevalence among the participants. 45% had diabetes, while CKD, COPD and benign enlargement of the prostate were each observed in 15% of the participants. The high incidence of HTN among the participants is not uncommon, as it, along with metabolic syndromes and diabetes are often associated with bladder cancer.[21,22,23] Some

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studies have also found significant association between patients with HTN and recurrence of bladder tumor.[22] During the TURBT operation, 85% had no incidence of jerk, while 2 patients had minimum jerk and 1 patient had maximum jerk after use of inguinal method. This was a significant improvement over the traditional approach, where over 50% of cases have incidence of jerk.[24,25] Similar studies done in comparative settings observed significantly less cases of muscle stimulation or jerk in the inguinal approach compared to the traditional approach.[8,13] As this was a retrospective study, data collection was faced with various difficulties. Data collection at 24-hour post-operative follow-up revealed majority had good outcomes, with 3 patients with no data and 1 patient with poor outcome.

Limitations of the Study

The study was conducted in a single hospital with a small sample size. So, the results may not represent the whole community.

CONCLUSIONS

The study observed very few incidence of muscle spasm or jerk during TURBT of lateral wall bladder tumor underwent SA after using the inguinal approach of obturator jerk. The study also found positive short-term outcome in most of the patients.

Recommendation

Being a retrospective study, data collection was hard for the present study. Further study in a prospective case-control manner needs to be performed to better understand the benefits and outcomes of using inguinal approach over the traditional approach for obturator nerve block

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