



MODE OF ANAESTHESIA IN PATIENT UNDERGOING TRANSURETHRAL RESECTION OF BLADDER TUMOR AT BPKIHS: A RETROSPECTIVE REVIEW OF RECORDS

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ABSTRACT

Background: The intraoperative complications during transurethral resection of bladder tumor (TURBT) are obturator jerk, bladder perforation, ICU admission and mortality. Sub arachnoid block when combined with obturator nerve block prevents these complications and reduces postoperative hospital stay. **Materials and Method:** A retrospective review of records was done of patient undergoing TURBT between May 2019-June 2021 of all age group. They were either given general anaesthesia or subarachnoid block (SAB) with 25 gauge Quincke's spinal needle at L3-L4 OR L4-L5 interspace with 0.5% heavy bupivacaine 2.8 ml combined with ultrasound guided obturator block on the ipsilateral side of tumor with 0.5% ropivacaine 5-10 ml. General anaesthesia was given with intravenous induction agent, muscle relaxant and inhalational agents. Standard dosage of drugs were used. **Result:** Out of 43 cases 26 under GA and 17 under SAB with obturator nerve block (ONB). Obturator jerk was seen in 2 patients in SAB with ONB group. Bladder perforation, ICU admission and mortality were absent in both groups. The mean postoperative hospital stay was slightly higher in GA patients (mean 3.31 ± SD 1.6 days), compared to SAB+ONB (mean 3.24 ± SD 1.4 days). **Conclusion:** SAB with ONB prevents postoperative complications in TURBT and reduces the postoperative hospital stay.

KEYWORDS: Transurethral resection of bladder tumor, Anaesthesia, Obturator nerve block.

INTRODUCTION

Bladder tumor is one of the common urogenital malignancies of the elderly population. It commonly occurs in the elderly above 50 years of age. The risk factors for bladder cancer are cigarette smoking, exposure to aniline dye, schistosomiasis of the bladder and metastasis from the genitourinary system. The treatment of bladder tumor is transurethral resection of bladder tumor (TURBT). The modes of anesthesia are general anesthesia (GA), spinal anesthesia block (SAB), combined spinal epidural (CSE) anesthesia and spinal anesthesia with obturator nerve block. During TURBT the contraction of obturator nerve block (ONB) due to involuntary contraction of adductor muscles group is often noticed which produces adverse effects like incomplete tumor resection, bladder perforation and bleeding. To abolish this reflex GA can be given but it is not suitable for patients who are elderly.

SAB and CSE do not abolish this reflex. This reflex can be abolished when the obturator nerve is blocked.^[1] The obturator nerve arises from the anterior branch of L2-L4. It runs along the lateral wall of the bladder. SAB combined with ONB has a favorable outcome. So this research was conducted to find out the better mode of anesthesia and assess the perioperative complications.

MATERIALS AND METHODS

This retrospective review of records was conducted in a tertiary referral center with a high volume of cases between May 2019 – June 2021 after obtaining clearance from the institutional review committee. All patients of all age groups who presented to the emergency or on a routine basis with a urinary bladder tumor and planned for transurethral resection of bladder tumor were included.

In the operation theatre patients baseline vitals were assessed. Patients were either given Subarachnoid block with ultrasound guided obturator nerve block or General Anaesthesia depending on the surgeons choice.

Mode of Anaesthesia

For SAB after positioning in sitting position and sterile painting, drapping, patients were given subarachnoid block with 25 gauge quincke’s spinal needle at L3-L4 OR L4-L5 interspace with 0.5% heavy bupivacaine 2.8 ml after local anesthetic skin infiltration.

Then the patient were kept supine. Block height was assessed using alcohol soaked cotton with loss of temperature sensation and block height of T10 was considered adequate block. Then for obturator nerve block the thigh of the patient ipsilateral to the tumor site was slightly abducted and laterally rotated. For ONB the GE Healthcare Versana ultrasound linear probe (6-12 Mhz) was used. The transducer was positioned medial to the femoral artery, slightly below the femoral crease. Local anesthetic solution was injected into the interfascial space between the pectineus and adductor brevis muscles to block the anterior branch and the adductor brevis and adductor magnus muscles to block the posterior branch. The block needle was advanced to initially position the needle tip between the pectineus and adductor brevis. At this point, 5–10 mL of 0.5% ropivacaine solution will be injected. The needle was advanced farther to position the needle tip between the

adductor brevis and adductor magnus muscles, and another 5–10 mL of 0.5% ropivacaine solution was injected.

For General Anaesthesia, patients were first preoxygenated with 100% oxygen for 3 minutes. Standard dosage of drugs were used. Induction of balanced anaesthesia was done with injection 10% Propofol, and for analgesia injection Fentanyl was given. After ensuring proper ventilation patients were given injection Rocuronium and three minutes thereafter patient’s trachea was intubated and anaesthesia was maintained with Sevoflurane. After the surgery was over trachea was extubated with the reversal of residual neuromuscular blockade with injection Neostigmine and Glycopyrrolate.

After the surgery patients were follow up until discharge. The informations were recorded in the data extraction form. The patients data was reviewed, demographic data, history of tobacco chewer/smoker, tumor site, type of anaesthesia, type of surgery, perioperative complications (obturator jerk, bladder perforation, ICU admission, mortality) and postoperative hospital stay was recorded.

RESULT

There were all together 43 cases who underwent TURBT out of which 26 cases were conducted under GA and 17 cases were conducted under SAB+ONB.

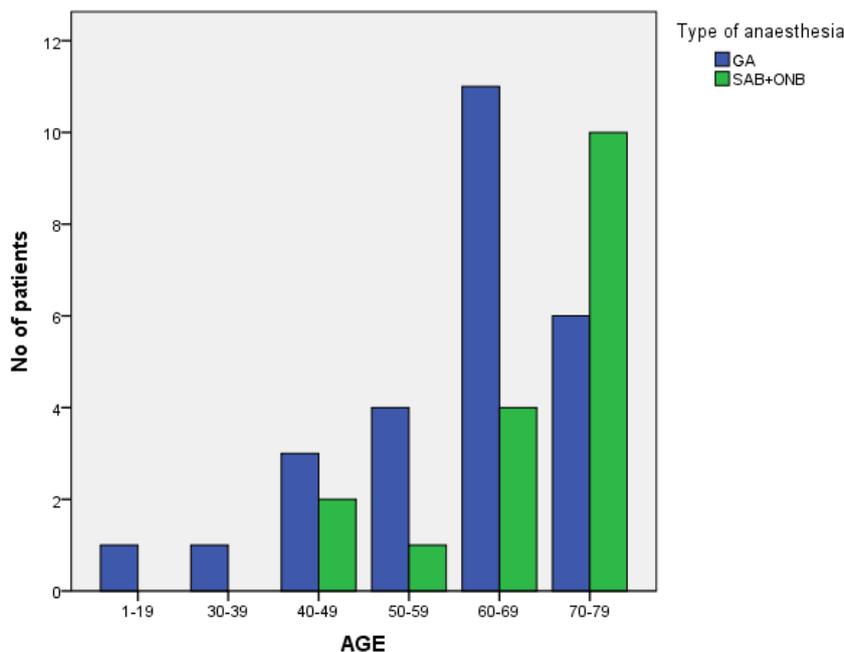


Figure 1: Range of age between the two modes of anaesthesia.

Most of the cases belong to age group 70-79 years (37.2%) followed by 60-69 years (34.9%), 50-59(11.6%) and 40-49 years(11.6%) as in Figure 1.

The proportion of male for General Anaesthesia(73.1%), SAB+ONB(70.6%) and for female General Anaesthesia(26.9%), SAB+ONB(21.4%). The proportion

of male and female were almost similar in both the modes of anaesthesia as in Table 1.

Table 1: Distribution of gender between modes of anaesthesia.

Gender	Type of anaesthesia		Total
	GA	SAB+ONB	
Male	19	12	31
	73.1%	70.6%	72.1%
Female	7	5	12
	26.9%	29.4%	27.9%
Total	26	17	43
	100.0%	100.0%	100.0%

44.2% of the study population was tobacco chewers or smokers out of which 46.2% received General

Anaesthesia and 41.2% received subarachnoid block and obturator nerve block as shown in Table no 2.

Table 2: Tobacco chewer or smoker distributed between modes of anaesthesia.

Tobacco chewer or smoker	Type of anaesthesia		Total
	GA	SAB+ONB	
No	14	10	24
	53.8%	58.8%	55.8%
Yes	12	7	19
	46.2%	41.2%	44.2%
Total	26	17	43
	100.0%	100.0%	100.0%

Table 3: Distribution of tobacco chewer or smoker between gender.

Gender	Tobacco chewer or smoker		Total
	No	Yes	
Male	66.7%	78.9%	72.1%
	16	15	31
Female	33.3%	21.1%	27.9%
	8	4	12
Total	100.0%	100.0%	100.0%
	24	19	43

In 19 patients who either chew tobacco or smoker, 4% were females and 15% were males as in table no 3.

posterior wall. 52.9% left lateral and 47.1% in the right lateral was found more among SAB+ONB compared to GA, 38.5% left lateral wall and 34.6% right lateral wall, respectively as per Table 4.

Tumor was 44% in left lateral wall followed by 39.5% in right lateral wall and 14% at the centre and 2.3% in the

Table 4: Distribution of patients according to tumor site.

Tumor site	Type of anaesthesia		Total
	GA	SAB+ONB	
Right lateral	9	8	17
	34.6%	47.1%	39.5%
Left lateral	10	9	19
	38.5%	52.9%	44.2%
Centre	6	0	6
	23.1%	.0%	14.0%
Posterior	1	0	1
	3.8%	.0%	2.3%
Total	26	17	43
	100.0%	100.0%	100.0%

Comorbid condition was present in almost half of the sample among which comorbidities was found more

among SAB+ONB (64.7%) compared to GA(38.5%) as per Table 5.

Table 5: Comorbid condition distributed between the mode of anaesthesia.

Comorbid condition	Type of anaesthesia		Total
	GA	SAB+ONB	
No	16	6	22
	61.5%	35.3%	51.2%
Yes	10	11	21
	38.5%	64.7%	48.8%
Total	26	17	43
	100.0%	100.0%	100.0%

Around 91% of the cases were elective and the rest were emergency cases(9.3%). The elective cases underwent

GA more (96.2%) as compared to SAB+ONB(82.4%) as per Table 6.

Table 6: Type of surgery distributed between the modes of anaesthesia.

Type of surgery	Type of anaesthesia		Total
	GA	SAB+ONB	
Elective	25	14	39
	96.20%	82.40%	90.70%
Emergency	1	3	4
	3.80%	17.60%	9.30%
Total	26	17	43
	100%	100%	100%

There were 2 cases of obturator jerk in patients undergoing TURBT with SAB+ONB (11.76%).

There were no bladder perforation, icu admission and mortality within both modes of anaesthesia.

The mean postoperative hospital stay was slightly higher in GA patients(mean3.31±SD1.6 days), compared to SAB+ONB(mean3.24±SD1.4 days).

DISCUSSION

Transurethral resection of bladder tumor is most common surgery for urinary bladder tumor.

In our study, mean age group in years, receiving GA was 60.58±15.611 and 70.59±12.64 in patients receiving SAB+ONB. This result was in contrast to the similar study in which older patients received GA(67.5±9.0 years) and regional anaesthesia(62.4±10.8years).^[2] The reason could be due to small sample size in our study. In our study, 19 patients either chew tobacco or had history of smoking(44%) out of which 4% were female 15% were male which was similar to the finding in a study where female had less smoking history(coefficient=-0.156,p=0.049) more than males at the time of diagnosis of bladder tumor.^[2] The Smoking increases bladder cancer prevalence 3-4 times.^[2]

Tumor was 83.5% in lateral walls followed by14% at the centre and 2.3% in the posterior wall. All the patients receiving SAB+ONB had tumor in lateral wall as compared to GA, where 73.1% was present in lateral walls. Since the obturator nerve course is close to the lateral wall of bladder GA or SAB with ONB is preferred to blunt obturator nerve jerk.^[4]

In our study, we studied only the presence or absence of comorbid conditions. There were 10 patients with comorbid condition in patients receiving GA(38.5%) and 11 patients with comorbid condition receiving SAB+ONB(64.7%). In a similar study comorbid conditions were more in patients undergoing surgery in regional anaesthesia(Diabetes Mellitus and Hypertension) but was statistically not significant. Hypertension, chronic kidney disease and diabetes mellitus are risk factors for tumor recurrences.^[3]

Around 91% of the cases were elective and the rest were emergency cases(9.3%). The elective cases underwent GA more (96.2%) as compared to SAB+ONB(82.4%). The emergency TURBT surgery was performed due to persistent gross hematuria.

Perioperative complications occurring with TURBT is obturator nerve jerk which may lead to bladder perforation. Various anaesthesia techniques are used till date with both pros and cons. General anaesthesia with its property of muscle relaxation abolishes obturator nerve jerk but has its own drawbacks. General anaesthesia causes neurohumoral stress response to occur and suppresses immune system such as T lymphocytes and Natural Killer cells and also causes cancer cell proliferation activation.^[5] Moreover, patients with comorbid condition does not tolerate General anaesthesia as compared to spinal anaesthesia.

Obturator nerve block abolishes obturator nerve jerk and is used in combination with spinal anaesthesia in the cases undergoing TURBT.^[6] In our study 2 patients receiving SAB+ONB had obturator nerve jerk(11.76%) almost comparable to the previous study with incidence of obturator nerve jerk in SAB(40%) and 11.4% in

patients receiving SAB+ONB.^[7] The reason behind presence of obturator nerve jerk in SAB despite of ONB could be because of anaesthesiologist with difference in experience while performing ultrasound guided obturator nerve block. In our study there was not a single case of bladder perforation. In one similar study, bladder perforation incidence was significantly less in SAB+ONB ($RR=0.24$, 95% CI (0.11, 0.53) (p value =0.0005), than SAB alone.^[8] SAB combined with ONB can effectively reduce the chances of bladder perforation following adequate control of obturator nerve jerk.

There was no ICU admission in our study. There was no mortality of any of the patients irrespective of modes of anaesthesia in our study. But in a similar study where they compared the 5 year survival with patients undergoing TURBT under GA or regional anaesthesia, 3 patients in GA group and 5 patients in regional anaesthesia group got expired.^[2] The reason being advanced stages of comorbid disease conditions.

In our study, postoperative hospital stay was found to be less in patients who have undergone TURBT under SAB+ONB (3.24 ± 1.4 days) than the patient who had underwent under GA (3.31 ± 1.6 days). Similarly Length of hospital stay was significantly reduced ($MD=-1.81$, 95% CI (-2.65, -0.97) (p value=0.0001), in a SAB+ONB group in similar meta-analytical study.^[8] Surgeons are more comfortable and the resection time will be short and adequate hemostasis will be maintained leading to reduction in length of postoperative hospital stay.^[9] SAB attenuates the stress response and thus reduces immunosuppression and preserve innate immunity to fight against remaining or residual cancer cells.^[10] Local anaesthetics, in vitro, directly affects the viability, proliferation and migration of cancer cells.^[11] Hence, regional anaesthesia provide 5 years survival benefits than GA.^[2]

CONCLUSION

Subarachnoid block with obturator nerve block is the acceptable mode of anaesthesia in a patient undergoing TURBT for bladder tumor with decrease postoperative hospital stay.

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