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RESEARCH ARTICLE

SUBARACHNOID BLOCK VERSUS SADDLE BLOCK IN PATIENTS UNDERGOING TRANSURETHRAL THULIUM LASER PROSTATIC ABLATION: A COMPARATIVE STUDY

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ABSTRACT

Background: Subarachnoid block is the preferred anaesthetic technique for transurethral resection of prostate (TURP). As both spinal as well as saddle block can be used for the surgery, we aim to compare the haemodynamic parameters and adequacy of surgical condition resulting from subarachnoid block versus saddle block in patients posted for transurethral thulium laser prostatic ablation.

Material and Methods: Sixty patients in the age group of 50 to 75 years, belonging to American Society of Anesthesiologists (ASA) grade I - II, posted for transurethral thulium laser prostatic ablation were included in this prospective, randomised study. Patients randomly divided into one of the two groups: Group A (n=30) - received spinal block and Group B (n=30) - received saddle block; with 2ml of 0.5% hyperbaric bupivacaine. Maximum block height was recorded. Haemodynamic parameters including heart rate (HR), oxygen saturation (SpO_2), systolic blood pressure (SBP), diastolic blood pressure (DBP) and mean arterial blood pressure (MAP) were monitored till the end of surgery. Incidence of complications like hypotension, volume overload, TURP syndrome etc. if encountered were noted.

Results: Adequate surgical condition was achieved in both groups. Incidence of hypotension and vasopressor requirement was significantly less in Group B than Group A ($p < 0.0001$). No complications were noted in both the groups.

Conclusion: Saddle block achieves adequate surgical condition for transurethral thulium laser prostatectomy without significant incidence of hypotension and vasopressor requirement.

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INTRODUCTION

Transurethral resection of prostate (TURP) is the most commonly performed surgery for benign prostatic hyperplasia (BPH). It involves insertion of a resectoscope through the urethra and resecting prostatic tissue with an electrically powered cutting-coagulating metal loop or using laser vapourization energy. The thulium laser offers an advanced performance with a lower intraoperative bleeding risk; shorter hospital stay and catheterization of patients making endoscopic procedures safer and less invasive than traditional surgical techniques and open surgery (Malhotra *et al*., 2015). Spinal anaesthesia is the most commonly used anaesthetic technique for TURP. It provides adequate anaesthesia for the patient with good relaxation of the pelvic floor and the perineum for the surgeon. The advantages of regional anaesthesia include: decreased incidence of deep venous thrombosis, reduced operative blood loss, early recognition of signs and symptoms of TURP syndrome, water intoxication and fluid overload (as the patient is awake) and early detection of accidental bladder perforation (provided that spinal level is limited to T_{10} level). The main risk associated with spinal anaesthesia is that of hypotension. Hypotension results from the vasodilatation caused by diminished venous return resulting from sympathetic blockade due to the subarachnoid block. The chemical sympathectomy due to spinal anaesthesia extends for 2 to 6 dermatomes above the sensory level and at the same level with epidural anaesthesia. In elderly patients with cardiac disease systemic vascular resistance may decrease by 25% whereas in normovolemic healthy patients it may decrease by only 15-18% (Bhattacharyya *et al*., 2015) However, subarachnoid anaesthesia is generally preferred over continuous epidural anaesthesia as it is technically easier to perform in elderly patients. Also, the incomplete block of sacral nerve roots that occasionally occurs with epidural technique is usually avoided

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with subarachnoid anaesthesia (Malhotra *et al*., 2015). Caudal and sacral blockade has also been used effectively for prostate surgery and bladder distension is avoided with the use of continuous irrigation. Caudal anaesthesia has been used in high risk patients undergoing laser prostatectomy.[2] As lower level of block is achieved therefore haemodynamic derangement and fluid requirement is less. This decreases the chances of circulatory overload. In our study we aimed to compare the haemodynamic changes, adequacy of surgical condition and vasopressor requirement between saddle and subarachnoid block in patients undergoing transurethral thulium laser prostatic ablation for benign prostatic hyperplasia.

MATERIALS AND METHODS

After obtaining consent from the institutional ethics committee, sixty patients in the age group of 50 to 75 years, belonging to ASA grade I - II, posted for transurethral thulium laser prostatic ablation were included in this prospective, randomised study. An informed and written consent was taken from all the patients. Patients having any contraindications to spinal anaesthesia (i.e. inability to remain still during needle puncture, raised intracranial pressure, local site infection, severe hypovolemia, coagulopathy, pre existing neurological disease) were excluded from the study. In the operating room, standard monitors for recording heart rate (HR), non-invasive blood pressure (BP), electrocardiography (ECG) and oxygen saturation (SpO_2) were attached. All patients were randomly divided into one of the two groups: Group A (n=30) – patients received 2 ml of 0.5% hyperbaric bupivacaine with 25 gauze Quincke's spinal needle at L_3 – L_4 intervertebral space via midline or paramedian approach in sitting position after obtaining free flow of cerebrospinal fluid. They were placed supine with one pillow under the head immediately after drug administration. Group B (n=30) – patients received 2 ml of 0.5% hyperbaric bupivacaine in the same manner but were kept in the sitting position for 10 minutes after the block administration and were then placed supine with one pillow under the head. Baseline HR, BP, MAP and SpO_2 were recorded before administration of the block and then at 5 minutes interval intaroperatively. If MAP decreased more than 20% of baseline, inj. ephedrine 3 mg i.v. was given and repeated after 5 minute interval if required. Heart rate less than 60 beats per minute was treated with intravenous inj. atropine 0.6 mg. The level of sensory block as assessed by temperature (cold) sensation was noted bilaterally. Motor block was tested using Bromage scale (McNamee *et al*., 2001).

Table 1. Bromage Scale

Grade	Criteria	Degree of block
0	Free movement of legs and feet	Nil (0%)
1	Just able to flex knees with free movement of feet	Partial (33%)
2	Unable to flex knees, but with free movement of feet	Almost complete (66%)
3	Unable to move legs or feet	Complete (100%)

The adequacy of surgical condition was assessed by the block height and adequate relaxation of pelvic floor muscles. Transurethral prostate ablation was performed by the same surgeon using thulium laser and 1.5% glycine as irrigation fluid.

RESULTS

The age, height weight and duration of surgery was comparable between the two groups. The baseline haemodynamic parameters like HR, SBP, DBP, MAP and SpO_2 were also found to be comparable between the two groups. However, the intraoperative fall in HR, SBP, DBP and MAP was significantly less in Group B as compared to Group A ($p < 0.0001$). Also the requirement of ephedrine was significantly less in Group B ($p < 0.0001$).

Table 2. Comparison of different parameters between Group A and Group B

Parameters	Group A	Group B	p-value
Demographic data:			
Age (years)	67.80±2.17	68.06±3.41	0.725
Weight (kg)	57.10±3.68	58.70±5.46	0.188
Height (cm)	156.26±2.56	155.40±2.58	0.200
Duration of surgery (min.)	75.30±3.12	73.66±2.67	0.033
Baseline:			
SBP (mm Hg)	127.13±7.65	126.60±9.03	0.807
DBP (mm Hg)	70.10±7.66	69.80±9.14	0.891
MAP (mm Hg)	88.93±5.83	88.46±7.00	0.778
HR (per min.)	77.56±4.54	80.73±6.49	0.032
SpO_2 (%)	99.40±0.77	99.50±0.73	0.607
Maximum change in BP (mm Hg):	19.86±3.43	12.90±2.23	<0.0001
SBP	13.40±2.91	6.06±1.61	<0.0001
DBP	16.46±2.66	8.90±1.56	<0.0001
MAP			
Dose of inj. ephedrine (mg)	2.70±1.03	1.00±0.54	<0.0001
Decrease in HR (per min.)	9.20±2.05	6.26±2.09	<0.0001

DISCUSSION

The visceral pain sensation from the prostate and bladder neck is transmitted by afferent parasympathetic nerve fibres derived mostly from the second and third sacral nerve roots travelling with the pelvic splanchnic nerves. Bladder sensation is supplied by sympathetic nerves of the hypogastric plexus, derived from nerve roots extending inferiorly from T_{11} – L_2. Regional anaesthesia resulting in a sensory level to T_{10} is required to eliminate the discomfort caused by bladder distension; however, slightly lower sensory levels often suffice for smaller lesions. In one study in which bladder pressure was monitored and kept low, anaesthetic levels to T_{12} or L_1 were adequate but midlumbar blocks to L_3 were not. Sensory levels above T_9 should not be sought because the pain on perforation of the prostatic capsule would not be present should perforation occur (Malhotra *et al*., 2015).

Spinal anaesthesia is the technique of choice for transurethral prostatic surgery provided that block height should not cross T_9 level. Toumiren in his study emphasised that concentration and volume of the local anaesthetics along with position during and after the injection are the major factors affecting the distribution of local anaesthetics (Touminan *et al*., 1991). In critrically ill patients, caudal anaesthesia has been used successfully for laser TURP because the use of continuous irrigation combined with minimal bleeding obviates the need

for copious irrigation and minimizes bladder distention. Other advantages of laser TURP include minimal bladder irrigating fluid absorption, minimized risk of TURP syndrome, potential to perform the procedure in anticoagulated patients and delivery in an outpatient setting (Malhotra *et al*., 2015). Various studies have already been done using 2 ml of 0.5% hyperbaric bupivacaine for TURP (Pitkanen *et al*., 1984; Ozmen *et al*., 2003) So, we in our study administered 2 ml of 0.5% hyperbaric bupivacaine in both study groups. In our study, we noted more haemodynamic changes in Group A (spinal group) than Group B (saddle group) and this was found to be statistically significant ($p < 0.0001$). Therefore, the requirement of inj. ephedrine was also significantly more in spinal group than in saddle group ($p < 0.0001$). Also the decrease in HR was significantly more in Group A as compared to Group B ($p < 0.0001$). Motor block as assessed by modified Bromage scale was 1 in Group B and 3 in Group A. Adequate surgical condition was achieved in both the groups. Because thulium laser was used for prostatic ablation, no complications (like TURP syndrome, circulatory overload, bladder perforation etc.) were encountered in any group. Bhattacharyya *et al* in their study comparing saddle block with subarachnoid block for TURP patients also observed that the incidence of hypotension and vasopressor requirement was significantly less in saddle group than spinal group ($p < 0.0001$).

They noted adequate surgical condition with no complications in both the groups and hence concluded that TURP can safely be performed under saddle block without hypotension and less vasopressor requirement (Bhattacharyya *et al.,* 2015). Gujrala *et al* performed saddle block with 1 ml of hyperbaric bupivacaine mixed with 50 mcg fentanyl in patients with aortic and mitral valve replacement for TURP without any deleterious cardiovascular effect (Gujrala *et al*., 2001). Ozmen *et al* compared epidural (75 mg hyperbaric bupivacaine + 50 mcg fentanyl), spinal (15 mg hyperbaric bupivacaine + 50 mcg fentanyl) and saddle (10 mg hyperbaric bupivacaine + 50 mcg fentanyl) anaesthesia during TURP. They observed that intraoperative SBP and SpO_2 remained more stable and sufficient surgical anaesthesia was achieved quickly without statistically significant motor block ($p < 0.001$) in saddle group (Pitkanen *et al*., 1984) Jindal *et al* also noted that fall in heart rate was more following spinal anaesthesia than epidural and general anaesthesia (21%, 17% and 14% respectively) (Jindal *et al*., 2007). Since we did the study in patients undergoing thulium laser prostatic ablation and it carries a documented minimal chance of TURP syndrome, circulatory overload and bleeding we did not take into account the serum sodium levels, absorption of irrigation fluid and intraoperative blood loss.

Conclusion

We conclude that saddle block provides adequate surgical conditions for transurethral thulium laser prostatic ablation with less chances of hypotension, circulatory overload and less requirement of vasopressor.

REFERENCES

Bhattacharyya, S., Bisai, S., Biswas, H., Tiwary, M.K., Mallik, S and Saha, S.M. 2015. Regional anesthesia in transurethral resection of prostate (TURP) surgery: A comparative study between saddle block and subarachnoid block. *Saudi J Anaesth*;9:268-71.

Gujrala, I., Vaddi, S., Devraj, R. 2001. Anaesthetic management of transurethral resection of prostate in a patient with aortic and mitral valve replacement. I*ndian J Anaesth.,* 55:435-37.

Jindal, P., Khurana, G., Sharma, C.U., Sharma, P.J., Chopra, G, Lal, S. 2007. Haemodynamic and central venous pressure changes in transurethral resection of prostate during general, spinal and epidural anaesthesia: A comparative study. *Indian J Anaesth*., 51:121-26.

Malhotra, V., Sudheendra, V., O'Hara, J., Malhotra, A. Anesthesia and the renal and genitourinary systems. In: Miller RD. editor. Miller's Anesthesia. 8th ed. Philadelphia: Churchill Livingstone; 2015. p. 2217-43.

McNamee, D.A., Parks, L., McClelland, A.M., Scott, S., Milligan, K.R., Ahlen, K., *et al*. 2001. Intrathecal ropivacaine for total hip arthroplasty: double-blind comparative study with isobaric 7.5 mg ml^{-1} and 10 mg ml^{-1} solutions. *Anesth Analg*;87:743-7.

Ozmen, S., Kosar, A., Soyupek, S., Armagan, A., Hoscan, M.B., Aydin, C. 2003. The selection of regional anesthesia in TURP operation. *Int Urol Nephrol.,* 35:507-12.

Pitkanen, M., Haapaniemi, L., Tuominen, M., Rosenberg, P.H. 1984. Influence of age on spinal anaesthesia with isobaric 0.5% bupivacaine. *Br J Anesth.,* 56:279-84.

Touminan, M. 1991. Bupivacaine spinal anesthesia. *Acta Anaesthesiol Scand*, 35:1.

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