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ORIGINAL ARTICLES

A STUDY OF EVALUATION OF SPINAL AND EPIDURAL ANAESTHESIA FOR DAY CARE SURGERY IN LOWER LIMB AND INGUINOSCROTAL REGION

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ABSTRACT

Day care surgery gradually increases in Bangladesh.Both regional and general anaesthesia can be used for this. Subarachnoid (Spinal) and epidural blocks are simple, cheap and easy to perform. This study was done to evaluate usefulness of spinal and epidural anaesthesia for day care surgery. 30 patients were randomized to either spinal(n=15) and epidural(n=15) group anaesthetized with either 0.5% hyperbaric 2.5 ml bupivacaine or 0.5% 20ml bupivacaine respectively. In spinal group 27 gauze quincke needle and in epidural group 18 gauge tuohy needle was used. Both the groups were compared for haemodynamic stability, side effects, complications, post anaesthesia discharge score (PADS), time taken to micturate,total duration of stay in hospital and patient satisfaction score for technique. It was observed that spinal anaesthesia had significantly early onset of anaesthesia and better muscle relaxation as compared to epidural block otherwise both groups were comparable for haemodynamic stability, side effects or complications. Although more patients in spinal group achieved PADS earlier (in 4 -8 hours) but statistically it was insignificant. Time to micturition (6.02± 0.55 v/s 6.03± 0.47 hours) and total duration of Stay (7.49± 1.36 v/s 8.03 ±1.33 hours) were comparable in both in groups. Both spinal and epidural anaesthesia can be used for day care surgery. Spinal anaesthesia with 27 gauge quincke needle and 2.5 ml 0.5% hyperbaric bupivacaine provides added advantage of early onset and complete relaxation.

INTRODUCTION

Recent advances in anaesthetic and surgical techniques have resulted in increasing number of surgical procedures being performed on day care basis. According to international terminology, day surgery or ambulatory surgery is the admission of selected patients to hospital for a planned, non emergency surgical procedure, returning home on the same day[1].

The requirements for anaesthesia for day care surgery are those of any anaesthetic agent having rapid, painless induction, profound analgesia and anaesthesia without depression of the cardiovascular and respiratory system and rapid smooth recovery[2].

There are so many benefits of ambulatory surgery like cost effectiveness, low morbidity and mortality, lower incidence of infection, lack of dependence on the availability of hospital beds and shorter surgical waiting lists[3].

Different option are available e.g general anaesthesia with newer short acting agent e.g propofol, isoflurane[4] and reginal anaesthetic techniques[5]. However, there are few potential disadvantages of regional anaesthesia which includes time taken for block, insertion and onset, needs active cooperation with patient and surgeon, risk of nerve damage, variable failure rate and urinary retention[5].

Avantages of regional anaesthesia over general anaesthesia include less cardivascular or respiratory complications, less initial post operative pain, patient's ability to communicate with the surgeon and reduced cost of drugs and equipment involved in regional anaesthesia [6].

Key words: Day care, spinal, Epidural, Bupivacaine.

The present study was done to evaluate usefulness of spinal and epidural anaesthesia for day care surgery in lower limb and inguinoscrotal region.

OBJECTIVES

1. To mention the side effects of procedure.
2. To explore the satisfaction of the patients.
3. To mention the mean total duration of stay in hospital in day case patients.
4. To elicit the mean anaesthesia onset time in minutes between two groups.

MATERIAL AND METHODS

In TMSS Medical College and Rafatullah Commmunity Hospital, 30 patients in the age group of 20-50 years of either sex, ASA grade I and II were included in the study. They were admitted in the hospital for surgical problems.

The patients were randomly divided into two groups of 15 each. Group A received spinal anaesthesia with 2.5 ml 0.5% hyperbaric bupivacaine in L3-L4 space and group B received epidural anaesthesia with 20 ml 0.5% isobaric bupivacaine in L3-L4 space.

Written and informed consent was taken after explaining the procedure to the patient prior to administration of block. A day before surgery, all patient were examined and throughly investigated.

Patients having bleeding diathesis, on any anticoagulant therapy,having history of drug abuse, morbid obese, surgery expected to have major fluid or blood loss, patients did not have any competent friend or relative to accompany or drive patient home after operation and look after him or her at home for the next 24-48 hours were excluded from study.

All the patients were advised to take Tab.Lorazepam (Lozicum) 1mg at night. Midazolum 3mg and atropine 600gm intravenous was administered before anaesthesia was started.

All the patients were preloaded with 10 ml/kg body weight of Hartmann solution over 15-20 minutes. In group A spinal anaesthesia was given with quincke needle No 27G and 2.5 ml of 0.5% hyperbaric bupivacaine was injected in subarachnoid space. In group B epidural anaesthesia was given with 18 gauge tuohy needle and 20 ml of 0.5% isobaric bupivacaine was given after the test dose.

After block gets fixed, the level of sensory block was checked with pin pick. Motor block was checked by modified Bromage score as used by Breen et al. Operation was started when full surgical anaesthesia had been attained. Pulse rate. blood pressure, respiratory rate and oxygen saturation of arterial pulsation (SpO_2) was recorded every five minutes upto 20 minutes then every ten minutes till the end of surgery.

If needed, supplementation of anaesthesia was given and if complete failure occured then those patients were excluded from this study. Diclofenac rectal suppository 100mg was given to all the patients in both the groups after surgical procedure was over. After the surgical procedure, all the vital signs (pulse rate, blood pressure, SpO_2 and respiratory rate were monitored. Any side effects like hypotension, bradycardia, tachycardia, nausea, vomiting, urinary retention, headache and backache were noted. Presence of complication such as dural pucture in case of epidural anaesthesia, total spinal and signs/symtoms of local anaesthetic toxicity were also noted.Any additional analgesic besides diclofenac suppository and any other drug like antiemetics, sedatives and vasopressors if given, were noted. After discharge, patient and doctor remained in contact with each other telephonically upto 48 hours.

Patient were dischared on the same day according to post anaesthesia discharge scoring system (PADS). Total duration of stay in the hospital was noted in each case. Then patient satisfaction was noted on a 5 point scale for next 24 hours and 48 hours telephonically which was already explained to all the patients preoperatively satisfaction score was 5-very satisfied, 4-satisfied, 3-Neutral, 2-issatisfied, 1-very dissatisfied.

RESULTS & DISCUSSION

There were no significant differences in age sex, height, body weight, ASA grade and duration of stay amongest two groups (Table1).

Table 1 : No significant difference between the groups.

Patient characteristics	Group-A Spinal(n=15)	Group-B Epidural(n=15)
Age in years	34.90–8.75	35–10.30
sex(M/F)	10/5	12/3
Height(cm)	162.36–5.10	162.26–5.30
Weight(kg)	60.20–7.66	60.30–8.02
ASA(I/II)	14/1	13/2
Duration of surgery in minutes	47.65–9.20	50.70–10.10

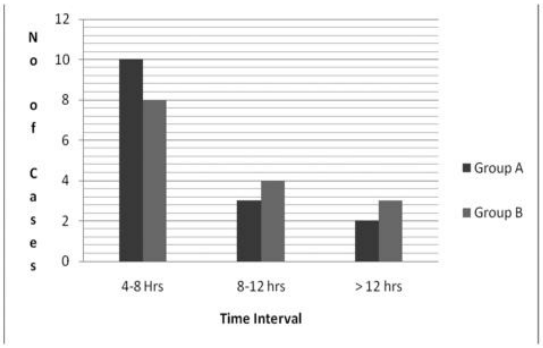
Table 2 : Highly significant

	Group-A, spinal (n=15)	Group-B, Epidural (n=15)
Mean anaesthesia onset time in minutes	9.oo–1.25	19.9–1.10
Mean modified bromage score	1.02–0.12	2.02–0.60

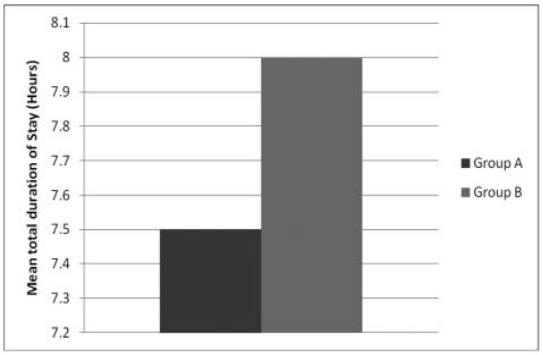
Table 3 : No significant side effects and complications.

Side effects	Group-A	%	Group-B	%
Total number of cases	15	100	15	100
Nausea and vomiting	01	6.66	01	6.66
Backache	00	00	00	00
Urinary retention	01	6.66	02	13.33
PDPH	01	6.66	00	00
No of cases having hypotension	04	26.66	02	13.33
No of cases requiring treatment with ephedrine	03	20	02	13.33
No of cases requiring treatment with atropine	01	6.66	01	6.66

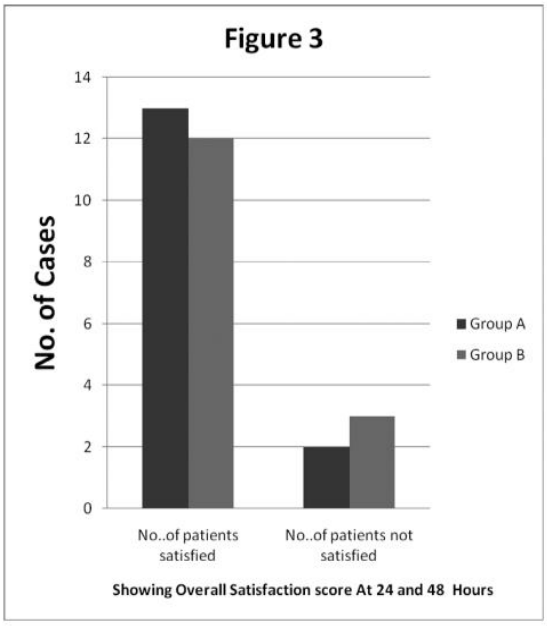
The anaesthesia onset time (as assessd by pin pick) was eary in spinal group as compared to epidural group (Table2). Both the groups were comparable regarding changes in pulse rate, systolic blood pressure, diastolic blood pressure, respiratory rate and SpO2 and there were few patients in both groups who developed hypotension and bradycardia intraoperatively (table 3) who promply responded to intravenous fluids and inj atropine and inj ephedrine and none if patients in either group had postoperative hypotension and bradycardia. The overall side effects are listed in table 3. Only 1 patient in spinal group and 2 patients in epidural group had urinary retention and in rest of the patients time taken to micturate was comparable.



There was no statistical difference between the groups regarding the time to achieve PAD score (Figure1) or in total duration of stay (figure2).



92% of patients in spinal group and 90% of patients in epidural group were discharged on the same day. 86.66% of patients in spinal group and 80% of patients in epidural group (figure3) were satisfied from technique used (Satisfaction score 4 or 5).



DISCUSSION

Day surgery is a cost effective, quality approach to surgery that has rapidly expanded in the recent years[1]. Modern anaesthetic drugs for ambulatory general anaesthesia are expensive,spinal and epidural are relatively simple techniques and the cost of drugs and equipment for regional anaesthesia are generally low. Cost of postoperarative medication for pain or nausea may also be reduced with regional anaesthesia.

We observed shorter of anaesthesia onset time in spinal anaesthesia (table2) as compared to epidural anaesthesiua. These results are in consistence with results shown by Davis et al[7]. They observed time to achieve maximum cephalad spread to be 13–7 min in spinal anaesthesia with 0.5% hyperbaric bupivacaine and 21–4 min in epidural anaesthesia with 0.5%20 ml bupivacaine.

Muscle relaxation as assessed by modified bromage score was more in spinal group as compared to epidural group (table2). Davis et al.[7] has similarly found mean bromage score of 1 after spinal anaesthesia vs 3.86 after epidural anaesthesia.

Both the groups remained haemodynamically stable after spinal anaesthesia and epidural anaesthesia.

There were only few side effects and complication in both the groups. Less nausea and vomiting is due to low level chosen because nausea and vomiting during regional anaesthesia are more common when sympathetic block extend above six thoracic segment[8].

Despond et al9 in their study, post dural puncture headache (PDPH) in young orthopaedic patients using 27 G needles, found incidence of 9.3% in both the groups. The incidence was more in woman than men. In our study only single patient in spinal group developed post dural puncture headache which responded adequately to intravenous fluids and oral analgesic. Lower incidence of post dural puncture headache is atributable to use of fine gauge (27 gauge) needle in our study. In our study maximum number of patients were males.

In spinal group 1 (6.66%) patients and in epidural group 2 (13.33%) patients had urinary Retention (i.e. full bladder on palpation and inability to micturate 8 hours postoperatively and associated with discomfort). Davis et al[7] in their study comparing spinal and epidural anaesthesia reported 7 (out of 32) patients in spinal group and 14 (out of 30) in epidural group who needed catheterization. Low incidence of urinary retention in our study as compared to this was due to lower dose of anaesthetic used in spinal group (12.5 mg) and use of single shot technique for epidural anaesthesia. Moreover their mean catheterization time was 4.2 –1.7 hours in spinal group and 4.7–2.3 hours in epidural group and we waited for at least 8 hours for patient to micturte spontaneously and before that catheterization was done only if indicated clinicaly.

Post anaesthesia discharge score (PADS) was noted after surgery and patients were dischared only when they achieved of total score=9. In spinal group 10 (66.66%) patients and in epidural group 8 (53.33%) patients achieved discharge criteria with in 4-8 hours while 03 (20%) patients in spinal group and 04 (26.66%) patient in epidural group achieved discharge criteria with in 8-12 hours but this difference from epidural group was statistically insignificant. 92% in spinal group and 90% patients in epidural group were discharged on the same day and both the groups were statistically insignificant for total duration of stay in hospital after surgery.

Kallio et al10 also reported that their patients were fit for discharge after 6.0 hours (5.2- 6.6 hours) and were discharged after 6.6 hours (5.9-9.0 hours) after 10mg of plain bupivacaine with spinal anaesthesia. They discharged 80% of their patients on the same day. Pittoni et al8 also discharged their 97% of patients from hospital on the same day after spinal anaesthesia with hyperbaric bupivacaine.

Gunal et al[11] in their study comparing spinal anaesthesia (with 20mg hyperbaric bupivacaine) and epidural anaesthesia (with 100mg 0.5% bupivacaine) for inguinal hernia repair found stand uptime (i.e time by which patient was able to ambulate after surgery) after epidural anaesthesia to be 9.4–1 hours and 5.7–1 hours after spinal anaesthesia but their average hospital stay after spinal anaesthesia was 1.8–0.1 days and 1.8–0.1 days after epidural anaesthesia and their greater number of patients in epidural groupb behaved as day case patients. They blamed post operative pain for delay in discharge. We atribute our shorter discharge times to low dose of bupivacaine used in our study (12.5 mg 0.5% hyperbaric bupivacaine) in spinal group and better post operative pain relief due to use of 100mg diclofenac rectal suppository at the end of procedure which provided painless post operative period and speeded discharge in our study.

Patient's satisfaction score as noted telephonically was comparable between two groups. Patients having score of 4 (satisfied) or 5 (very satisfied) were taken as satisfied for the purpose of statistical analysis and it was found that 98% of patients who received spinal anaesthesia and 96% of patients who received epidural anaesthesia were satisfied from technique used. Similarly in study by Pollok[12] comparing spinal and epidural anaesthesia for outpatient knee arthroscopy reported 92% of epidural group and 97% of spinal group were either extremely or very satisfied from their anaesthetic technique used.

COCLUSION

Spinal block produces an early and significantly more effective analgesia and more intense motor blockade than epidural block. The haemodynamic changes and side effects following the two techniques are similar with no significant difference. Two block are not different as per time taken to micturate and total duration of stay in hospital after the surgery. Thus both spinal and epidural anaesthesia can be satisfactory used for day care surgery. Spinal anaesthesia with 27 gauge quincke needl and 2.5ml 0.5% hyperbaric bupivacaine provides added advantage of early onset and complete relaxation.

REFERENCES

1. Castoro C. Ambulatory Surgery: Current Status and Future Trends. East andCentral African Journal of Surgery. 2006;11(1):67-68.
2. Goold JE. Anaesthesia for day-care surgery: a review. J R Soc Med.1983;76:415-420.
3. Miller RD, Fleisher LA, John RA, Young WL, Jeanine P, Kronish W, et al. Miller's Anaesthesia. ChurchillLivingstone. (Sixth ed) 2005:2590.
4. Warner MA, Sheilds SE, Chute CG. Major morbidity and mortality within 1 month of ambulatory surgery and anaesthesia. JAMA. 1993;270:1437-1441.
5. Korttila K. Regional anaesthesia for outpatients. Eur Soc Anaesthesiol. 1999:1-8.
6. Raeder JC. Regional anaesthesia in ambulatory surgery. Can J Anaesth. 2001;48:1-8.
7. Davis S, Erskine R, James MF. A comparison of spinal and epidural anaesthesia for hip arthroplasty. Can J Anaesth. 1992;39:551-554.
8. Pittoni G, Toffoletto F, Calcarella G, Zanette G, Giron GP. Spinal anaesthesia in outpatient knee surgery:22 gauze versus 25 gauze sprotte needle. Anesth Analg. 1995;81:73-79.
9. Despond O, Meuret P, Hemmings G. Postdural puncture headache after spinal anaesthesia in young orthopaedic outpatients using 27-gauze needles. Can J Anaesth. 1998;45(11):1106-1109.
10. Kallio H, Snall EVT, Kero MP, Rosenberg PH. A comparison of intrathecal plain solutions containing Ropivacaine 20 or 15 mg versus bupivacaine 10mg. Anesth Analg. 2004;99:713-717.
11. Gunal O, Arikan Y, Celikel N. Clinical assessment of spinal and epidural anaesthesia in inguinal hernia repair. J Anaesth Clin Pharmacol.2002;16(2):119-122.
12. Pollock JE, Mulroy MF, Bent E, Polissar NL. A comparison of two regional anaesthetic techniques for outpatient knee arthroscopy. Anesth Analg. 2003;97:397-401.