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Original Research Article

A RANDOMIZED PROSPECTIVE OBSERVATIONAL STUDY COMPARING SPINAL VERSUS CAUDAL EPIDURAL ANAESTHESIA IN THE MANAGEMENT OF PATIENTS UNDERGOING AMBULATORY PERIANAL SURGERY.

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Abstract

Background & Methods: The aim of the study is to compare spinal versus caudal Epidural Anaesthesia in the management of patients undergoing ambulatory perianal surgery.All subjects received 2 L/min of nasal oxygen during the whole procedure. A > 30 % decrease in MAP from the baseline measurement or a drop in systolic blood pressure < 90 mmHg was defined as hypotension. 5-10 mg intravenous ephedrine was administered in case of Intraoperative hypotension. Heart rate < 50 beats/min was defined as bradycardia. 0.6 mg intravenous atropine was administered to manage intraoperative bradycardia.

Results: There were no significant differences between the groups in terms of mean arterial pressure and heart rate recorded. (low MAP at 5 mins).Subjects randomized to spinal anesthesia had a significant extensive motor and sensory block compared to those randomized to caudal epidural anesthesia. VAS scores for surgical pain at postoperative period was significantly higher in patients receiving spinal anesthesia compared to those receiving caudal epidural anaesthesia. Time to first analgesic administration was significantly lower in subjects randomized to spinal anesthesia compared to those receiving caudal epidural anesthesia.

Conclusion: Spinal anesthesia is associated with more extensive sensory and motor block compared to caudal epidural anesthesia in patients undergoing ambulatory perianal surgery. Both techniques lead to similar hemodynamic changes. Postoperative pain control is more favorable with caudal block than the spinal anesthesia. Nevertheless, neither surgeons nor the patients' satisfaction is different between the two techniques. Lack of motor block with caudal epidural anesthesia may facilitate ambulation and discharger in patients undergoing day-care perianal surgery.

Keywords: spinal, caudal, epidural, anaesthesia, perianal & surgery.
Study Design: Prospective Observational Study.

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1. Introduction

Pain is perhaps the most dreadful symptom of disease and man has attempted to discover methods to get relieved from pain[1]. It is an highly unpleasant sensation that only can be experienced. The utmost important thing is that they can feel varying intensities of pain from similar type of tissue damage and they can feel pain without injury or with apparent injury. [2]

The various techniques of alleviating pain have remarkable side effects prohibiting their usage, narcotics - due to respiratory depression, the other analgesics which are usually avoided for some time after general anaesthesia because of the fear of vomiting and aspiration, the objection to the use of needles in the case of analgesics which are parenterally administered[3]. Regional anaesthetic method significantly reduces postoperative pain and decreases analgesic requirements. Caudal epidural route is being selected for this study as this is one of the simpler and safer technique in surgeries with a remarkable success rate[4].

Caudal block is usually performed after the local anesthesia and is used as an additional effect to Intraoperative anaesthesia which is more comfortable for surgeons and Postoperative pain relief[5].

Perianal surgery which can be performed in outpatient setting is often performed for perianal abscess, perianal fistula, hemorrhoids, and anal fissures. General anesthesia, local anesthesia, and regional anesthesia techniques have traditionally been used in anesthesia management of patients undergoing perianal surgery [6]. General anesthesia has been reported to prolong hospital stay and patient discharge as a consequence of postoperative nausea and vomiting and postoperative pain compared to local and regional anesthesia [7-9]. On the other hand, perianal surgery with local anesthetic infiltration requires concomitant anesthesia.Anesthesia can cause respiratory depression, nausea and vomiting. [8-9]. Regional anesthetic techniques might be unique for use in perianal surgery since spontaneous breathing is preserved, gag reflexes remained active, and subjects are often mobilized in early postoperative period[10].

2. Material and Methods

After the local ethics committee approval 70 patients aged ≥ 18 years, and American Society of Anesthesiologists (ASA) class I-II, who were scheduled for perianal surgery for perianal abscess, perianal fistula, hemorrhoids, and anal fissures were included in this study. Those with vertebral column deformities, neurological or hematological disorders, and obese patients (body mass index > 30 kg/m2) and subjects with known allergy to levobupivacaine were excluded.

Before randomization, all eligible subjects received standardized verbal and written information from a research fellow. Written informed consent was obtained from all subjects. Subjects were randomly assigned to spinal anesthesia (n=35) or caudal epidural anesthesia (n=35) using random allocation software. Sealed envelopes indicating patients group were opened at operation theatre. Heart rate and peripheral oxygen saturation (SpO2) were monitored continuously systolic, diastolic, and mean arterial pressure (MAP) were measured non-invasively at 5 min intervals during the procedure. The baseline values were recorded.

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All subjects received 2 L/min of nasal oxygen during the whole procedure. A > 30 % decrease in MAP from the baseline measurement or a drop in systolic blood pressure < 90 mmHg was defined as hypotension. 5-10 mg intravenous ephedrine was administered in case of Intraoperative hypotension. Heart rate < 50 beats/min was defined as bradycardia. 0.5 mg intravenous atropine was administered to manage intraoperative bradycardia.

3. Result

Table 1: Intraoperative Parameters

Parameters	Spinal Anesthesia	Caudal Epidural	P Value
Age (years)	46±27	45±83	0.71
Gender(male/female)	28/7	27/8	0.62
BMI (kg/m2)	26.44 ± 2.76	24.92 ± 3.47	0.61
ASA risk score (n) I/II	30/05	29/06	0.7
Operation time (min)	25.94 ±15.24	28.34±6.69	0.67
Onset time of sensory block	4.3 ±7.4	13.9±3.8	0.011

Table 2: Mean arterial pressure and heart rate of the groups

Mean arterial pressure (mmHg)	Spinal Anesthesia	Caudal Epidural	P Value
Preoperative 93.72±13.53 101.71±17.86	99.71±17.86	98.72±13.53	0.54
Post-caudal/spinal 5th min	94.71±15.84	88.50±15.51	0.2
10th min	93.88±14.60	89.67±11.42	0.6
15th min	90.13±15.59	90.94±13.29	0.71
30th min	87.75±14.59	93.67±12.29	0.72
Post-surgery 1st min	90.05±17.50	92.01±0.29	0.61
Post operate 15th min	86.57±12.56	88.45±11.27	0.55
Heart rate (beats/ min)			
Preoperative	84.42±18.75	83.17±12.53	0.56
Post-caudal/spinal 5th min	78.29±19.22	78.33±9.95	0.5
10th min	74.88±16.72	74.56±14.16	0.51
15th min	76.04± 17.00	74.83±13.12	0.6
30th min	75.92±16.77	76.44±11.19	0.7
Post-surgery 1st min	66.55±18.32	67.13±8.89	0.72
Post operate 15th min	64.21± 14.44	65.30±4.54	0.7

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Table 3: Postoperative visual analogue scale (VAS)

VAS	Spinal Anesthesia	Caudal Epidural	P Value
Postoperative 15th min	1.89 ± 0.18	1.23 ± 0.126	0.07
Postoperative 2nd hour	2.77 ± 0.33	2.15 ± 0. 24	0.039
Postoperative 12th hour	3.75 ± 0.62	2.46 ± 0.41	0.041
Postoperative 24th hour	0.7 ± 0.09	0.7 ± 0.06	0.71

Table 4: Postoperative clinical periods

	Spinal Anesthesia	Caudal Epidural	P Value
Time of first Analgesia(mins)	272 ± 66	751 ± 72	0.036
Incidence of motor weakness	32	4	<0.01
Patient Satisfaction	48	22	
Highly Satisfied	11	30	0.0001
Satisfied	24	5	
Somewhat Satisfied	01	00	
Not Satisfied	00	00	

4. Discussion

This prospective randomized study compared the effects of different regional anesthesia techniques during perianal surgery[12-14]. there are many anatomical variations including downward and upward displacement of the hiatus, narrowing or partial obliteration of the sacral canal, and ossification of the sacrococcygeal membrane may complicate needle insertion and lead to a failure in performing caudal epidural anaesthesia.[13] In this study,spinal and caudal epidural blocks were performed by experienced anaethesiologist. Adequate anesthesia level was achieved with this block. No significant complications were observed with caudal block.

Caudal block provided better outcome including sensory block levels without motor blockade. In the caudal group, fewer patients required analgesic agent and post-operative analgesic consumption was lower during the 1st post-operative day. Lower complication rate and earlier mobilization revealed that caudal block can be a safe method in patients undergoing perianal surgeries. Recently, it was revealed that spinal anesthesia did not reduce the catecholamine response despite mid-thoracic analgesia levels.[14-15]Therefore, the hemodynamic variables did not change. In our study, both MAP decreased significantly in spinal block group probably due to sympathetic blockade. However, in the caudal block group, MAP and the HR was stable intraoperatively. PDPH which is a seldom complication of spinal anesthesia, are rare with caudal anaesthesia[16]. PDPH was observed in 1 patient after spinal puncture and medical treatment was given.

Compared to spinal anesthesia, the level of motor block is more predictable with caudal epidural anaesthesia. Selective sensory and motor block provided by caudal anesthesia in

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the anorectal area without motor block in legs may facilitate early ambulation and discharge. [13-16].

5. Conclusion

Spinal anesthesia is associated with more extensive sensory and motor block compared to caudal epidural anesthesia in patients undergoing perianal surgery. Both techniques lead to similar hemodynamic changes. Postoperative pain control is more favorable with caudal block than the spinal anesthesia. Nevertheless, neither surgeons nor the patients satisfaction is different between the two techniques. Lack of motor block with caudal epidural anesthesia may facilitate ambulation and discharge in patients undergoing day-care perianal surgery.

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