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Original Research

A Comparative Randomised Study of Paravertebral Block versus Unilateral Spinal Anaesthesia for Non Complicated Inguinal Hernia Repair

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ABSTRACT:

Background: Paravertebral black is important in giving long-lasting unilateral anesthesia, hemodynamic constancy, rapid ambulation and long term relief from pain. Paravertebral block leads to ipsilateral segmental anesthesia Via injecting local an aesthetic over the roots of spinal nerve along the sides of the vertebral column. It is backed majorly for unilateral techniques like thoracotomy, breast operations, trauma to chest wall, hernia or renal operations. The present study was conducted with the aim to compare paravertebral block versus unilateral spinal anaesthesia for non complicated inguinal hernia repair. **Materials and methods:** The present prospective comparative study was conducted in the department of anaesthesia for a period of 2 years. The study included 40 male subjects between 20-60 years of age belonging to ASA grade I or II category for unilateral inguinal hernia repair that were randomly divided into 2 groups. Group P subjects received paravertebral block between T10 to L2 with bupivacaine and epinephrine and Group S subjects received spinal anaesthesia with hyperbaric bupivacaine. Premedication with midazolam and fentanyl was done amongst all the patients. The block was regarded as success if the start of pinprick discrimination began within 15 min or if the sensory blockade was obtained within a maximum time of 30 minutes. Sensory block assessment was done by pinprick from the level of T4 downwards . All the vital were noted at baseline, before initiation of bock and immediately after block and then every 3 minutes for initial 15 min and thereafter, every 10 minutes. Student t test was used for analysis and probability value of less than 0.05 was regarded as significant.
Results: The present study enrolled 00 patients with 40 patients in each group. The mean time to perform block in Group P was 18.53±1.99 and in Group S was 6.10±1.27. The difference was significant between the two groups. Nausea was observed amongst 4 patients of Group S. Nausea was observed amongst 6 patients of Group S. 30 patients of Group P and 10 of Group S had recovery room bypass. **Conclusion:** Paravertebral block is more efficacious compared to spinal anesthesia in inguinal hernia repair, as it provides better analgesia, hemodynamic stability and the time to reach discharge is considerably lower.

Key words: analgesia, anesthesia, discharge, Paravertebral

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INTRODUCTION

Inguinal herniorrhaphy is a frequent day care treatment that can be performed under general anesthesia, [1] peripheral neural blockade, regional anesthesialike-subarachnoid block [1-3] or paravertebral blocks . [4,5] Paravertebral black is important in giving long-lasting unilateral anesthesia, hemodynamicconstancy, rapid ambulation and long term relief from pain. Whereas, its usage as an onlyan aestheticprotocolis not completely utilized due totechnical difficulty encountered in inexperienced hands. [5-8]Paravertebral blockleads to ipsilateral segmental anesthesiaVia injecting localan aestheticover the roots of spinal nerve along the sides of the vertebral column. It is backed majorly for unilateral techniques like thoracotomy, breast operations, trauma to chest wall, hernia or renal operations. [9,10]Additionally, there are very some studies that compare its potential as an effective an aestheticmethodwith subarachnoid block.

[6,11]The present study was conducted with the aim to compare paravertebral block versus unilateral spinal anaesthesia for non complicated inguinal hernia repair.

MATERIALS AND METHODS

The present prospective comparative study was conducted in the department of anaesthesia for a period of 2 years. The study was approved by the institutional ethical board and all the subjects ere informed about the study and a written consent was obtained from them in their vernacular language. The study included 40 male subjects between 20-60 years of age belonging to ASA grade I or II category for unilateral inguinal hernia repair that were randomly divided into 2 groups. Group P subjects received paravertebral block between T10 to L2 with bupivacaine and epinephrine and Group S subjects received spinal anaesthesia with hyperbaric bupivacaine. Patients with uncontrolled systemic diseases, infection at the site of block, morbid obesity, history of allergy or substance abuse, metabolic disorder and mental ailments were excluded from the study. After 8 hours of fasting patients were taken to the operating room and standard monitoring of heart rate, blood pressure were initiated. Premedication with midazolam and fentanyl was done amongst all the patients.The block was regarded as success if the start of pinprick discrimination began within 15 min or if the sensory blockade was obtained within a maximum time of 30 minutes. Or else, it was regarded as 'block failure' and the subject was administered GA and excluded from the study. Motor block was studied at the end of thesurgery with a modified Bromage scale between 0–3 with 0 indicating full flexion and 3 indicatinginability to move legs.Group S patients were given spinal blockat the sitting Posture with midline approach using a 25 gauge needle at the level of L3-L4 or L2-L3 intervertebral space using a 12.5 mg of hyperbaric bupivacaine. Sensory blockassessment was done by pinprick from the level of T4 downwards . All the vital were noted at baseline, before initiation of bock and immediately after blockand then every 3 minutes forinitial 15 min and thereafter, every 10 minutes. All the variables like time to reach the discharge criteria, duration of post operative analgesia and number of rescue analgesics was noted postoperatively. Any complication encountered thereafter were noted in a tabulated form and analyzed using SPSS software. Student t test was used for analysis and probability value of less than 0.05 was regarded as significant.

RESULTS

The present study enrolled 80 patients with 40 patients in each group. The mean time to perform block in Group P was 18.53±1.99 and in Group S was 6.10±1.27. The difference was significant between the two groups. The mean Time to surgical anaesthesia in Group P was 17.25±1.62 and in Group S was 5.23±1.22. The difference was significant between the two groups. The mean Intravenous fluids administered in Group P was 1187.47±124.02 and in Group S was 1676.77±230.32. The difference was significant between the two groups. The mean Duration of post-operative analgesia in Group P was 384.57±38.26 and in Group S was 193.30±20.19. The difference was significant between the two groups. The mean Time to reach the discharge criteria in Group P was 167.50±30.39 and in Group S was 361.24±18.67. The difference was significant between the two groups. The mean Total rescue analgesics in Group P was 123.67±24.20 and in Group S was 206.77±25.47. The difference was significant between the two groups.

Table 2 illustrates the complications encountered in our study. Nausea was observed amongst 6 patients of Group S. 30 patients of Group P and 10 of Group S had recovery room bypass. Headache was seen amongst 2 patients of Group S and backache by 3 patients of Group S.

Table 1: Subjects distribution as per the features of block.

Variable	Group P (n=40)	Group S (n=40)	P value
Time to perform block (min)	18.53±1.99	6.10±1.27	<0.05
Time to surgical anaesthesia (min)	17.25±1.62	5.23±1.22	<0.05
Intravenous fluids (ml)	1187.47±124.02	1676.77±230.32	<0.05
Mephenteramine boluses (6 mg)	0	2	
Total fentanyl (mcg)	85.73±22.24	51±00	<0.05
Duration of post-operative analgesia (min)	384.57±38.26	193.30±20.19	<0.05
Time to reach the discharge criteria (min)	167.50±30.39	361.24±18.67	<0.05
Total rescue analgesics (tramadol in mg)	123.67±24.20	206.77±25.47	<0.05

Table 2: Complications encountered

Complications	Group P (n=40)	Group S (n=40)
Nausea	0	6
Urinary catheterization	0	0
Recovery room bypass	30	10
Headache	0	2
Backache	0	3

DISCUSSION

Repair of inguinal hernia can be conducted under general anesthesia, regional, or under local anesthetics.[12] Spinal anesthesia is a prevalentmethod for hernial repair, but it is not a perfect anesthetic method for ambulatory surgery regarding undesirable hemodynamic outcomes, adverse events, and delayed post operative discharge from hospital.[13,14] Recently, paravertebral block become popular method for hernial repair, in which local anesthetic are unilaterally given to the nerve roots and their associated dermatomes without superseding central nervous system, thus evading the adverse events of spinal block. [15]Repair of inguinal hernia is a morning surgery that requires rapid recovery and home readiness, apt and real postoperative analgesia, and deterrence of adverse events like postoperative nausea and vomiting. [16-18] The choice of technique is dependent on different factors like preference of the surgeon and anesthesiologist, the likelihood of the method, intraoperatively and postoperative pain optimizing methods, the complexity and duration of the treatment, morbidity, recovery duration, and the cost effectiveness. [12,19]As per the epidemiological data, general anesthesia was the preferred choiceamongst 60%–70%, central neuraxial blocks amongst 10%–20%, and local infiltration amongst 5%–10% of patients. [20]Paravertebral block have shown success, both as an anesthetic and analgesic method for repair. [21]Patient satisfaction seemed to be more with Group P that was in accordance with the few studies, [22,23] butcontrasting to others. [24]The time to surgical anesthesia onset was considerably more in Group P compared to Group S thta was like study outcomeby Bhattacharya et al. [6] and Akcaboy et al. [7] in the view of injections administered at different levels. Since post-operative analgesia is one of the frequent causes that delaysrapid ambulation and discharge, adding local anaesthetics or NSAIDS can improve post-operative pain, thus leading to an earlier discharge. Some thought disadvantages of paravertebral block are the requirement for sufficient training, the increased time needed for performing the block, the chances of failure of block and risk of pneumothorax. [5,8]

CONCLUSION

Paravertebral block is more efficacious compared to spinal anesthesia in inguinal hernia repair, as it provides better analgesia, hemodynamic stability and the time to reach discharge is considerably lower. The subjects also demonstrated lower incidence of side effects with paravertebral block.

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