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Original article:

Study of comparison of hernia block versus subarachnoid block for elective inguinal hernia repair

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Abstract:

Introduction: Inguinal hernia repair is commonest required surgery in old age patient which might be having cardiac, respiratory, hepatorenal problems. Spinal or epidural anesthesia is commonly used anaesthetic technique for inguinal hernia repair. However, these modes of anesthesia carry its own infrequent risks such as urinary retention, prolonged anesthetic effect, hypotension, and post dural puncture headache.

Material and methods: 100 patients admitted in surgery department of our institute for hernia repair surgery and fulfilling the inclusion criteria were included in the study. A prospective randomized clinical study has been conducted in patients undergoing unilateral hernia repair surgery.

All patients posted for unilateral hernia repair surgery and fulfilling the inclusion criteria were included in the study, which is total 100 patients. They were divided in two groups. Systemic random sampling was done. All odd number patients selected for hernia block and all even patients were selected for subarachnoid block and were allotted in group A and group B respectively.

Results and conclusion: Hernia block is a safe and effective alternative for elective unilateral hernia repair when compared with spinal anaesthesia; especially for elderly and high risk patients; as it provides good haemodynamic stability and prolonged duration of postoperative analgesia even though it takes longer time to perform and to achieve its maximum action.

Introduction:

Inguinal hernia repair is commonest required surgery in old age patient which might be having cardiac, respiratory, hepatorenal problems. Spinal or epidural anesthesia is commonly used anaesthetic technique for inguinal hernia repair. However, these modes of anesthesia carry its own infrequent risks such as urinary retention, prolonged anesthetic effect, hypotension, and post dural puncture headache.[1] Hernial Block which is one of the technique for inguinal hernia repair is supposed to be safe for most of the inguinal hernia repairs. It has no haemodynamic complications, early mobilization, early oral intake, avoiding urinary retention and shorter recovery time. Today in the era of Day Care Anaesthesia, hernia block could be really adventitious. It is also most suitable in elderly and in high risk patients with cardiac, respiratory or hepato-renal problems.[2]

Inguinal hernia is a frequently encountered surgical problem. It occurs in about 15% of adult males. It is three times more common in males and more common on right side. Inguinal hernia repair is one of the most commonly performed operations worldwide. Relatively newer technique is laparoscopic mesh repair. These

procedures can be performed under local, regional and general anaesthesia.[2]

Material and methods:

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Group A: 50 cases of inguinal hernia repair under hernia block with sedation.

Group B: 50 cases of inguinal hernia repair under subarachnoid block.

DRUG AND DOSES

Group A:40 ml 0.25% Bupivacaine was used for hernial block.

Group B: 3 to 3.5 ml of 0.5% Bupivacaine (hyperbaric) was used for subarachnoid block depending upon height, weight and age of the patient.

A) **Inclusion criteria**-

- Age group - 18 to 65 years
- Sex - Male

- Patients with unilateral hernia
- ASA grade - ASA I, ASA II, ASA III grade patients undergoing surgery of inguinal hernia repair.

B) **Exclusion criteria**-

- Patient refusal
- Sensitivity to local anaesthetics.
- Patients with bilateral hernia.
- Infection at the site of block
- Patient suffering from bleeding disorder.
- Patients with complicated hernias like- irreducibility, obstruction, strangulation.

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Results:

Table No. 1 : Onset of Block

	Group A Hernia Block (mean±SD) n = 50	**Group B SA (mean±SD) n = 50**	**P value**	**Significance**
Onset of Block (min.)	12.54±3.19	3.06±o.68	p<0.001	Significant

t statistic – 3.0514, p< 0.001

Table showing onset of block in both study groups. The onset of block was assessed from the time of injecting drugs for block in group A and following spinal in group B up to loss of sensations to pinprick. Analgesia to pinprick was assessed at the operative site.

Table shows, in Group A (Hernia Block) onset of block is 12.54±**3.19** min and in Group B (SA), 3.06 ± 0.68 min. The difference is found to be highly significant (p < 0.001).

Table no. 2 : Duration of Block

	Group A Hernia Block (mean±SD) n = 50	**Group B SA (mean±SD) n = 50**	**p value**	**Significance**
Duration of Block (hours)	5.51±0.98	2.31±0.58	p<0.001	Significant

t statistic – 5.6707, p < 0.001

Table showing duration of block in both study groups. The duration of block was assessed from the time of injecting drugs for block in group A and following spinal in group B up to feeling pain sensations.

Table shows, in Group A (Hernia Block) duration of block is 5.51**±0.98 hrs** and in Group B (SA) 2.31 ± 0.58 hrs .The difference is found to be significant (p < 0.001).

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Table no. 3 : Quality of Blockade

Quality of blockade	Group A Hernia Block (mean±SD) n = 50	Group B SA (mean±SD) n = 50	P value
Poor	0	0	P<0.001 Significant Chi-square test
Fair	9	3	
Good	30	5	
Excellent	11	42	
Total	50	50	

The quality of blockade is comparable in both the groups. The quality of block in hernia block good in 60%, fair in 18% and excellent in 22% and in spinal block good in 10%, fair in 6% and excellent in 84% in spinal group. The difference is bound to highly significant ($p < 0.001$).

Discussion:

For hernia repair surgery spinal anaesthesia, epidural anaesthesia and general anaesthesia are given routinely. However in case of very high risk patients, these methods are associated with increased rate of complications like hypotension. Hernial block can be used in very high risk patients or in cases were sympathectomy accompanying neuraxial block is contraindicated.

In our institute, 100 patients posted for elective inguinal hernia repair surgery, ASA group I, II, III, in the age group of 18 and above, were included in this study.

All patients from both the groups were explained regarding the procedure. After taking written informed consent, anaesthetic procedure was carried out in the operation theatre under all aseptic precautions and patients were monitored intra and postoperatively.It was inferred that onset of analgesia was faster in spinal anaesthesia compared to Hernial Block group. This result can be explained by the fact that local anesthetic solution must cross different anatomical barriers such as fibrous tissue and nerve sheaths before reaching the site of action in peripheral nerves. In spinal anaesthesia as there is direct contact with the nerve by the drug in subarachnoid space, the onset is quick. Thus in hernia block drug diffuses in the larger space requiring longer time for onset of action. An injection site corresponds to a common distribution pattern: the diffusion space. It depends on the surrounding fatty and connective tissues. Fascial layers constitute a frequent barrier to LA diffusion. Each injection site in a diffusion area corresponds to a preferential distribution of LA towards less resistant regions.[3]

Gurkan I, Utebey G, Ozlu O.[3] Comparison of ilioinguinal- iliohypogastric nerve block versus spina aneshtesia techniques for single sided inguinal herniorrhaphy. In this study Twenty-five ASA I-III patients in Group S

received 15 mg 0.5% hyperbaric bupivacaine intrathecally, and25 ASA I-III patients in Group I received IHNB with 20 mL 0.5% plain bupivacaine. Mean block application duration and time to block termination was found to longer in Group I with respect to Group S ($p<0.001$. The time to duration block termination (4.37±65.2 vs 1.94±102.5 min) was found to longer in Group I with respect to Group S ($p<0.001$).In our study duration of hernia block is longer than spinal block which is similar and comparable to this study.

The quality of blockade is comparable in both the groups. The quality of block good in hernia block and quality of block excellent in spinal group. In spinal anaesthesia as there is direct contact with the nerve by the drug in subarachnoid space, the quality of block was excellent in spinal group. In hernia block, drug diffuses in the larger tissue space so quality of block was good in majority of cases hernia block group.[4,5]

Shivakumar K.P, Mahantesha J Sharma, Arunkumar Ajjappa[6] field block for inguinal hernia repair- a clinical study present clinical study was conducted to evaluate advantages of field block for inguinal hernia repair, with respect to duration and quality of analgesia, haemodynamic stability, and speed of recovery by using 1% lidocaine with adrenaline. In the present study, the quality of analgesia was excellent in 72% of cases, good in 16%, fair in 8% and poor in 4%. The results of this study are similar and comparable to our study.

Türker et al[7] compared epidural anaesthesia with psoas compartmental block. In this study, epidural group were given general anesthesia plus epidural block with 15 ml of 0.5% bupivacaine and Psoas compartmental block group were given general anesthesia plus psoas compartment block with 30 ml of 0.5% bupivacaine. In all above mentioned studies, cases with inadequate anaesthesia required general anaesthetic agents, sedatives or opioids. In our study by giving bupivacaine 5cc in neck of sac we overcame inadequate anaesthesia and avoided respiratory depressant drugs and general anaesthesia.

Conclusion:

Hernia block is a safe and effective alternative for elective unilateral hernia repair when compared with spinal anaesthesia; especially for elderly and high risk patients; as it provides good haemodynamic stability and prolonged duration of postoperative analgesia even though it takes longer time to perform and to achieve its maximum action.

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