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Comparison of local versus spinal anesthesia in long standing open inguinal hernia repair

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ABSTRACT

Background: Hernias are among the oldest known afflictions of human kind and elective inguinal hernia repair is commonly performed operation in general surgery. General or spinal anesthesia are still the most common types of anesthesia being used in India. Studies comparing the recovery profiles of local, general and regional anesthesia show that local anesthesia is ideal for day care surgery.

Methods: This study had included 60 cases of male single sided reducible indirect long standing (more than 5 years) inguinal hernia. Patients were divided randomly into two groups of 30 each named Group A and Group B. Patients in group A were subjected to inguinal hernia mesh repair under local anesthesia and patients in group B were subjected to inguinal hernia mesh repair under spinal anesthesia. Tension free Lichtenstein hernioplasty was done in both groups.

Results: Time taken in local anesthesia is higher than spinal anesthesia. Intraoperative pain is higher in local anesthesia than spinal anesthesia. There is no difference on post-operative pain. Post-operative complications are more in spinal anesthesia group.

Conclusions: Patient selection is very important and patient with long history should be avoided under local anesthesia.

Keywords: Hernia, Local anesthesia, Spinal anesthesia

INTRODUCTION

Hernias are among the oldest known afflictions of human kind and elective inguinal hernia repair is commonly performed operation in general surgery. Inguinal hernia repair can be performed by using a variety of anesthetic techniques such as, general anesthesia, regional anesthesia in the form of spinal or epidural anesthesia, paravertebral block and local anaesthesia. Patient safety should be the paramount importance in choosing the type of anesthesia. General or spinal anesthesia is still the most common types of anesthesia being used in India. Studies comparing the recovery profiles of local, general

and regional anesthesia show that local anesthesia is ideal for day care surgery.³ Local anesthesia provides increased safety for patients, better postoperative pain control, shorter recovery period with reduced duration of hospital stay and reduced cost, hence local anesthesia is acceptable and safe technique for inguinal hernia surgery.⁴

Aim of the study was to compare the safety, effectiveness, surgical ease, post-operative complications and hospital stay in long standing inguinal hernia surgery done under local anesthesia versus spinal anesthesia.

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METHODS

The prospective study was conducted in Sarojini Naidu Medical College Agra for a period of eighteen months from1st January 2016 to 30th June 2017. This study had included 60 cases of male single sided reducible indirect long standing (more than 5 years) inguinal hernia. After admission to the hospital detailed history was taken and thorough clinical examination was done. Routine investigations like hemoglobin, total leucocytes count, differential leucocytes count, random blood sugar, renal function tests, chest X-ray and electrocardiogram were done in every case. Informed written consent was taken in every case. Patients were divided randomly into two groups of 30 each named Group A and Group B. Patients in group A were subjected to inguinal hernia mesh repair under local anesthesia and patients in group B were subjected to inguinal hernia mesh repair under spinal anesthesia.

In group A patients, anesthetic solution was 2% xylocaine with adrenaline 10 ml diluted with distal water to make it 40 ml. A skin weal was raised 2.5 cm from the iliac crest along the line joining anterior superior iliac spine to umbilicus. A needle was then passed through this to strike the inner surface of ileum just below the crest. 10 ml of the solution was deposited as needle was slowly withdrawn. The injection was repeated with the needle reinserted at a slightly steeper angle and 5 ml of solution was deposited. Second point of block was 2cm above the mid inguinal point. The needle was inserted perpendicularly until it pierced the aponeurosis of external oblique.10 ml of solution was deposited at this depth and 5 ml as needle was withdrawn over 2 cm. Next a weal was raised over the pubic tubercle and subperiosteal injection of 3 cc of solution was made. The block was completed by a subcutaneous infiltration along the line of surgical incision and 10 ml of solution was deposited.

In group B patients, regional anesthesia in the form of spinal was given by using 5 % xylocaine. Under all aseptic conditions subarachnoid puncture was performed using a mid-line lumbar approach with patient in sitting or lateral position. Using 26-gauge spinal needle in L3-L4 interspace 2 cc of 5 % xylocaine was injected in subarachnoid space after getting free flow of cerebrospinal fluid (CSF). Patient was turned supine. In case of inadequate or no effect local or spinal anesthesia was converted into general anesthesia and patient was not included in the study.

Tension free Lichtenstein hernioplasty was done in both groups Material used for hernioplasty was Polypropylene Prosthetic mesh with dimensions of 15x7.5cm. Post-operative analgesia was injection Diclofenac twice daily. After the surgery following observations were made: - Any pain or discomfort to the patient during surgery under local anesthesia, duration of surgery, post-operative Pain at the incision site, urinary retention, wound

hematoma, sepsis, headache, testicular pain/swelling, hospital stay. Follow up of the patients were carried out on 3rd and 7th postoperative days as outpatient. In follow, up patients were assessed for any wound sepsis, persistent pain at incisional site and any other complication. All the data collected and analyzed.

RESULTS

Mean age in group A is 59.6 years and 61.4 in group B. In group A, 23 patients had inguinal hernia on right side and 7 patients had hernia on left side. In group B, 21 patients had inguinal hernia on right side and 9 patients had hernia on left side. The time taken to complete operation under local anaesthesia (mean 72 minutes) is more than time taken in spinal anaesthesia (mean 51.5 minutes).

Table 1: Duration of surgery.

Duration of surgery	Local anesthesia (30)	Spinal anesthesia (30)
<15 minutes	0	1
16-30 minutes	2	7
31-45 minutes	4	9
46-60 minutes	4	7
61-75 minutes	7	3
76-90 minutes	13	3

Table 2: Intraoperative pain.

Intraoperative	Local	Spinal
pain (VAS)	anesthesia (30)	anesthesia (30)
None (VAS=0)	6	28
Mild (VAS 1-3)	8	1
Moderate (VAS 4-6)	12	1
Severe (VAS>=7)	4	0

Table 3: Post-operative pain using visual analog scale.

Time after surgery	Group A	Group B
12 hours	4.32	4.43
24 hours	3.43	3.68
48 hours	1.26	1.64

Table 4: Complications.

Post-operative complications	Group A	Group B
Wound hematoma	0	0
SSI	2	3
Testicular swelling	2	2
Urinary retention	0	4
Headache	0	2
Respiratory problem	0	0
DVT	0	0
Recurrence (at 7 post op day)	0	0
Pain after 7 days	1	2

Intraoperative pain was assessed by using Visual Analog Scale (VAS). In spinal anesthesia 28 cases had no pain (VAS = 0) during surgery while mild and moderate pain was experienced by one each. In local anesthesia 6 cases had no pain (VAS =0), 8 cases had mild pain (VAS 1-3), 12 cases had moderate pain (VAS 4-6) and 4 had severe pain (VAS>=7). Post operatively cases were given Injection Diclofenac 75 milligram intramuscularly 12 hourly. Post operatively pain was assessed 12 hours, 24 hours and 48 hours after surgery using VAS scale. No difference was found in post-operative Postoperative complications were also assessed and urinary retention and headache was more in spinal anesthesia group than local anesthesia group.

DISCUSSION

In the present study the mean age was 59.6 years in group A and 61.⁴ years in group B. All the patients were male. The study conducted by Kark AE et al showed that 97% of the patients operated were males and ranged between 15-92 years of age.⁵ The study conducted by Song et al included 50 patients with mean age of patients 42±18 years in the group operated under local anaesthesia and 39±14 years in the group operated under spinal anaesthesia. 43 patients were males and 7 were females.⁶ Several other studies like by Ryan et al, Young DV2 (1987), O' Dwyer et al and Erdem E also showed similar results.⁷⁻⁹ Age of patients in our study was more as we have taken long standing cases.

In present study 23 patients in group A and 21 patients in group B had right sided inguinal hernia. Left sided hernia was present in 7 patients in group A and 9 in group B. The results of present study were comparable to the studies8 conducted by others. Right side of inguinal hernia is more common due to the later descent of right testis and high incidence of patent processus vaginalis on the right side.⁵ In present study the mean operative time was 72 minutes in group A and 51.5 minutes in group B. The results of our study were different to the other studies conducted by Song et al, Job C et al and Young DV as in local anesthesia planes got distorted.^{2,6,10}

Pain is typically regarded as primary indicator of tissue damage. The perception of pain is supported by sensory neurons (nociceptors) and neural afferent pathways. In the present study group, a has more pain intraoperatively than group B. The study conducted by Earle AS on 46 patients showed 23 (50%) patients experienced slight pain and remaining 23 (50%) felt no pain during inguinal hernia repair under local anesthesia. 11 Pain during operation is felt in case of large hernia operated under local anesthesia, if dissection is difficult due to adhesions of the sac. 12 If local anesthesia is given by experienced surgeon, it is well accepted by the patients.5 Studies done by Wellword et al, Amid PK et al, Song D et al demonstrated that conversion of local anesthesia to general anesthesia was because of pain during dissection or reposition of the hernia sac. 6,13,14

In the present study, post-operative pain was recorded at 12 hours, 24 hours and 48 hours after operation by using visual analog scale. The mean pain visual analog score is slightly lower in group A than in group B (Table 3). The results of our study were comparable to other studies conducted by Song D et al showed that VAS scores lower in patients operated under local anesthesia compared to patients operated under spinal anesthesia.⁶

The inguinal hernia repair is a common surgery with almost no mortality. The emphasis is on low rates of recurrence and other complications like wound hematoma, SSI, testicular pain/ swelling, urinary retention, headache and respiratory complications. The choice of anesthesia and surgical technique depend on low complication rates. No patients in either group had wound hematoma. There was no case of mesh infection. The study conducted by Shulman AG et al reported no cases of mesh infection. The study done by Kark AE et al reported no case of mortality, over all sepsis rate was 0.9%. The study conducted by Gianetta E et al showed that inguinal hernia repair in elderly under local anesthesia had 3 (1%) wound infections. The results of our study were comparable to the other studies. The

Accumulated data from other hernia literature suggest that incidence of urinary retention is lowest with local anesthesia compared with both regional and spinal anesthesia is comparable with present study. In the present study we found that Lichtenstein's hernioplasty under local anaesthesia is safe, simple, effective, economical, with no mortality but had long intraoperative period and more intraoperative pain. This was due to case selection of long duration of hernia.

CONCLUSION

The Lichtenstein tension-free hernioplasty under local anaesthesia has opened a new era in hernia surgery without the risk of serious morbidity. Patient selection is very important and patient with long history should be avoided under local anaesthesia.

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institutional ethics committee

REFERENCES

- 1. Rutkow IM, Robbins AW. Demographic classificatory and socio-economic aspects of hernia repair in the united states. Surg Clin N Am. 1993;73:413.
- 2. Young DV. Comparison of local, spinal and general anaesthesia for inguinal hernia repair. Am J Surg. 1987;153:560-3.
- 3. Amado WJ. Anaesthesia for groin hernia surgery. Surg Clin N Am. 2003;83:1065-77.

- 4. Callesen T, Bech K, Kehlet H. One thousand consecutive groin hernia repairs under unmonitored local anaesthesia. Anesth Analg. 2001;93:1373-6.
- 5. Kark AE, Kurzer MN, Belsham PA. Three thousand one hundred seventy five primary inguinal hernia repairs advantages of ambulatory open mesh repair using local anaesthesia. Am J Coll Surg. 1998;186:1541-7.
- 6. Song D, Greilich NB, White PF, Wateha MF, Tongier WK. Recovery profiles and costs of anaesthesia for outpatient unilateral inguinal herniorrhaphy. Anesth Analg. 2000;91:876-81.
- 7. Ryan JA, Adye BA, Jolly PC, Murloy MF. Outpatient inguinal herniorrhaphy with both regional and local anaesthesia. Am J Surg. 1984;148:313-6.
- 8. O'Dwyer PJ, Serpell MG, Millar K, Paterson C, Young DV, Hair A, et al. Local or general anaesthesia for open tension-free hernioplasty: A randomized trial. Ann Surg. 2002;237:574-9.
- 9. Erdem E. comparison of local and spinal anaesthesia techniques in inguinal hernia repair, Denizli turkey: Pamukkale University School of Medicine. 2003;10(3):128-32.
- 10. Job CA, Fernandez MA, Dorph DJ, Betcher AM. Inguinal hernia repair; Comparison of local, epidural, and general anesthesia. NY State J Med. 1979;79(11):1730-3.

- 11. Earle AS. Local anaesthesia in inguinal hernia repair. Am J Surg. 1960;100:782.
- 12. Jolon AM Meyer-bech D, Rosa AD, MarcosAG, Inguinal hernia repair under local anaesthesia, evalution of intraoperative discomfort. Br J Surg. 1995;82:100-2.
- 13. Wellwood J, Sculpher MJ, Stocker D, Nicholls GJ, Geddes C, Singh R, et al. Randomised controlled trial of laparoscopic vs open mesh repair for inguinal hernia. Outcome and pain. Br Med J. 1998;317:103-10.
- 14. Amid PK, Lichenstein IL. Long term results in current status of the Lichtenstein open tension-free hernioplasty. Hernia. 1998;2:89-94.
- 15. Amid PK, Shulman AG, Lichenstein IL. Local anaesthesia for inguinal hernia repair step by step procedure. Ann Surg. 1994;220:735-7.
- 16. Gianetta E, Decian F, Cuneo S, Friedman D, Vitale B, Marinari G, et al. Hernia repair in elderly patients. Br J Surg. 1997;84:983-5.

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