

Original article

**Assessment of Efficacy of Local and General Anaesthesia in Patients
Undergoing Inguinal Hernia Repair: A Comparative Study**

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Abstract

Background: A higher risk of irreducibility or incarceration is associated in patients with inguinal hernias. It may result in strangulation and obstruction; however, unlike with femoral hernias, strangulation is rare. Surgical treatment of the inguinal hernias is one of the most common surgical treatment protocol followed throughout the world and is carried out both by the means of open and laparoscopic surgery. In the past literature, it has been quoted that local anaesthesia (LA) provides greater safety to the patients undergoing inguinal hernia repair (IHR) in comparison to general anaesthesia (GA). Hence; we conducted the present study to compare the efficacy and effectiveness of LA and GA in patients undergoing IHR.

Material & methods: The present study included retrospective assessment of records of patients undergoing IHR. All the details of the patients including the demographic details, ASA grade, type of technique used for repair and complications encountered were recorded. Post-surgical analgesia, day-case rates, and early complications including wound infection, haematoma, urinary retention, and unplanned re-admissions were the early outcome measures that were recorded. All the patients were divided into two study groups based on the type of the anaesthesia delivered. First group comprised of patients in whom LA was given while second comprised of patients in which GA was used. Complete collection of the post-operative data records was done.

Results: The mean age of the patients under LA group and GA group were 61.5 years and 59.1 years respectively. 90 percent of the patients in LA group were males while in the GA group, 92 percent of the patients were males. Direct hernia was present in 50 and 40 subjects of LA group and GA group respectively. Wound infection was seen in 2 and 1 percent of the patients under LA and GA respectively. Non-significant results were obtained while comparing the post-operative complications in patients in the LA group and GA group.

Conclusion: LA can be used with equal efficacy in comparison to GA for performing IHR.

Key words: General Anaesthesia; Inguinal Hernia Repair; Local Anaesthesia

INTRODUCTION

Inguinal hernias present with a lump in the groin that vanishes with the application of the minimal pressure or when the patient is lying down. With the increase in the activity, the severity of the cases increases from mild to moderate to severe.¹ A higher risk of irreducibility or incarceration is associated in patients with inguinal hernias. It may result in strangulation and obstruction; however, unlike with femoral hernias, strangulation is rare. Surgical treatment of the Inguinal hernias is one of the most common surgical treatment protocol followed throughout the world and is carried out both by the means of open and laparoscopic surgery.²

Several randomized trials have compared both techniques but have not elucidated the place of laparoscopic inguinal hernia repair. Patients with inguinal hernia treated with laparoscopic repair have less postoperative pain and fewer wound infections and return to normal activity and work sooner. However, in comparison to the other technique, open repair is cost effective and comparatively easier to perform.³

The most important outcome after inguinal hernia repair (IHR), however, is recurrence rate. Mode of anaesthesia in the patients undergoing IHR is topic of great interest.⁴ In the past literature, it has been quoted that local anaesthesia (LA) provides greater safety to the patients undergoing IHR in comparison to general anaesthesia (GA).⁵ At the same time, GA is also known to provide certain advantages over LA in same group of patients including better post-operative pain control and cost-effectiveness.⁶ Hence; we conducted the present study to compare the efficacy and effectiveness of LA and GA in patients undergoing IHR.

MATERIAL & METHODS

The present study was conducted in the department of anaesthesia and department of general surgery of

Dayanand Medical College & Hospital, Ludhiana, Punjab (India) and included retrospective assessment of records of patients undergoing IHR over a period of 2 years. All the details of the patients including the demographic details, ASA grade, type of technique used for repair and complications encountered were recorded. Post-surgical analgesia, day-case rates, and early complications including wound infection, haematoma, urinary retention, and unplanned re-admissions were the early outcome measures that were recorded. For the measurement of long term outcome measures, chronic groin pain and recurrence were recorded. All the patients were divided into two study groups based on the type of the anaesthesia delivered. First group comprised of patients in whom LA was given while second comprised of patients in which GA was used. Data collection of total of 250 patients was taken for the present study. Lichtenstein repair, PHS repair and mesh plug repair with onlay mesh were surgical techniques employed.⁷ Complete collection of the post-operative data records was done. All the results were analyzed by SPSS software. Chi-square test and student t test were used for the assessment of level of significance.

RESULTS

The mean age of the patients of the LA group and GA group were 61.5 and 59.1 years respectively (Table 1, Graph 1). Non-significant results were obtained while comparing the mean age of the patients in the two study groups. In the LA group, 100 patients were males while 25 were females. In the GA group, 105 patients were males while 20 were females. Direct and indirect hernia was observed in the 50 and 75 patients of the LA group respectively. In the GA group, direct and indirect hernia was present in 40 and 65 patients respectively. Primary and recurrent hernia was

present in 118 and 7 patients of the LA group while in the GA group, 112 and 13 patients were having primary and recurrent hernia respectively. In the LA group, haematoma and wound infection was observed in 7 and 3 patients respectively while in the GA group, haematoma formation and wound infection was observed in 9 and 4 patients respectively. Urinary infection and recurrence was observed in 2 and 4 patients of the LA group and 4 and 5 patients of the GA group respectively. Post-operative hydrocoele was present in 2 and 3 patients of the LA and GA group respectively. Non-significant results were obtained while comparing the various post-operative complications in the patients of the two study groups (Table 2, Graph 2).

DISCUSSION

For the repair of inguinal hernia, Lichtenstein repair has been the mainstay for the last couple of decades.⁸ Multifactorial outcomes are associated with Lichtenstein repair. LA and GA are both available as the mode of anaesthesia in patients undergoing IHR. In addition, a local anaesthetic inguinal hernia repair is technically more demanding and may influence the long-term recurrence rates.^{9,10} With adequate supervision, results comparable to consultants have been achieved when operated by trainees for colorectal surgery, upper gastrointestinal surgery and pancreatic surgery.¹¹ Hence; we conducted the present study to compare the efficacy and effectiveness of LA and GA in patients undergoing IHR.

In the present study, we observed that in comparison to the GA, similar results occur with LA in patients undergoing IHR (p-value >0.05) (Table 2). Haematoma formation and recurrence were the most commonly encountered complications in both the study groups. Non-significant results were obtained while comparing the occurrence of post-surgical

complications in between patients under GA and patients under LA. Sanjay et al retrospectively analyzed all inguinal hernia repairs performed in one district general hospital over a 9-year period was performed. The outcome measures were type of anaesthesia used, early and late postoperative complications and recurrence. A postal questionnaire survey was conducted to obtain satisfaction rates. A total of 577 hernia repairs were performed during the study period. Of these, 369 repairs were performed under LA and 208 under GA. Day-case repair were achieved in 70% of cases. The day-case rates were significantly higher under LA compared to GA. Patients operated under LA had lower postoperative analgesic requirements and lower incidence of urinary retention compared with the GA group. There were 7 (1.2%) recurrences at a median follow-up of 5.1 years. Postal questionnaire revealed higher satisfaction rates with LA compared to GA repair. From the results, they concluded that the use of LA results in increased day-case rates, lesser postoperative analgesic requirements and fewer micturition problems.⁷

O'Dwyer et al compared patient outcome following repair of a primary groin hernia under LA or GA in a randomized clinical trial. Two hundred seventy-nine patients were randomized to LA or GA hernia repair; 276 of these had an operation, with 138 participants in each group. At 6, 24, and 72 hours postoperatively there were no differences in vigilance or divided attention between the groups. Similarly, memory, sustained attention, and cognitive function were not impaired in either group. Although physical activity was significantly impaired at 24 hours, this and return to usual social activities were similar in both groups. While patients in the LA group had significantly less pain on moving, at 6 hours they were less likely to

recommend the same operation to someone else. GA hernia repair cost 4% more than the same operation under LA. From the results, they concluded that there are no major differences in patient recovery after LA or GA hernia repair.¹² Sanjay et al retrospectively reviewed all Prolene Hernia System repairs over a 5-year period was performed. The outcome measures were type of anaesthesia used, early and late complications, recurrence and patient satisfaction. 100 repairs were analysed. Seventy repairs were performed under local anaesthesia and 30 under general anaesthesia. The number of patients with a body mass index >30 were 17 and 8, respectively, in the local- and general-anaesthesia groups ($p = 0.7$). Day cases were higher in the local-anaesthesia group. From the results, they concluded that both anaesthetic techniques are associated with good outcomes and excellent patient satisfaction.¹³ Nordin et al evaluated patient acceptance, satisfaction, and quality of life with these three anaesthetic alternatives in hernia surgery. One hundred and thirty-eight patients at three hospitals were randomised to one of three groups, GA, Regional anaesthesia (RA), or LA. Upon discharge, they were asked to complete a specially designed questionnaire with items focusing on pain, discomfort, recovery, and overall satisfaction with the anaesthetic method used. The global quality-of-life instrument EuroQol was used for estimation of health perceived. Significantly more patients in the LA group than in the RA group felt pain during surgery. This pain was characterised as light or moderate and for the majority of LA patients was felt during infiltration of the anaesthetic agent. Postoperatively, patients in the LA group first felt pain significantly later than patients in the other two groups and significantly fewer LA patients consumed analgesics more than three times during

the first postoperative day. The results concerning nausea, vomiting, and time to first meal all favour LA. No difference was found among the three groups concerning overall satisfaction and quality of life. In a general surgical setting, they found LA to be well tolerated and associated with significant advantages compared to GA and RA.¹⁴

CONCLUSION

From the above results, the authors concluded that LA can be used with equal efficacy for performing IHR. However, future studies are recommended for standardizing the use of LA in comparison with GA such patients.

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Table 1: Correlation of the demographic details of the patients in both the groups

Parameter		LA group	GA group	p-value
Mean age (years)		61.5	59.1	0.52
Gender	Males	100	105	0.71
	Females	25	20	
Hernia type	Direct	50	40	0.24
	Indirect	75	65	
	Both	15	25	
Hernia	Primary	118	112	0.01*
	Recurrent	7	13	

*: Significant

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Graph 1: Distribution of patients based on gender and type of hernia

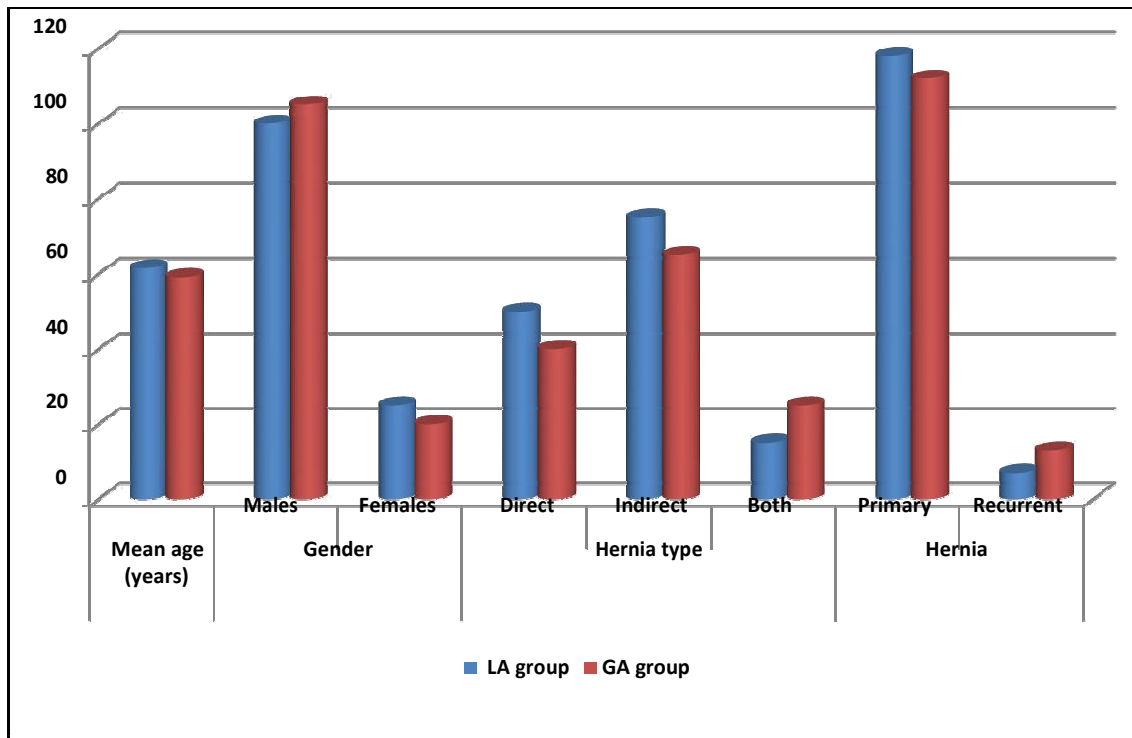
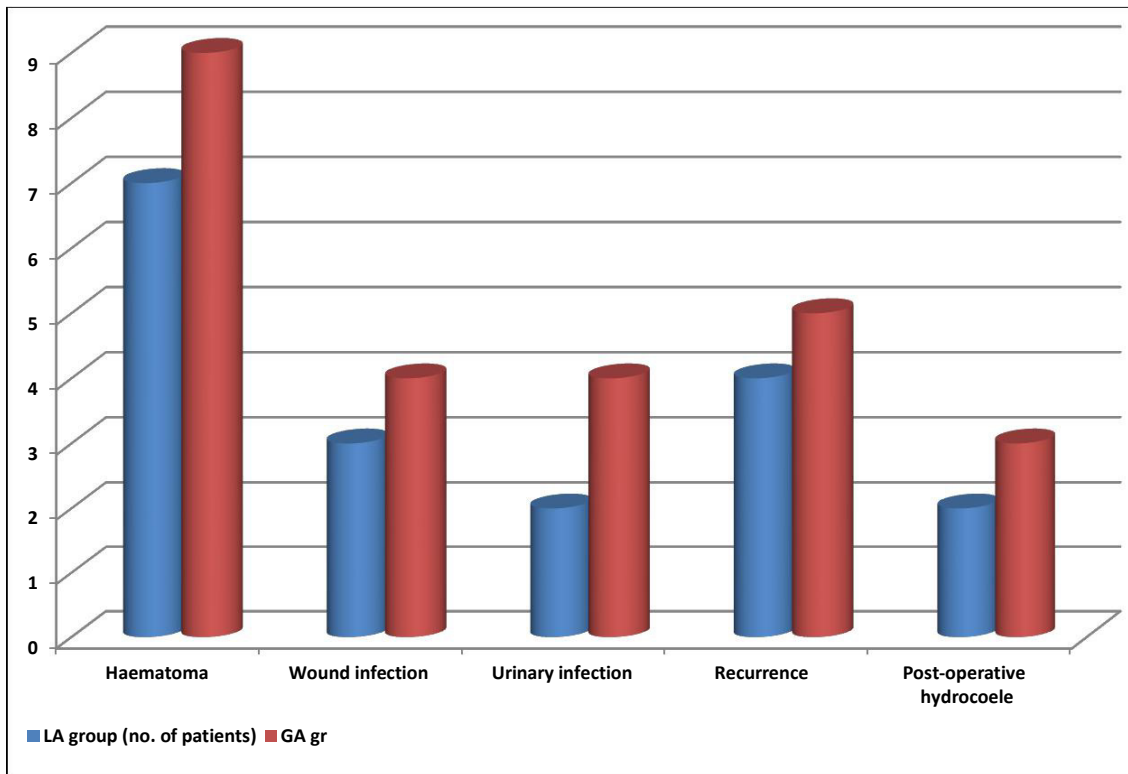


Table 2: Correlation of the post-operative complications of the patients in both the study groups

Post-operative complications	LA group (no. of patients)	GA group (no. of patients)	p-value
Haematoma	7	9	0.71
Wound infection	3	4	0.45
Urinary infection	2	4	0.25
Recurrence	4	5	0.68
Post-operative hydrocoele	2	3	0.79

Graph 2: Post-operative complications of the patients in both the study groups



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