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ORIGINAL RESEARCH

Evaluation of inguinal hernia repair with prolene mesh under local anaesthesia as ambulatory surgery

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ABSTRACT

Background & Objective: Hernias are one of the oldest recorded human conditions. Performing hernia repair under local anaesthesia is feasible and offers multiple advantages in terms of safety, patient comfort, operational efficiency, and cost-effectiveness.The aim of the study was to assess the feasibility, analysis of morbidity and recurrence during short term follow up by using the technique of tension free mesh hernioplasty under local analgesia. **Method:** The technique was evaluated in 40 cases of inguinal hernia, including indirect, direct and recurrent hernias. The obstructed and strangulated hernia was excluded. All patients were operated under local infiltration with or without sedation. **Results:** Most patients were discharged on the same day (87.5%). Most of cases were of indirect type (right sided). During 6 months follow up, there was not a single case of recurrent hernia. Only 1 case out of 40 was associated with the risk of surgical site infection.Conversion from local to general anaesthesia was required in only 2 (5%) patients. **Conclusion:** This study concludes that it is a cost-effective method and comparatively safer method of inguinal hernia repair provided anatomy is not very complex, proper technique and methods are followed.

INTRODUCTION

A hernia occurs when an organ or part of an organ protrudes from the abdominal area through an abnormal opening in the body. Inguinal hernia repairs are among the most frequently performed surgeries today. There are several types of hernia repair techniques, each with its own advantages and considerations based on the type of hernia, patient characteristics, and surgeon preference. Traditional methods like Bassini or Shouldice repairs involve suturing the margins of the hernia's deficit without using mesh. However, they can create tension on the surrounding tissues, potentially leading to increased stress at the repair site and can influence the recurrence of hernia.

The principles of mesh hernia repair emphasize a tension-free approach, appropriate mesh selection and placement, minimally invasive techniques, comprehensive preoperative planning, and meticulous infection control. Performing open tension-free hernia repair under local anaesthesia is a viable option for many patients. Patients may recover faster and experience less postoperative nausea, reduces risk of hospital acquired infections and drowsiness associated with general anaesthesia.[1]

Hernia repairs, particularly inguinal hernia repairs, are commonly performed as day case surgeries. Advantages of day case surgery includes decreased hospital stay costs and resource utilization, reduced risk of Hospital-Acquired Infections. Patients can recover in the comfort of their own homes. As such, local anaesthesia for hernia repair continues to be a preferred option for many patients and healthcare providers globally.[2]

MATERIAL AND METHODS

The technique was evaluated in 40 cases of inguinal hernia. The study was conducted after approval from Institutional, Scientific and Ethical Committee and an informed consent of the patient was taken. Complete blood tests, urine examination, RFTs, LFTs, ECG, X-Ray chest and other investigations were carried out. Premedication was given to all patients.

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Inclusion criteria

1. Adults between 18 to 65 years of age.
2. Patients with ability to contact hospital in emergency.
3. Patients with BMI under 40.

Exclusion criteria

1. Presence of bleeding disorder, respiratory infections, local infection in the operative field and obstructed or strangulated inguinal hernia.
2. Malnourished or mentally unfit patients
3. No informed consent
4. Patient on on chemotherapy or immunosuppressants.

Local anaesthesia technique

A mixture of 30 ml of lignocaine/xylocaine (2%) and 30 ml of bupivacaine/sensorcaine (0.5%) was used for infiltration. 3 ml of sodium-bicarbonate (7.5%) was added to prevent the sting sensation of injection and achieve quick onset of analgesia. This mixture was diluted with 50 ml normal saline solution. The midinguinal point area, pubic tubercle area and a point below the inguinal ligament lateral to femoral artery was infiltrated with 10ml of mixture. A point 2cm above and medial to anterior superior iliac spine was infiltrated with10ml of mixture. The line of skin incision was infiltrated with 10ml of mixture. To establish total local anaesthesia, a few milliliters of the mixture was injected around the neck, into the indirect hernia sac, and at the level of the pubic tubercle.

Hernia repair technique

After flooding the canal with 10 ml of mixture, the aponeurosis was opened through the external ring in the direction of the fibres, the lower leaf and upper leaf of EOA was freed and retracted from the spermatic cord. The spermatic cord with its cremasteric fascial covering was separated from the floor of the inguinal canal and the pubic bone for a distance of approximately 2-3cms beyond the pubic tubercle. After careful dissection indirect hernia sacs identified and was freed the cord to a point beyond the neck of the sac, the sac was opened and then transfixed at the neck and excised. In case of direct sacs, they were separated from the cord and reduced back into the preperitoneal space. A 3-by-6-inch mesh patch was affixed based on the specific needs of each patient, positioned anterior to the posterior wall of the inguinal canal and generously sutured in all directions, including medially over the pubic tubercle.To provide room for the cord structure, a slit was cut at the lateral side of the polypropylene mesh, resulting in two tails: a small lower 1/3rd below and a broad upper 2/3rd above. Upper margin was secured to the conjoin tendon by few interrupted sutures of polypropylene 2-0.

Each patient was contacted for a follow-up examination three weeks, three months, and six months apart to note any issues or recurrences.

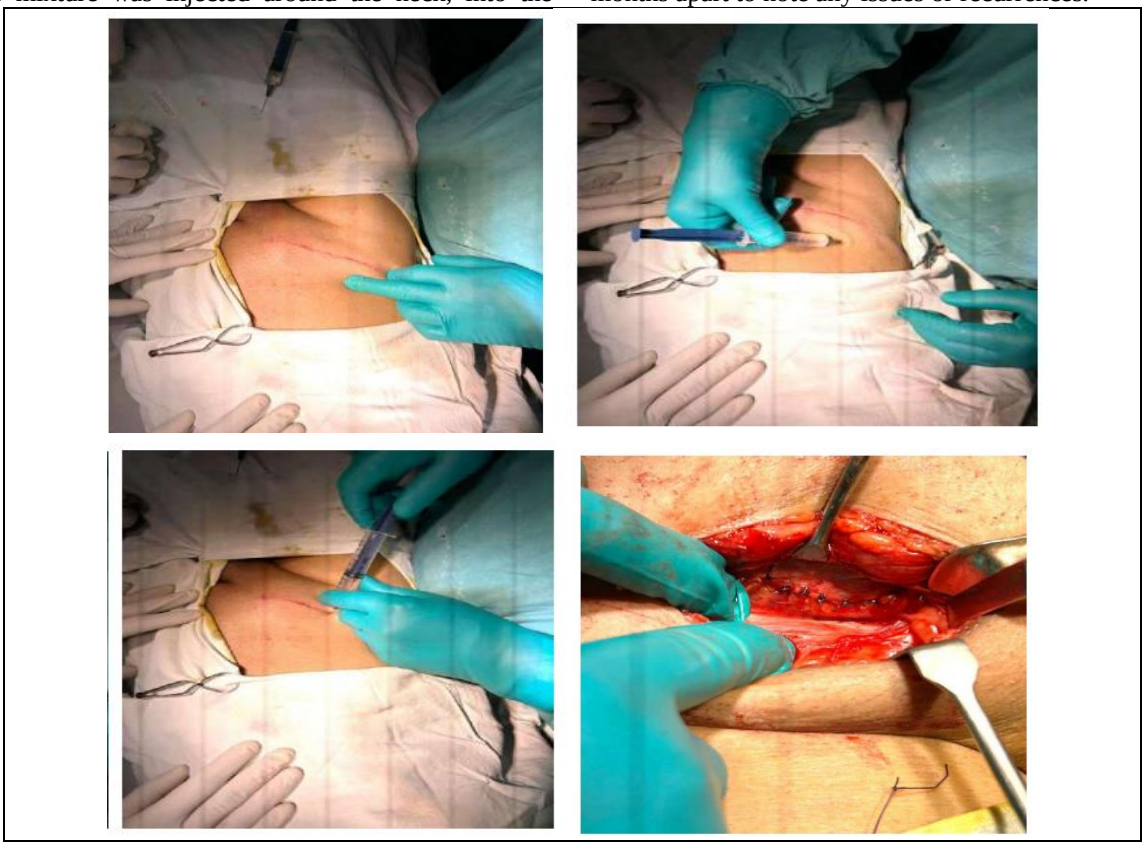

Figure 1: Showing marking of line of incision, Infiltration of local anaesthetic mixture to block iliohypogastric nerve and repair of floor of inguinal canal after reduction of direct sac with absorbable sutures

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Statistical analysis

The data was systematically gathered, organised into tables, and rigorously analysed.

RESULTS

Of 40 male cases of inguinal hernia, maximum number of patients were ≥60 years of age i.e. 14 [35%]. 31 patients [77.5%] were indulged in strenuous activity. Right sided inguinal hernia cases were 20 [50%] in number, 14 (35%) cases were on left side and 15 % of the patients were having bilateral inguinal hernia. Figure 2 shows that maximum number of cases were having right indirect inguinal hernia [RIIH] i.e. 14 [35%]. Figure 3 shows that most of the patients were discharged on day of surgery i.e. 35 patients [87.50%]. Most cases had complaint of constipation 17 [42.5%] and diabetes 20 [50%] while hypertension was seen in 16 [40%] patients and cardiovascular abnormalities were seen in 10 [25%] of the patients, 7 [17.5%] patients had history of smoking, 10 [25%] had history of alcohol consumption, 2 [5%] patients were found to have thyroid abnormalities. Figure 4 shows that 35 [87.5%] of procedures were performed under local anaesthesia, with 2 [5%] transitioning to general anaesthesia, 3 [7.5%] patients were sedated with ketamine or midazolam and no case was performed under spinal anaesthesia. This depicts the feasibility of performing inguinal hernia repair under local anaesthesia. Figure 5 shows that during 6 months of follow up, superficial wound infection was seen in 1 [2.5%] patient, scrotal swelling was seen in 2 [5%] patients, hematoma in 1 [2.5%] patients however no case of recurrence was seen.

Table1: Showing age distribution of patients with inguinal hernia in our study

Age(years)	No.of patients [n=40]	Percentage
<29	1	2.5%
30-39	9	22.5%
40-49	7	17.5%
50-59	9	22.5%
>=60	14	35.0%
Total	40	100%

Table 2: Types of hernia

Type of hernia	No.of patients [n=40]	Percentage
RIIH	14	35%
RDIH	8	20%
LIIH	8	20%
LDIH	7	17.5%
LIIH+DIH	1	2.5%
RIIH+DIH	2	5%
Total	40	100%

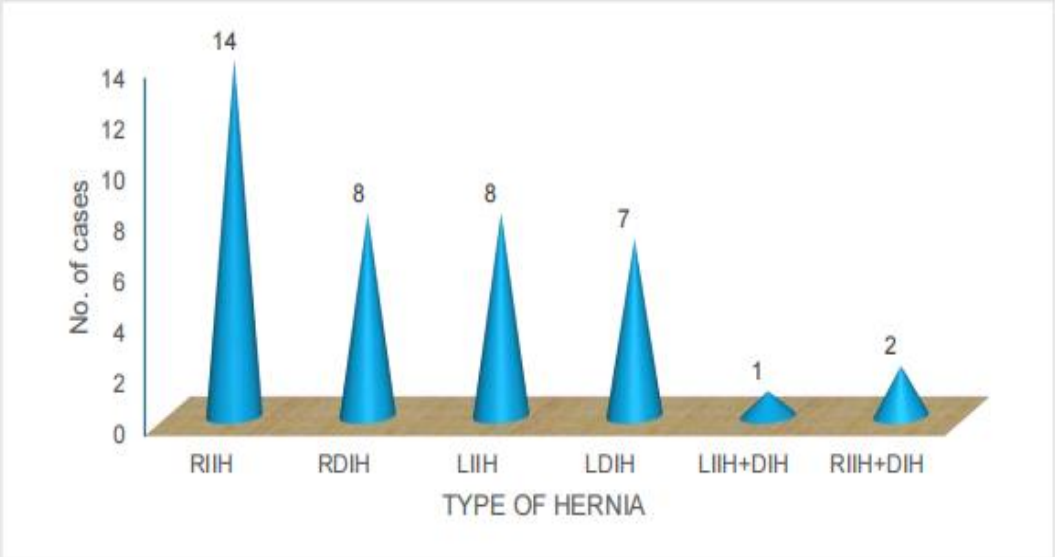

Figure 2

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Table 3: Describing postoperative stay in the hospital

Postoperative stay in days	No. of patients [n=40]	Percentage
On day of surgery	35	87.5%
01 to 05days	3	7.5%
06 to 10days	2	5%
TOTAL	40	100%

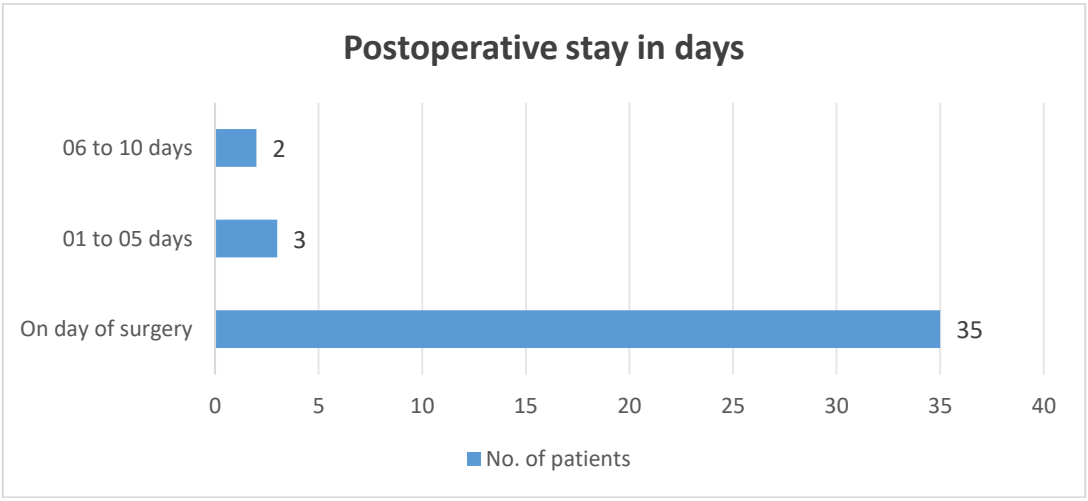

Figure 3

Table 4: Showing type of anaesthesia used

Type of anaesthesia	No.of patients [n=40]	Percentage
Local anaesthesia	35	87.50%
Spinal anaesthesia	0	0%
Sedation with ketamineormidazolam	3	7.50%
Local anaesthesia converted togeneral anaesthesia	2	5%

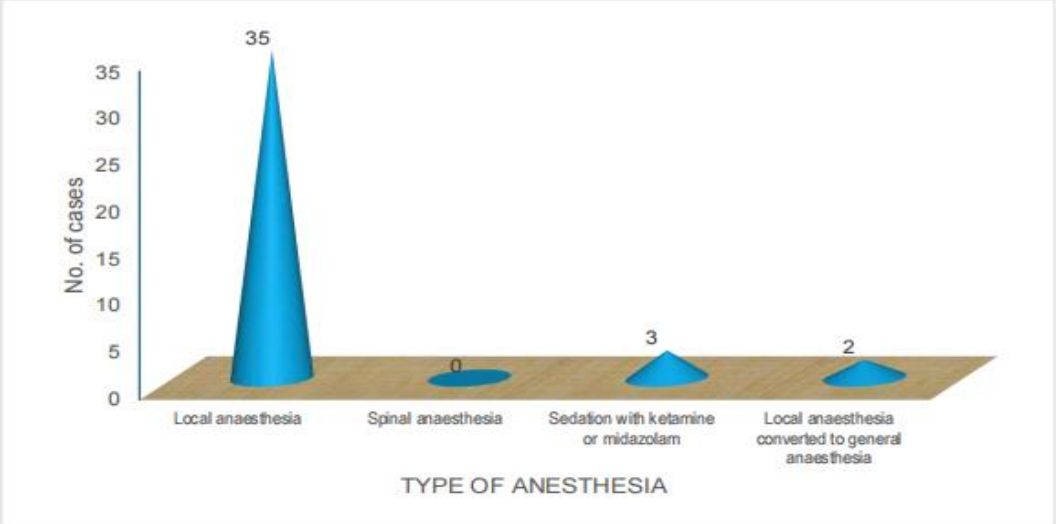

Figure 4

Table 5: Postoperative complications and recurrence during 6 months follow-up

Postoperative complications and recurrence	No. of patients[40]	Percentage
Superficial wound infection	1	2.50%
Scrotal swelling	2	5%
Hematoma	1	2.50%
Recurrence	0	0%
Total	40	100%

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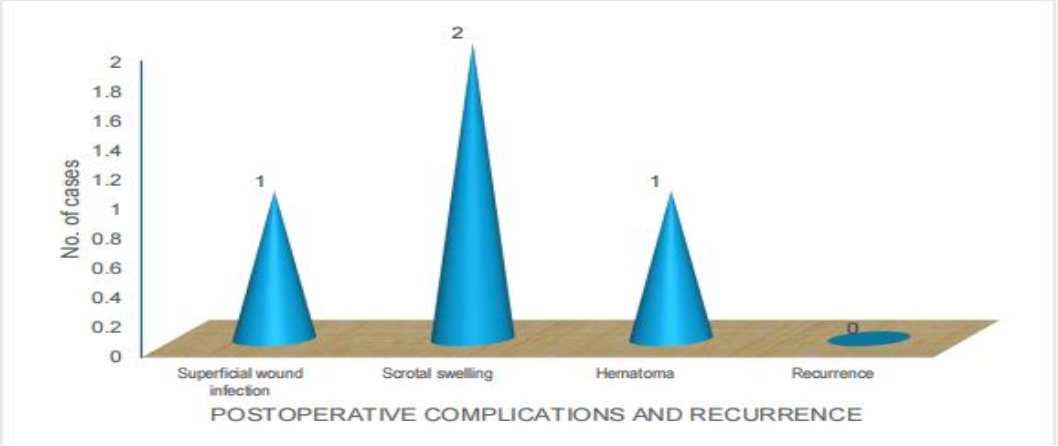

Figure 5

DISCUSSION

The viability and advantages of doing inguinal hernia repairs under local anaesthetic have been brought to light by recent developments and research. The cases of inguinal hernia in our study were significantly higher in age above 50 years, with maximum number in age group above 60 years.In our study, maximum patients were sent home on day of surgery itself. Kurzer et al., described hernia repair as a day-care procedure has become standard practice, demonstrating safety and feasibility with appropriate patient selection and enhanced recovery protocols.[3] Inguinal hernia repairs performed under local anaesthetic might result in a speedier recovery from surgery and a shorter hospital stay according to Rosenberg et al.[4] Lau et al., explained hernia repair being performed as a day-care procedure. The total time from patient arrival in the operating room to discharge home after hernia repair under local anaesthesia typically ranges from 2 to 4 hours, depending on individual recovery and postoperative monitoring requirements.[5] In our study, 35[87.5%] of procedures were performed under local anaesthesia. Amid et al., described that repair under local anaesthesia is particularly beneficial for day-case surgeries, suitable for minor hernia repairs in elderly patients, providing minimal systemic impact and rapid recovery.[6] Kark & Kurzer et al., reported that local anaesthesia, often combined with sedation, is commonly used for open repairs in the ambulatory setting.[7] Thompson, P., et al. assessed the efficacy of ERAS protocols in patients receiving local anaesthetic for hernia surgery.[8] Kumar, S., et al. showed a 98% success rate in performing the procedure without the need for conversion to general anaesthesia. Patient satisfaction was high, with minimal postoperative complications and a quick return to normal activities.[9] Hernandez, J., et al. demonstrated that local anaesthesia is both safe and effective for elderly patients. The study reported low complication rates and a high level of patient satisfaction, making it a preferred option for older patients.[10] Findings of the above listed studies are consistent with the findings of our study suggesting feasibility of performing the procedure under local anaesthesia.

In our study, Superficial wound infection was seen in 1[2.5%] patient, scrotal swelling was seen in 2[5%] patients, hematoma in 1[2.5%] patients. While no case of recurrence was seen during 6months follow up period. The use of mesh methods and local anaesthetic are recommended in evidence-based guidelines for hernia repair, with a focus on their role in attaining high patient satisfaction and low recurrence rates.[11] Lee, C. H., et al. evaluated five-year outcomes and found that those who had their hernias repaired under local anaesthesia had lower rates of chronic pain and hernia recurrence compared to those who underwent the procedure with general anaesthesia.[12]Findings from above studies and our study were correlating with each other, depicting lower rates of recurrence and post-operative complications when procedure was performed under local anaesthesia.

CONCLUSION

The goal of day care surgery is to operate on patients so they can be released the same day. From our small but important prospective study with 6 months follow up period we can conclude that Tension free mesh hernioplasty with prolene mesh is a totally feasible, cost effective, uncomplicated procedure which results in rapid post op recovery and return to normal daily routine with less complications compared to general and spinal anaesthesia when performed as early ambulatory surgery. This procedure is recommended for inguinal hernias except obstructed and strangulated hernia as early ambulatory surgery.

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