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Research Article

### HERNIOPLASTY UNDER LOCAL ANESTHESIA

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**Abstract:**

*Mostly surgeons prefer local anesthesia for inguinal hernia repair in elderly. Local anesthesia if employed in hernia repair is safer, causes less pain, no urinary and wound complications and results in rapid recovery and can be done as a day case with economy.*

***Objective:** To compare the outcome of mesh hernioplasty performed under local anesthesia in patients with age <60 versus > 60 years in regards to wound complications and urinary retention.*

***Study Design:** Comparative Study*

***Setting:** Department of surgery, Allied Hospital Faisalabad*

***Duration of study:***

***Methodology:** After permission from hospital ethical committee and written consent, 102 consecutive patients admitted through OPD. Demographic profile like age and sex will be noted. The surgical method implied will be Lichtenstein mesh repair done under local anesthesia. Outcome will be documented in terms of urinary retention at 8 hours after operation, wound seroma and hematoma at 24hours and wound infection after 5 days of surgery.*

***Results:** Among patients <60 years urinary retention developed in 7.8% while 11.8% in >60 years. Frequency of the wound complications including wound hematoma, seroma and wound infection were seen in 3(5.9%),2(3.92%) and 0 respectively in patients with age less than 60 years and 2(3.92%), 2(3.92%) and 0 respectively in patients with age over 60 year.*

***Conclusion:** The result in patients with age less than 60 years is comparable to the patients with age more than 60 years in terms of urinary retention and wound complications.*

***Keywords:** Inguinal hernia, urinary retention, wound seroma, wound hematoma and wound infection.*

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**INTRODUCTION:**

Inguinal hernia is more commonly occurring in elderly patients than in younger patients [1]. The incidence rises from 11 /10000 persons years aged 16-24 years to 200/10000 persons years aged 75 years and above[2].

Moreover the demand for operations for inguinal hernia is increasing due to an increase of an aging population. According to the literature, the safest approach for repair of inguinal hernia in old patients is mesh hernioplasty under local anesthesia [3,4].

Many authors reserve this local hernia repair only in elderly patients because of high risk for general or spinal anesthesia. Many articles show superiority of local anesthesia in elderly patients than young patients [5].

Moreover very few studies are available from Pakistan favoring the inguinal hernia repair under local anesthesia [6]. In this study we compared the frequency of complications in two age groups have inguinal hernia for which mesh hernioplasty was done under local anesthesia.

**MATERIAL AND METHODS:**

This comparative study was conducted in Department of surgery, Allied Hospital Faisalabad six months after approval from the hospital ethical review committee. All were male patients with age more than 18 years with complete and reducible inguinal hernia.

Outcome will be measured in terms of post-operative urinary retention and wound complications. Urinary retention is described as the in capacity to totally or partially empty the bladder 8 hours after the completion of surgery.

Wound complication will be measured in terms of wound hematoma defined as collection of blood in the wound evident on examination and wound infection defined as pain and localized swelling of the wound with purulent discharge from which the organism is isolated on culture Patients with recurrent irreducible and strangulated hernia, skin infections and Post micturition volume greater than 30ml were excluded.

All included patients were clarified about the nature of research and written informed consent was taken. 3<sup>rd</sup> generation cephalosporin injection ceftriaxone 1 gram IV was given half hour before the surgery. All operations were performed by resident surgeon using Lichtenstein mesh hernioplasty technique [7,8] with standard weight polypropylene mesh. Local anesthesia was employed by step by step procedure as defined by Amid et al and monitored by pulse oximeter [9,10].

Outcome was demonstrated in terms of urinary retention at 8 hours after operation wound seroma and hematoma at 24 hours and wound infection after 5 days of surgery. All the data acquired will be composed through a designed proforma.

The collected data were checked for any possible mistakes. Then the data will be imported and analyzed in SPSS version 20. The study variables will be urinary retention and wound complications (measured in terms of wound hematoma, seroma and infection). Comparison between the study variables was done in two age groups (younger and elders) to see any statistical difference. Quantitative variables were presented in the form of Mean  $\pm$  SD and qualitative variable were presented in the form of frequency (percentage). Comparison among the groups was done by chi square test and level of significance was considered at  $p \leq 0.05$ . Since our hypothesis is that despite difference in age groups the outcome are similar, for our Hypothesis to be true need to be non-significant indicating there is no statistical difference among the age groups.

**RESULTS:**

None of 102 patients were complicated by any side effects due to anesthetic techniques or any procedure related complication and there were no deaths. Post operatively 10 patients had urinary retention in which group A (patient with age less than 60 years) had 4 (7.8%) whereas group B (patient with age more than 60 years) had 6 (11.8%) ( $p=0.09$ ).

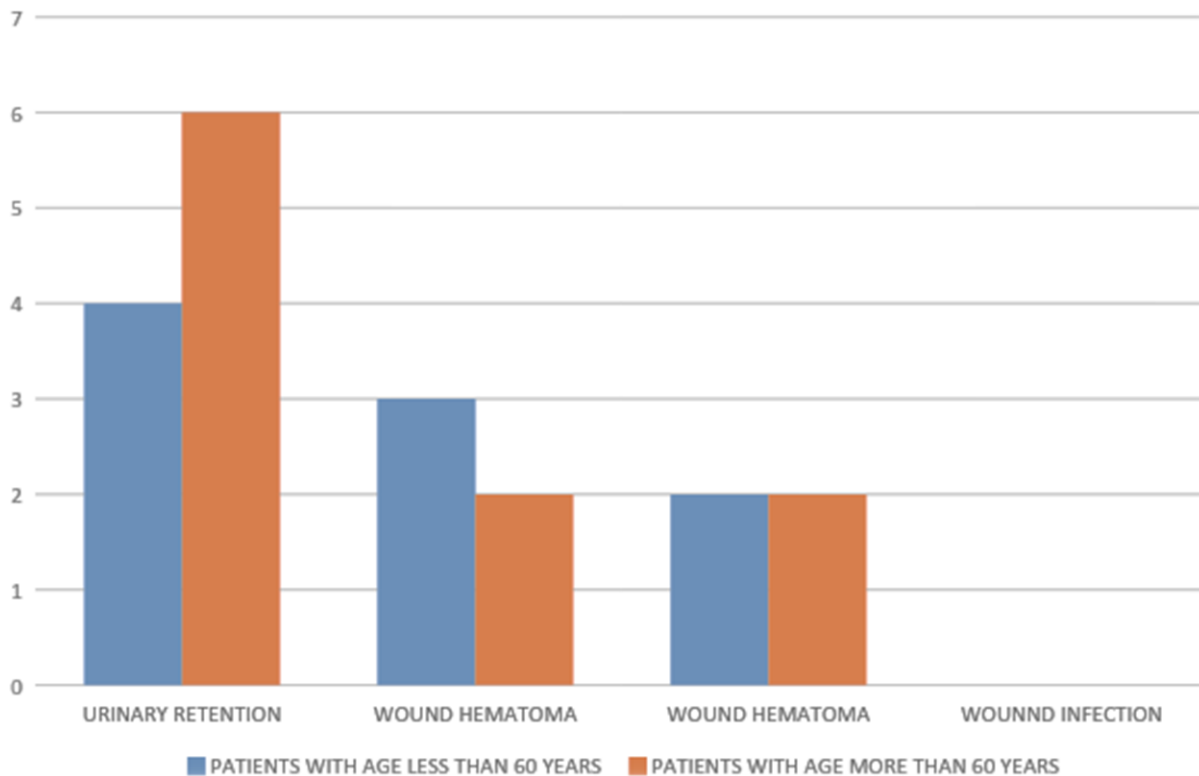
Similarly 9 patients developed wound complications like hematoma, seroma but none developed wound infection. Wound complication rates were 5 in group A vs 4 in group B (0.19).

**Table 1: Complication rates among different age groups**

PARAMETERS	Group A ( $\leq 60$ years) number=51 n (%)	Group B ( $> 60$ years) number=51 n (%)	P value* (for chi square test)
URINARY RETENTION	4 (7.8)	6 (11.8)	0.09
WOUND COMPLICATIONS	5 (9.8)	4 (7.8)	0.19
HEMATOMA	3 (5.9)	2 (3.9)	0.43
SEROMA	2 (3.9)	2 (3.9)	0.95
INFECTION	0 (0)	0 (0)	Ns

\*P value for chi square test (none of the parameters were significant in the groups which indicates the outcomes like urinary retention and wound complications are comparable among groups and these outcomes does not depends of age of patients)

“Comparison of the outcome of mesh hernioplasty under local anesthesia in patients with age less than 60 years VS more than 60 years in terms of wound complications and urinary retention”



**Figure 1: Comparison of the outcome of mesh hernioplasty under local anesthesia in terms of complications and urinary retention**

#### DISCUSSION:

Elective inguinal hernia repair is one of the most common surgical procedures. The choice of anesthetic technique for inguinal herniorrhaphy is

based on the preference of the surgeon, anesthesiologist, and patient; complexity and duration of the procedure; ease of execution; length of recovery; and cost-benefit. Field block and/or

ilioinguinal nerve and iliohypogastric nerve block have better cost-benefit(speed of recovery, satisfaction, and costs)than general anesthesia and spinal anesthesia in herniorrhaphy.[11]

The Lichtenstein's repair is most commonly used procedure mainly owing to ease of operation and because it provides a tension free reinforcement of the posterior abdominal wall of inguinal canal. The fundamental defect in inguinal hernias is in the posterior abdominal wall e.g. deficiency in transversals fascia. All Repairs include strengthening of this layer. However the final Outcome of inguinal hernia repair depends on the type of repair, experiences and skills of the surgeons and type of anesthesia used [11] There was always debate about the gold standard technique for inguinal hernia repair apart from laparoscopic repair, comparison was always between Lichtenstein and non-mesh repair but surgical site infection, foreign body sensation and migration of mesh were serious problems [12]

Tension-free technique with mesh-plug is a widely accepted technique with optimal results and minimal recurrence. In a multi center randomized trial with 5-year follow-up the recurrence rate after Lichtenstein Repair was 1.2%. [13]

Current evidence supports the use of local infiltration anesthesia as it has shorter intra hospital recovery and less urinary morbidity. It has also been shown to have considerable cost advantages over regional and general anaesthesia. [14].

In a study by Sanjy P et al in 2007 the day case rates were significantly higher under local anesthesia (82.6%) compared to General Anesthesia(42.6%).[15] A recent systematic review argues that use of local anesthesia avoids the complications of general anesthesia and spinal anesthesia and enables more patients to go home on day of operation. Local anesthetic repairs are quicker, have fewer adverse effects on respiratory functions and cardio vascular system than both general and regional anesthesia also can be safely used in patient with co-morbid condition. However local anesthetic repair is technically more demanding. [15].

Patient can give a cough to increase intra-abdominal pressure during exploration or checking the safety of repair. Local anesthesia is also considered as an assurance for more delicate surgical manipulation. Surgeon will have to dissect the tissues gently and the assistant will have to retract the wound edges with caution [16]. A step-by-step infiltration technique is the widely use method for establishing local

anesthesia, and dose of anesthetic agents can be always kept in the limit of confidence. Intra venous mild sedation should also be added to maximize intra operative comfort.[17] In respect of postoperative anesthesia-related complications local anesthesia seems to be more advantageous than its counter parts. Urinary retention rate is much lower in local anesthesia. It is also free of severe head ache which is seen after spinal anesthesia. [18]

Most recent Cochrane meta-analysis on antibiotic prophylaxis in inguinal hernia repair in which seven of thirteen trials were mesh repair series concluded that "administration of antibiotic prophylaxis for elective inguinal hernia repair cannot be universally recommended. [19]

Different mesh techniques have been described to date. Single and double layer meshes, and plug repairs all have been reported with good results by their users and defenders. However, environment, health and safety (EHS) guideline has clearly stated that none of the alternative mesh techniques except for the Lichtenstein and endoscopic techniques has received sufficient scientific evaluation to be recommended [20] Reasonable recurrence and complications rates have been obtained worldwide. The Lichtenstein Hernia Institute and the British Hernia Centre reported very low recurrence rates in thousands of cases. It is also suitable for outpatient surgery in an economic way by using local anesthesia.[21] Today, some strong recommendations exist in favor of Lichtenstein repair. American College of surgeons choose this technique for "gold standard", while National Institute of Clinical Excellence [NICE] from UK and The National Agency for Accreditation and Evaluation in Health [ANAES] from France recommended it for inguinal hernia repair. It is easy to learn and perform [22].The increasing use of day case surgery is in line with guidelines of the royal college of surgeons of England, which state that at least 30% of all hernia repairs should be performed as day case .The UK Wide day case rate was for inguinal hernia repairs in 2003 were around 20%. [23]

On the contrary, side effects of local anesthesia attributed to vagal stimulation ,such as hypotension or bradycardia, have been occasionally reported. Some authors state that regional anesthesia techniques (spinal-epidural) have no documented benefits ;as invasive techniques, they carry a low risk of rare neurological side effects and high risk of urinary retention.[24] In the UK, only 5 to 10% of inguinal hernia undergo surgery under local anesthesia with majority of cases being repaired

under general anesthesia (60% to 70%) and regional anesthesia (10-20%).[25]

This study was conducted to compare of the outcome of mesh hernioplasty under local anesthesia in patients with age less than 60 years versus more than 60 years in terms of wound complications and urinary retention. Inguinal hernias are also encountered in female, but in our inclusion criteria all the 102 patients were male. All patients in our study were 18 years and above. Mesh repair was done for repair of all the inguinal hernias in both groups.

Local anesthetic repairs are quicker, have fewer adverse effects on respiratory functions and cardiovascular system than both general and regional anesthesia also can be safely used in patient with comorbid condition. However local anesthetic repair is technically more demanding. Current evidence supports the use of local infiltration anesthesia as it has fewer chances of wound complications and no urinary retention as well as early discharge make local anesthesia ideal anesthesia for day case surgery. This is the reason that local anesthesia is ideal for elderly and moribund patient who are otherwise unfit for general or spinal anesthesia due to multiple comorbid factors..[26] While in another study Amato et al shows a good success rate of inguinal hernia repair under local anesthesia in elderly patients presenting a wound complication rate of 3.6% in patients with age less than 60 years as compared to 6.6% in patients above 60 years.[27] In a done by Pavlidis et al shows extra ordinary morbidity of surgery of inguinal hernia in local anesthesia in elderly patients as matched to younger population. They display wound complications in 3.8% of cases with age less than 60 years as compared to 10.9% of more than 60 years (p value < 0.001).[28]

In our study total numbers of cases were 102. Group A has 51 cases with age less than 60 years and Group B has 51 cases with age more than 60 years. All patients were operated under local anesthesia. In patients with age less than 60 years (Group A) only 4 patients (7.8%) developed urinary retention 8 hours after surgery while among patients with age more than 60 years (Group B), 6 patients (11.8%) developed urinary retention 8 hours after surgery (p value = 0.09). On the other hand 5 (9.8%) patients under age of 60 years developed wound complications and 4 (7.8%) patients over age of 60 years developed wound complications (p value = 0.19) as shown in the below **table No 1**.

We did not encounter any major intra-operative or post-operative complication. There was no cardio

pulmonary cerebro vascular orthrombotic complication in both groups. Main limitation of this study was to convince the patient for surgery under local anesthesia as many patients were afraid of being operated when they are awake post-operative pain is difficult to be assessed accurately, because of the variation of perception of pain between individuals.

The VAS method employed in the present study can be considered as an indicative tool. Results of our study are comparable with local and international studies. This is evident from our experience and these studies that the majority of inguinal hernia repairs in elderly can be done safely under local anesthesia with good results.

### CONCLUSION:

Elective inguinal hernia repair under local anesthesia is feasible and safe and causes no post-operative significant pain. It allows shorter duration of hospitalization and faster access to treatment.

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