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COMPARATIVE CLINICAL OUTCOMES OF DARNING VERSUS LICHTENSTEIN MESH REPAIR FOR PRIMARY INGUINAL HERNIA: A THREE-YEARS PROSPECTIVE STUDY

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Abstract: Background: This clinical trial compares complication rates and postsurgical outcomes of two surgical techniques used for primary inguinal hernia repair: the Lichtenstein (mesh-based) procedure and the traditional darning technique.

Patients and Methods: A total of 127 patients aged 20–66 years were enrolled, including 88 males (69.3%) and 39 females (30.7%). Surgeries were performed between 1st February 2021 and 31st January 2024 at the General Hospitals of Khanagin and Jalawla. Patients underwent either the Lichtenstein procedure (n=58) or darning repair (n=69). Postoperative complications, including recurrence, seroma, hematoma, and chronic pain, were assessed.

Results: Recurrence occurred in 3 patients (4.34%) in the darning group and in 1 patient (1.7%) in the mesh group. Seroma was recorded in 3 patients (4.34%) in the darning group and in 2 patients (3.45%) in the mesh group. Only one hematoma was observed in the darning group. Chronic pain was reported in 2 patients (2.90%) in the darning group versus 1 patient (1.70%) in the mesh group.

Conclusion: Both techniques are effective for primary inguinal hernia repair. However, the Lichtenstein method is associated with fewer postoperative complications and may provide more favorable outcomes compared to the darning procedure.

Keywords: Main inguinal hernia, mesh remedial, Lichtenstein procedure, darning technique, Postoperative results.

Introduction

The term Hernias are the oldest documented disturbances in addition to diseases affecting man, and they are mostly found in the gap between the abdomen and the thigh on the left and the right sides of the body, called the groin [1]. Repair of inguinal hernia is one of the common operations of operations of general

surgery. High-quality evidence has also increasingly clarified the best methods of reducing complications like recurrence, chronic pain, seroma, and hematoma through recent evidence [2].

The highest studies cited that the incidence of inguinal hernia increases with age, and the prevalence reaches approximately 50 percent in old men annually [3]. The inguinal hernia repair issue is as yet unsure [4]. These techniques, among which are the Herniotomy technique, are used in children (below 15 years), and in mature patients; Bassini repair, different types of Darn repair, Shouldice repair, Lichtenstein repair, and the Prolene Hernia System (PHS) [5]. The risk factors to the production and development of a disease like inguinal hernia may be grouped into personal risk factors which may include age and gender [6], [7] and the external aspects of the risk factors which may include the physically demanding stress and other factors [8-10]. Whereas, the use of mesh repair in inguinal hernia is now gaining acceptance in our field, the techniques of non-prosthetic are find reception under emergency conditions like obstruction state or strangulation state which are unusual forms of presentation [11], [12].

A recent systematic rapid review asked 2022 to determine whether mesh repair consistently reduces the rates of recurrence, with little difference in chronic pain, seroma, or hematoma versus non-mesh repair; independent risk factors were increased body mass index, smoking, or direct hernia subtype [13]. A 2023 randomized clinical trial of 330 adult patients compared combined mesh: darning (CMD) versus mesh-alone repair and indicated a recurrence rate of zero in the CMD group after three years, compared with 1.7% in the mesh-alone, and both groups were similar in terms of the complication profile [14] [15]. Lastly, during a 2023 systematic review of self-gripping versus sutured mesh comparable levels of pain and recurrence were observed and the self-gripping procedure resulted in a shorter duration of operation [18]. This medical study aims to add to these data by using insight through their comparative study of darning versus Lichtenstein mesh repair and their main outcomes being recurrence, chronic pain, seroma and hematoma [16], [17]. While several studies have compared mesh-based and non-mesh methods for inguinal hernia repair, most have been conducted in well-resourced healthcare systems [18]. This study adds novel evidence from a resource-limited Iraqi setting, using a three-year prospective design with a relatively large patient cohort [19]. By focusing on key postoperative outcomes recurrence, seroma, hematoma, and chronic pain [20-23]. The findings aim to enrich the local literature and guide evidence-based surgical decision-making in developing healthcare systems. Therefore, the objective of this study was to compare the clinical outcomes of darning repair versus Lichtenstein mesh repair in patients with primary inguinal hernia.

Novelty of the Study:

Despite various studies to compare mesh- versus non-mesh techniques for the inguinal hernia repair, this study contributes unique value by presenting clinical data. It evaluates outcomes over a 3-year period in a large patient group, emphasizing recurrence, seroma, hematoma, and chronic pain. The study enhances the regional literature and supports evidence-based surgical decision-making in developing healthcare systems.

Patients and Methods

This was a prospective clinical trial that was carried out in two general hospitals within the province of Diyala in Iraq: Khanagin General Hospital and Jalawla General Hospital. We enrolled 127 patients (88 males and 39 females) aged of between 20-66 years who were diagnosed with either direct or indirect primary inguinal hernia between the period of 1st February 2021 and 31st January 2024. The patients were categorized into two groups according to the method of surgery that was performed: Group A (n = 69) received tension-free darning repair, and the mesh-based Lichtenstein repair was completed in Group B (n = 58).

Inclusion Criteria:

- The age group of the patients was between 20-66 years.
- Upon this, a primary unilateral inguinal hernia (direct or indirect) was informed to them.

- Appropriate in elective open repair hernia under the influence of the spinal anesthetic or a general anesthetic.

Exclusion Criteria:

- Children younger than 12, because herniotomy alone will usually prove adequate in repair.
- Patients with considerable comorbidities, such as diabetes mellitus, chronic obstructive pulmonary disease (COPD) and malignancy.
- Morbidly obese patients or those having a body mass index (BMI) who are deemed too much on the risk of surgery.

Data Collection:

Demographic information such as age and gender of the patient was captured. Details on operative specifics like anesthesia kind and the surgical procedure completion time were recorded. Recurrence, seroma, hematoma, and chronic pain were the assessments of postoperative results. Persistent inguinal discomfort or pain reported at follow-up visits at six months after the operation was mentioned and denoted as chronic pain. They followed up all the patients at outpatient clinics and information was obtained based on clinical records and interviews with patients.

Statistical Analysis:

All the statistical calculations were made by Statistical Package in the Social Sciences (SPSS) version 22. The discrete variables were illustrated in terms of their frequency and proportion. The connections between the surgical technique and all postoperative outcomes were analyzed using cross-tabulations and the chi-square tests. Significance was regarded as p-value of less than 0.05.

Results:

In the research, 127 patients were studied with an age range between 20 and 66 years. Amongst them, 88 were male and 39 were female. In Table 1 and Figure 1, the gender review of the study group presents that males were the largest proportion of the group, and females were the least proportion of the group, representing 69.3% and 30.7% respectively.

Table 1. Patients identification on the basis of Genders

Gender	Number	Percentage (%)
Male	88	69.3%
Female	39	30.7%
Total	127	100%

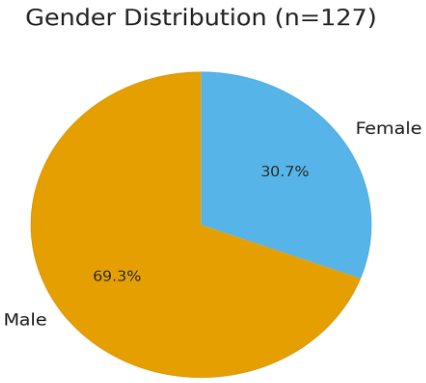


Figure 1. Gender distribution of patients included in the study.

Table 2 shows that patients who had either direct or indirect inguinal hernia had been subjected to either open mesh (Lichtenstein) repair or darning repair (58 and 69, respectively). This is further demonstrated in Figure 2, which shows that 54.3% of the patients had darning repair and 45.7% had Lichtenstein mesh repair.

Table 2. Distribution by Surgical Technique

Technique	Number of Patients	Percentage (%)
Darning Repair	69	54.3%
Lichtenstein Repair	58	45.7%
Total	127	100%

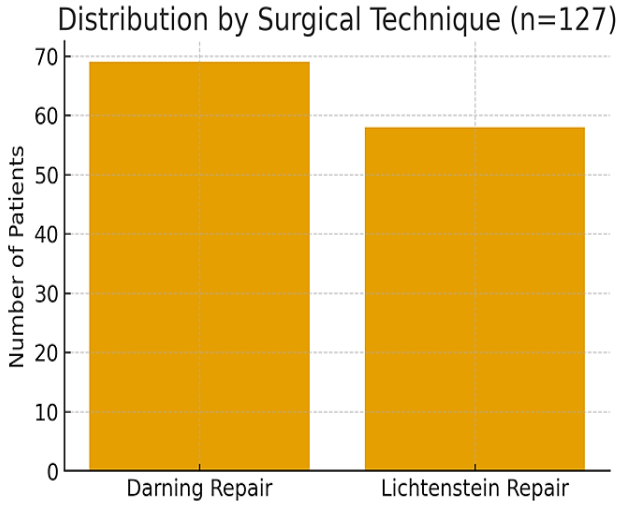


Figure 2. Distribution of patients according to surgical technique.

Postoperative complications were as follows:

- Complication instances were found to recur in 3 instances (4.34%) among the darning group (see Table 3), whilst the number was found to be significantly lower at 1 instance (1.72%) in the mesh group. Such difference implies possible protective mechanism of mesh technique against recurrence.
- There was also expressed incidence of 3 cases (4.34) of seroma formation occurring in the darning group in comparison with 2 occurrences (3.45) recorded in the mesh group. Even though this difference is not important in the statistical sense, this tendency suggests a possibility of slightly higher risk of seroma with the use of the darning technique.
- The result on the occurrence of hematoma in the darning group was 1 case (1.45%), but none in the mesh group. This finding emphasizes the effectiveness of the hemostatic effect of the mesh technique that can be explained by the structural characteristics of the product and its assimilation with surrounding tissues.
- Chronicity of pain was 2.90 percent versus 1.72 percent between the darning and mesh, respectively. Although the difference is not significant, the evidence can indicate that the mesh approach may have a potential benefit to reduce chronic post-procedure pain.

These results provide support for the significance of the choice of a certain surgical modality depending on the concrete clinical situation and peculiarities of a patient in order to achieve the best surgical results and reduce associated complications.

Table 3 summarizes the incidence of postoperative complications, and Figure 3 provides a visual comparison, highlighting slightly higher rates of recurrence, seroma, hematoma, and chronic pain in the darning group compared to the Lichtenstein repair group.

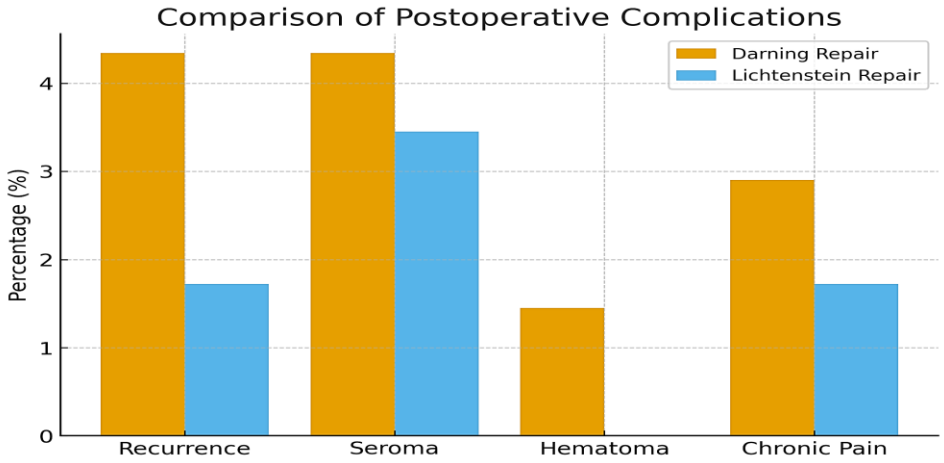


Figure 3. Comparison of postoperative complications (recurrence, seroma, hematoma, and chronic pain) between darning repair and Lichtenstein repair.

Table 3. Comparison of Postoperative Complications.

Complication	Darning Repair	Lichtenstein Repair	p-value
Recurrence	3 (4.34%)	1 (1.72%)	0.2172
Seroma	3 (4.34%)	2 (3.45%)	0.5023
Hematoma	1 (1.45%)	0 (0%)	1.000
Chronic Pain	2 (2.90%)	1 (1.72%)	1.000

Discussion:

The various methods of hernial repair or in general it may be classified into tissue based and the prosthetic methods. Most of the problems that have all along surrounded tissue based repairs are associated with this and amounts of tension was linked to most of the problems and is one of the greatest determinants of recurrence [13], [24]. Some of the methods used to minimize postoperative issues and recurrence were through a variety of ways. In the present study the mesh repair was compared to darning repair. We have cited recurrence, in two forms of technique repair. The recurrence rate was (1.7%) in Lichtenstein repair and (4.34%) it was in repair darn type [25]. A slight increase in number of recurrence with darn repair were also observed, which could be due to the fact that, it requires longer time to perform the surgery and also the possibilities of rupturing blood vessels and ilio-inguinal nerve injury, which is within the region of the open technique, compared to Lichtenstein type of repair. These findings are also congruent with others works and studies [14-16]. Few patients in both types of repair experienced seroma and hematoma. Lichtenstein mesh repair has been shown to be a good procedure as compared to further practices. Thus, repair of mesh is a possible alternative to the classical approach of adopting the old conventional concept of darning followed in the primary inguinal hernioplasty [26].

In our findings, the investigation of recurrence rate and chronic pain was significant (4.34 and 2.90% respectively) in the darning group compared to the mesh repair (1.72 and 1.72% respectively), which was

very close to the results identified in the rapid review in 2022 that stated that mesh repair compared to non-mesh techniques has lower recurrence, with a similar complication rate (20).

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