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Original Article

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The obstructed hernia dilemma: lichtenstein or darn? a comprehensive comparison lichtenstein vs darn repair

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ABSTRACT

BACKGROUND & OBJECTIVE: Inguinal herina,reperesting approximately 75% of all abdominal wall hernias, poses a substantial surgical burden, affecting millions worldwide. Males bear a significantly higher lifetime risk than females. The primary aim of this study was to compare Lichtenstein repair and Darn repair techniques in managing obstructed inguinal hernias, evaluating the incidence of wound infection, seroma formation, post-operative pain duration, and hernia recurrence for each repair method.

METHODOLOGY: A total of 40 patients (20 in each group) were selected. Group 1 contained the patients undergoing Lichtenstein repair, and Group 2 contained those undergoing Darn repair. Data was analyzed using SPSS version 25. Data for wound infection, seroma, andpost-op pain were described using frequency, and similarity amongst groups was made using chi-square and Fisher exact test.

RESULTS: Forty subjects were randomly divided into Lichtenstein repair and Darn repair groups. The mean age in the Lichtenstein repair group was higher than in the Darn repair group. Seroma formation occurred in 15% of patients in both groups. Post-operative wound infection showed variations over time, while recurrence rates remained similar between the groups.

CONCLUSION: This study provides valuable insights into managing obstructed inguinal hernias, suggesting that Lichtenstein mesh repair may be a viable option for this condition. Future studies should further investigate the role of mesh repair in emergency hernia cases, potentially reshaping current surgical paradigms.

KEYWORDS: Herniorrhaphy, Seroma, Surgical Mesh, Surgical Wound Infection, Postoperative Complications.

INTRODUCTION

An inguinal hernia displaces the abdominal cavity's gastrointestinal content through a hernia opening in the inguinal area [1]. It has a 27% and 3% prevalence in men and women, respectively [2]. Risk factors for Hernia Formation include increased blood levels of matrix metalloproteinase-2 and rare connective tissue disorders [3]. Hernias are generally reducible, and those that fail to reduce are termed Irreducible or Obstructed. Obstructed hernias are usually present in the emergency ward. Patients often present with a painful swelling localized to the groin region. Some also have clinical signs of bowel obstruction [4].Obstructed hernias are of two main types, i.e., incarcerated and strangulated. The former is a hernia in which the contents are irreducible. In contrast, a strangulated hernia refers to a hernia with a compromised vascular supply to the contents of the hernia (omentum or bowel) [5].

Inguinal hernia repair with mesh placement is the gold standard for clinically symptomatic elective groin hernia. In cases of obstruction of inguinal hernias, the hernia repair technique commonly used is Darn Repair.

The recurrence rate in Lichtenstien's own series was documented as nil but calculated to be nearly 1 percent in

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some other series [6]. However, the recurrence rates for Darn repair are documented to be around seven percent [2].

Complications of inguinal hernia surgery include pain, bleeding, urinary retention, seroma formation, wound infection at any point in time, ticular atrophy in the late phase [7]. Timely recognition of imminent necrosis, stratification of at-risk bowel, and timely surgery are critically important factors contributing to the positive outcome. Incarcerated inguinal hernia [8] has a reported incidence of 0.3%-3% for incarceration or strangulation.

Emergency surgery for an obstructed hernia has greater risks of poor post-operative outcomes compared to planned surgeries. The usual approach is Darn repair. Infection is the biggest problem with mesh placement in obstructed cases. Some studies have been carried out to experiment with using biomaterials in emergency hernia repair.

Very limited operative approaches are available to manage obstructed inguinal hernia, contrary to the elective procedures for hernia surgery. The clinical effectiveness of hernia repair surgery can be judged by assessing the parameters of groin pain, duration of the hospital stay, recovery time, rate of recurrence, and complications. Patient outcomes rely upon the choice of surgical procedure, patient factors, type of mesh, and the technique of its fixation [9].

In reported literature, early infection and Seroma formation in the Darn procedure were 1.9 percent and 3.7 percent, while in the Lichtenstein procedure, they were 5.9 percent and 5.9 percent, respectively [9]. This shows that the Darn technique is comparable to the Lichtenstein technique of inguinal hernia repair, which is currently the gold standard for open inguinal hernia repair [10]. However, there is no mesh placement agreement for treating obstructed hernias [11].

Perception is thatprosthetic material is generally avoided in cases of obstructed hernia. Recent reports have challenged these preconceptions. A 2008 study reported favorable consequences for the mesh group with similar rates of infection but decreased rates of recurrence in the long-term follow-up in the mesh group. So far, there is no consensus on mesh placement in these scenarios [11].

Our current study aims to compare Lichtenstein mesh repair with darn repair in terms of postoperative pain, wound infection, seroma formation, and recurrence in cases of Obstructed Inguinal hernia.

METHODOLOGY

The present research comprises a comparative, prospective Quasi experimental Study. The study was conducted at the Department of General Surgery, General Hospital, Lahore, from September 2021 to January 07, 2024, after approval from the ethical review committee of the hospital with reference number 00/39/21 dated September 09, 2021. Follow-up for postoperative outcomes was taken for 6 months. We employed a non-probability purposive sampling technique followed by randomization using the Balloting method. The inclusion criteria included all male patients between 20 and 60 years of age who presented with an obstructed hernia in a surgical emergency department. Exclusion criteria include patients with strangulated hernia, poorly controlled diabetes, hypertension, HIV, chronic liver disease, morbid obesity, recurrent hernia, and gangrenous gut. A sample size of 40 (20 in each group) was estimated by using a 5% level of significance and 80% power of study with an expected post-op pain score of 39.8 with an SD of 22.98 in the Darn group and 58.89 with an SD of 19.8 in the Lichtenstein group [9,11].

After approval from the hospital's ethical review committee, cases were selected according to the inclusion criteria. The patients were randomized into two equal groups: Group 1 was the patients undergoing the Lichtenstein repair, and Group 2 was the patients undergoing the Darn repair.

In group 1, a polypropylene mesh of 6x11 cm mesh was cut fit to the defect site and sutured in place as per the Lichtenstein technique. Group 2 had their defect repair done continuously using nylon one suture from the pubic tubercle to the internal ring and back.

Post-operatively, patients were admitted to the ward for 2-3 days, discharged, and followed up one week, two weeks, one month, three months, and six months after surgery.

SPSS 25 version was used for the analysis of data. An independent sample t-test was used to determine the mean between the two groups. The association between the treatment group and wound infection, seroma, and post-op pain was calculated using the likelihood ratio test. P value ≤ 0.05 would be considered significant [11].

RESULTS

In this study, 40 Subjects were randomly divided into two equal groups. Half of the subjects were treated with Lichtenstein, whereas the other half used the Darn repair technique. The mean age of the Lichtenstein repair was 42.25±13.82 years, whereas the mean age of the Darn repair was 33.6±12.86. The age was statistically significant (p-value 0.047).The patients were followed up for six months.

Table-I shows that there is no association between treatment group and seroma formation (p-value 1.000), pain duration (p-value 0.342), Wound infection (p-value 1.000), Recurrence duration (p-value 1.000) and post operative complication (p-value 0.661).

Table-I: Group-wise comparison according to outcomes.

Outcome Variable	Categories	Group		Total	P-value
		Lichtenstein repair n(%)	Darn repair n(%)		
Seroma Formation	Yes	3(15.0)	3(15.0)	6(15.0)	1.000
	No	17(85.0)	17(85.0)	34(85.0)	
Pain Duration	One Week	7(35.0)	4(20.0)	11(27.5)	0.342
	Two Week	3(15.0)	6(30.0)	9(22.5)	
	Three Week	0(0)	1(5.0)	1(2.5)	
	Six Months	0(0)	1(5.0)	1(2.5)	
	No Pain	10(50.0)	8(40.0)	18(45.0)	
Wound Infection Duration	One Week	0(0)	1(5.0)	1(2.5)	1.000
	Two Week	1(5.0)	0(0)	1(2.5)	
	Three Week	1(5.0)	0(0)	1(2.5)	
	Four Week	0(0)	1(5.00)	1(2.5)	
	No Wound Infection	18(90.0)	18(90.0)	36(90.0)	
Recurrence Duration	Three Months	2(10.0)	2(10.00)	4(10.0)	1.000
	Six Months	1(5.0)	1(5.0)	2(5.0)	
	No Recurrence	17(85.0)	17(85.0)	34(85.0)	
Other Complication	Fever	4(20.0)	2(10.0)	6(15.0)	0.661
	Vomiting	0(0)	1(5.0)	1(2.5)	
	No complication	16(80.0)	17(85.0)	33(82.5)	

DISCUSSION

Inguinal or groin hernia is a common surgical problem, constituting approximately 75% of all abdominal wall hernias. Males have a lifetime risk of 27%, contrasting with females with only 3% lifetime risk [12,13]. Of all the surgical procedures performed in a surgical unit, 10-15% are attributed to hernias as the surgical pathology. Steps of hernia surgery include herniotomy, herniorrhaphy, and hernioplasty [7].

The first-month follow-up for patients with Lichtenstein's repair and darning technique was 5% and the six-month follow up was found to be greater, i.e. 95% for Lichtenstein repair and 90% for the darning method, respectively. The mean age of patients who underwent Lichtenstein's repair was 42.25 years, and that of darn repair was 33.6 years.

Seroma formation was seen equally in patients undergoing either Lichtenstein repair or darning procedure, i.e. 15% of patients presented with it post-operatively. This contrasts with the Abd El Maksoud W et al. study in which 3.7% of cases of seroma formation in patients who underwent the Darn procedure and 5.9% in those treated with Lichtenstein's approach [10].

Post-operative surgical wound infection was noted to be present among 5% of patients operated with the Darn method on the 7th day compared to none in the case of Lichtenstein repair. However, 5% of patients with Lichtenstein repair presented for follow-up check with the complaint of wound infection on day 14, compared to none with darn operation. A study from Iraq shows greater complications of post-operative wound infection in patients with darn repair than in patients who were operated using Lichtenstein's approach [14].

CONCLUSION

The above study shows comparable results regarding most of the variables under study for Lichtenstein and Darn repair in managing obstructed inguinal hernia. By this, a popular notion of not using mesh in obstructed inguinal hernia management can be put to rest. This, however, would require further research before it can be conclusively made a routine practice in surgical wards.

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Authors' Contribution:

Muhammad Khalil Ur Rahman: Concept and design the study, Principal investigator and drafting of work.
Naeem Sarwar: Data collection, analysis of data and conception of study.
Ahmad Naeem Akhtar: Substantial contribution to the conception and design of the work.
Shahzeena Kaleem : Drafting the work and revising it critically for important intellectual content.
Hashir: Data collection, analysis and revising the article for final version to be published.
Muhammad Rehman Gulzar: The acquisition, analysis, and interpretation of data for the work.

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