

Evaluation of Darn Repair for Recurrence Rate in the Management of Indirect Inguinal Hernia

HAFIZ GUL NASIB KHAN¹, MUHAMMAD SHOAIB KHAN², ATIF IQBAL³, AAMIR KHAN⁴, MUHAMMAD AMIR MURTAZA⁵, MOHAMMAD BASIL RIZVI⁶

¹MBBS, FCPS, District Surgeon, DHQ Battagram.

²Consultant surgeon, General Surgery Department, DHQ Hospital Bathkela

³Assistant Professor, Department of Surgery, Jinnah International Hospital, Abbottabad

⁴Resident Surgeon, Khyber Teaching Hospital Peshawar

⁵MBBS, FCPS, Department of Surgery, THQ Mankera, Punjab

⁶Associate Professor, Department of Surgery, Avicenna Medical, Dental College and Hospital, Bedian Road Lahore

Corresponding author: Muhammad Shoaib Khan, Email: shoaib061@gmail.com

ABSTRACT

When an organ, or even part of an organ, protrudes through the inguinal canal, it is called an inguinal hernia. Two-thirds of all herniations are of the indirect inguinal subtype; they are most common in adults between 30 and 59; and men are twice as likely to be affected as women. The standard treatment for a hernia is surgery. A decrease in collagen metabolism and fibro-connective tissue in the groin is typically the root cause of an inguinal hernia. Both of these things cause the fascia transversalis to weaken. Because of this, surgeons have come up with a number of ways to strengthen the back wall of the inguinal canal.

Methodology: Approximately 220 patients with indirect inguinal hernias participated in this descriptive study. The study collected data on the demographic characteristics of the patients, the clinical characteristics of the hernias, and the outcomes of the treatment. The results showed that the majority of the patients responded well to the treatment. The study also revealed that the incidence of hernia recurrence was low. Jinnah International Hospital Abbottabad and DHQ Battagram, Department of Surgery served as the study site for these individuals. Patients were followed for six months after therapy to check for problems or recurrence; darn repair was the modality of choice.

Results: Results showed that darn repair had a low recurrence rate reported in the literature, despite some patients being lost to follow-up and others perceiving early complications like wound infection, seroma, hematoma formation, scrotal swelling, or prolonged postoperative pain. Restoring damaged tissues has also been shown to be less expensive than replacing damaged tissues with mesh. Tissue repair has showed potential and costs less than mesh repair for treating inguinal hernias, thus both options should be investigated. There is also a lower chance of infection with tissue repair compared to mesh repair

Keywords: hernias, indirect inguinal hernia, darn repair, recurrence.

INTRODUCTION

Since inguinal hernias are so common among adults, researchers are still trying to figure out the best way to treat them. Although Bassini's operational approach from 1887 has seen extensive use over the years, other methods have arisen in an effort to reduce relapse rates, complications, and hospital stays while hastening patients' returns to normal life. Due to the fact that long-term monitoring of typical hernia treatments has showed recurrence rates ranging from 0.7% to 9.3%, with rates as high as 30% seen in cases of recurrent hernias, there has been a rising interest in tension-free repairs. The recurrence rate was found to be less than 1% after the use of tension-free mesh repairs. The tension-free strategy to repairing hernias and guts that was established by Moloney, as well as the use of polypropylene mesh in hernia repair that was described by Lichtenstein et al., are two instances of successful approaches. Yet, from a monetary standpoint, the advent of laparoscopic hernia repair has caused some anxiety. Even though mesh repair is a common treatment, it is not without risk, as it can lead to complications such as infection, migration, late rejection, the creation of abscesses, and chronic discomfort, which may need the removal of the mesh. Some researchers have documented problems and a high recurrence rate, which has led to changes of the Darn approach. Moloney's low recurrence rates, on the other hand, have not been replicated by other researchers. Both the Lichtenstein operation (LP) and a modified Darn repair technique (MDR) are believed to be tension-free procedures for treating inguinal hernias. The results of the Lichtenstein operation (LP) and the MDR are compared in the current study. Most surgeons in the South West of England perform an open fresh repair for primary inguinal hernias in accordance with NICE recommendations. In contrast, the majority of surgeons still opt for open mesh surgery when treating hernia recurrences, despite advice from the National Institute for Health and Care Excellence (NICE). If an open mesh replacement has already failed once, laparoscopic surgery is usually the next option. While only one randomised controlled trial has directly compared open and laparoscopic repair for recurrent hernias, there is insufficient

information to provide firm recommendations for either approach. The Stoppa or GPVRS method of open repair is likewise rarely employed, despite the fact that it is associated with a lower rate of visceral injury than the total extraperitoneal (TEP) laparoscopic approach. With a meta-analysis finding no significant difference in recurrence rates between open and laparoscopic hernia surgery, NICE recommendations focus primarily on cost effectiveness and health economics. This report's estimates of repair costs have been extensively contested as exaggerated, but the open approach is still recommended for primary maintenance. It's worth noting that laparoscopic repair has additional advantages, such as the ability to detect contralateral occult hernias and facilitate a quicker recovery. The NICE guidelines for managing recurrent hernias were based on industry information claiming that open repair is technically problematic due to scar tissue, despite the fact that the experience of the group of surgeons from the South West of England did not support this claim. Surgeons don't agree on how difficult it is to perform an open repair more than once, but that hasn't stopped most of them from using it. Swedish and Danish hernia registries reveal that insufficient medial mesh overlap or fixation is the primary cause of recurrent hernias following open mesh treatment. Most general surgeons, speaking from experience, will advocate for an open repair of a hernia that has returned. Although laparoscopic repair is preferred by the National Institute for Health and Care Excellence (NICE), there is limited data to suggest that this method is effective for all cases of recurrent hernia. The decision to switch from general to specialist surgery to repair a recurring hernia is still up in the air

METHODOLOGY

Over the course of six months from June, 2022 to November, 2022. Total 220 patients participated in a prospective study done by the Department of Surgery at Jinnah International Hospital in Abbottabad & DHQ Hospital District Battagram. Patients' ages, body mass indexes, and locations of hernias were documented after obtaining informed written consent. Individuals having a

history of hernia complications, those who were younger than 18, and those with other major medical issues were excluded. All patients received an anaesthetic.

For all patients, we used continuous polypropylene sutures (02) to do tension-free darning between the linked tendon above and the iliopubic tract (if it was well formed) and the inguinal ligament below, with apposition between these structures and the transverse fascia in the first row. Precision and stress-free production allowed the transverse fascia to be included in the plug. The traditional method always involved building an internal inguinal ring. The exact same surgeon performed an operation on each of these patients. In most cases, patients were discharged once their conditions had stabilised. The rate of recurrence, length of hospital stay, and postoperative complications were measured. The entire dataset was analyzed using SPSS 20.0.

RESULTS

Table 1: Of the 220 cases, 35 (16%) were between 18 and 30 years old, 52 (23.7%) patients were in the 31 to 40 year age group, and most patients 133 (60.3%) were > 40 years old. We found that most cases had right-sided hernias, 119 (54.7%), 29 (38.3%) cases had left and bilateral cases were 18 (7%). The majority of cases had a relocatable hernia 165 (75.4%) and emergency treatment was performed in non-retractable cases 55 (24.6%)

Variables	Frequency	Percentage
Age Group (Years)		
18-30	35	16
31-40	52	24
>40	133	60
Side Of Hernia		
Bilaterla	18	8
Left	83	38
Right	119	54
Type Of Hernia		
Reducible	165	75
Irreducible	55	25

Table 2: In 147 (66.8%) cases general anesthesia was mainly used and 73 (33.2%) patients received spinal anaesthesia. The mean operating time was 57.6±7.84minutes and the mean hospital stay was 26.8±8.59 hours.

Variables	Frequency	Percentage
Anesthesia		
General	147	66.8
Spinal	73	33.2
Operative Time - Mean	57.6±7.84	
Hospitalization - Mean	26.8±8.59	

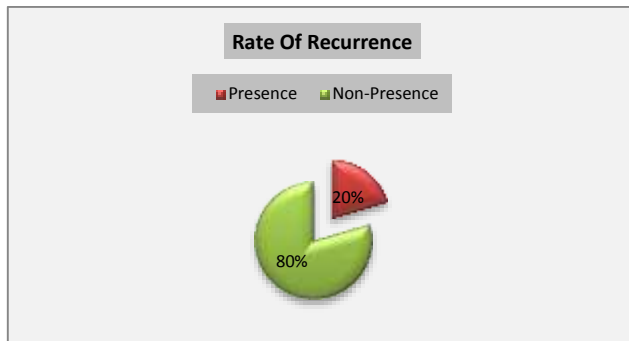


Figure 1: We found a recurrence rate in only 2 (3.3%) cases and the rest of patients 58 (96.7%) showed no hernia recurrence.

Table 3: The incidence of complications was 45 (20.5%), with most cases involving postoperative wound infection.

Variables	Frequency	Percentage
Complications		
Yes	45	20.5
No	175	79.5
Types Of Complication		
Surgical Site Infection	22	48.9
Seroma	12	26.7
Pain	11	24.4

Table 4: Observed complications in 220 cases of inguinal hernioraphy with prolene darn. Table 4: he had a postoperative wound infection.

Complications	Frequency	Percentage	
Short Term Complications	Urinary Intention	15	48.4
	Wound Infection	9	29
	Chest Infection	3	9.7
	Scrotal Hematoma	3	9.7
	Hypotension	1	3.2
Long Term Complications	Recurrence	2	66.7
	Hypertrophic Scar	1	33.3

Table 5: Verbal pain scores observed at the end of the first day and at the end of the second day repair sample 220.

End Of First Day – 24 Hours	Pain Severity	Frequency	Percentage
	Mild	108	49.1
Moderate	65	29.5	
Severe	28	12.7	
No Pain	19	8.6	
End Of Second Day – 48 Hours	Pain Severity	Frequency	Percentage
	Mild	125	56.8
	Moderate	56	25.5
	Severe	22	10
	No Pain	17	7.7

The complications observed in the series are given in Table 4. Patients with postoperative urinary retention were managed by interventions such as reassurance, providing privacy to sit on the side of the bed to void, or encouraging lavatory use. These measures worked in only 2 patients, while the rest were catheterized for 12 hours. There was no urinary tract infection in any of the catheterized cases. Patients with scrotal hematoma were treated conservatively by needle aspiration. This occurred in the scrotal type of hernia. Superficial wound infection was managed conservatively with suture removal, regular dressings, and antibiotics appropriate to culture and sensitivity. Four cases had undergone bowel resection. No significant testicular complication occurred in the study. Postoperative pain scores were recorded in all patients by nurses 24 hours and 48 hours after surgery, which was low-intensity in most cases (69%) of the cases. Of 220 patients, 157 (18.76%) patients were lost to follow-up. 2 (66.7%) patients recurred at six months. One patient had a recurrence at 3 months and 01 at 6 months follow-up.

The one found at the 3 month follow-up had developed infection and was indirect in nature. In the one found at 6 months, recurrence occurred probably due to non-compliance in a heavy laborer and was of a direct nature. These three were of a direct nature and occurred just lateral to the pubic tubercle. All recurrent cases underwent reoperation and had an uneventful recovery and have not reported any recurrence to date.

*significant p-value

DISCUSSION

Inguinal hernia repairs can be broadly classified into two primary categories: tissue-based and prosthetic. The considerable stress associated with most tissue-based repairs has been correlated with recurrence, which is a significant limitation of these treatment methods. However, plugging, a tissue-based technique, is thought to provide an advantage over many other non-prosthetic procedures, as it restores the posterior wall without compressing the tissues against one another. Instead, a web is formed by passing sutures in a continuous pattern over the posterior panel. Much of the research on this type of repair has been conducted in English-speaking countries, making it a prevalent technique in those regions [13].

Our study involved 60 male patients who underwent surgical plug repair, with follow-ups conducted at one week, two weeks, one month, three months, and six months post-operation. Of the 220 cases, 35 (16%) were young adults (aged 18-30), 52 (24%) were middle-aged (aged 31-40), and 133 (60%) were seniors (aged 40 and older). We recorded 119 cases with the hernia on the right side, 83 cases on the left side, and 18 cases with bilateral

hernias. Retractable hernias were present in 165 (75%) of the cases, while 55 (80%) of the non-retractable hernia cases necessitated emergency care. Our findings aligned with those of other studies.

General anesthesia was the primary method of pain relief in 147 (66.8%) cases, while spinal anesthesia was utilized in 73 (33.2%) cases. The surgery and recovery times were, on average, 57.67 minutes and 26.88 hours, respectively [17]. Recurrence was observed in only two patients (1%), while 218 patients (99%) displayed no signs of hernia recurrence following treatment. Olasehind et al. [18] reported a zero recurrence rate in their study, with a median follow-up period of 7.5 months. Comparable findings were also observed in studies conducted by Chakraborty et al. and Jawwad Azeem Khan et al. [19,20]. In another study by Olasehind [13], the recurrence rate was found to be 1.5% after 15 months, while BinBisherSaeed et al. [21] reported a 0.8% recurrence rate. The follow-up duration was determined to be a full calendar year.

The incidence of complications was 45 (20.5%), with most cases involving postoperative wound infections. Despite the Bassini technique being comparable to the Shouldice method, Celik et al. [22] found that it was associated with significantly higher rates of recurrence, postoperative infection, and hematoma. According to Kingsnorth et al. [23], Bisgaard et al. [24] discovered that the cumulative recurrence rate in the mesh group increased up to 5 years post-surgery in patients who underwent primary Lichtenstein mesh or sutured groin repair during an 8-year follow-up period. Long-lasting pain after surgery was experienced by only 3% of patients, as per a study by Ahmad et al. [25].

Based on the results of our research, plugging represents a viable option for treating inguinal hernias, allowing the Darn Repair technique to serve as an alternative to the industry standard.

CONCLUSION

In conclusion, our study demonstrates that the plugging technique, a tissue-based inguinal hernia repair method, yields a low recurrence rate and a manageable incidence of complications. These findings suggest that the Darn Repair technique can be considered a viable alternative to the industry standard for inguinal hernia treatment. Further research is warranted to validate and optimize this approach, potentially improving patient outcomes and expanding the range of effective treatment options.

REFERENCES

1. Aborty S, Mukherjee A, Bhattacharya M. Tension-free inguinal hernia repair comparing 'darn' with 'mesh': A prospective randomized controlled clinical trial. *Indian Journal of Surgery*. 2007 Mar 1;69(2).
2. Khan JA, Imaduddin S, Razzak R, Haider S, Zaman J. Darning versus mesh repair for inguinal hernia: when do patients return to normal physical activity. *Pak J Surg*. 2015;31(3):173-8.
3. Rabee B, Aram FO, Abdulla A. Inguinal hernia repair by darning. *Yemeni Journal for Medical Sciences*. 2009 Dec 1;3:5
4. Celik F, Guler K, Bozkurt S, Eldem L, Bozatlil L. A comparative study in inguinal hernia repair. 23 Kingsnorth AN, Gray MR, Nott DM.
5. Prospective randomized trial comparing the Shouldice technique and plication darn for inguinal hernia 24 Bisgaard T, Bay-Nielsen M, Christensen IJ, Kehlet H (2007)
6. Ger R, Monroe K, David R. Management of indirect inguinal hernia by laparoscopic closure of the neck of sac. *Am J Surg* 1990; 159: 370-3.
7. Graupe F, Schwenk KW, Hucke HP, Stock W. Inguinal hernia repair modified by Kirschner: a critical analysis after eleven years of clinical experience. *Langenbeck's Arch Chir* 1992; 377: 324-31.
8. Tran VK, Putz T, Rohde H. A randomized controlled trial for inguinal hernia repair to compare the shouldice and the Bassins-Kirschner operation. *Int Surg* 1992; 77: 341-5.
9. Beets GL, Dirkson CD, Go PMNYH, Geisler FFA, Bacten CGM, Koostra G. Open or laparoscopic preperitoneal mesh repair for recurrent inguinal hernia? A randomised controlled trial. *Surg Endosc* 1999; 13: 323-7.
10. MRC Laparoscopic Groin Hernia Trial Group. Laparoscopic versus open repair of groin hernia: a randomised comparison. *Lancet* 1999; 354: 185-90.
11. Motson R. Why does NICE not recommend laparoscopic herniorrhaphy? *BMJ* 2002; 324:1092-4.
12. Bay-Nielsen M, Nordin P, Nilsson E, Kehlet H from the Danish Hernia Database and the Swedish Hernia Database. Operative findings in recurrent hernia after a Lichtenstein procedure. *Am J Surg* 2001; 182: 134-6.
13. Mesh fixation with human fibrin glue (Tissucol) in open tension-free inguinal hernia repair: a preliminary report. Canonico S, Santoriello A, Campitiello F, Fattopace A, Corte AD, Sordelli I, Benevento R *Hernia*, (4):330-333 2005 MED: 16132188
14. [Damage to the inguino-femoral nerves in the treatment of hernias. An anatomical hazard of traditional and laparoscopic techniques]. Chevallier JM, Wind P, Lassau JP *Ann Chir*, (9):767-775 1996 MED: 9124783
15. Laparoscopic total extraperitoneal hernia repair: mesh fixation is unnecessary. Beattie GC, Kumar S, Nixon SJ *J Laparoendosc Adv Surg Tech A*, (2):71-73 2000 MED: 10794209
16. Lifschutz H, Juler GL (1986) The inguinal darn. *Arch Surg* 121(6):717-719
17. Cobb WS, Kercher KW, Heniford BT (2005) The argument for lightweight Polypropylene mesh in hernia repair. *Surg Innov* 12(1):63-69
18. Higgins JP, Altman DG (2011) Chapter 8: assessing risk of bias in included studies. In: Higgins JP, Green S, editors. *Cochrane handbook for systematic reviews of interventions*. <https://doi.org/10.1002/9780470712184.ch8>. <http://handbook-5-1.cochrane.org>. Accessed 10 Oct 2018