

ORIGINAL ARTICLE

Indirect Inguinal Hernia Management: Darn Repair for Recurrence Rate

FAZLI SUBHAN¹, YOUSAF HAROON², NAUMAN ANWAR RANA³, CAPT. IHSANULLAH SIAL⁴, TANVEER SADIQ CH⁵, KAUSER SHAIKH⁶

¹Consultant General and Laparoscopic Surgeon, DHQ Hospital, KharBajaur

²Assistant Professor Surgery, Combined Military Hospital, Sargodha

³Assistant Professor Surgery, Combined Military Hospital, Mardan

⁴Assistant Prof General Surgery, Al Tibri Medical Collage Isra University Karachi Campus Malir

⁵Professor of Surgery, Mohtarma Benazir Bhutto Shaheed Medical College, Mirpur AJK

⁶General Surgeon, Shah Bhattai Government Hospital, Latifabad Hyderabad Sindh

Corresponding author: Yousaf Haroon, Email: dryousafharoon71@gmail.com, Cell: +923235556987

ABSTRACT

Objective: Aim of current is to determine the efficacy of darn repair technique in the management of indirect inguinal hernia in terms of complications and recurrence rate among patients.

Study Design: Prospective study

Place and Duration: The study was conducted at Surgery department of Combined Military Hospital, Sargodha and DHQ Hospital, KharBajaur during the period from January 2021 to June 2021.

Methods: There were sixty males who had indirect inguinal hernia included in this study. Included patients had age between 18-80 years. After receiving informed written agreement, the demographics of enrolled patients were recorded, including age, BMI, and side of hernia. All the patients were treated with darning method. Post-operative complications, hospital stay and recurrence rate among patients were assessed. We used the SPSS 24.0 version to analyze all data.

Results: Among 60 cases, 10 (16.7%) were aged between 18-30 years, 12 (20%) patients were from age group 31-40 years and most of the patients 38 (63.3%) had age >40 years. We found most of the cases had right side hernia 34 (56.7%), 20 (33.3%) cases had left and bilateral cases were 6 (10%). Majority of the cases had reducible hernia 48 (80%) and emergency treatment was given to irreducible cases 12 (20%). General anesthesia was mostly used among 44 (73.3%) cases. The mean operative time was 55.3±9.43 minutes and mean hospitalization was 30.3±7.33 hours. We found recurrence rate only among 2 (3.3%) cases and frequency of complications were 8 (13.3%).

Conclusion: We concluded in this study that darning method for the management of indirect inguinal hernia is effective and useful in terms of less post-operative complications and recurrence rate.

Keywords: Inguinal Hernia, Darn Method, Anesthesia, Complications, Recurrence Rate

INTRODUCTION

Since the publication of the Bassini procedure, inguinal hernia repair has undergone significant changes. [1] The numerous strategies outlined are aimed at improving the result, namely the rate of recurrence. The fraying and tearing of the inguinal ligament fibres due to the substantial amount of stress associated with them has been found as a cause of recurrence in most of these techniques of treatment. [2]

A hernia occurs when a viscous or a portion of a viscous protrudes through an irregular hole in the contacting cavity's walls. [3] It can strike both men and women at any age. Inguinal hernias account for 80% of hernias in women and 92 percent in males, with 18% occurring in children under the age of 15. [4] It is a frequent surgery, accounting for 10 to 15% of all surgical procedures. In the United States, over 800,000 repairs are made each year. [5]

The strategies presented are targeted at improving the result, namely the recurrence rate. The fraying and tearing of the inguinal ligament fibres due to the substantial amount of stress associated with them has been recognised as a cause of recurrence in most of these techniques of repair [6]. All of these procedures were founded on the notion of reinforcing the inguinal canal's posterior wall while restricting the internal ring. [7]

Darning, which was first reported by Moloney et al and has a recurrence rate of 0.8 percent, is said to be an inexpensive and successful means of healing hernias. [8] In his own series, Lichtenstein introduced polypropylene mesh with a zero recurrence rate. The result of inguinal hernia repair has been the subject of much investigation. [9] The risk of recurrence after non-mesh inguinal hernia repair varies between 0.2 and 33%, depending on operational procedures, surgeon expertise, hospital type, and length of follow-up. [10]

Another tension-free repair procedure is the darn repair, which was first described by Moloney [11]. Mesh repair, whether traditional or laparoscopic, is more common than the tension-free procedure, but it is more costly and can result in a variety of problems, including mesh removal [12]. The purpose of this study is to investigate the problems of the polypropylene darning method in the treatment of inguinal hernia (especially surgical site infection, early recurrence rate).

MATERIAL AND METHODS

This prospective study was conducted at the department of Surgery, Combined Military Hospital, Sargodha and DHQ Hospital, KharBajaur during the period from January 2021 to June 2021 and comprised of 60 men patients. After receiving informed written agreement, the demographics of

enrolled patients were recorded, including age, BMI, and side of hernia. Patients <18 years of age, severe other medical illness and with recurrent hernia were not included in this study.

Anesthesia was administered to all of the patients. Tension-free darn repair was performed on all patients using continuous polypropylene (0–2) suture between the conjoined tendon above and the iliopubic tract (only if well-formed) and inguinal ligament below, with apposition between these structures and the fascia transversalis in the first row. Transversalis fascia was included into the darn, which was precisely made without unnecessary stress. As per the original approach, an internal inguinal ring was always constructed. All of these individuals were operated on by the same surgeon. Once the patients' general health had improved, they were sent home.

Post-operative complications, hospital stay and recurrence rate among patients were assessed. We used SPSS 24.0 version to analyze all data.

RESULTS

Among 60 cases, 10 (16.7%) were aged between 18-30 years, 12 (20%) patients were from age group 31-40 years and most of the patients 38 (63.3%) had age >40 years. We found most of the cases had right side hernia 34 (56.7%), 20 (33.3%) cases had left and bilateral cases were 6 (10%). Majority of the cases had reducible hernia 48 (80%) and emergency treatment was given to irreducible cases 12 (20%). (table 1)

Table 1: Characteristics details of enrolled cases

Variables	Frequency	Percentage
Age Group (years)		
18-30	10	16.7
31-40	12	20
>40	38	63.3
Side of Hernia		
Right	34	56.7
Left	20	33.3
Bilateral	6	10
Type of Hernia		
Reducible	48	80
Irreducible	12	20

General anesthesia was mostly used among 44 (73.3%) cases and 16 (26.7%) patients received spinal anesthesia. The mean operative time was 55.3±9.43 minutes and mean hospitalization was 30.3±7.33 hours.(table 2)

Table 2: Operative time and post-operative hospital stay among all cases

Variables	Frequency	Percentage
Anesthesia		
General	44	73.3
Spinal	16	26.7
Mean operative time (mins)	55.3±9.43	
Mean hospitalization (hours)	30.3±7.33	

We found recurrence rate only among 2 (3.3%) cases and rest of the patients 58 (96.7%) did not show recurrence of hernia.(fig 1)

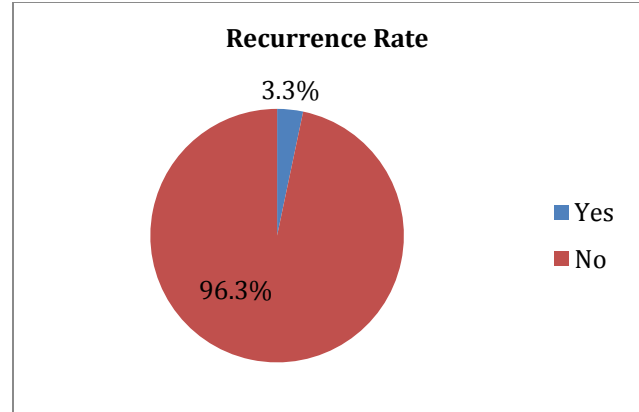


Figure 1: Post-operative frequency of recurrence among cases

Frequency of complications were 8 (13.3%) in which most of the cases had surgical site infection.(table 3)

Table 3: Association of complications among enrolled cases

Variables	Frequency	Percentage
Complications		
Yes	8	13.3
No	52	86.7
Type of Complications		
Surgical Site Infection	4	6.7
Seroma	2	3.3
Pain	2	3.3

DISCUSSION

Tissue-based and prosthetic treatments are the two primary categories of inguinal hernia repair procedures. One key disadvantage of tissue-based repairs has been the high level of stress associated with most of them, which has been linked to recurrence. [13] Darning, although being tissue-based, is thought to offer a benefit over many other nonprosthetic methods in that it is largely tension-free, as the posterior wall is repaired without forcing the tissues against one other. Rather, the sutures are carried in a continuous pattern over the posterior wall, generating a weave. This form of repair is widely used in certain other English-speaking nations, where the majority of research on the procedure has taken place. [13]

All patients in our research were treated surgically with darn repair and monitored for the first week after surgery, then two weeks, one month, three months, and six months. There were 60 males patients in our study. Among 60 cases, 10 (16.7%) were aged between 18-30 years, 12 (20%) patients were from age group 31-40 years and most of the patients 38 (63.3%) had age >40 years. We found most of the cases had right side hernia 34 (56.7%), 20 (33.3%) cases had left and bilateral cases were 6 (10%). Majority of the cases had reducible hernia 48 (80%) and emergency treatment was given to irreducible cases 12 (20%). Results of our study were comparable to the previous studies. General anesthesia was mostly used among 44 (73.3%) cases and 16 (26.7%) patients received spinal anesthesia. The mean operative time was 55.3±9.43 minutes and mean hospitalization was 30.3±7.33 hours.[17]

We found recurrence rate only among 2 (3.3%) cases and rest of the patients 58 (96.7%) did not show recurrence of hernia. In the study by Olasehind et al [18] there was no

recurrence rate. The average follow-up period was 7.5 months. Other investigations by Chakraborty et al and JawwadAzeem Khan et al have found similar outcomes. [19,20] Another study by Olasehind [13] found that the recurrence rate was 1.5 percent during a 15-month follow-up period. BinBisherSaeed et al. [21] also documented a 0.8 percent f. recurrence. A one-year follow-up period was established.

Frequency of complications were 8 (13.3%) in which most of the cases had surgical site infection. Celik et al. [22] evaluated the Moloney, Bassini, and Shouldice methods and discovered that, while the Moloney approach had no benefit over the Shouldice technique, the Bassini technique had much greater rates of recurrence, postoperative infection, and hematoma than the other two. The recurrence rates after the Moloney and Shouldice procedures did not differ much, according to Kingsnorth et al. [23]. Bisgaard et al. [24] followed primary Lichtenstein mesh and sutured inguinal repair patients for 8 years and observed that cumulative recurrence was increasing in the mesh group until 5 years postoperatively. According to Ahmad et al. [25], persistent postoperative pain affects 3% of patients. Darning was found to be a safe and effective method of inguinal hernia repair in our investigation. As a result, darn repair is a viable substitute for the gold standard.

CONCLUSION

We concluded in this study that darning method for the management of indirect inguinal hernia is effective and useful in terms of less post-operative complications and recurrence rate.

REFERENCES

- 1 Bekker J, Keeman JN, Simons MP, Aufenacker TJ. A brief history of the inguinal hernia operation in adults. *Ned Tijdschr Geneesk* 2007;151:924-31.
- 2 Zsolt B, Csiky M. Recurrence rate in Bassini operation after five years. *Magy Seb* 2001;54:307-8.
- 3 Russell R C G, Norman S, Williams, Christopher. J K, Bulstrode. *Short practice of surgery* 23rd Ed. 2000; 1143.
- 4 Ali M, Habiba U, Hussain A, Hadi G. The outcome of darning method of inguinal hernia repair using polypropylene in a district general hospital *JPMI* 2003; 17(1): 42-45.
- 5 Rutkow I M. Demographic and socioeconomic aspects of hernia repair in the United States in 2003. *Surg Clin North Am* 2003; 83: 1045-51.
- 6 Zsolt B, Csiky M. Recurrence rate in Bassini operation after five years. *Magyar sebeszet*. 2001 Oct;54(5):307-8.
- 7 Amid PK. Groin hernia repair: open techniques. *World journal of surgery*. 2005 Aug 1;29(8):1046-51.
- 8 Moloney G E, Gill W G, Barelay R C. Operations for hernia: technique of nylon darn. *Lancet* 1948; 2: 45-48.

- 9 Lichtenstein I L, Shulman A G, Amid P K, Montllor M. The tension-free hernioplasty. *Am J Surg* 1989; 157(2): 188-193.
- 10 Simons M P, Kleijnen, Van G D, Hoitsma H F, Obertop H. Role of the Shouldice technique in inguinal hernia repair: a systemic review of controlled trials and a meta-analysis. *Br J Surg* 1996; 83(6): 734-38.
- 11 Moloney GE (1958) Results of nylon-darn repairs of herniae. *Lancet* 1:273-278
- 12 Malangoni MA, Rosen MJ (2008) Hernias. In: Townsend CM Jr, Beauchamp RD, Evers BM, Mattox KL (eds) *Sabiston textbook of surgery: the biological basis of modern surgical practice*, 18th edn. Saunders/Elsevier, Philadelphia, pp 1155-1179
- 13 Olasehinde OO, Adisa AO, Agbakwuru EA, Etoneyeaku AC, Kolawole OA, Mosanya AO. A 5-year review of darning technique of inguinal hernia repair. *Niger J Surg* 2015; 21:52-55.
- 14 Mahesh SV, Hota PK, Abhishek D. A comparative study of intra operative parameters of darning and mesh repair in inguinal hernia. *Int Surg J* 2016; 3:2012-2015.
- 15 Das AM, Nigam N, Das VM. A comparison of Moloney's darn repair and Lichtenstein mesh herniorrhaphy for open inguinal hernia repair. *J Evol Med Dental Sci* 2014; 3:10992-10999
- 16 Farooq O, Batool Z, Bashir urRehman. Prolene Darn: Safe and effective method for primary inguinal hernia repair. *J Coll Physicians Surg Pak* 2005;15:358-61.
- 17 Line Schmidt, BSc1; Stina Öberg, MD1; Kristoffer Andresen, PhD 1 et al. Recurrence Rates After Repair of Inguinal Hernia in Women *AMA Surg*. 2018;153(12):1135-1142.
- 18 Olasehinde O, Lawal OO, Agbakwuru EA, Adisa AO, Alatise OI, Arowolo OA, Adesunkanmi AR, Etoneyeaku AC. Comparing Lichtenstein with darning for inguinal hernia repair in an African population. *Hernia*. 2016 Oct 1;20(5):667-74.
- 19 Chakraborty 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).
- 20 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.
- 21 Rabee B, Aram FO, Abdulla A. Inguinal hernia repair by darning. *Yemeni Journal for Medical Sciences*. 2009 Dec 1;3:5-.
- 22 Celik F, Guler K, Bozkurt S, Eldem L, Bozatli L. A comparative study in inguinal hernia repair.
- 23 Kingsnorth AN, Gray MR, Nott DM. Prospective randomized trial comparing the Shouldice technique and plication darn for inguinal hernia
- 24 Bisgaard T, Bay-Nielsen M, Christensen IJ, Kehlet H (2007) Risk of recurrence 5 years or more after primary Lichtenstein mesh and sutured inguinal hernia repair. *Br J Surg* 94:1038-1040
- 25 Ahmad S, Ahmed N, Singha JL, Rayhan F, Hassan AF, Hossain MA, Islam M. Open Maloney Repair for Adult Inguinal Hernia, 5 Years Experience in A Remote District. *Journal of Shaheed Suhrawardy Medical College*. 2018 Nov 22;10(1):6- 10.