INGUINODYNIA IN MESH VERSUS DARN REPAIR

MOHAMMAD HUSSAIN¹, SHAHID ALAM¹, ANWARUL HAQ¹, NISAR ALI¹, MOHAMMAD ISMAIL¹, S.M. NAEEM², MANZOOR ALI¹

1. Department of Surgery, Saidu Teaching Hospital, Saidu Sharif, Swat

2. Department of Biochemistry Saidu Medical College, Saidu Sharif, Swat.

ABSTRACT

BACKGROUND: Inguinal hernia repair is the most common procedure in general surgery, ranging from 10 to 15% of all surgical procedures. Chronic groin pain following Mesh operation may lead to potential complication and its incidence can be as high as 62.9%. A quarter of these patients suffer from severe impairment in carrying out their daily routine. Chronic groin pain affect physical and social functioning, thereby limiting the individual's ability to participate in any paid employment.

OBJECTIVE: This study was conducted to compare the outcome of mesh repair and darning in term of chronic groin pain in the understudy group.

METHODS: All men, who consented for the study, with primary inguinal hernia between age of 18 to 80 years were included in the study. Patients having bilateral, irreducible strangulated or recurrent hernia were excluded from the study. Patients were non randomly divided in to two groups, to have the repair with either polypropylene mesh (Lichtenstien Technique) or polypropylene darn (Anatomical repair).

RESULTS: A total of 200 patients were included in the study. 3 patients were excluded because of having another type of hernia or bilateral repair needed. 98 patients had anatomic repair while in 99 patients mesh repair (LR) was done. The mean age of the anatomical group was 61.2 years (SD= 12.7) while the mean age of mesh group was 58.3 years (SD=12.1). Statistical analysis did not reveal a significant disparity between mesh repair versus anatomic repair with regards to the incidence of superficial SSIs (0 vs 2%, $P=0.497$), testicular swelling (4 vs 1%, $P=0.369$), hematoma (3vs 2%, $P = 0.99$), recurrence (0 vs 2%, $P = 0.497$), or pain (12 vs 7%, $P = 0.335$).

CONCLUSION: It was concluded that anatomical repair can still be offered to the patient who has an inguinal hernia with knowledge that postoperative complications are not greater than that with mesh repair.

KEYWORDS: Inguinodynia Mesh Plasty

INTRODUCTION

Inguinodynia is pain or discomfort lasting greater than 3 months after surgery of inguinal hernia. Inguinal hernia repair is the most common procedure in general surgery, with approximately 800,000 operations performed annually in the United States, occupying 10 to 15% of all surgical procedures¹. This is due to the high incidence of inguinal hernias, accounting for a lifetime risk of 27% in men and 3% in women². Inguinal hernia repair has evolved immensely over the last few decades in attempts to improve the overall outcomes following hernia operations; it was traditionally performed by Bassini, Schuldice or Mc Vay techniques before the widespread acceptance of synthetic Mesh repair in 1970s³. Recurrence of

inguinal hernia was initially a significant problem, however, with the advent of the tension-free mesh repair as described by Lichtenstein repair (LR)⁴, recurrence rate has consistently been reported as low as 1–4%^{5,6,7,8,9}, a drop by 50–60%. Concomitant with this drop in the hernia recurrence rate, investigators and surgeons are facing other challenges, such as an increased incidence of chronic pain. Chronic groin pain following Mesh operation is a potential complication and its incidence can be as high as 62.9%¹⁰. A quarter of these patients suffer from severe impairment in carrying out their daily routine^{11,12,13}. Courtney et al showed the effect of chronic groin pain on physical and social functioning, thereby limiting the individual's ability to participate in any paid

employment¹⁴ There are several controversies regarding definition of chronic pain but a relatively accepted definition has been put forth by the International Association for the Study of Pain i.e pain that persists at the surgical site and nearby surrounding tissues beyond 3 months.¹⁵ This study was conducted to compare the outcome of mesh repair and darning in term of chronic groin pain.

METHODOLOGY

This was a prospective case control study carried out in Department of Surgery, Saidu Teaching Hospital Saidu Sharif Swat from January 2009 to December 2013.

All men with primary inguinal hernia between age of 18 to 80 years were included in the study. Patient admitted were thoroughly examined and investigated. Patients having bilateral, irreducible strangulated or recurrent hernia were excluded from the study.

Hernia repair was done under general, spinal or local anesthesia as decided by the Anesthetist. Patients agreed to be in the trial were non randomly divided in to one of the two groups, according to surgeon preference and consent of the patient to have the repair with either polypropylene mesh (Lichtenstien Technique) or polypropylene darn (Anatomical repair). Operations were performed by registrars or consultant surgeons. Mesh repair was done in 99 patients according to strict protocol, using polypropylene prosthetic mesh of 11x6cm. Mesh was anchored to the posterior wall of inguinal canal by taking few circumferential stitches with 2/0 polypropylene. The spermatic cord was then placed between the two tails of the mesh for creation of new deep inguinal ring. In 98 patients repair was done by darning using 2/0 polypropylene, between conjoint tendon and inguinal ligament, without tension in an interwoven fashion. All patients got IV antibiotics Cephadrine before induction and Diclofenac injection post operatively for analgesia according to severity of pain. All patients were discharged on 1st post op day.

Patients reviewed in outpatient at 10 days, one months for post hernioraphy pain and other complications. The definition of chronic pain syndrome varies in recent scientific literature. For the purpose of our study, we defined chronic pain syndrome as pain in the inguinal area requiring analgesics, persistent more than 3 months after inguinal hernia repair, or patient referral pain management, or necessity of a secondary procedure for pain control, including nerve or trigger point injection, reoperation, or nerve excision.

Because of the binomial outcome and small sample sizes, Fisher's exact test was selected to evaluate the statistical significance of chronic pain syndrome in the anatomic and mesh repair groups. The number of patients suffering from chronic pain was compared between the mesh and non mesh groups all statistical tests were 2-sided; P .05 was considered significant. All statistical analyses were performed using the Statistical Package for Social Sciences for Windows (SPSS).

RESULTS

A total of 200 patients were included in the study. Three (3) patients were excluded due to the reason that two of them appeared to have another type of hernia at operation whereas one patient needed bilateral repair. In the remaining 197 patients, anatomial repair was performed while in 98 cases, whereas mesh repair (LR) in the remaining 99. The mean age of the anatomical group was 61.2 years (SD= 12.7) while the mean age of mesh group was 58.3 years (SD=12.1).

In cases of mesh repair, during follow up period, no superficial surgical site infection was identified. Three had hematoma (2.97%), 4 patients (3.96%) had testicular swelling, no recurrence was found in 12 instances (11.88%) of chronic pain syndrome.

In the anatomic repair group there were two superficial SSIs (2%), two hematomas (1.96%), 1 patients (.98%) had testicular swelling, two

had recurrences (1.96%), and 7 (6.86%) experienced chronic pain syndrome.

Complications	Mesh repair	Darn repair
Hematoma	3 (2.97%)	2 (1.96%)
Testicular swelling	4 (3.96%)	1 (0.98%)
SSIs	0 (0%)	2 (1.96%)
Chronic pain syndrom	12 (11.88%)	7 (6.88%)
Reccurence	0 (0%)	2 (1.96%)

Statistical analysis did not reveal a significant disparity between mesh repair versus anatomic repair with regards to the incidence of superficial SSIs (0 vs 2 %, $P=0.497$), testicular swelling (4 vs 1%, $P=0.369$), hematoma (3vs 2%, $P = 0.99$), recurrence (0 vs 2%, $P = 0.497$), or pain (12 vs 7%, $P = 0.335$).

DISCUSSION

Chronic severe pain following inguinal hernia repair is a significant post-operative problem. Its exact cause and lack of evidence-based treatment path present problems in the effective management of this surgical complication. This has major impact on quality of life in a significant proportion of patients. The incidence of chronic pain after inguinal hernia has been estimated to be between 1% and 19% and even upto 62%^{10,16,17,18}. In a multicentre prospective study looking at the incidence of chronic pain, Alfieri S et al observed chronic severe pain in 0.5% of patients at 1-year follow-up¹⁹. In a questionnaire study, Cunningham et al noted that 12% respondents (315 of 883 patients: 36% response rate) had moderate or severe pain one year after open hernia surgery¹⁸. Callesen et al reported that 19% of patients complained of some pain and 6% of patients complained of moderate to severe pain at 1 year following hernia repair²⁰. In the present study, an internationally accepted standard definition of pain (pain beyond 3 months) was used¹⁵. We observed chronic, severe pain in 11.88% percent of patients with mesh repair and in 7% of

patients with anatomical repair.

Chronic pain syndrome has been “correlated with mesh” repair by Voeller,³ and the incidence varied from 21 to 38 per cent in three studies of the Lichtenstein technique (20.6%, 25% and 38%), conceding that in one study of 66 patients no chronic pain was noted²¹. However it is not clear from the literature whether mesh repair is associated with increased incidence of chronic pain. Callesen et al. observed a non-significant increase in chronic pain in patients who had mesh repair than compared to patients who had suture repair²². In a randomised controlled trial of primary inguinal hernia repair by surgical trainees, Miedema et al compared Lichtenstein and suture repairs (McVay and Shouldice) for recurrences and chronic groin pain. He noted a higher incidence of chronic pain following Lichtenstein repair (38%) than Shouldice repair (7%) ($P<0.05$)²³. This present study corresponds with these studies, in this study we a non significant higher incidence of pain in patients of mesh repair.

Our study findings are in contrast with a meta-analysis study of 58 randomised controlled trials by the European Hernia Trialists Collaboration found that mesh repair was associated with lower incidence of both hernia recurrence and late post-operative pain²⁴. This contrast may be mesh repair has been introduced earlier in developed countries.

There are several notable weaknesses in our research. By non randomly allocating patients to two groups we did not have the controlled conditions available in a randomized, prospective study. Other major drawbacks of our study are that we have follow up of these patients for three months only. Regular follow up of all patients beyond three months would have given the true incidence of chronic pain and this reported incidence of pain may an under estimation of the actual incidence of pain.

We concluded that anatomical repair can still be offered to the patient who has an inguinal hernia with knowledge that postoperative complications

are not greater than with mesh repair. This is particularly applicable to the younger patient, whose anatomical defect is primarily a patent processus vaginalis, rather than a direct weakness in the floor of Hesselbach's triangle. We recommend that all patients should have the possibility of chronic pain syndrome noted in the informed consent. The trend towards decreased chronic pain syndrome with anatomical repair deserves further clinical study.

REFERENCES

1. ARutkow I M. Demographic and socioeconomic aspects of hernia repair in the United States in 2003. *Surg Clin North Am* 2003; 83: 1045-51.
2. Jenkins JT. Inguinal hernias. *BMJ* 2008;336:269-72.
3. Voeller GR. "Less is more-improving patient outcomes in inguinal and ventral hernia repair with a focus on technique." *Medscape CME*. Available at: <http://cme.medscape.com/sites/advances/hernia> (Accessed December 23, 2013)
4. Amid PK. Lichtenstein tension-free hernioplasty: its inception, evolution and principles. *Hernia* 2004;8:1-7.
5. Heikkinen T, Bringman S, Ohtonen P et al. Five-year outcome of laparoscopic and Lichtenstein hernioplasties. *Surg Endosc* 2004;18:518-22.
6. Lepere M, Benchetrit S, Debaert M et al. A multicentric comparison of transabdominal versus totally extraperitoneal laparoscopic hernia repair using PARIETEX meshes. *J Soc Laparoendosc Surg* 2000;4:147-53.
7. MacFadyen BV Jr and Mathis CR. Inguinal herniorrhaphy: complications and recurrences. *Semin Laparosc Surg* 1994;1:128-40.
8. McCormack K, Scott NW, Go PM et al. Laparoscopic techniques versus open techniques for inguinal hernia repair. *Cochrane Database* 2003;1:CD001785.
9. Ali N, Israr M, Usman M. Recurrence after primary inguinal hernia repair: mesh versus darn. *PJS* 2008;24:153-5.
10. Poobalan AS, Bruce J, King PM, Chambers WA, Krukowski ZH, Smith WC. Chronic pain and quality of life following open inguinal hernia repair. *Br J Surg* 2001; 88: 1122-1126
11. Bay-Nielsen M, Perkins FM, Kehlet H. Pain and functional impairment 1 year after inguinal herniorrhaphy: a nationwide questionnaire study. *Ann Surg* 2001; 233: 1-7
12. Staal E, Nienhuijs SW, Keemers-Gels ME, Rosman C, Strobbe LJ. The impact of pain on daily activities following open mesh inguinal hernia repair. *Hernia* 2008; 12: 153-157
13. Kalliomäki ML, Sandblom G, Gunnarsson U, Gordh T. Persistent pain after groin hernia surgery: a qualitative analysis of pain and its consequences for quality of life. *Acta Anaesthesiol Scand* 2009; 53: 236-246
14. Courtney CA, Duffy K, Serpell MG, O'Dwyer PJ. Outcome of patients with severe chronic pain following repair of groin hernia. *Br J Surg* 2002; 89: 1310-1314.
15. Classification of chronic pain. Descriptions of chronic pain syndromes and definitions of pain terms. Prepared by the International Association for the Study of Pain, Subcommittee on Taxonomy. *Pain Suppl* 1986;3:S1-226.
16. Lichtenstein IL, Shulman AG, Amid PK, Montllor MM. Cause and prevention of postherniorrhaphy neuralgia: a proposed protocol for treatment. *Am J Surg* 1988;155(6):786-90.
17. Kumar S, Wilson RG, Nixon SJ, Macintyre IM. Chronic pain after laparoscopic and open mesh repair of groin hernia. *Br J Surg* 2002;89(11):1476-9.
18. Cunningham J, Temple WJ, Mitchell P, Nixon JA, Preshaw RM, Hagen NA. Cooperative hernia study. Pain in the post repair patient. *Ann Surg* 1996;224(5):598-602.
19. Alfieri S, Rotondi F, Di Giorgio A, Fumagalli U, Salzano A, Di Miceli D, et al. Influence of preservation versus division of ilioinguinal, iliohypogastric, and genital nerves during open mesh herniorrhaphy: prospective multicentric study of chronic pain. *Ann Surg* 2006;243(4):553-8.
20. Callesen T, Kehlet H. Postherniorrhaphy pain. *Anesthesiology* 1997;87(5):1219-30.
21. Franneby U, Sandblom G, Nordin P, et al. Risk factors for long-term pain after hernia surgery. *Ann Surg* 2006;244: 212-9.
22. Callesen T, Bech K, Kehlet H. Prospective study of chronic pain after groin hernia repair. *Br J Surg* 1999;86(12):1528-31.
23. Miedema BW, Ibrahim SM, Davis BD, Koivunen DG. A prospective trial of primary inguinal hernia repair by surgical trainees. *Hernia* 2004;8(1):28-32.
24. EU Hernia Trialists Collaboration. Repair of groin hernia with synthetic mesh: meta-analysis of randomized controlled trials. *Ann Surg* 2002;235(3):322-32.

CORRESPONDENCE ADDRESS:

Dr. Mohammad Hussain,
Department of Surgery,
Saidu Teaching Hospital/Shah medical center,
Saidu Sharif Swat.
Phones: 03005923813.
E-mail: mhussaindr@hotmail.com