Original Article

Comparative study of polypropylene hernia system against lichtenstein for hernia repair with respect to surgical parameters

Salve P G[1*], Anmod G L[2], Dahiphale Aruna[3]

[1]Associate Professor, [2]Professor, Department of General Surgery, GMC Latur, Maharashtra, INDIA.
[3]Resident, Department of Surgery, SRTR GMC, Ambajogai, Maharashtra, INDIA.
Email: drpgsalve@rediffmail.com

Abstract

Introduction: Inguinal hernia repair is the most common general surgery procedure, and several hundred thousand are performed every year in the United States. Countless studies have been done in attempts to improve outcomes, and the procedure has evolved greatly, especially over the last few decades. **Aims and Objectives:** To study Polypropylene hernia system against Lichtenstein for hernia repair with respect to surgical parameters. **Methodology:** This was a prospective study of the hernia patients at tertiary health care center during the year January 2013 to January 2014. Total 50 Patients of all age and sex, who were diagnosed as inguinal hernia were included into study. Those who didn't give consent and were having serious illness, immuno-compromised state were excluded from the study. The selected patients were randomly included into 2 groups based upon material used for the inguinal hernia repair Lichtenstein for hernia repair into group A and the Polypropylene hernia system into Group B by a computer generated random numbers. The statistical analysis done by un-paired t-test. **Result:** In our study we have observed that Majority of the of the patients were in the age group of >50 – 46.00% followed by 40-50- 24%, 30-40-16.00%, 20-30-10.00%, 10-20- 2 % and in 1-10 were 2.00%. Majority of the patients were Male i.e. 72.00% followed by Female 28.00%. Average Duration of Surgery was 49 ± 8.4 Min. Group A and Group B was 53 ± 7.8 Min. which is comparable to each other (P>0.05). Pain by VAS on Day 1 was 4.1 ± 2.2 Group A and 5.2± 2.9in Group B which is significant (P<0.05) and on Day 5 the VAS score was 3.5 ±1.1 in Group A 4.2 ± 2.1 in Group B which is significant (P<0.05). Seroma Size on Day1 was 4.9 ± 2.2 ml in Group A while 3.3 ± 1.1 ml in Group B which is significant (P< 0.05) while on Day 5 the size was 8.6 ± 3.2 ml Group A and 4.5± 1.5ml in Group B which is significant (P<0.05). **Conclusion:** In our study it can be concluded that the Lichtenstein type of repair found to be superior to Polypropylene suture for the hernia repair in view of post- operative pain and seroma formation as the foreign body reaction is less to Polyester Mesh.

Keywords: Polypropylene, Polyester Mesh, Groin Hernia Repair.

Address for Correspondence
Dr. Salve P. G., Associate Professor, Department of General Surgery, GMC Latur, Maharashtra, INDIA.
Email: drpgsalve@rediffmail.com
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INTRODUCTION

Inguinal hernia repair is the most common general surgery procedure, and several hundred thousand are performed every year in the United States. Countless studies have been done in attempts to improve outcomes, and the procedure has evolved greatly, especially over the last few decades. Hernia recurrence was a significant problem in the past; however, with the advent of the tension-free mesh repair as described by Lichtenstein and colleagues[1], recurrence rates have dropped significantly and are consistently reported as 1–10%[2–6]. Concomitant with this drop in recurrence, researchers and clinicians have noted an increase in the rate of chronic pain following hernia repair. The definition of chronic pain, as set forth by the International Association for the Study of Pain, and referenced by Poobalan *et al.*[7], is pain that persists at the surgical site and nearby surrounding tissues beyond 3 months. Despite the frequency with which the procedure is performed and the extensive research that has been done, chronic postoperative pain continues to be

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a significant problem in inguinal herniorraphy. Multiple studies have been performed documenting the pain associated with inguinal hernia repair. The incidence of chronic pain has been reported to range from 13% up to 57% of subjects, depending on the study and level of severity of the pain studied[2,7–14]. It has been observed that choice of the mesh-prothesis in inguinal hernia repair is far more important than technique as a determinant of outcome[15,16.] The extent of the foreign-body reaction with its provoked scar tissue formation seems to depend on the amount and structure of the incorporated material[17-20]. In spite of markedly reducing recurrence rates and providing a tension-free technique with reduced postoperative pain and fast recovery, the prosthetic material is often linked to several complications[20, 21]. Permanent relief of pain or discomfort and low incidence of periand postoperative complications and recurrence rates are the goals of successful hernia repair. Mainly polypropylene meshes are used. In international studies on polyester meshes used for laparoscopic inguinal hernia repair it was described that patients showed no complications related to the mesh and identified prospective technical and long-term advantages using polyester mesh[22].

MATERIAL AND METHODS

This was a prospective study of the hernia patients at tertiary health care center during the year January 2013 to January 2014. Total 50 Patients of all age and sex, who were diagnosed as inguinal hernia were included into study. Those who didn't give consent and were having serious illness, immuno-compromised state were excluded from the study. The selected patients were randomly included into 2 groups based upon material used for the inguinal hernia repair Lichtenstein for hernia repair into group A and the Polypropylene hernia system into Group B by a computer generated random numbers. The pain at various post- operative day were graded by Visual Analogue scale. The statistical analysis done by un-paired t-test.

RESULTS

Table 1 : Age wise distribution of the Patients

Age	No.	Percentage (%)
1-10	1	2.00%
10-20	1	2.00%
20-30	5	10.00%
30-40	8	16.00%
40-50	12	24.00%
>50	23	46.00%
Total	**50**	**100.00%**

Majority of the of the patients were in the age group of >50 – 46.00% followed by 40-50- 24%, 30-40-16.00%, 20-30-10.00%, 10-20- 2 % and in 1-10 were 2.00%.

Table 2: Genderwise Distribution of the Patients

Sex	No.	Percentage (%)
Male	36	72.00%
Female	14	28.00%
Total	**50**	**100.00%**

Majority of the patients were Male i.e. 72.00% followed by Female 28.00%.

Table 3: Distribution of the Group A and Group B patients as per various Surgical Parameters

Surgical Parameters	Group A (n=25) (Mean ± SD)	Group B (n=25) (Mean ± SD)	P value
Duration of Surgery	49 ± 8.4 Min.	53 ± 7.8 Min.	P>0.05
Pain by VAS			
Day 1	4.1 ± 2.2	5.2± 2.9	P<0.05
Day 5	3.5 ±1.1	4.2 ± 2.1	P<0.05
Seroma Size			
Day1	4.9 ± 2.2 ml	3.3 ± 1.1 ml	P< 0.05
Day 5	8.6 ± 3.2 ml	4.5± 1.5ml	P<0.05

Average Duration of Surgery was 49 ± 8.4 Min. Group A and Group B was 53 ± 7.8 Min. which is comparable to each other (P>0.05). Pain by VAS on Day 1 was 4.1 ± 2.2 Group A and 5.2± 2.9in Group B which is significant (P<0.05) and on Day 5 the VAS score was 3.5 ±1.1 in Group A 4.2 ± 2.1 in Group B which is significant (P<0.05). Seroma Size on Day1 was 4.9 ± 2.2 ml in Group A while 3.3 ± 1.1 ml in Group B which is significant (P< 0.05) while on Day 5 the size was 8.6 ± 3.2 ml Group A and 4.5± 1.5ml in Group B which is significant (P<0.05).

DISCUSSION

Nowadays the introduction of biomaterials for inguinal hernia repair has become an integral component of surgery. The choice of the type of mesh in hernia surgery is often left to surgeon's preference and cost [15]. In international studies it has been mentioned that choice of the prosthesis in hernia repair is far more important than technique as a determinant of outcome [16]. It is described that polypropylene meshes, as a hydrophobic material, cause some degree of contraction and scar formation in the long-term follow-up. In our study we have observed that Majority of the of the patients were in the age group of >50 – 46.00% followed by 40-50- 24%, 30-40-16.00%, 20-30-10.00%, 10-20- 2 % and in 1-10 were 2.00%. Majority of the patients were Male i.e. 72.00% followed by Female 28.00%. Average Duration of Surgery was 49 ± 8.4 Min. Group A and Group B was 53 ± 7.8 Min. which is comparable to each other (P>0.05). Pain by VAS on Day 1 was 4.1 ± 2.2 Group A and 5.2± 2.9in Group B which is significant (P<0.05) and on Day 5 the VAS score was 3.5 ±1.1 in Group A 4.2 ± 2.1 in Group B which is significant (P<0.05). Seroma Size on Day1 was 4.9 ± 2.2 ml in Group A while 3.3 ± 1.1 ml in Group B which is

significant (P< 0.05) while on Day 5 the size was 8.6 ± 3.2 ml Group A and 4.5± 1.5ml in Group B which is significant (P<0.05). These findings are in confirmatory with Mike Ralf Langenbach *et al* [23]

CONCLUSION

In our study it can be concluded that the Lichtenstein type of repair found to be superior to Polypropylene suture for the hernia repair in view of post- operative pain and seroma formation as the foreign body reaction is less to Polyester Mesh.

REFERENCES

1. Amid PK (2004) Lichtenstein tension-free hernioplasty: its inception, evolution, and principles. Hernia 8(1):1–7
2. Heikkinen T, Bringman S, Ohtonen P, Kunelius P, Haukipuro K, Kulkko A (2004) Five-year outcome of laparoscopic and Lichtenstein hernioplasties. SurgEndosc 18(3):518–522
3. Lepere M, Benchetrit S, Debaert M, Detruit B, Dufiho A, Gaujoux D, Lagoutte J, Saint Leon LM, Parvisd'Escurac X, Rico E, Sorrentino J, Therin M (2000) A multicentric comparison of transabdominal versus totally extraperitoneal laparoscopic hernia repair using PARIETEX meshes. JSLS 4(2):147–153
4. Olmi S, Erba L, Magnone S, Bertolini A, Mastropasqua E, Perego P, Massimini D, Zanandrea G, Russo R, Croce E (2005) Prospective study of laparoscopic treatment of incisional hernia by means of the use of composite mesh: indications, complications, mesh fixation materials, and results (in Italian). Chir Ital 57(6):709–716
5. MacFadyen BV Jr, Mathis CR (1994) Inguinal herniorrhaphy: complications and recurrences. SeminLaparoscSurg 1(2):128–140
6. McCormack K, Scott NW, Go PM, Ross S, Grant AM (2003) Laparoscopic techniques versus open techniques for inguinal hernia repair Cochrane Database (1):CD001785
7. Poobalan AS, Bruce J, King PM, Chamgers WA, Krukowski ZH, Smith WC (2001) Chronic pain and quality of life following open inguinal hernia repair. Br J Surg 88(8):1122–1126
8. Poobalan AS, Bruce J, Smith WC, King PM, Krukowski ZH, Chambers WA (2003) A review of chronic pain after inguinal herniorrhaphy. Clin J Pain 19(1):48–54
9. Kumar S, Wilson RG, Nixon SJ, Macintyre IM (2002) Chronic pain after laparoscopic and open mesh repair of groin hernia. Br J Surg 89(11):1476–1479
10. Nienhuijs SW, van Oort I, Keemers-Gels ME, Strobbe LJ, Rosman C (2005) Randomized trial comparing the prolene hernia system, mesh plug repair, and Lichtenstein method for open inguinal hernia repair. Br J Surg 92(4):33–38
11. Bay-Nielsen M, Nilsson E, Nordin P, Kehlet H (2004) Chronic pain after open mesh and sutured repair of indirect inguinal hernia in young males. Br J Surg 91(10):1372–1376
12. Koniger J, Redecke J, Butters M (2004) Chronic pain after hernia repair: a randomized trial comparing Shouldice, Lichtenstein, and TAPP. Langenbecks Arch Surg 389(5):361–365
13. O'Dwyer PJ, Kingsnorth AN, Molloy RG, Small PK, Lammers B, Horeyseck G (2005) Randomized clinical trial assessing impact of a lightweight or heavyweight mesh on chronic pain after inguinal hernia repair. Br J Surg 92:166–170
14. O'Dwyer PJ, Alani A, McConnachie A (2005) Groin hernia repair: postherniorrhaphy pain. World J Surg 29:1062–1065.
15. J. R. Eriksen, I. Gögenur and J. Rosenberg, "Choice of Mesh for Laparoscopic Ventral Hernia Repair," Hernia, Vol. 11, No. 6, 2007, pp. 481-492. doi:10.1007/s10029-007-0282-8
16. G. Champault, C. Bernard, N. Rizk and C. Polliand, "Inguinal Hernia Repair: The Choice of Prosthesis Outweights That of Technique," Hernia, Vol. 11, No. 2, 2007, pp. 125-128. doi:10.1007/s10029-006-0179-y
17. D. Weyhe, O. Belyaev, C. Müller, K. Meurer, K. H. Bauer, G. Papapostolou and W. Uhl, "Improving Outcomes in Hernia Repair by the Use of Light Meshes-A Comparison of Different Implant Constructions Based on a Critical Appraisal of the Literature," World Journal of Surgery, Vol. 31, No. 1, 2007, pp. 234-244. doi:10.1007/s00268-006-0123-4
18. K. Junge, U. Klinge, R. Rosch, B. Klosterhalfen and V. Schumpelick, "Functional and Morphologic Properties of a Modified Mesh for Inguinal Hernia Repair," World Journal of Surgery, Vol. 26, No. 12, 2002, pp. 1472-1480. doi:10.1007/s00268-002-6444-z
19. D. Weyhe, I. Schmitz, O. Belyaev, R. Grabs, K. M. Müller, W. Uhl and V. Zumtobel, "Experimental Comparison of Monofile Light and Heavy Polypropylene Meshes: Less Weight Does Not Mean Less Biological Response," World Journal of Surgery, Vol. 30, No. 8, 2006, pp. 1586-1589. doi:10.1007/s00268-005-0601-0
20. H. Scheidbach, C. Tamme and A. Tannapfel, "In Vivo Studies Comparing the Biocompatibility of Various Polypropylene Meshes and Their Handling Properties during Endoscopic Total Extraperitoneal (TEP) Patchplasty: An Experimental Study in Pigs," Surgical Endoscopy and Other Interventional Techniques, Vol. 18, No. 2, 2004, pp. 211-220. doi:10.1007/s00464-003-8113-1
21. R. Horstmann, M. Hellwig, C. Classen, S. Röttgermann and D. Palmes, "Impact of Polypropylene Amount on Functional Outcome and Quality of Life after Inguinal Hernia Repair by the TAPP Procedure Using Pure, Mixed and Titanium-Coated Meshes," World Journal of Surgery, Vol. 30, No. 9, 2006, pp. 1742-1749. doi:10.1007/s00268-005-0242-3
22. T. Schmidtbauer, R. Ladurner, K. K. Hallfeldt and T. Mussack, "Heavy-Weight versus Low-Weight Polypropylene Meshes for Open Sublay Mesh Repair of Incisional Hernia," European Journal of Medical Research, Vol. 10, No. 6, 2005, pp. 247-253.
23. Mike Ralf Langenbach, Stefan Sauerland. Polypropylene versus Polyester Mesh for Laparoscopic Inguinal Hernia Repair: Short-Term Results of a Comparative Study. Surgical Science, 2013, 4, 29-34 http://dx.doi.org/10.4236/ss.2013.41005 Published Online January 2013 (http://www.scirp.org/journal/ss)

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