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Research Article

### ANALYSIS OF OUTCOMES OF PATIENTS WITH BOTH LAPAROSCOPIC AND OPEN INGUINAL HERNIA REPAIRS

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**Abstract:**

**Introduction:** Inguinal hernia is a commonly encountered urgent condition in surgical clinics. An abdominal wall hernia is a protrusion of the abdominal tissues or organs through a weakness in the muscular structure of the wall of the abdomen. Inguinal and femoral hernias are usually classified together as groin hernias.

**Objective of the study:** The main objective of the study was to compare the outcomes of different surgical techniques performed for inguinal hernia, and to evaluate the effect of prosthetic mesh repair in obstructed inguinal hernia.

**Methodology of the study:** This retrospective study was performed with 70 patients who had been admitted to our hospital's emergency department between 2019 and 2020 to undergo surgery for a diagnosis of obstructed inguinal hernia. **Results:** The patients were divided into two groups based on the applied surgical technique. In Group 1, it was observed that eight of the patients had wound infections, while two had hematomas, four had seromas, and one had relapse. In Group 2, one of the patients had a wound infection, while three had hematomas, one had seroma, and none had relapses. In Group 3, it was observed that one of the patients had wound infections, while one had a hematoma, one patient had seroma, and none had relapses. In Group 4, seven of the patients had wound infections, while one had a hematoma, three had seromas, and one had a relapse.

**Conclusion:** There were no significant differences between the two groups with respect to wound infection, seroma, hematoma, or relapse ( $p > 0.05$ ). In urgent groin hernia repair surgeries, polypropylene mesh can be safely used even in the patients undergoing bowel resection.

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**INTRODUCTION:**

Worldwide, more than 20 million patients undergo groin hernia repair annually. The many different approaches, treatment indications and a significant array of techniques for groin hernia repair warrant guidelines to standardize care, minimize complications, and improve results. The main goal of these guidelines is to improve patient outcomes, specifically to decrease recurrence rates and reduce chronic pain, the most frequent problems following groin hernia repair. They have been endorsed by all five continental hernia societies, the International Endo Hernia Society and the European Association for Endoscopic Surgery. Inguinal hernia is a commonly encountered urgent condition in surgical clinics. An abdominal wall hernia is a protrusion of the abdominal tissues or organs through a weakness in the muscular structure of the wall of the abdomen. Inguinal and femoral hernias are usually classified together as groin hernias. It is believed that the prevalence of groin hernias in a population varies between 3% and 8%. Between 75% and 85% of all hernias are observed in men. Inguinal hernias account for 80–83% of all hernias (59% indirect inguinal hernias, 25% direct inguinal hernias, 5% femoral hernias). The most common hernias in both genders is inguinal hernia; however, femoral hernias are reported to be more common in women than in men [1-3].

Incarcerated inguinal hernia is a commonly encountered urgent surgical condition, and tension-free repair is a well-established method for the treatment of non-complicated cases. However, due to the risk of prosthetic material-related infections, the use of mesh in the repair of strangulated or incarcerated hernia has often been the subject of debate. Recent studies have demonstrated that biomaterials represent suitable materials for performing urgent hernia repair. Certain studies recommend mesh repair only for cases where no bowel resection is required; other studies, however, recommend mesh repair for patients requiring bowel resection as well [4].

**Objective of the study**

The main objective of the study was to compare the outcomes of different surgical techniques performed for inguinal hernia, and to evaluate the effect of prosthetic mesh repair in obstructed inguinal hernia.

**MATERIAL AND METHODS:**

This retrospective study was performed with 70 patients who had been admitted to our hospital's emergency department between 2019 and 2020 to undergo surgery for a diagnosis of obstructed inguinal

hernia. Patients who died in the postoperative period due to systemic complications, as well as those who were lost during the follow-up period, were excluded from the study. The patients were divided into two groups based on the applied surgical technique. Group 1 consisted of 35 patients treated with laparoscopic techniques, while Group 2 consisted of 35 patients treated with tissue repair techniques. The surgical technique to be applied was selected by the surgeons. The Lichtenstein procedure was used for obstructed inguinal hernia patients where laparoscopic was preferred, while the Bassini procedure was used for obstructed inguinal hernia patients where the tissue repair technique was preferred. Patients in Group 1 were further divided into two sub-groups: one consisting of patients undergoing bowel resection (Group 3), and the other consisting of patients not undergoing bowel resection (Group 4). Thus, Group 3 anti-biotherapy included patients who underwent mesh repair in addition to bowel resection, while Group 4 consisted of patients not assigned for bowel resection who underwent mesh repair.

All the patients were administered a single prophylactic dose of antibiotics; patients who underwent bowel resection received anti-biotherapy for an additional two to four days.

**Statistical analysis:**

The Statistical Package for the Social Sciences (SPSS version 16.0) for Windows software package was used in data collection and statistical analysis. The Chi-square test and U test were used for statistical analysis. P values <0.05 were considered to be statistically significant.

**RESULTS:**

Laparoscopic techniques were performed on the 35 patients comprising Group 1, while tissue repair techniques were performed on the 35 patients comprising Group 2. In this study, 81.5% of the patients were male, while 18.5% were female. Female patients had a significantly higher ratio of femoral hernia than male patients, while male patients had a significantly higher ratio of inguinal hernia than female patients ( $p < 0.05$ ).

In Group 3 (table 1), 6.7% (1) of the patients had wound infections, while 6.7% had hematomas, 6.7% had seromas, and none had relapses. In Group 4, 7.2% of the patients had wound infections, while 1% had hematomas, 3% had seromas, and 1% had relapses. There were no statistically significant differences between the two groups in terms of wound infection, seroma, hematoma, or relapse ( $p > 0.05$ ).

**Table 1:** Statistical analyses of complications for 70 patients who underwent surgical treatment with laparoscopic

	Group (Laparoscopic with bowel resection)	Group (Laparoscopic without bowel resection)	Significant value p*
Wound infection	26.7%	7.1%	0.946
Hematoma	6.1%	3%	0.131
Seroma	6.3%	1%	0.497
Relapse	0%	1%	

**P\* <0.05**

In Group 3 and Group 4 (table 7), 26% and 7.1% of the patients had comorbidities, respectively. In Group 3, the mean age of the patients was 62.6 years (range: 32–82 years), the mean hospitalization time was 5.73 months (range: 5–7 months), and the mean follow-up period was 37.8 months (range: 6–67 months). In Group 4, the mean age of the patients was 52.1 years (range: 16–94 years), the mean hospitalization time

was 1.7 months (range: 1–8 months), and the mean follow-up period was 33.7 months (range: 7–62 months). Patients belonging to Group 3 had significantly higher comorbidity rates, higher mean age, and longer hospitalization times ( $p < 0.05$ ). There were no statistically significant differences between the two groups in terms of the mean follow-up period ( $p > 0.05$ ).

**Table 2:** Comorbidities, mean age, hospitalization time and follow-up period for 112 patients who underwent surgical treatment with laparoscopic.

	Group (Laparoscopic with bowel resection)	Group (Laparoscopic without bowel resection)	Significant value p*
Comorbidities	26.7%	7.1%	0.010
Mean age	62.67 S.D= 17.9	52.18 SD: 18.98	0.034
Hospitalization time	5.7 S.D= 0.70	1.78 SD: 18.98	<0.0001
Follow up period	37.86 S.D= 16.24	33.73 SD: 17.07	0.343

**P\* <0.05**

It was determined that (table 3) 8.92% of the patients in Group 1, and 20.51% of the patients in Group 2 had comorbidities. In Group 1, the mean age of the patients was 53.54 years (range: 16–94 years), the mean hospitalization time was 2.27 days (range: 1–8 days), and the mean follow-up period was 37.3 months (range: 6–67 months). In Group 2, the mean age of the

patients was 49.41 years (range: 9–85 years), the mean hospitalization time was 2.12 months (range: 1–17 months), and the mean follow-up period was 40.1 months (range: 2–62 months). There were no statistically significant differences between the two groups in terms of mean age, hospitalization time, and follow-up period ( $p > 0.05$ ).

**Table 3:** Comorbidities, mean age, hospitalization time and follow-up period for 70 patients who underwent surgical treatment for incarcerated hernias.

	Group 1 (Laparoscopic)	Group 2 (Tissue repair)	Significant value p*
Comorbidities	8.7%	20.1%	0.055
Mean age	53.54 S.D= 19.01	49.41 SD: 21.63	0.036
Hospitalization time	2.27 S.D= 1.58	2.12 SD: 2.78	0.234
Follow up period	37.86 S.D= 16.35	40.10 SD: 16.07	0.317

**P\* <0.05**

**DISCUSSION:**

Obstructed inguinal hernia is one of the most common urgent surgical conditions. Ten percent of patients with inguinal hernia present with incarceration, and require urgent surgical procedures. For inguinal hernias, the risk of strangulation varies between 0.29% and 2.9%. Nearly 15% of all inguinal hernia repairs are associated with relapses, and most of them occur following old surgical techniques that do not include a mesh-repair. Although modern inguinal hernioplasty techniques do not affect mortality rates following incarceration, they are highly effective in reducing the relapse rate<sup>7</sup>. The most commonly used prosthetic materials in tension-free mesh repair are polymers, polypropylene, and polyester. Polypropylene is the most preferred of these, since it provides the best prosthesis leading to fibroblast activation. The pore size of the mesh is also important. With pore sizes larger than 75  $\mu\text{m}$ , it is easier for macrophages to penetrate the tissue, which helps to minimize the risk of infection [8].

Although tension-free mesh repair is considered to be the gold standard surgical procedure in inguinal hernia repair under elective conditions, it is not recommended for strangulated hernia repair since it may increase the risk of wound infection. However, recent studies have reported that strangulation is no longer a contraindication for tension-free mesh repair<sup>9-19</sup>. However, other studies report mesh as a potential cause of wound infection, describing that it may be necessary to perform mesh removal to limit the risk of infection [20-21].

Papaziogas *et al.*<sup>4</sup> conducted a study of 75 patients with incarcerated hernia who underwent surgery in their study, where 33 patients were assigned to the tension-free mesh repair group (Group A), while 42 patients underwent hernioplasty with the Bassini procedure (Group B); the outcomes in both groups were then compared. Two patients in Group A and four patients in Group B had wound infections; however, no statistically significant difference was identified between the groups. In Group B, hospitalization time was significantly longer. The mean follow-up period was nine years. One patient in Group A and two patients in Group B experienced relapse. This study reported that the use of polypropylene mesh in strangulated hernias can be considered safe.

**CONCLUSION:**

The current study revealed that the use of polypropylene mesh in incarcerated inguinal hernia repair has no negative effect on wound infection or complications. Considering the fact that traditional

tissue repair techniques can increase the risk of relapse, the current study results revealed that polypropylene mesh can be used safely in urgent groin hernia repair, even in cases where bowel resection is required.

**Limitations of the study:**

Limitations of our study include the fact that the surgeries were performed by the same surgeon; the fact that the study was retrospective, and the lack of standardization between the groups. As this study is a clinical trial, there was only a weak correlation in parameters such as gender and age, while performing comparisons between different groups was inevitably necessary.

**REFERENCES:**

1. Skandalakis LJ, Gadacz TR, Mansberger AR, Mitchell WE, Colborn GL, Skandalakis JE. Çeviri: Dr. Ünal Değerli. Modern Herni Tamiri. 2002;1:3–250.
2. Lichtenstein IL, Shore JM. Simplified repair of femoral and recurrent inguinal hernia by a “plug” Technique. *Am J Surg.* 1974;128:439–56.
3. Velitchkov NG, Losanoff JE, Kiossev KT, Grigorov GI, Kirov GK, Losanoff CE. The Lichtenstein open tension-free inguinal hernia repair using a new prosthetic mesh-Bulgarian irresorbable amplexen. *Int Surg.* 1996;81:205–9.
4. Papaziogas B, Lazaridis C, Makris J, Koutelidakis J, Patsas A, Grigoriou M, *et al.* Tension-free repair versus modified Bassini technique (Andrews technique) for strangulated inguinal hernia: a comparative study. *Hernia.* 2005;9:156–9.
5. Noszczyk W, Szmidi J. *Chirurgia Ogólna.* In: Noszczyk W, editor. *O chirurgii polskiej końca XX wieku.* Warszawa Fundacja Polski Przegląd Chirurgiczny. 2001. pp. 52–69.
6. Haapaniemi S, Gunnarsson U, Nordin P, Nisson E. Reoperation after recurrent hernia repair. *Ann Surg.* 2001;234:122–6.
7. Petersen S, Henke G, Freitag M, Faulhaber A, Ludwig K. Deep prosthesis infection in incisional hernia repair: predictive factors and clinical outcome. *Eur J Surg.* 2001;167:453.
8. Amid PK. Classification of biomaterials and their related complications in abdominal wall hernia surgery. *Hernia.* 1997;1:15–21.
9. Pavlidis TE, Atmatzidis KS, Lazaridis CN, Papaziogas BT, Makris JG, Papaziogas TB. Comparison between modern mesh and conventional non-mesh methods of inguinal hernia repair. *Minerva Chir.* 2002;57:7–12.
10. Zieren J, Zieren HU, Jacobe CA, Wenger FA, Müller JM. Prospective randomized study

- comparing laparoscopic and open tension-free inguinal hernia repair with Shouldice's operation. *Am J Surg.* 1998;175:330–3.
11. Catena F, La Donna M, Gagliardi S, Mingolla P, Avanzolini A, Pasgualini E, et al. Use of prosthetic mesh in complicated incisional hernias. *Minerva Chir.* 2002;57:363–9.
  12. Henry X, Randiamanantsoa V, Verhaeghe P, Stoppa R. Is there a reasonable role for prosthetic materials in the emergency treatment of hernias? *Chirurgie.* 1994;120:123–8.
  13. Mauch J, Helbling C, Schlumpf R. Incarcerated and strangulated hernias-surgical approach and management. *Swiss Surg.* 2000;6:28–31.
  14. Wysocki A, Pozniczek M, Krzywon J, Bolt L. Use of polypropylene prostheses for strangulated inguinal and incisional hernias. *Hernia.* 2001;5:105–6.
  15. Wysocki A, Kulawik J, Pozniczek M, Strzalka M. Is the Lichtenstein operation of strangulated groin hernia a safe procedure? *World J Surg.* 2006;30:2065–70.
  16. Bessa SS, Katri KM, Abdel-Salam WN, Abdel-Baki NA. Early results from the use of the Lichtenstein repair in the management of strangulated groin hernia. *Hernia.* 2007;11:239–42.
  17. Atila K, Guler S, Inal A, Sokmen S, Karademir S, Bora S. Prosthetic repair of acutely incarcerated groin hernias: a prospective clinical observational cohort study. *Langenbecks Arch Surg.* 2010;395:563–8.
  18. Nieuwenhuizen J, van Ramshorst GH, Ten Brinke JG, de Wit T, Van der Harst E, Hop WC, et al. The use of mesh in acute hernia: frequency and outcome in 99 cases. *Hernia.* 2011;15:297–300.
  19. Pans A, Desai C, Jacquet N. Use of a preperitoneal prosthesis for strangulated groin hernia. *Br J Surg.* 1997;84:310–2.
  20. Taylor SG, O'Dwier PJ. Chronic groin sepsis following tension-free inguinal hernioplasty. *Br J Surg.* 1999;86:562–5.
  21. Gilbert AI, Felton L. Infection in inguinal hernia repair: considering biomaterials and antibiotics. *Surg Gynecol Obstet.* 1993;177:126–30.