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Original Research Article

An analysis of incisional hernia treatment and repair in practice

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Abstract

Background: Incisional hernia is a frequent surgical disease, with a frequency that has been found to range anywhere from 5% to 11% of patients who have undergone abdominal procedures. The purpose of this study is to evaluate the severity of this issue and the various approaches that can be done to surgically repair by mesh in our particular environment.
Methods: This is a prospective study of thirty patients diagnosed with incisional hernia who sought treatment in the outpatient department (OPD) and General Surgery Department, Govt Medical College & Hospital Mahabubnagar between the months of May 2021 and May 2022. The patients volunteered their information to be used in the study. All of the patient documentation, including identification, history, clinical findings, investigative tests, operation findings, operative procedures, and complications during the patient's stay in the hospital and during the subsequent follow-up period, was recorded in a proforma that had been especially prepared. In order to determine whether or not any of the patients were fit for surgery, routine blood and radiological tests were performed on every one of them. Every patient had mesh repair, the extent of which was determined by the size of the lesion. Patients were monitored for any issues that may have arisen immediately after surgery.
Results: The majority of the patients had an incisional hernia in the sub umbilical region at the time of their presentation. Two of the patients who had undergone inlay mesh repair experienced a recurrence of their incisional hernia, while the patients who had undergone overlay mesh repair did not experience a recurrence. In light of the fact that there was no recurrence during the comparative follow-up period of three to twelve months, overlay mesh repair appears to be unquestionably superior to inlay repair.
Conclusions: According to the findings of the research, overlay mesh repair is preferable than inlay mesh repair for the treatment of incisional hernias.

Keywords: Hernia caused by an incision, overlay repairs to the mesh and complications

Introduction

A bulge or protrusion that develops next to or immediately along a past abdominal surgical incision is referred to as an incisional hernia [1]. This type of hernia is also known as a ventral hernia [2, 3]. Due to the twisted anatomy that results from prior surgical procedures, repair of ventral hernias has traditionally been considered to be one of the most difficult surgical procedures. The hernias have been repaired through the utilisation of a wide variety of surgical procedures, ranging from open surgery to meshplasty [4-6]. In a growing number of cases, ventral hernias are being corrected laparoscopically because to the advancements made in the field of laparoscopy [7]. In spite of the high number of people who have had ventral hernias repaired, there is still no widespread agreement over the method that is most effective. In order to determine which approach to incisional hernia repair is superior to the others, a comparative analysis of the available options was carried out [8-10].

Any gap in the abdominal wall, with or without a bulge, in the region of a surgical scar that is apparent or palpable through clinical examination or imaging is considered to be an incisional hernia [11]. Since the beginning of human evolution, the problem of hernia has been a persistent one. Incisional hernias became an issue as abdominal surgery became more common; Harold Ellis describes an incisional hernia as one that forms in the scar of a surgical incision. The problem of incisional hernias emerged when abdominal surgery became more common [12-15]. It is possible for there to be a minor protrusion through the wound, one that is perhaps inconsequential, but it is also possible for there to be a huge protrusion that is unattractive and uncomfortable. It is estimated that between 5 and 11 percent of patients who undergo abdominal surgery will develop an incisional hernia. All of these things provide a difficult challenge for the surgeon. Recent research has indicated that approximately two thirds of them show up during the first five years and that at least another third of them show up between 5 and 10 years following the procedure [16-18]. If they are not responded to, they have a propensity to grow in size, causing the patient discomfort and possibly leading to the suffocation of the patient's abdomen contents. The bowel is more likely to become trapped in small hernias, whereas large hernias are more likely to cause bowel blockage due to adhesions in the hernial sac or the hernial orifice. Bowel incarceration may occur more frequently in small hernias. It is important to remember that the repair of a ventral incisional hernia is a major operation that should not be handled lightly [19]. In order to reduce the likelihood of complications and future hernias, thorough preoperative planning, excellent surgical technique and expert judgement are all essential components. Nearly every surgeon has their own unique procedures, which they may adapt based on the circumstances. The purpose of this study is to evaluate the relative importance of a number of elements that contribute to the development of this illness as well as the various treatment strategies that are utilised within our organization [20-22].

Methods and Subjects

Between the months of May 2021 and May 2022, this prospective study was carried out in the surgical department of GMC, Mahabubnagar, Telangana, India. The study was given permission by the institutional ethical committee. Patients and patient attendants both gave their consent after being fully informed. In the context of a prospective study, the months of May 2021 through May 2022 will be used to collect data for an investigation into the outcomes of 30 individual cases of incisional hernias that will be treated at GMC &Hospital in Mahabubnagar, Telangana, India. The patients who participated in the study were chosen at random without using any predetermined criteria, and the cases were analysed using the

proforma that was provided. The patient's medical history was thoroughly investigated because this information is critical for determining the kind of hernia and what caused it. A comprehensive general as well as a local examination was carried out. All of the cases were analysed with regard to a number of different factors, including age, gender, number of children, relative incidence, clinical presentation, type of previous operation, location of previous scar, and precipitating factors such as obesity, wound infection, and abdominal distension. Particular attention was paid to the conditions that contributed, such as persistent bronchitis and constipation, as well as an enlarged prostate. In the process of presenting the cases, only pertinent and positive findings were recorded in the proforma case sheet that is enclosed, and a master chart that deals with all aspects of the cases has been constructed and is being presented. In each and every one of the cases, the clinical diagnosis was made without any problems whatsoever. In order to determine whether or not the patient was fit for surgery, standard investigations were performed. In order to establish the extent of the hernia defect, ultrasound of the abdomen was performed on each patient. According to the severity of the hole in each patient's body, either anatomical surgery or mesh repair was performed. Patients who had their mesh repaired still had a suction drain in their bodies after the procedure. Patients were monitored for any issues that may have arisen immediately after surgery. The data that was collected was tallied, and then statistically analysed, using the SPSS programme.

Results

Researchers discovered that patients in the age range of 30 to 60 years had the highest incidence of incisional hernia. The ratio of females to males was 4:1, with the females having a greater overall presence. The history of the incision used in gynecological operations. The majority of the patients had an incisional hernia in the sub umbilical region at the time of their presentation. Ten patients underwent surgery while under general anaesthesia, while 20 patients underwent the procedure while under spinal anaesthesia. Out of 30 patients with incisional hernia, 18 were treated with overlay mesh repair and 12 by inlay repair. Patients were chosen at random and this was done regardless of the magnitude of the hernial defect or their weight. Redivac drains were employed for the vast majority of patients, and in every instance, separate incisions were required to remove the drains (Table 1).

Table 1: Surgical technique used for treatment of incisional hernia

Sr. No.	Type of repair	Kings North		Present study	
		No. of cases	%	No. of cases	%
1.	Sublay	33	63.4	0	0
2.	Overlay	16	30.7	18	60
3.	Inlay	1	1.92	12	40
4.	Ramirez abdominoplasty	2	3.84	0	0

Infection of the wound is still the most common risk factor that is related with wound failure. Two of the patients who had undergone inlay mesh repair experienced a recurrence of their incisional hernia, while the patients who had undergone overlay mesh repair did not experience a recurrence. In light of the fact that there was no recurrence during the comparative follow-up period of three to twelve months, overlay mesh repair appears to be unquestionably superior to inlay repair. Figure 1 shows the incisional hernia through the scar left by the tubectomy and table 2 lists the post-operative complications that can arise from having an incisional hernia repaired.

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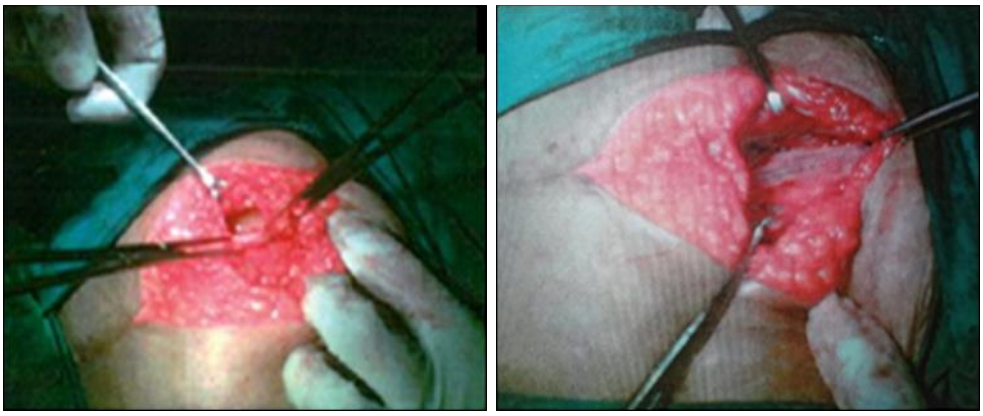

Fig 1: Incisional hernia through tubectomy scar

Table 2: Post-operative complications of incisional hernia repair

Sr. No.	Complication	Inlay Repair (N=12)	Overlay Repair (N=18)	IL vs. OL P-Value*
1.	Seroma	3(25%)	2(11.1%)	0.364, NS
2.	Wound dehiscence	1(8.3%)	-	0.400, NS
3.	Recurrence	2(16.6%)	-	0.152, NS
4.	Total	4(33.3%)	2(11.1%)	0.184. NS

Discussion

Hospital, located in Mahabubnagar, Telangana, India, between the months of May 2021 and May 2022, was the location of the study. 30 percent of the total was due to wound infection and wound gaping. Twenty percent of the cases were caused by obesity, sixteen and a half percent were caused by diabetes mellitus, and sixteen and a half percent were caused by postoperative respiratory complications. There were no problems discovered in 16.6% of the patients [23, 24].

The study of the patients' histories showed that thirteen percent of them presented with an incisional hernia within six months of their most recent operation. 23% of patients noted swelling at the operated site within a year of surgery and 30% of patients saw swelling within three years following the operation. This means that roughly 53.3% of patients had acquired an incisional hernia within three years of their surgery. Ten patients underwent surgery while under general anaesthesia, while 20 patients underwent the procedure while under spinal anaesthesia. 18 of the 30 patients who were diagnosed with an incisional hernia were treated with an overlay mesh repair, and the other 12 had an inlay repair. Patients were chosen at random, and this was done regardless of the magnitude of the hernial defect or their weight. In the majority of patients, a redivac drain was inserted, and in every instance, the drain was removed by a second incision [25-27].

A postoperative cough was diagnosed in five patients, and they were given benzyl inhalation, chest physiotherapy and cough medication to address their condition. One patient who needed treatment for urinary retention underwent a Foley catheterization procedure. Seroma collection in the suture line was treated by drainage and dressing in three patients who had undergone inlay mesh repair and in two patients who had undergone overlay mesh repair. The statistical significance of this finding was not significant (P=0.364, NS). One patient who was undergoing inlay repair experienced wound dehiscence (F=0.400, NS), which required secondary suturing to be resolved. There was no case of serious wound infection. In this particular study, there were no deaths that could be attributed to surgical procedures. Recurrent incisional hernia was observed in two patients who had inlay mesh repair performed ($p = 0.152$; not significant). There was no evidence of recurrence in any of the patients who were treated with overlay mesh repair. My research revealed a recurrence rate of

6.66%, which was consistent with the findings of the JB Shah series. Both recurrences took place less than a year after the procedure was performed. The follow-up period was quite brief, making it unable to comment on the true recurrence rate. For the purpose of my research, incisional hernias were repaired with polypropylene mesh and the suture material of the same type [28, 29]. This was done because polypropylene mesh satisfies the requirements of an ideal prosthesis and is the material that is most commonly used today for the repair of all types of hernia. In eighteen of the thirty cases, an overlay mesh repair was performed, and in twelve of the cases, an inlay repair was done. Both groups had two patients who developed post-operative wound seroma collection in the suture line. These patients were treated with appropriate drainage and dressings for their wounds. Secondary suturing was required to address wound dehiscence in one patient who had previously undergone primary suturing. In this particular study, the inlay mesh corrected group had two patients who experienced a recurrence of their incisional hernia. In the group that received an overlay mesh repair, none of the patients experienced a recurrence. In their study, Roland *et al*. found that patients who had mesh repair experienced a recurrence rate of 24 percent. The investigation by Roland and colleagues found that the recurrence rate was statistically significant. My research showed that the result was not statistically significant. However, the follow-up period was inconsistent and too short to make any definitive statements regarding the actual recurrence rate [30-33]. When inlay mesh repair was used in techniques for the repair of incisional hernias, there was increased contact between the prosthesis and the viscera, which led to wound infection, wound dehiscence and subsequent wound recurrence. Because overlay repair provides a tension-free closure and makes it simpler to treat infections, there was no recurrence of the problem after it was fixed. In conclusion, the results of my research demonstrate that overlay mesh repair is more effective than inlay repair in preventing the recurrence of incisional hernia.

Conclusion

Avoiding making incisions in the midline, particularly in the infra umbilical region, is one of the best ways to prevent incisional hernias, which are caused by medical intervention and are iatrogenic. It is just as crucial to have a meticulous aseptic procedure and carefully close the abdominal wound as it is to have deft hands doing the operation. It is equally crucial to ensure that individuals who are at high risk have appropriate preoperative preparation in order to reduce the likelihood of recurrence. When it comes to preventing a hernia from returning in patients who have undergone an incisional hernia repair, an overlay mesh repair is preferable than an inlay mesh repair.

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References

1. Baig SJ, Afaque MY, Priya P, Sheth H, Goel R, Mahawar KK, *et al*. Practice and short-term outcomes in ventral hernia repair: a prospective multicenter data audit of Indian Association of Gastrointestinal Endo Surgeons Research Collaborative. Hernia, 2022, 1-9.
2. Courtney CA, Lee AC, Wilson C, O'Dwyer PJ. Ventral hernia repair: a study of current practice. Hernia. 2003;7(1):44-46.
3. Shen MR, Howard R, Ehlers AP, Delaney L, Solano Q, Englesbe M, *et al*. Ventral hernia repair and mesh use in females of childbearing age. Surgical Endoscopy, 2022, 1-6.
4. Morales-Conde S, Hernández-Granados P, Tallón-Aguilar L, Verdaguer-Tremolosa M,

López-Cano M. Ventral hernia repair in high-risk patients and contaminated fields using a single mesh: proportional meta-analysis. Hernia, 2022, 1-13.

5. Arora E, Mishra A, Mhaskar R, Mahadar R, Gandhi J, Sharma S, Ramana B. Are drains useful in eTEP ventral hernia repairs? An AWR surgical collaborative (AWRSC) retrospective study. Surgical Endoscopy, 2022, 1-7.
6. Chaudhuri A. Incisional hernias after open abdominal aortic aneurysm repair: more attention needed at start and finish. European Journal of Vascular and Endovascular Surgery, 2022.
7. Henriksen NA, Nazari T, Simons MP, Hope W, Montgomery A. Guidelines for Treatment of Umbilical and Epigastric Hernias from the European and Americas Hernia Societies-A Web-Based Survey on Surgeons' Opinion. Journal of Abdominal Wall Surgery. 2022;1:102-60.
8. Howard R, Ehlers A, Delaney L, Solano Q, Shen M, Englesbe M, *et al*. Sex disparities in the treatment and outcomes of ventral and incisional hernia repair. Surgical Endoscopy, 2022, 1-8.
9. Park A, Birch DW, Lovrics P. Laparoscopic and open incisional hernia repair: a comparison study. Surgery. 1998;124(4):816-822.
10. Liang MK, Holihan JL, Itani K, Alawadi ZM, Gonzalez JRF, Askenasy EP, *et al*. Ventral hernia management. Annals of surgery. 2017;265(1):80-89.
11. Alder AC, Alder SC, Livingston EH, Bellows CF. Current opinions about laparoscopic incisional hernia repair: a survey of practicing surgeons. The American journal of surgery. 2007;194(5):659-662.
12. Bondre IL, Holihan JL, Askenasy EP, Greenberg JA, Keith JN, Martindale RG, *et al*. Suture, synthetic or biologic in contaminated ventral hernia repair. journal of surgical research. 2016;200(2):488-494.
13. Mariette C, Wind P, Lupinacci RM, Tresallet C, Adham M, Arvieux C, *et al*. Practice patterns in complex ventral hernia repair and place of biological grafts: a national survey among French digestive academic surgeons. Journal of visceral surgery. 2014;151(1):9-16.
14. Passot G, Villeneuve L, Sabbagh C, Renard Y, Regimbeau JM, Verhaeghe P, *et al*. Definition of giant ventral hernias: development of standardization through a practice survey. International journal of surgery. 2016;28:136-140.
15. Paul A, Korenkov M, Peters S, Köhler L, Fischer S, Troidl H. Unacceptable results of the Mayo procedure for repair of abdominal incisional hernias. The European journal of surgery. 1998;164(5):361-367.
16. Hawn MT, Snyder CW, Graham LA, Gray SH, Finan KR, Vick CC. Long-term follow-up of technical outcomes for incisional hernia repair. Journal of the American College of Surgeons. 2010;210(5):648-655.
17. Breuing K, Butler CE, Ferzoco S, Franz M, Hultman CS, Kilbridge JF, *et al*. Working Group. Incisional ventral hernias: review of the literature and recommendations regarding the grading and technique of repair. Surgery. 2010;148(3):544-558.
18. Gray SH, Hawn MT, Itani KM. Surgical progress in inguinal and ventral incisional hernia repair. Surgical Clinics of North America. 2008;88(1):17-26.
19. Hawn MT, Gray SH, Snyder CW, Graham LA, Finan KR, Vick CC. Predictors of mesh explantation after incisional hernia repair. The American journal of surgery. 2011;202(1):28-33.
20. Helgstrand F. National results after ventral hernia repair. Danish medical journal, 2016, 63(7).
21. Carbonell AM, Warren JA, Prabhu AS, Ballecer CD, Janczyk RJ, Herrera J, *et al*. Reducing length of stay using a robotic-assisted approach for retromuscular ventral hernia repair. Annals of surgery. 2018;267(2):210-217.

22. Bamehriz F, Birch DW. The feasibility of adopting laparoscopic incisional hernia repair in general surgery practice: early outcomes in an unselected series of patients. Surgical Laparoscopy Endoscopy & Percutaneous Techniques. 2004;14(4):207-209.
23. Hussain A, Mahmood H, Singhal T, Balakrishnan S, Nicholls J, El-Hasani S. Long-term study of port-site incisional hernia after laparoscopic procedures. JSLS: Journal of the Society of Laparoendoscopic Surgeons. 2009;13(3):346.
24. Israelsson LA, Smedberg S, Montgomery A, Nordin P, Spangen L. Incisional hernia repair in Sweden 2002. Hernia. 2006;10(3):258-261.
25. Hawn MT, Snyder CW, Graham LA, Gray SH, Finan KR, Vick CC. Hospital-level variability in incisional hernia repair technique affects patient outcomes. Surgery. 2011;149(2):185-191.
26. Shen MR, Howard R, Ehlers AP, Delaney L, Solano Q, Englesbe M, *et al*. Ventral hernia repair and mesh use in females of childbearing age. Surgical Endoscopy, 2022, 1-6.
27. Kingsnorth A, LeBlanc K. Hernias: inguinal and incisional. The Lancet. 2003;362(9395):1561-1571.
28. Donkor C, Gonzalez A, Gallas MR, Helbig M, Weinstein C, Rodriguez J. Current perspectives in robotic hernia repair. Robotic Surgery: Research and Reviews. 2017;4:57.
29. Venclauskas L, Šilanskaitė J, Kanišauskaitė J, Kiudelis M. Long-term results of incisional hernia treatment. Medicina. 2007;43(11):855.
30. Misiakos EP, Machairas A, Patapis P, Liakakos T. Laparoscopic ventral hernia repair: pros and cons compared with open hernia repair. JSLS: Journal of the Society of Laparoendoscopic Surgeons. 2008;12(2):117.
31. Misiakos EP, Machairas A, Patapis P, Liakakos T. Laparoscopic ventral hernia repair: pros and cons compared with open hernia repair. JSLS: Journal of the Society of Laparoendoscopic Surgeons. 2008;12(2):117.
32. Evans KK, Chim H, Patel KM, Salgado CJ, Mardini S. Survey on ventral hernias: surgeon indications, contraindications, and management of large ventral hernias. The American Surgeon. 2012;78(4):388-397.
33. Chan DL, Talbot ML, Chen Z, Kwon SCM. Simultaneous ventral hernia repair in bariatric surgery. ANZ journal of surgery. 2014;84(7-8):581-583.