

Evaluation of outcome of retromuscular mesh repair of ventral hernia surgery in Nararayan Medical College- An observational study

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Abstract

Background: This study was conducted to evaluate outcome of retromuscular mesh repair of ventral hernia. **Materials & Methods:** This study was conducted among 200 patients with Ventral Hernia of both genders treated with retromuscular mesh repair technique. **Results:** Incisional hernia were 126, umbilical were 35, para-umbilical were 26 and epigastric were 13. The mean operative time was 90.3 minutes, drain removal time was 3.2 days, hospital stay was 4.0 days, ambulation time was 3.2 days. Post-operative complications were surgical site infection seen in 4 patients, Hematoma/ Seroma formation was observed in 1 patient, wound infection in 1 case, mesh infection in 2 patients. **Conclusion:** Retromuscular mesh repair is a good and an ideal technique for the treatment of ventral incisional hernias

Key words: Retromuscular, mesh repair, Incisional hernia.

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Introduction

Ventral Hernia is a protrusion of an abdominal viscus or part of a viscus through the anterior abdominal wall occurring at any site other than groin[1]. It includes incisional hernias, paraumbilical hernias, umbilical hernia, epigastric hernias and spigelian hernias[1]. The patient seeks medical advice for swelling, discomfort, acute pain, associated gastrointestinal symptoms or cosmetic symptoms. Diagnosis can be achieved with ease by clinical examination or by ultrasound scanning[2].

A number of predisposing factors have been identified that may be related to specific patient characteristics, an underlying pathological process, or iatrogenic factors[3]. From the surgeon's perspective, repair of hernias is a commonly done procedure.

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Incisional hernias are unique in that they are the only abdominal wall hernias that are considered to be iatrogenic. It continues to be one of the more common complications of abdominal surgical procedures and is a significant source of morbidity and loss of time from productive employment[4]. It is estimated that 2 to 10% of all abdominal operations result in an incisional hernia. For many years, the repair of incisional hernia was associated with a high recurrence rate. In more recent years, the introduction of synthetic prosthetic materials has provided the opportunity to perform a tension free repair, thereby reducing the rate of recurrence. Small hernias less than 2 ½ cm in diameter are often successfully closed with primary tissue repairs. However, larger ones have a recurrence rate of up to 30-40% when a tissue repair alone is performed [5]. Nowadays tension free repair using prosthetic mesh has decreased recurrence to negligible. Despite excellent results increased risk of infection with placement of a foreign body and cost factor still exist; however, operating time and hospital length of stay are shortened. Primary tissue repair is associated with higher unacceptable recurrence rate, nowadays; tension

free mesh repair is ideal hernia repair technique[3]. Mesh repair can be done by open surgery [onlay or sublay (pre-peritoneal)] or Laparoscopic surgery (inlay) [6]. This study was conducted to evaluate outcome of retromuscular mesh repair of ventral hernia.

Materials & Methods

This study was conducted among 200 patients with Ventral Hernia in Narayan Medical College & Hospital. Ethical approval was obtained from ethical clearance committee. Inclusion Criteria were all

patients presenting with anterior abdominal wall hernias such as umbilical hernias, epigastric hernias, paraumbilical hernias, incisional hernias and spigelian hernias etc. Data such as patient age, sex incidence, etiologies, morbidity and mortality associated with the causation and management. Patients were treated with retromuscular mesh repair technique. All the statistical analysis was performed using statistical package for social sciences (SPSS Inc., Chicago, Illinois, USA). Data were presented as mean± SD and proportions as appropriate.

Results

Table 1: Distribution of patients

Parameters		(Retromuscular mesh repair)
Age group (years)	20-40	80
	40-60	120
Gender	Males	90
	Females	110

Table 1 showed that age group 20-40 years had 80 patients while age group 40-60 years had 120. 90 males and 110 females were involved in study.

Table 2: Type of ventral hernia

Type	Number	P value
Incisional	126	0.05
Umbilical	35	
Para- umbilical	26	
Epigastric	13	

Table 2 shows that incisional hernia were 126, umbilical were 35, para- umbilical were 26 and epigastric were 13. The difference was significant (P< 0.05).

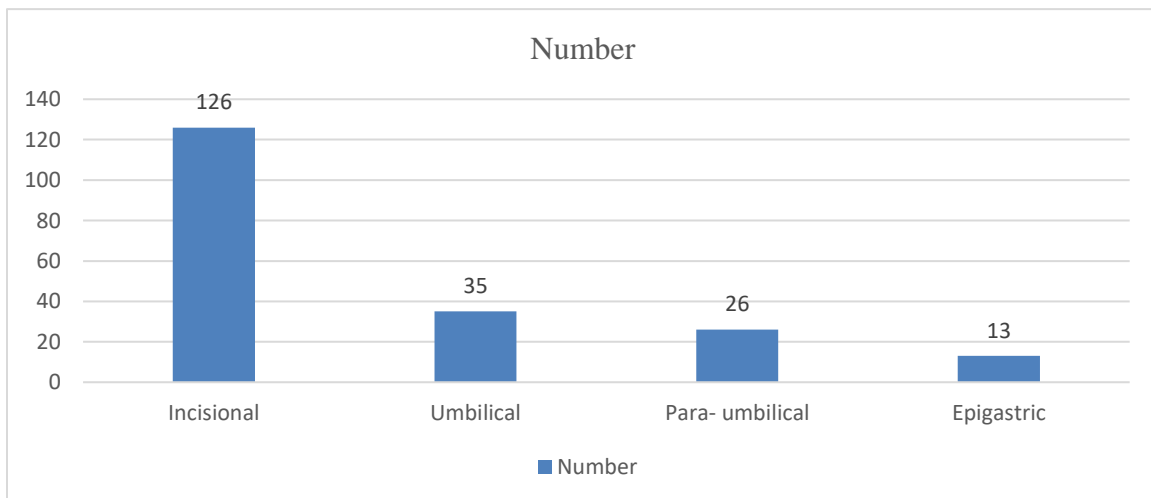


Fig 1: Type of ventral hernia

Table 3: Type of incision

Type	Number	P value
Upper midline	70	0.05
Lower midline	34	
Pfannenstiel	28	
Left paramedian	24	
Right paramedian	20	
Right subcostal	14	
Transverse umbilical	10	

Table 3 shows that type of incision was upper midline in 70, lower midline in 34, Pfannenstiel in 28, left paramedian in 24, right paramedian in 20, right subcostal in 14 and transverse umbilical in 10 cases. The difference was significant ($P < 0.05$).

Table 4: Assessment of Parameters

Parameters	Outcome	P value
Operative time (Minutes)	90.3	0.05
Drain removal (Days)	3.2	0.91
Hospital stay (Days)	4.0	0.98
Ambulation time	3.6	0.15
Recurrence rate	3	0.81
Post-operative complications		
Surgical site infection	4	0.11
Hematoma/ Seroma formation	1	0.08
Wound infection	1	1
Mesh infection	1	0.06
Mesh migration	2	0.01

Table 4 shows that the mean operative time was 90.3 minutes, drain removal time was 3.2 days, hospital stay was 4.0 days, ambulation time was 3.2 days. Post-operative complications were surgical site infection seen in 4 patients, Hematoma/ Seroma formation was observed in 1 patient, wound infection in 1 case, mesh infection in 2 patients.

Discussion

Incisional hernias have been repaired with either primary suture techniques or placement of a variety of prosthetic materials. Before the 1960s, most ventral hernias were repaired primarily with suture and a few with metallic meshes[7]. Even with some modifications, the recurrence rates with the primary suture repair ranged from 24 to 54%. The introduction of polypropylene mesh repair opened a new era of tension-free herniorrhaphy. The recurrence rates with prosthetic mesh decreased to 10-20%. Subsequently, it was realized that the placement and fixation of the mesh was more crucial in determining the outcome of the repair[8]. Analysis of various techniques of incisional hernia repair along multiple outcome variables reveals that mesh-based repair offers the best

alternative when compared with the suture-based technique. The main issue is increased risk for infection with the placement of a foreign body and the cost factor. Postoperative complications such as seroma formation, hematoma, cellulitis, and wound infection have been attributed largely to the extensive dissection and tissue handling during hernia repair.⁹This study was conducted to assess different techniques used in ventral hernia repair. In this study, patients were treated with retromuscular mesh repair technique. Age group 20-40 years had 80 patients while age group 40-60 years had 120. 90 males and 110 females were involved in study. Goda et al[10] evaluated the retromuscular mesh repair technique in the treatment of ventral incisional hernia as one of the standard techniques for treatment of such cases on 52 consecutive patients. Patients were prepared to be operated by the retromuscular mesh repair technique. All patients were evaluated with respect to operative time and postoperative complications. In this study on 52 patients, there were 37 female patients (71.2%) and 15 male patients (28.8%). The age of the studied patients ranged between 20 and 61 years with mean age of 45.4 years. The mean operative time was 84.88 ± 18.04 min. The mean period of drainage was 3.1 ± 0.9

days. Seroma was not encountered in any patient. No recurrence was reported in the studied patients during the period of follow-up (12-30 months). We found that incisional hernia were 126, umbilical were 35, para-umbilical were 26 and epigastric were 13. Alkhayat et al [11] evaluated the retro muscular mesh repair technique in the treatment of ventral hernia as one of the standard techniques for treatment of such cases. In this study on 50 patients, there were 30 female patients (60%) and 20 male patients (40%). The age of the studied patients ranged between 26 and 65 years with mean age of 49.8 years. The mean operative time was 88.5±15.3 min. The mean period of drainage was 2.3±1.3 days. Seroma was encountered in one case only 2%. No recurrence was reported in the studied patients during the period of follow-up (12 months). We found that type of incision was upper midline in 70, lower midline in 34, Pfannenstiel in 28, left paramedian in 24, right paramedian in 20, right subcostal in 14 and transverse umbilical in 10 cases. In present study, that the mean operative time was 90.3 minutes, drain removal time was 3.2 days, hospital stay was 4.0 days, ambulation time was 3.2 days. Post-operative complications were surgical site infection seen in 4 patients, Hematoma/ Seroma formation was observed in 1 patient, wound infection in 1 case, mesh infection in 2 patients. Seroma formation is one of the most commonly reported complications after ventral hernia repair. It occurs immediately after operation in virtually all patients. Most seromas develop above the mesh and within the retained hernia sac. The mean incidence of seroma in reported series at a range of 4-8 weeks is 11.4%. In the largest multi-institutional trial, seromas that were clinically apparent more than 8 weeks were considered a complication and occurred in 2.6%. Regardless of whether they are aspirated under sterile conditions or allowed to resolve, they rarely cause long-term morbidity [12]. Aspiration may increase the risk for mesh infection but is recommended if they enlarge or persist before they reach their extremes.

Conclusion

Retromuscular mesh repair is a good and an ideal technique for the treatment of ventral incisional hernias

References

1. Dubay DA, Wang X, Kuhn MA, Robson MC, Franz MG. The prevention of incisional hernia

formation using a delayed-release polymer of basic fibroblast growth factor. *Ann Surg* 2004;179-186

2. Buerger JW, Lange JF, Halm JA. Incisional hernia prevention. In: Schumpelick V, Nyhus LM, editors. *Meshes: benefits and risk*. Springer; 2004. 399-405.
3. Chevel JP. Classification of incisional hernia of the abdominal wall. In: Morales-Conde S, editor. *Laparoscopic ventral hernia repair*. Barcelona-Springer; 2002. 65-72.
4. Miserez M, Penninckx F. Endoscopic totally preperitoneal ventral hernia repair. *Surg Endosc* 2002; 16 :1207-1213.
5. Shaikh NA, Shaikh NM. Comparative study of repair of incisional hernia. *J Pak Med Assoc* 1994; 44 :38-39
6. Heniford BT, Park A, Ramshaw BJ, Voeller G. Laparoscopic repair of ventral hernias: nine years' experience with 850 consecutive hernias. *Ann Surg* 2003; 238 :391-400
7. Pierce RA, Spittler JA, Frisella MM, Matthews BD, Brunt LM. Pooled data analysis of laparoscopic vs. open ventral hernia repair: 14 years of patient data accrual. *Surg Endosc* 2007; 21 :378-386.
8. Bauer JJ, Harris MT, Gorfine SR, Kreel I. Rives-Stoppa procedure for repair of large incisional hernias: experience with 57 patients. *Hernia* 2002; 6 :120-123
9. Earle D, Seymour N, Fellingner E, Perez A. Laparoscopic versus open incisional hernia repair: a single-institution analysis of hospital resource utilization for 884 consecutive cases. *Surg Endosc* 2006; 20 :71-75.
10. Goda El-Santawy HM, El-Sisy AA, El-Gammal AS, El-Kased AF, Sultan HM. Evaluation of retromuscular mesh repair technique for treatment of ventral incisional hernia. *Menoufia Med J* 2014; 27:226-9.
11. Alkhayat MM, Saleh HA, Nassar MN, El-Balshy MA. Evaluation of retro muscular mesh repair technique for treatment of ventral hernia. *International Surgery Journal*. 2018 Jan 25;5(2):364-7.
12. Bhat Mahabhaleshwar G, Somasundaram Santosh K. Preperitoneal mesh repair of incisional hernias: a seven-year retrospective study. *Indian J Surg* 2007; 6:95-98.

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