Original Article

Early Outcome of Onlay Mesh Repair for Umbilical Hernia in a Tertiary Care Hospital: a Retrospective Study

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Article History
Received: 14 May, 2025
Accepted: 1 Jun, 2025
Published: 31 Jul, 2025

Funding Sources: None

Conflict of Interest: None

Online Access

DOI: https://doi.org/10.61122/jkistmc359

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Citation: Maharjan SB, Guragain N. Early Outcome of Onlay Mesh Repair for Umbilical Hernia in a Tertiary Care Hospital: a Retrospective Study. J. KIST Med. Col 2025;7(14):55-58.

Abstract

Introduction: Umbilical hernia is a ventral hernia. It can be repaired by different surgical methods like Mayo's repair, simple suture repair, inlay mesh repair, onlay mesh repair, sublay mesh repair and laparoscopic repair. The aim of this study is to determine the early outcome after onlay mesh repair for umbilical hernia.

Methods: A retrospective descriptive study was conducted in Department of Surgery, Patan Academy of Health Sciences from April 2022 to March 2025. All the records were obtained from OT record book and medical record sections. All the patients who underwent onlay mesh repair for umbilical hernia were included while those who underwent suture repair or laparoscopic repairs were excluded. The patient's demographics, post-operative details, hospital stay, comorbidities and complications were analyzed.

Results: This study includes a total of 30 patients. Among these, the indication for onlay mesh repair was primary umbilical hernia in 17 patients (56.6%) and for umbilical port site hernia (acquired cause) in 13 patients (43.3%). The mean age was 50.4±14.3 years and male female ratio was 2.3: 1. Median hospital stay was 5 days (IQR: 5-6 days). Early complications were noted in 8 patients (26.4%) with margin necrosis in 4 patients (13.3%), wound infection in 3 patients (10%) and hematoma formation in 1 patient (3.3%).

Conclusion: Onlay mesh repair is simple, easy, quick and effective surgical procedure for repair of umbilical hernia with acceptable few complication rate.

Keywords: complication, hernia, mesh, onlay repair.

Introduction

Umbilical hernia is a ventral hernia. It may be primary or acquired. It represents 10% of all abdominal wall hernias.[1,2] Increased intra-abdominal pressure like in multiple pregnancy, ascites, COPD and previous surgeries may result in umbilical hernia. There may be pain, swelling, obstruction, strangulation and ischemia in umbilical hernia. Surgical repair is the main treatment for umbilical hernia with methods like Mayo's repair, simple suture repair, onlay mesh repair, inlay mesh repair, sublay mesh repair and laparoscopic repair (intra peritoneal onlay mesh). Mayo's repair and simple suture repair have some sort of tissue tension and have high recurrence rate about 19-54%.[3,4] Using Mesh for repair of umbilical hernia has advantages like less recurrence rate.[5-7] Small umbilical hernia less than 2cm can be repaird with simple suture and more than 2 cm with mesh

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repair. Mesh can be placed at different tissue planes which has its own advantages and disadvantages. In this study mesh is kept over the hernia defect following the technique called onlay mesh repair. Mesh repair has complications like wound infection, seroma formation, hematoma formation, pain, wound margin necrosis and flap necrosis.

Methods

This study was a descriptive and retrospective cross sectional study conducted in department of Surgery, Patan Academy of Health Sciences from April 2022 to March 2025. All the cases of onlay mesh repair for umbilical hernia were included whereas incarcerated or strangulated umbilical hernias, hernias which were managed by simple anatomical repair or laparoscopic repair were excluded. All the necessary data were obtained from record files available in medical records section. This study obtained total 35 patients in the three year study period but enrolled only 30 patients due to missing of record files of remaining 5 patients.

All the onlay mesh repair for umbilical hernias in this study were performed under general or spinal anesthesia. At the time of induction Inj. Ceftriaxone 1gm. Intra venous was given as the prophylactic antibiotic. During the surgical procedure, transverse incision was made inferior to umbilicus. The upper and lower subcutaneous flaps were raised and the defect was identified. The redundant sac was excised, the contents were reduced and the defect was closed with 1/0 polypropylene suture. After adequate dissection, polypropylene mesh was kept over the anterior rectus sheath overlapping at least 2-5 cm of the defect. The hemostasis was maintained and the mesh was fixed with underlying rectus sheath with 2-0 or 3-0 polypropylene suture. The wound was then closed with staplers or suture. A negative suction drain was kept under the subcutaneous plane to prevent the formation of seroma and hematoma. The drain was removed once the output was less than 30-50ml. After their discharge, the patients were followed up regularly on OPD basis. All the demographics of the patients, hospital stay , and complications were considered in this study to determine early outcomes of onlay mesh repair of umbilical hernia repair.

Results

This study included total of 30 patients, who presented to our centre within the three year period for umbilical hernia and were repaired with onlay mesh. The etiology of umbilical hernia was primary in 17 patients (56.6%) while the port site umbilical hernia (acquired cause) in 13 Patients (43.3%). The mean age of the patients was 50.4 ± 14.3 years. In this study, the number of male patients was higher and the male female ratio was 2.3 :1. (Table 1). In this study, 6 patients (20%) were hypertensive, 3 patients had COPD (10%) and 3 patients had diabetes mellitus (10%). The median days of hospital stay was 5 days (IQR: 5-6 days).

The complications arising within a one-month period postoperatively were considered as the early complications. All the patients were followed up regularly on OPD basis. The complications like seroma formation, wound infection, wound margin necrosis and hematoma formation were recorded. In this study, complications were noted in 8 patients (26.4%). Among the common complications, the margin necrosis was found in 4 patients (13.3%), wound infection in 3 patients (10%), hematoma formation in 1 patient (3.3%) and seroma formation in none. (Table 2)

Table 1: Demographics and hospital stay

Category	
Mean age	50 ± 14.3 years
Male - n (%)	21 (70 %)
Female - n(%)	9 (30 %)
Male : Female ratio	2.3 : 1
Median days of Hospital stay	5 days (IQR: 5-6 days)

Table 2: Complications after onlay mesh repair for umbilical hernia

Complications	Number of patients	Percentage
Margin necrosis	4	13.3%
Wound infection	3	10%
Hematoma	1	3.3%
Seroma	0	0%

Discussion

Umbilical hernia is one of the ventral hernias. Surgery is the main treatment option for umbilical hernia with techniques like Mayo's repair, simple suture repair, inlay mesh repair, onlay mesh repair, sublay mesh repair and laparoscopic repair for umbilical hernia. Many surgeons prefer simple suture repair for small umbilical hernias. The European Hernia Society and American Hernia Society strongly recommended mesh repair for umbilical hernia to reduce recurrence.[8] Studies have shown that the use of mesh to repair the umbilical hernia results in low recurrence rate.3 In this study, onlay mesh repair is done for the umbilical hernia.

In our study mean age of patient was 50.4±14.3 years. This study showed higher number of male patients than female with ratio 2.3:1. In a different study done by Srinivas et al, the ventral hernias were more common in females and elderly people than males and younger people.9 The median days of hospital stay after onlay mesh repair in this study was 5 days (IQR: 5-6 days) while mean hospital stay coated by Srinivas et al was 10,11 days.[9] Similar findings were noted by other authors.[10,11] So hospital stay of patients

were lower in our study.

According to literatures, many surgeons prefer simple suture repair for small umbilical hernia. Mesh repair is superior to suture repair in term of recurrence. Mostly, Inlay mesh repair is not preferred nowadays.[5-7] Some studies showed, sublay was better than onlay repair in terms of seroma and hematoma formation.[10-13] Still there is no uniform consensus among surgeons on either sublay or onlay is superior. Both seroma and hematoma can result in surgical site infection.[5,14] Srinivas et al[9] reported 17.3%, Hanumanthappa J8 reported 10% and Qayoom et al[15] reported 11.11% patients developed wound infection after onlay mesh repair while our study found the wound infection in only 3 patients (10%). None of them required readmission or the removal of mesh for local complications of the repair as these were managed with regular dressing and antibiotics.

In this study 1 patient (3.3%) developed hematoma after onlay mesh repair. The skin staplers were removed and evacuation of hematoma performed followed by regular dressings requiring no major interventions. Srinivas et al[9] reported seroma in 42.5% of complicated cases and Hanumanthappa J et al[8] reported seroma in 5% of total patients, our study did not have any patients with seroma. The risk factors like COPD, ascites, diabetes mellitus, hypertension and smoking may increase morbidity and mortality in umbilical hernia repair.

This study is a cross-sectional study of the data of 3 years duration, which limits the study population and the follow up time required to observe the recurrence rates. Due to the retrospective design with a small population size, we could not study on the potential risk factors for the complications and also might have missed the patients who have seeked medical help from other centres for the complications. Our study only looks at the complications after onlay mesh repair but further studies which compare the outcomes of different surgical techniques are required.

Conclusion

Onlay mesh repair is simple, quick, easy and effective surgical procedure for umbilical hernia. It is associated with a few complications rate. So onlay mesh repair is one of choice of repair for umbilical hernia.

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