



## Mesh Migration Causing Strangulated Intestinal Obstruction After Umbilical Hernia Repair

Authors

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### ABSTRACT

*Mesh migration following hernia repair is an uncommon complication, leading to erosion, infection, fistula or obstruction. Migration can occur because of primary factors like inadequate fixation or can be secondary due to erosion. Very few cases have been reported of mesh migration causing intestinal obstruction after umbilical hernia repair and ours is perhaps only the second such case resulting in strangulated bowel obstruction. Use of prosthetic materials like prolene is more liable to develop in such complications and a composite or a biocompatible mesh is less liable to develop such complications.*

**Key Words:** Umbilical, hernia, mesh, migration, intestinal obstruction

### INTRODUCTION

Mesh migration and subsequent infection are common complications after surgical repair of hernias, either open or laparoscopic. Many reports of plug or mesh migration have been described after inguinal hernia repair. However, migration of mesh after umbilical hernia repair is extremely rare and only a few cases have been reported<sup>(2,10)</sup>. We encountered an extremely rare case of strangulated intestinal obstruction secondary to mesh migration after repair of umbilical hernia necessitating exploratory laparotomy and

resection anastomosis of intestine. We present the case along with the review of the available literature regarding the the same.

### CASE REPORT

A 58 year old female patient reported to our surgical clinic with symptoms of vomiting, abdominal pain, constipation and abdominal distention since 3 days, suggestive of acute intestinal obstruction. She had undergone umbilical hernia repair at 49 years of age and developed a recurrence after 3 years which was

treated by mesh repair. She did not have any concurrent medical illness like diabetes or hypertension.

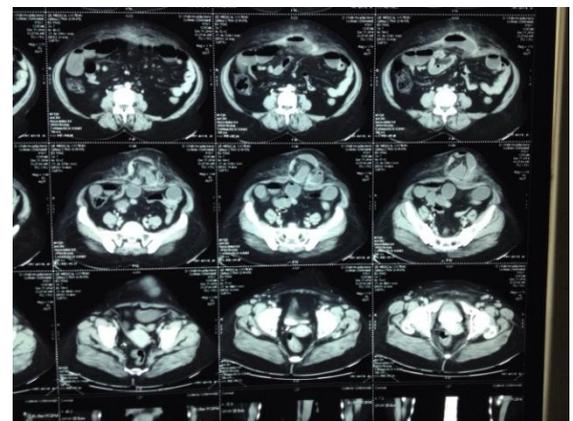
On examination, the patient was febrile, pulse was 110/min, and BP was 100/80 mm of Hg. Abdominal examination showed a grossly distended abdomen with rebound tenderness in lower abdomen along with sluggish peristalsis and an associated irreducible tense umbilical hernia involving the scar of previous surgery. Erect abdominal x-ray showed multiple air fluid levels along with dilated intestinal coils and the ultrasonogram revealed an irreducible incisional hernia with dilated bowel loops and omentum protruding in the hernia sac. A subsequent CT scan revealed a large defect in the anterior abdominal wall into which there was herniation of sac containing bowel loops and fluid along with omentum suggestive of acute intestinal obstruction.

The patient was taken for emergency exploratory laparotomy after adequate surgical preparation for the intestinal obstruction. On exploration, disintegrating polypropylene mesh was discovered causing adhesions of coils of terminal ileum to it along with presence of gangrenous loop of intestine 2 feet away from ileocaecal junction. A complete excision of gangrenous intestine was done along with the removal of mesh adherent to it and a resection anastomosis of healthy bowel was performed. Anatomical repair of the hernial site was done during the closure of abdomen, in view of the associated infective condition of peritoneal cavity. Postoperative recovery of the

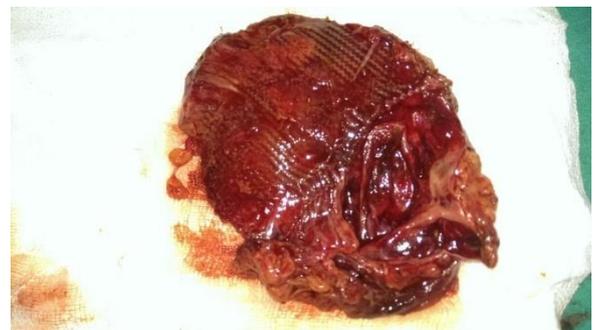
patient was uneventful and she was discharged on 10th postoperative day



**Fig 1:** Clinical photograph



**Fig 2:** CT Scan of abdomen



**Fig 3:** Operative photograph

## DISCUSSION

Umbilical hernia accounts for 3-8% cases of abdominal hernias. Open primary repair remains the operation of choice for defects < 2 cm in size, while mesh repair is the preferred surgical procedure for defects > 3 cm in size<sup>(11)</sup>. Mesh

repair has significantly reduced the incidence of recurrence after umbilical hernia repair from 54% to less than 10% <sup>(10)</sup>. Incisional hernias occur in 10-15% cases after abdominal surgeries. Incidence of recurrence has been significantly reduced from 60% after simple sutured repair to 30% after use of mesh in repair, which is now the preferred technique <sup>(1)</sup>, especially in defects > 4cms.

Several complications can occur after use of mesh in hernia repairs, which include wound hematoma and seroma, foreign body reaction, organ injury, infection, mesh rejection and fistula <sup>(1)</sup>. Mesh migration following hernia repair is an uncommon complication which may lead to erosion, infection, abscess, fistula and obstruction. Complete intraluminal migration is extremely rare <sup>(4)</sup>. Mesh migration can occur by two mechanisms. Primary mechanical migration occurs due to an inadequate fixation or displacement by external forces. Secondary migration occurs through transanatomical planes due to erosion induced by foreign body reaction <sup>(10)</sup>. Mesh migration has reported to have occurred to urinary bladder or scrotum after laparoscopic hernia repairs and into small and large bowel leading to enterocutaneous / enterovesicle fistulas <sup>(1)</sup>. Many cases have been reported of small bowel obstruction due to mesh migration following open or laparoscopic inguinal hernia repairs <sup>(5,7,9)</sup> and obturator hernia repair <sup>(3)</sup>. However, small bowel obstruction due to migration of mesh following incisional or umbilical hernia repairs are very rare <sup>(2,8)</sup>. and ours is probably only the second case to describe mesh migration causing intestinal obstruction and

strangulation, after umbilical hernia repair. Enterocutaneous fistulas have been described after migration of mesh into sigmoid colon after ventral hernia repair <sup>(4)</sup> and into ileal loop after umbilical hernia repair <sup>(10)</sup>.

The incidence of migration and subsequent complications depend upon the type of mesh used and the method of fixation adopted in ventral hernia repairs. The use of prosthetic materials like polypropylene or PTFE mesh leads to more incidence of infections and adhesions with subsequent complication <sup>(1)</sup>, as in our case where prolene mesh was used. Use of transabdominal sutures titanium tacks or staples may cause more complications by entrapping sensory nerves and inducing more adhesions <sup>(8)</sup>. Composite meshes are preferable, which combine inert surface with a more porous surface, allowing intraperitoneal placement of mesh with minimal adhesion formation to the dorsal surface but tissue in growth to the ventral surface, although occasional migration of such a mesh has also been reported <sup>(4)</sup>. Recently greater use of biocompatible implants such as Permacol (acellular porcine debris), used as a dermal scaffold, vascularised and remodelled to construct the abdominal wall has been shown to be having greater stability and decreasing the degradation by collagenase, resulting in more long term prosthesis for the hernial site <sup>(10)</sup>.

We have performed anatomical repair of the defect with nonabsorbable prolene sutures, because of the associated infective condition of the abdomen in our patient who presented with strangulation. However, if conditions permit, use of either a composite mesh <sup>(4)</sup> or a biocompatible

mesh<sup>(10)</sup> is preferable in repair of ventral hernias, while dealing with the cases involving mesh migration.

## CONCLUSION

Small bowel obstruction subsequent to mesh migration following umbilical hernia repair is an extremely rare complication, as is evident in our case. Use of either a composite or a biocompatible mesh is advocated for the hernia repair rather than a prosthetic mesh to avoid such an eventuality.

## REFERENCES

1. D Gandhi , S Marcin , Z Xin , B Asha D Kaswala , B Zamir . Chronic abdominal Pain secondary to mesh erosion into cecum following incisional hernia repair ; a case report and literature review .Ann Gastroenterol 2011;24(4) : 321-324
2. Di Muria A , Formisano V, Di Carlo F ,Aveta A, Giglio D . Small bowel obstruction by mesh migration after Umbilical hernia repair . Ann ItalChir , 2007 Jan-Feb; 78(1):59-60.
3. D. Borchert , B. Kumar , R. Dennis , J. Alberts . Mesh migration following obturator hernia repair presenting as a bezoar inducing small intestinal obstruction . Hernia(2008)12:83-85.
4. E.C. Nelson and T.J. Vidovszky .Composite mesh migration into the sigmoid colon following ventral hernia repair . Hernia. Feb 2011; 15(1): 101-103
5. FerroneR ,Scarone PC, Natalini G. Late complication of open inguinal hernia repair : Small bowel obstruction caused by intraperitoneal mesh migration .Hernia.2003 Sep;7(3):161-2. Epub 2003 Apr 24.
6. Joaquin A. Rodriguez , MD, and Ronald A. Hinder, MD , PhD. Surgical Management of Umbilical Hernia . Operative techniques in General Surgery , Vol 6, No.3 ( September ), 2004:pp 156-164.
7. Liang X , Cai XJ , Yu H , Wang YF . Strangulated bowel obstruction resulting from mesh plug migration after open inguinal hernioplasty: Case Report . Chin Med J ( Engl ) , 2008 Jan 20;121(2): 183-4
8. S. Olmi , M. Uccelli , G. Cesana , F. Ciccicarese , D. Carrieri , G. Castello , G. Legnani . Small bowel obstruction caused by mesh migration . Case Report . G Chir Vol.34-n.3-pp.70-73 March 2013.
9. Tiwari SK , Lal P. A rare case of acute intestinal obstruction due to bowel entrapment in migrated onlay polypropylene mesh . Ann R CollSurg Engl. 2014 Oct;96(7):e4-5.
10. V. Ripetti, V. La Vaccara , E. Angelini , G. Battista Giorgio, R. Alloni. Mesh migration and migration after Umbilical Hernia repair . Surgical Science , 2013, 4,421-425 .