Case study

VERY EARLY DRAIN SITE HERNIA WITH INTESTINAL OBSTRUCTION AFTER LAPAROSCOPIC APPENDECTOMY AND DEBULKING OF A MUCINOUS NEOPLASM OF APPENDIX : A CASE REPORT

ABSTRACT

INTRODUCTION -Trocar site hernia is a rare but potentially life threatening complication of laparoscopic surgery. Among trocar site hernia, drain site herniation is an even rarer complication. Also, due to its low prevalence it is usually diagnosed late and there is a delay in surgical intervention. Herein, we report a case of jejunal loops herniating through a 10mm drain site in a case of laparoscopic appendectomy with debulking for mucinous neoplasm of appendix. CASE SUMMARY - A 76 year old male known hypertensive, who underwent laparoscopic appendicectomy with debulking for low grade appendiceal mucinous neoplasm presenting on post-operative day 8 with complaints of pain in abdomen, vomiting and inability to pass stool or flatus since 3 days. Patient was hypotensive and was admitted in the ICU for further management. Patient was resuscitated with fluids and intravenous antibiotics and CT abdomen was performed on day 3 of admission as the symptoms were not relieved. CT was suggestive of jejunal loops herniating through the lateral abdominal wall. Patient was taken up for emergency laparotomy and a drain site hernia was diagnosed which was reduced and bowel loops were found to be viable. Herniorrhaphywas done. Patient recovered well and was discharged on post operative day 9. CONCLUSION - Trocar site hernia is a rare complication that must be kept in mind following laparoscopic surgery. There must be high degree of suspicion to avoid serious complications like necrosis or gangrene of the bowel segment. Also all 10 and 12 mm ports must be closed under vision following laparoscopic surgeries to avoid herniation.

Keywords – AppendectomyAdhesions Drain Hernia Laparoscopic Mucinous.

Abbreviations – TSH – Trocar Site Hernia.

INTRODUCTION

Trocar site hernia (TSH) is a rare and potentially dangerous complication of laparoscopic surgery. The incidence of TSH is shown to be 0.3% - 5.4% depending on several factors like age,BMI, trocar size, previous history of hernia, previous surgery and trocar design[1][2]. However the most important factor affecting the occurrence of TSH is trocar size. Hernias almost always occur in 10 and 12 mm ports and never in 5 mm ports as the musculo-facial planes in a 5 mm port are too small for the intra-abdominal contents to herniate through. Drain site TSH are a special type of TSH that occur through the port where the intra-abdominal

drainage tube is placed. All the 10 and 12 mm trocar sites are routinely closed under vision in laparoscopic surgery however the musculo-facial planes and peritoneum at the drain site have to be left open leading to occurrence of drain site TSH.

Herein, we report a rare case of drain site TSH just 3 days after a laparoscopic appendicectomy with debulking for mucinous neoplasm of appendix and how the complication was diagnosed and dealt with.

CASE PRESENTATION

A 76 year old known hypertensive malepresented with non-specific complaints of loss of weight and appetite with intermittent abdominal pain and right inguinal hernia. A CT scan was performed of the abdomen and pelvis and it was suggestive of ascites with a lump in right iliac fossa. A provisional diagnosis of mucinous appendiceal neoplasm was made and pateint was planned for laparoscopic appendectomy with debulking of the ascites as the patient was deemed not clinically fit for total peritonectomy with HIPEC due to age and other comorbid conditions as well as presence of the advanced disease.

Surgery was done uneventfully via 4 ports. Two 10 mm ports on the left lateral abdominal wall, one 5 mm port on the lateral abdominal wall and one 5 mm port in the infraumbilical region. Appendectomy was done following which removal of almost all mucinous deposits on peritoneum was carried out. A thorough wash was given with warm saline.A 24 Fr abdominal drain was placed in the pelvis though one of the 10 mm trocar sites and fixed in place.

The patient had a relatively uneventful post op course and drain was removed on post op day 3. Patient opened bowels 3 times before being discharged in post op day 4.

Patient then presented on post op day 10 in the emergency department with complaints of severe pain in abdomen that was generalized with distension of the abdomen.He presented with constipation and obstipation since 3 days with bilious projectile vomiting and anuria since 1 day.

On examination, the patient was dehydrated and pale, tachycardic with a pulse of 110 beats per minute and blood pressure of 80/50 mm of Hg. He was conscious but not oriented to time, place or person and showed signs of mild confusion.

On abdominal examination, we could elicit significant tenderness with guarding and rebound in all four quadrants suggesting features of peritonitis. A PR exam was performed which showed an empty roomy rectum without any mass or fecal impaction.

Patient was admitted in the intensive care unit and 2 large bore IV cannulas were placed and aggressive fluid resuscitation was done following which patient was hemodynamically stable. Ryle's tube insertion was done and yielded 2.2 litres of bilious aspirate that was mildly feculent. Patient had an elevated creatinine of 2.4 and very low urine output. Central line insertion done

and fluid resuscitation was continued. Adhesive obstruction was suspected and conservative line of management was planned. He settled hemodynamically but was yielding 2 liters of ryles tube aspirate daily.

Decision was taken to perform a CT scanof abdomen and pelvis which showed bowel loops herniating through the left lateral abdominal wall.However, one peculiar finding noted on the scan was that the extern oblique was obliterated and the internal oblique and transversusabdominis planed were gaping wherein the bowel loops had herniated suggesting that the herniation occurred around 1 to 2 days after removal of drain.

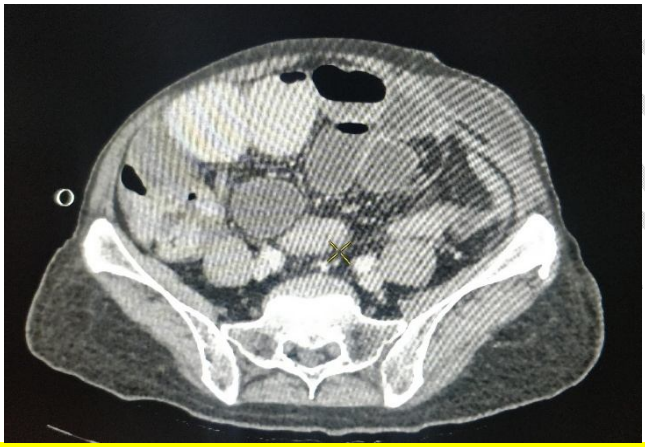
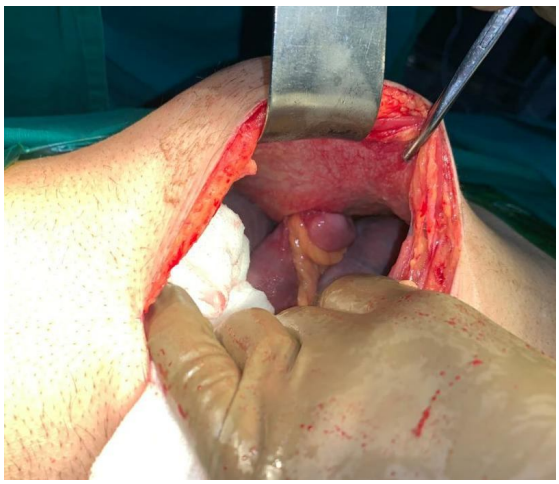


FIG 1 BOWEL LOOPS HERNIATING ON CT SCAN

Patient was taken up for urgent laparotomy and jejunal loops were seen herniating through the drain site. Bowel reduced and was found to be viable. Defect was closed with 1-0 vicryl and a herniorrhaphywasdone. Patient had a relatively uneventful post-operative course and was discharged on post-operative day 10. Patient remains comfortable and free of complications on 2 weeks follow up.



(FIG-2) **(FIG – 3)**

BOWEL LOOPS HERNIATING THROUGH DEFECTVIABLE JEJUNAL LOOPS AFTER BEING REDUCED

DISCUSSION

Over the course of the last 30 years laparoscopic surgery has gained immense popularity and widespread acceptance over abdominal surgery due to improved immediate post-operative results, reduced morbidity and faster recovery of the patients.

However, laparoscopic surgery does come with its own complications one of the most common and serious one being trocar site hernia. TSH is defined as protrusion of intra-abdominal contents into the abdominal wall from a trocar site. A study conducted by tonouchi et al. classified trocar site hernias into 3 types – 1)early onset type (where the hernia occurs within 2 weeks of surgery and most commonly presents as small bowel obstruction). 2)late onset type (due to dehiscence of facial planes presents without obstruction and consists of a sac of peritoneum). 3) A special type wherein dehiscence of the entire abdominal wall occurs anytime after surgery.[3] Third type is the most common type and seen among large number of patients after laparoscopic surgery.[4] Drain site TSH are emergent conditions wherein if suspected an urgent USG or CT scan must be performed and subsequent laparotomy or laparoscopy must be done to prevent bowel gangrene.

Risk factors for TSH could be patient related or port related patient related factors are age, obesity, gravida status in females, personal factors such as bowel bladder habits, smoking causing chronic cough.[2] However the more important factors are port size, position, whether sharp or blunt, instrument used through that particular port and technique of closure.It has been reported that over 82% of TSHs occurred at the umbilicus site, with an extremely high rate of 96% when the trocar size was larger than 10 mm.[5][6] It is commonly acknowledged that a non-bladed trocar can decrease tissue trauma, resulting in the reduced incidence of TSH.[7] 10

and 12 mm sharp ports inserted from midline have the maximum tendancy to cause herniation post surgery. In our case the only risk factor was the age of the patient as the port used was non bladed and inserted in extraumbilical position. The only unusual point was that a 24 Frdrain was inserted from the 10 mm camera port. This caused an extremely rare early onset herniation without a peritoneal sac and lead to small bowel obstruction only 5 days after removal of the drain.

Due to this complicationSanz et al have recommended routinefascial closure of all port sites more than 5 mm in multiplelayers to close all musculo-fascialplanes[8]. There have been multiple cases reported of TSH from 5 as also 3 mm ports after gynecological and surgical procedureshowever none of these have been drain site herniations.

Out of the reviewedliterature Ramalingum et al, Manigrasso et al, andXianggao et al. , were reports suggesting drain site TSH. Of these manigrasso reported a drain site hernia with the drain still in-situ[9][10].Ramalingum reported 5 early drain site hernias in a paediatric population of 148 cases however all of them had omentum as content[10] and gao reported a small bowel herniation 10 days after removal of drain[1]. A retrospective study on laparoscopic procedures for children revealed that 5/148 had DSH after the operation, three of which were released by sedation.[10]

We firmly believe that precautionary measures are the mainstay in reducing the rate and management of drain site TSH. There should be reasonable consideration regarding the selection and insertion position of the drainage tube. Insertion of surgical drainage should be avoided at the ≥ 10 mm trocar site to eliminate the free space between the abdominal wall and the tube. The residual unstitched huge fascial defect after tube removal is prone to causing visceral incarceration[5][9]. Thus, all the drainage tubes must always be inserted from a separate incision and never from trocar site. We can also conclude that all trocar sites larger than 10 mm must be closed in layers and that any trocar site of 5 mm through which a drain has been inserted must be closed.[11] We report a similar case here but ours is different and unique due to the fact that the jejunual loops herniated through the drain site a mere 3 days after removal of drain causing small bowel obstruction and also early signs of bowel ischaemia had set in.

Strategically, multidisciplinary treatment may benefit the formulation of an individualized treatment schedule that is convenient for whole-process supervision of the physical condition of patients. Collectively, a comprehensive and profound understanding of the risk factors for DSH and the application of adequate precautions are thought to decrease the incidence of DSH to a minimum.[5]

CONCLUSION

There is not much information available on the prevention of such herniations but what we can conclude from our study is that we must always close any port larger than 5 mm in multiple layers and any drain insertion should be done by taking a separate incision or from a 5 mm

port. This is the best possible way to avoid these herniations in the future however any concrete evidence on these findings is yet to be established.

REFERENCES

1.Gao X, Chen Q, Wang C, Yu YY, Yang L, Zhou ZG. Rare case of drain-site hernia after laparoscopic surgery and a novel strategy of prevention: A case report. World Journal of Clinical Cases. 2020 Dec 26;8(24):6504.

2. .Memon MR, Arshad S, Rafiq S, Bozdar AG, Shah SQ. Port-site hernia: A serious complication of laparoscopy. Rawal Med J. 2011;36:14-7.

3. Tonouchi H, Ohmori Y, Kobayashi M, Kusunoki M. Trocar site hernia. Archives of surgery. 2004 Nov 1;139(11):1248-56.

4. .Makama JG, Ameh EA, Garba ES. Drain site hernia: a review of the incidence and prevalence. West Afr J Med. 2015 Jan 1;34(1):62.

5. Su J, Deng C, Yin HM. Drain-site hernia after laparoscopic rectal resection: A case report and review of literature. World J Clin Cases. 2022 Mar 16;10(8):2637-2643. doi: 10.12998/wjcc.v10.i8.2637. PMID: 35434063; PMCID: PMC8968592.

6. .Helgstrand F, Rosenberg J, Bisgaard T. Trocar site hernia after laparoscopic surgery: a qualitative systematic review. Hernia. 2011 Apr;15:113-21.

7. Gutierrez M, Stuparich M, Behbehani S, Nahas S. Does closure of fascia, type, and location of trocar influence occurrence of port site hernias? A literature review.Surgical Endoscopy. 2020 Dec;34:5250-8.

8. Moreno-Sanz C, Picazo-Yeste JS, Manzanera-Díaz M, Herrero-Bogajo ML, Cortina-Oliva J, Tadeo-Ruiz G. Prevention of trocar site hernias: description of the safe port plug technique and preliminary results. Surgical innovation. 2008 Jun;15(2):100-4.

9. Manigrasso M, Anoldo P, Milone F, De Palma GD, Milone M. Case report of an uncommon case of drain-site hernia after colorectal surgery. International journal of surgery case reports. 2018 Jan 1;53:500-3.

10. Ramalingam M, Senthil K, Murugesan A, Pai M. Early-onset port site (drain site) hernia in pediatric laparoscopy: a case series. Journal of Laparoendoscopic& Advanced Surgical Techniques. 2012 May 1;22(4):416-8.

11. Gass M, Zynamon A, von Flüe M, Peterli R. Drain-site hernia containing the vermiform appendix: Report of a case. Case Reports in Surgery. 2013 Jun 4;2013.