

# World Journal of *Clinical Cases*

*World J Clin Cases* 2021 May 26; 9(15): 3487-3795



**OPINION REVIEW**

- 3487 COVID-19 combined with liver injury: Current challenges and management  
*Deng ML, Chen YJ, Yang ML, Liu YW, Chen H, Tang XQ, Yang XF*

**MINIREVIEWS**

- 3498 Cholesterol gallstones: Focusing on the role of interstitial Cajal-like cells  
*Fu BB, Zhao JN, Wu SD, Fan Y*
- 3506 Association of hidradenitis suppurativa with Crohn's disease  
*Zhang M, Chen QD, Xu HX, Xu YM, Chen HJ, Yang BL*
- 3517 Surgical treatment of hepatocellular carcinoma in the era of COVID-19 pandemic: A comprehensive review of current recommendations  
*Fancellu A, Sanna V, Scognamillo F, Feo CF, Vidili G, Nigri G, Porcu A*

**ORIGINAL ARTICLE****Retrospective Cohort Study**

- 3531 Critical prognostic value of the log odds of negative lymph nodes/tumor size in rectal cancer patients  
*Xie JB, Pang YS, Li X, Wu XT*
- 3546 Effectiveness of adjunctive corticosteroid therapy in patients with severe COVID-19: A retrospective cohort study  
*Xiong B, He LM, Qin YY, Du H, Zhan Z, Zhou YH, Chen YK, Zhang A*

**Retrospective Study**

- 3559 Multifactor study of efficacy and recurrence in laparoscopic surgery for inguinal hernia  
*Chen WL, Deng QQ, Xu W, Luo M*
- 3567 Ultrasound-guided, direct suprainguinal injection for fascia iliaca block for total hip arthroplasty: A retrospective study  
*Wang YL, Liu YQ, Ni H, Zhang XL, Ding L, Tong F, Chen HY, Zhang XH, Kong MJ*
- 3576 Changes in endoscopic patterns before and during COVID-19 outbreak: Experience at a single tertiary center in Korean  
*Kim KH, Kim SB, Kim TN*

**Observational Study**

- 3586 Cleansing efficacy and safety of bowel preparation protocol using sodium picosulfate/magnesium citrate considering subjective experiences: An observational study  
*Liu FX, Wang L, Yan WJ, Zou LC, Cao YA, Lin XC*

- 3597 Clinically significant endoscopic findings in patients of dyspepsia with no warning symptoms: A cross-sectional study

*Mao LQ, Wang SS, Zhou YL, Chen L, Yu LM, Li M, Lv B*

### META-ANALYSIS

- 3607 Effect of antifoaming agent on benign colorectal tumors in colonoscopy: A meta-analysis

*Zhang H, Gong J, Ma LS, Jiang T, Zhang H*

### CASE REPORT

- 3623 Subchondral bone as a novel target for regenerative therapy of osteochondritis dissecans: A case report

*Zhang SY, Xu HH, Xiao MM, Zhang JJ, Mao Q, He BJ, Tong PJ*

- 3631 Progressive familial intrahepatic cholestasis – farnesoid X receptor deficiency due to *NR1H4* mutation: A case report

*Czubkowski P, Thompson RJ, Jankowska I, Knisely AS, Finegold M, Parsons P, Cielecka-Kuszyk J, Strautnieks S, Pawłowska J, Bull LN*

- 3637 Postoperative pain due to an occult spinal infection: A case report

*Kerckhove MFV, Fiere V, Vieira TD, Bahroun S, Szadkowski M, d'Astorg H*

- 3644 Combined cesarean delivery and repair of acute aortic dissection at 34 weeks of pregnancy during COVID-19 outbreak: A case report

*Liu LW, Luo L, Li L, Li Y, Jin M, Zhu JM*

- 3649 Brucellosis of unknown origin with haemophagocytic syndrome: A case report

*Tian LH, Dong ZG, Chen XY, Huang LJ, Xiao PP*

- 3655 Recalcitrant paradoxical pustular psoriasis induced by infliximab: Two case reports

*Xia P, Li YH, Liu Z, Zhang X, Jiang Q, Zhou XY, Su W*

- 3662 Needle tract seeding of papillary thyroid carcinoma after fine-needle capillary biopsy: A case report

*Shi LH, Zhou L, Lei YJ, Xia L, Xie L*

- 3668 Metachronous pulmonary and pancreatic metastases arising from sigmoid colon cancer: A case report

*Yang J, Tang YC, Yin N, Liu W, Cao ZF, Li X, Zou X, Zhang ZX, Zhou J*

- 3675 Infiltrating ductal breast carcinoma with monoclonal gammopathy of undetermined significance: A case report

*Ma Y, Cui S, Yin YJ*

- 3680 Roxadustat as treatment for a blood transfusion-dependent maintenance hemodialysis patient: A case report and review of literature

*Fei M, Wen XQ, Yu ZL, Kang T, Wu WH, Ou ST*

- 3689 Small bowel ulcer bleeding due to suspected clopidogrel use in a patient with clopidogrel resistance: A case report

*Lee SH, Ryu DR, Lee SJ, Park SC, Cho BR, Lee SK, Choi SJ, Cho HS*

- 3696** Recurrent abdominal pain due to small bowel volvulus after transabdominal preperitoneal hernioplasty: A case report and review of literature  
*Man Y, Li BS, Zhang X, Huang H, Wang YL*
- 3704** Malignant giant cell tumor in the left upper arm soft tissue of an adolescent: A case report  
*Huang WP, Zhu LN, Li R, Li LM, Gao JB*
- 3711** Anesthetic management of bilateral pheochromocytoma resection in Von Hippel-Lindau syndrome: A case report  
*Wang L, Feng Y, Jiang LY*
- 3716** Sarcomatoid carcinoma of the pancreas – a rare tumor with an uncommon presentation and course: A case report and review of literature  
*Toledo PF, Berger Z, Carreño L, Cardenas G, Castillo J, Orellana O*
- 3726** Fulminant amebic colitis in a patient with concomitant cytomegalovirus infection after systemic steroid therapy: A case report  
*Shijubou N, Sumi T, Kamada K, Sawai T, Yamada Y, Ikeda T, Nakata H, Mori Y, Chiba H*
- 3733** Maisonneuve injury with no fibula fracture: A case report  
*Liu GP, Li JG, Gong X, Li JM*
- 3741** Alopecia treatment using minimally manipulated human umbilical cord-derived mesenchymal stem cells: Three case reports and review of literature  
*Ahn H, Lee SY, Jung WJ, Lee KH*
- 3752** Pheochromocytoma in a 49-year-old woman presenting with acute myocardial infarction: A case report  
*Wu HY, Cao YW, Gao TJ, Fu JL, Liang L*
- 3758** Lymphangiomatosis associated with protein losing enteropathy: A case report  
*Ding XL, Yin XY, Yu YN, Chen YQ, Fu WW, Liu H*
- 3765** *De novo* multiple primary carcinomas in a patient after liver transplantation: A case report  
*Rao W, Liu FG, Jiang YP, Xie M*
- 3773** Contralateral hemothorax after penetrating thoracic trauma: A case report  
*İşcan M*
- 3779** Bilateral posterior scleritis presenting as acute primary angle closure: A case report  
*Wen C, Duan H*
- 3787** Bilateral cerebral infarction in diabetic ketoacidosis and bilateral internal carotid artery occlusion: A case report and review of literature  
*Chen YC, Tsai SJ*

**ABOUT COVER**

Editorial Board Member of *World Journal of Clinical Cases*, Wei Wang, MD, PhD, Associate Professor, Key Laboratory on Technology for Parasitic Disease Prevention and Control, Jiangsu Institute of Parasitic Diseases, Wuxi 214064, Jiangsu Province, China. wangwei@jipd.com

**AIMS AND SCOPE**

The primary aim of *World Journal of Clinical Cases* (*WJCC*, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

*WJCC* mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

**INDEXING/ABSTRACTING**

The *WJCC* is now indexed in Science Citation Index Expanded (also known as SciSearch®), Journal Citation Reports/Science Edition, Scopus, PubMed, and PubMed Central. The 2020 Edition of Journal Citation Reports® cites the 2019 impact factor (IF) for *WJCC* as 1.013; IF without journal self cites: 0.991; Ranking: 120 among 165 journals in medicine, general and internal; and Quartile category: Q3. The *WJCC*'s CiteScore for 2019 is 0.3 and Scopus CiteScore rank 2019: General Medicine is 394/529.

**RESPONSIBLE EDITORS FOR THIS ISSUE**

Production Editor: Ji-Hong Lin; Production Department Director: Xiang Li; Editorial Office Director: Jin-Lei Wang.

**NAME OF JOURNAL**

*World Journal of Clinical Cases*

**ISSN**

ISSN 2307-8960 (online)

**LAUNCH DATE**

April 16, 2013

**FREQUENCY**

Thrice Monthly

**EDITORS-IN-CHIEF**

Dennis A Bloomfield, Sandro Vento, Bao-Gan Peng

**EDITORIAL BOARD MEMBERS**

<https://www.wjgnet.com/2307-8960/editorialboard.htm>

**PUBLICATION DATE**

May 26, 2021

**COPYRIGHT**

© 2021 Baishideng Publishing Group Inc

**INSTRUCTIONS TO AUTHORS**

<https://www.wjgnet.com/bpg/gerinfo/204>

**GUIDELINES FOR ETHICS DOCUMENTS**

<https://www.wjgnet.com/bpg/GerInfo/287>

**GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH**

<https://www.wjgnet.com/bpg/gerinfo/240>

**PUBLICATION ETHICS**

<https://www.wjgnet.com/bpg/GerInfo/288>

**PUBLICATION MISCONDUCT**

<https://www.wjgnet.com/bpg/gerinfo/208>

**ARTICLE PROCESSING CHARGE**

<https://www.wjgnet.com/bpg/gerinfo/242>

**STEPS FOR SUBMITTING MANUSCRIPTS**

<https://www.wjgnet.com/bpg/GerInfo/239>

**ONLINE SUBMISSION**

<https://www.f6publishing.com>

# Recurrent abdominal pain due to small bowel volvulus after transabdominal preperitoneal hernioplasty: A case report and review of literature

Yi Man, Bao-Shan Li, Xin Zhang, Huang Huang, Yin-Long Wang

**ORCID number:** Yi Man 0000-0002-3764-2694; Bao-Shan Li 0000-0002-6136-2449; Xin Zhang 0000-0002-8743-9352; Huang Huang 0000-0001-7882-4278; Yin-Long Wang 0000-0002-2774-3504.

**Author contributions:** Man Y was a major contributor in writing the manuscript; Li BS, Zhang X and Huang H analyzed and interpreted the patient data; Wang YL designed the study.

**Informed consent statement:**

Informed written consent was obtained from the patient for publication of this report.

**Conflict-of-interest statement:**

The authors declare that they have no conflicts of interest.

**CARE Checklist (2016) statement:**

The authors have read the CARE checklist (2016), and the manuscript was prepared and revised according to the CARE checklist (2016).

**Open-Access:**

This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0)

Yi Man, Bao-Shan Li, Xin Zhang, Huang Huang, Yin-Long Wang, Department of Hernia Surgery, Tianjin Union Medical Centre, Tianjin 300000, China

**Corresponding author:** Yin-Long Wang, MD, PhD, Doctor, Professor, Department of Hernia Surgery, Tianjin Union Medical Centre, No. 190 Jieyuan Road, Hongqiao District, Tianjin 300000, China. [herni616@126.com](mailto:herni616@126.com)

## Abstract

### BACKGROUND

Compared with open mesh repair, transabdominal preperitoneal (TAPP) hernioplasty results in less chronic postoperative inguinal pain and faster postoperative recovery. However, it may still lead to rare but serious complications. Here we report a case of intestinal volvulus with recurrent abdominal pain as the only clinical symptom, which occurred 3 mo after TAPP repair for bilateral inguinal hernia.

### CASE SUMMARY

A 50-year-old male patient underwent laparoscopic TAPP for bilateral inguinal hernias. After the operation, he experienced recurring pain in his lower right abdomen around the surgical area, which was relieved after symptomatic treatment. Three months after the surgery, the abdominal pain became severe and was aggravated over time. The whirlpool sign of the mesentery was seen on contrast-enhanced computed tomography (CT). Laparoscopic exploration confirmed that a barb of the V-Loc™ suture penetrated the peritoneum, which caused the adhesion of the small intestinal wall to the site of peritoneal injury, forming intestinal volvulus. Since there was no closed-loop obstruction or intestinal ischemia, recurrent abdominal pain became the only clinical manifestation in this case. After laparoscopic lysis of adhesions and reduction of intestinal volvulus, the patient recovered and was discharged.

### CONCLUSION

The possibility of intestinal volvulus should be considered in patients who experience recurrent abdominal pain following TAPP surgery during which barbed V-Loc sutures are used for closing the peritoneum. Contrast-enhanced CT and active laparoscopic exploration can confirm the diagnosis and prevent serious complications.

license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

**Manuscript source:** Unsolicited manuscript

**Specialty type:** Surgery

**Country/Territory of origin:** China

#### Peer-review report's scientific quality classification

Grade A (Excellent): 0  
Grade B (Very good): B, B, B, B  
Grade C (Good): 0  
Grade D (Fair): D  
Grade E (Poor): 0

**Received:** December 24, 2020

**Peer-review started:** December 24, 2020

**First decision:** January 10, 2021

**Revised:** January 22, 2021

**Accepted:** March 19, 2021

**Article in press:** March 19, 2021

**Published online:** May 26, 2021

**P-Reviewer:** Baryshnikova NV, Gram-Hanssen A, Ruiz-Jasbon F

**S-Editor:** Zhang H

**L-Editor:** Filipodia

**P-Editor:** Yuan YY



**Key Words:** Laparoscopy; Inguinal hernia; Transabdominal preperitoneal hernioplasty; Volvulus; Intestinal; Complication; Case report

©The Author(s) 2021. Published by Baishideng Publishing Group Inc. All rights reserved.

**Core Tip:** This case provides surgeons guidelines for the management of small bowel volvulus with only recurrent abdominal pain as a clinical manifestation after transabdominal preperitoneal (TAPP) hernioplasty. It highlights that the possibility of intestinal volvulus should be considered in patients who experience unexplained abdominal pain following TAPP surgery during which barbed V-Loc™ sutures are used for closing the peritoneum. Additionally, contrast-enhanced computed tomography and active laparoscopic exploration can help confirm the diagnosis and prevent more serious complications.

**Citation:** Man Y, Li BS, Zhang X, Huang H, Wang YL. Recurrent abdominal pain due to small bowel volvulus after transabdominal preperitoneal hernioplasty: A case report and review of literature. *World J Clin Cases* 2021; 9(15): 3696-3703

**URL:** <https://www.wjgnet.com/2307-8960/full/v9/i15/3696.htm>

**DOI:** <https://dx.doi.org/10.12998/wjcc.v9.i15.3696>

## INTRODUCTION

Transabdominal preperitoneal (TAPP) hernioplasty is a commonly used technique for the repair of adult inguinal hernias. Its benefits are fast recovery, low risk of chronic pain, and high cost-effectiveness. Therefore, it is particularly feasible for bilateral inguinal hernias and recurrent inguinal hernias after open hernia repair[1-3].

The TAPP procedure requires peritoneal opening and suturing[4]. As the integrity of the peritoneum is destroyed, abdominal adhesions may still occur after TAPP, leading to serious complications such as intestinal obstruction, strangulation, and necrosis. It has been reported that the incidence of such complications following TAPP ranges from 0.2% to 0.5%[5,6]. Complications often occur within 2 wk after surgery, with abdominal pain and vomiting being the typical clinical manifestations[7]. These complications are rare but require a second operation. Here we report a case of intestinal volvulus with recurrent abdominal pain as the only clinical symptom, which occurred 3 mo after a TAPP procedure for bilateral inguinal hernia, and review the literature regarding complications after TAPP.

## CASE PRESENTATION

### Chief complaints

A 50-year-old male patient who underwent a TAPP procedure for symptomatic bilateral inguinal hernia presented with repeated pain in the right lower abdomen around the surgical site for 3 mo and worsened on the day before admission (Table 1).

### History of present illness

The patient experienced repeated pain in the operation area of the right lower abdomen within 3 mo after TAPP repair of bilateral inguinal hernia. He had no nausea/vomiting, chills, or fever. His anal exsufflation and defecation were smooth. The abdominal pain was relieved after symptomatic treatment with antispasmodics and analgesics. One day before his admission, the patient suddenly felt severe pain in the right lower abdomen, with no nausea/vomiting, chills, or fever; his anal exsufflation remained unobstructed.

### History of past illness

The patient denied any history of hypertension, type 2 diabetes, coronary heart disease, cerebrovascular disease, or hepatitis. He underwent a Lichtenstein hernia repair for the right inguinal hernia 7 years ago, and there was no history of other

**Table 1** Timeline of the events of this case

Timeline	Date	Events/past illnesses	Interventions
Past history	March 6, 1970	Birth	
	January 23, 2013	Right inguinal hernia	Lichtenstein hernia repair
	January 10, 2020	Right inguinal hernia recurred and left inguinal hernia diagnosed	TAPP
Presenting concerns	January-March, 2020	Repeated abdominal pain	Symptomatic treatment
Chief complaints	April 10, 2020	Abdominal pain worsened	Readmission
Diagnoses and exam	April 10, 2020	Small bowel volvulus	Contrast-enhanced CT
Treatment	April 11, 2020	Small bowel adhesion to the site of peritoneal flap closure	Laparoscopic exploration and separation of the adhesion
Outcome	April 12, 2020	Abdominal pain was relieved	Antimicrobials, acid suppression, and liquid diet
	April 13, 2020	Discharge	
Follow-up	October 13, 2020	Normal	

CT: Computed tomography; TAPP: Transabdominal preperitoneal hernioplasty.

abdominal surgeries. Three months ago, the right inguinal hernia recurred, and a left inguinal hernia was also found. A diagnosis of bilateral inguinal hernia was made after clinical physical examinations and color Doppler ultrasonography. The patient voluntarily requested surgical treatment. He signed the informed consent form and then underwent TAPP using the surgical method described in the literature[2]. Briefly, the peritoneum was opened, the bilateral inguinal hernia sacs were reduced into the peritoneal cavity, and the mesh was placed. The peritoneum was then closed with a V-LoC™ 180 continuous suture, and a return suture was placed to prevent suture loosening[8]. Postoperative recovery was uneventful and the patient was discharged 1 day after surgery.

### **Personal and family history**

His family history was not remarkable.

### **Physical examination**

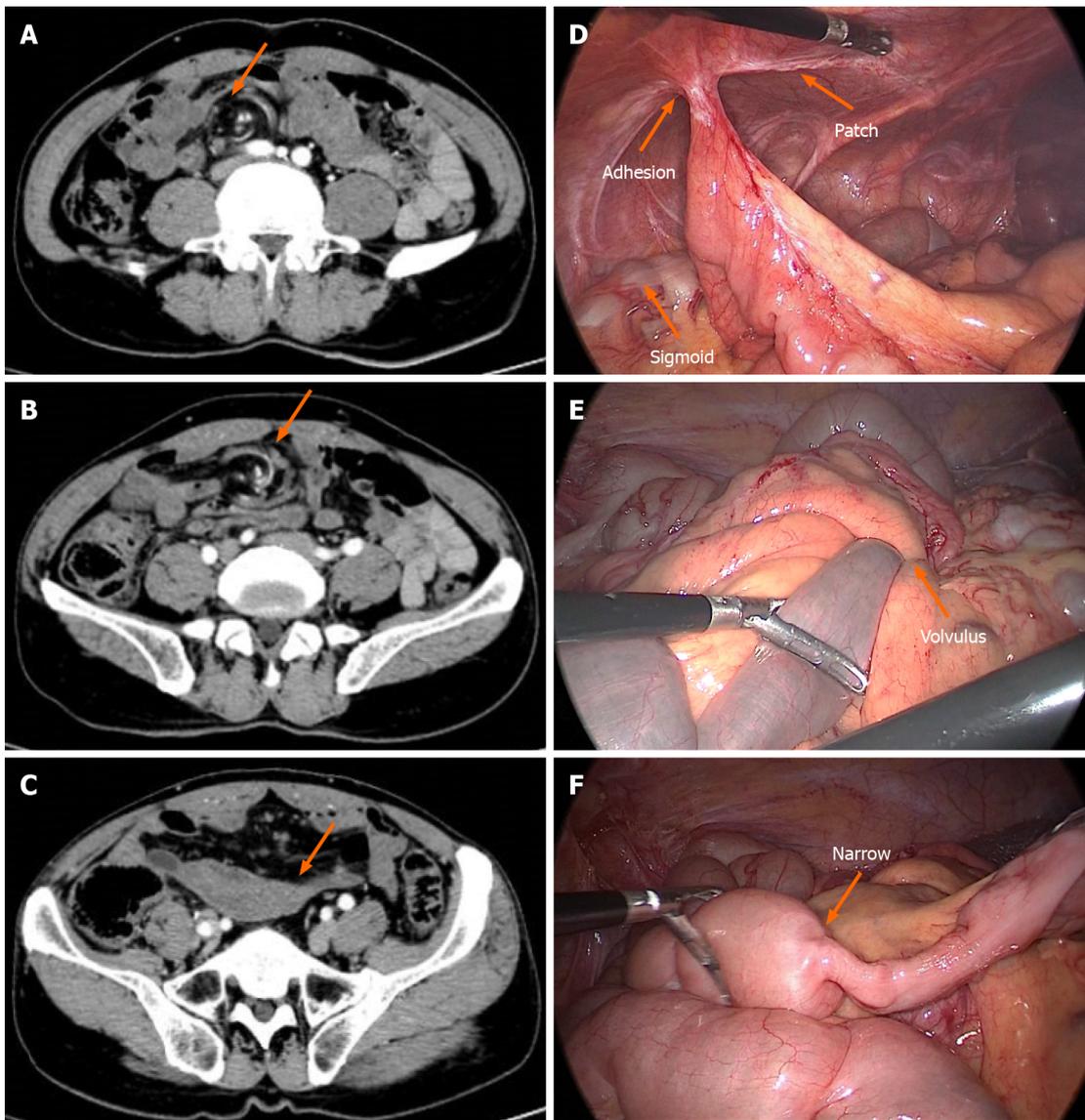
Physical examination found a body temperature of 36.3 °C, heart rate of 80 beats/min, respiratory rate of 20 breaths/min, and a blood pressure of 130/70 mmHg. No yellowing of the eyes or skin was present. The abdomen was flat, without varicose veins on the abdominal wall. No peristaltic waves were recorded. His abdomen was soft except for the pain in the right lower abdomen when pressed, and there was no rebound tenderness or abdominal rigidity. Murphy's sign was negative. The liver and kidney areas were not sensitive to percussion. He had no shifting dullness, and the bowel sounds were about 4 times/min. No high-pitched bowel sound or gurgling sound was heard.

### **Laboratory examination**

All laboratory results were within the normal ranges. The white blood cell count was  $4.4 \times 10^9/L$ , the percentage of neutrophils was 55.7%, the percentage of lymphocytes was 34.3%, the blood amylase level was 42 U/L, and the lipase level was 62 U/L.

### **Imaging examinations**

Contrast-enhanced CT revealed the whirlpool sign of the mesentery, dilated bowel, and normal bowel migration on the right side of the middle and lower abdomen (Figure 1A-C), suggesting the possibility of small bowel volvulus.



**Figure 1 Computer tomography and intraoperative findings.** A and B: Computed tomography (CT) reveals the whirlpool sign of the mesentery; C: CT reveals a proximal dilated bowel and distal normal bowel migration; D: Adhesion band on the small bowel; E: Small bowel volvulus; F: Intraoperative exploration found the migration area of proximal dilated bowel and distal normal bowel.

## FINAL DIAGNOSIS

Laparoscopic exploration revealed an adhesion band between the peritoneum and the small intestine at the site of repair of the left inguinal hernia in the right lower abdomen. A small intestine volvulus was found 150 cm away from the ileocecal area (Figure 1D-F). The results of intraoperative exploration were consistent with pre-operative CT findings, and the diagnosis of small bowel volvulus was confirmed.

## TREATMENT

Interventions after admission included fasting, nasogastric intubation, continuous gastrointestinal decompression, acid suppressive therapy, spasmolysis, and fluid replacement therapy. As the CT suggested the possibility of a small bowel volvulus, after having obtained informed consent from the patient and his family, we performed laparoscopic exploration under general anesthesia.

The adhesion band was separated and the peritoneum was repaired during the operation. Further exploration did not find a leak of the intestinal canal at the adhesion band. The twisted small intestine was reduced. According to the operator, a barb of the V-Loc suture pierced the peritoneum, which caused the adhesion of the small

intestinal wall with the site of peritoneal injury, forming intestinal volvulus.

---

## OUTCOME AND FOLLOW-UP

---

The patient was not admitted to the intensive care unit after the operation. Instead, he was treated with antimicrobials, acid suppression, and rehydration. On the first postoperative day, the abdominal pain was relieved and the nasogastric tube was removed. On the second postoperative day, flatulence was restored and the patient had no abdominal pain after eating liquid food. He was then discharged from the hospital. At the 6-mo outpatient visit and telephone follow-up, the patient no longer had abdominal pain and his diet and urination/defecation were normal.

---

## DISCUSSION

---

Although the common complications (*e.g.*, seroma, hematoma, and orchitis) after laparoscopic inguinal hernia repair are mostly minor, rare and serious complications such as neuralgia and intestinal obstruction may also occur. It has been reported that the incidence of intestinal obstruction after TAPP surgery is higher than that after open hernia repair[6]. The incidence of chronic pain after TAPP surgery is markedly lower than that after traditional open surgery; however, TAPP procedures have a higher incidence of chronic abdominal pain than total extraperitoneal procedures because of the separation of the peritoneum[9].

Similar to other laparoscopic techniques, the main causes of intestinal obstruction following TAPP surgery include inadequate closure, port-site herniation, and adhesion band formation[10,11]. Suturing of the peritoneum is the final step of TAPP procedure. When a peritoneal gap is not tightly closed, an adhesion band may form between the small intestine and the mesh, leading to intestinal obstruction[12,13].

Peritoneal closure can be performed with running sutures, tacks, and staples and glue. Many studies have compared different materials for peritoneal closure during TAPP inguinal hernia repair. Kapisir *et al*[5] described the use of running sutures and stapled closure of the peritoneum[5]. They found that use of Vicryl running sutures reduced the incidence of intestinal obstruction from herniation through the peritoneal closure. However, Fitzgerald *et al*[14] reported a case of small bowel obstruction caused by a displaced spiral tack used during a TAPP procedure. Ross *et al*[15] reported that suture closure of the peritoneum resulted in less early postoperative pain than tacked closure, and improved 2-wk postoperative activity compared with stapled and tacked closures. Subsequently, based on a larger sample size and a 2-yr follow-up, Ross *et al*[16] found that there were no significant differences between the tacked, sutured and stapled techniques. However, a prospective randomized study by Oguz *et al*[17] reported peritoneal closure using tacks increased short-term pain compared with suture closure. Recent studies demonstrated the safety and feasibility of glue for peritoneal closure in TAPP procedures, but further randomized comparative studies are needed to confirm these early results[18,19]. Although the optimal method of peritoneal closure in TAPP remains controversial, the running suture method is widely used[20-22].

Absorbable barbed sutures and Vicryl absorbable sutures are commonly used to perform peritoneal running closures[8,20,21]. Absorbable barbed sutures do not require knots, which simplifies peritoneal suturing and shortens the operating time. In recent years, they have been widely used in TAPP and other procedures[7]. However, if used improperly, the barbs may be attached to the adjacent small intestine, mesentery, or omentum, causing complications such as abdominal adhesions, volvulus, and intestinal obstruction[23]. For instance, Tagliaferri *et al*[24] and Filser *et al*[25] reported cases in which the residual end of the barbed V-Loc suture was hooked to the mesentery and caused small bowel obstruction as a volvulus. In addition, Köhler *et al*[26] reported a case of intestinal obstruction caused by tight adhesion of barbed sutures to the small bowel wall. Therefore, it is important to correctly use V-Loc sutures to reduce the risk of complications of TAPP procedures. The manufacturer of V-Loc sutures recommends that the suture stump should include additional peritoneal tissue surrounding the closure[25]. A literature review found that the end of the suture line seems to be essential[26-29]. Similar small bowel obstructions or volvulus complications following use of V-Loc sutures have been reported in the context of gastrointestinal and gynecological surgery[30,31]. Additionally, all defects of the peritoneal flap that are larger than 5 mm should be carefully

sutured to avoid contact of the mesh with abdominal viscera. Furthermore, if the peritoneum is fragile and thin, peritoneal flap closure with staples may be an alternative[22]. In this patient, after the peritoneal flap was completely closed with V-Loc sutures, a backward stitch was used to prevent suture loosening. That might have led to laceration and gapping of the peritoneum, causing the adhesion of the small intestinal wall to the site of peritoneal injury and the intestinal volvulus. Therefore, the use of V-Loc sutures for peritoneal closure in TAPP procedures along with a backward stitch should be reassessed.

Abdominal pain, vomiting, and bloating are typical symptoms of intestinal obstruction, and CT can assist in the diagnosis of intestinal obstructions. As reported by Clapp *et al*[7], small bowel obstructions following the use of barbed sutures often occurred 2 wk after TAPP surgery. The common symptoms included abdominal pain, vomiting, abdominal distension, oral intolerance, and constipation. Lee *et al*[32] reported a case of small bowel obstruction from barbed suture 6 wk after laparoscopic myomectomy. Unlike previous reports, our patient presented after TAPP surgery only with recurring pain in the surgical area of the right lower abdomen. The abdominal pain was tolerable and no other typical clinical manifestations were noted. It had initially been considered as neuralgia after TAPP surgery, and it was relieved after symptomatic treatment. Three months after the operation, the patient developed acute and intolerable abdominal pain. Contrast-enhanced CT revealed signs of intestinal volvulus that was confirmed by laparoscopic exploration. In the present case, although the small intestine volvulus was caused by abdominal adhesion, it did not cause closed-loop obstruction or blood flow disorder in the small intestine. As a result, recurrent abdominal pain was the only clinical manifestation. Therefore, contrast-enhanced CT can be recommended as the preferred evaluation for small bowel volvulus.

## CONCLUSION

The possibility of intestinal volvulus should be considered in patients who experience recurrent abdominal pain following TAPP surgery during which barbed V-Loc sutures are used to close the peritoneum. Contrast-enhanced CT and active laparoscopic exploration can confirm the diagnosis and prevent serious complications.

## REFERENCES

- 1 **Mahon D**, Decadt B, Rhodes M. Prospective randomized trial of laparoscopic (transabdominal preperitoneal) vs open (mesh) repair for bilateral and recurrent inguinal hernia. *Surg Endosc* 2003; **17**: 1386-1390 [PMID: 12802653 DOI: 10.1007/s00464-002-9223-x]
- 2 **Bittner R**, Arregui ME, Bisgaard T, Dudai M, Ferzli GS, Fitzgibbons RJ, Fortelny RH, Klinge U, Kockerling F, Kuhry E, Kukleta J, Lomanto D, Misra MC, Montgomery A, Morales-Conde S, Reinhold W, Rosenberg J, Sauerland S, Schug-Pass C, Singh K, Timoney M, Weyhe D, Chowbey P. Guidelines for laparoscopic (TAPP) and endoscopic (TEP) treatment of inguinal hernia [International Endohernia Society (IEHS)]. *Surg Endosc* 2011; **25**: 2773-2843 [PMID: 21751060 DOI: 10.1007/s00464-011-1799-6]
- 3 **HerniaSurge Group**. International guidelines for groin hernia management. *Hernia* 2018; **22**: 1-165 [PMID: 29330835 DOI: 10.1007/s10029-017-1668-x]
- 4 **Lovisetto F**, Zonta S, Rota E, Bottero L, Faillace G, Turra G, Fantini A, Longoni M. Laparoscopic transabdominal preperitoneal (TAPP) hernia repair: surgical phases and complications. *Surg Endosc* 2007; **21**: 646-652 [PMID: 17103276 DOI: 10.1007/s00464-006-9031-9]
- 5 **Kapiris SA**, Brough WA, Royston CM, O'Boyle C, Sedman PC. Laparoscopic transabdominal preperitoneal (TAPP) hernia repair. A 7-year two-center experience in 3017 patients. *Surg Endosc* 2001; **15**: 972-975 [PMID: 11605111 DOI: 10.1007/s004640080090]
- 6 **Bringman S**, Blomqvist P. Intestinal obstruction after inguinal and femoral hernia repair: a study of 33,275 operations during 1992-2000 in Sweden. *Hernia* 2005; **9**: 178-183 [PMID: 15568160 DOI: 10.1007/s10029-004-0305-7]
- 7 **Clapp B**, Klingsporn W, Lodeiro C, Wicker E, Christensen L, Jones R, Tyroch A. Small bowel obstructions following the use of barbed suture: a review of the literature and analysis of the MAUDE database. *Surg Endosc* 2020; **34**: 1261-1269 [PMID: 31183792 DOI: 10.1007/s00464-019-06890-z]
- 8 **Takayama S**, Nakai N, Shiozaki M, Ogawa R, Sakamoto M, Takeyama H. Use of barbed suture for peritoneal closure in transabdominal preperitoneal hernia repair. *World J Gastrointest Surg* 2012; **4**: 177-179 [PMID: 22905286 DOI: 10.4240/wjgs.v4.i7.177]
- 9 **Scheuermann U**, Niebisch S, Lyros O, Jansen-Winkel B, Gockel I. Transabdominal Preperitoneal (TAPP) versus Lichtenstein operation for primary inguinal hernia repair - A systematic review and

- meta-analysis of randomized controlled trials. *BMC Surg* 2017; **17**: 55 [PMID: [28490321](#) DOI: [10.1186/s12893-017-0253-7](#)]
- 10 **Duron JJ**, Hay JM, Msika S, Gaschard D, Domergue J, Gainant A, Fingerhut A. Prevalence and mechanisms of small intestinal obstruction following laparoscopic abdominal surgery: a retrospective multicenter study. French Association for Surgical Research. *Arch Surg* 2000; **135**: 208-212 [PMID: [10668883](#) DOI: [10.1001/archsurg.135.2.208](#)]
  - 11 **Cueto J**, Vázquez JA, Solís MA, Valdéz G, Valencia S, Weber A. Bowel obstruction in the postoperative period of laparoscopic inguinal hernia repair (TAPP): review of the literature. *JLS* 1998; **2**: 277-280 [PMID: [9876754](#)]
  - 12 **Xue TM**, Tao LD, Zhang J, Zhang PJ. Mesh erosion causes small bowel obstruction: a rare complication of laparoscopic inguinal hernia repair: case description and review of literature. *Hepatogastroenterology* 2015; **62**: 55-58 [PMID: [25911867](#)]
  - 13 **Luijendijk RW**, de Lange DC, Wauters CC, Hop WC, Duron JJ, Pailler JL, Camprodon BR, Holmdahl L, van Geldorp HJ, Jeekel J. Foreign material in postoperative adhesions. *Ann Surg* 1996; **223**: 242-248 [PMID: [8604903](#) DOI: [10.1097/00000658-199603000-00003](#)]
  - 14 **Fitzgerald HL**, Orenstein SB, Novitsky YW. Small bowel obstruction owing to displaced spiral tack after laparoscopic TAPP inguinal hernia repair. *Surg Laparosc Endosc Percutan Tech* 2010; **20**: e132-e135 [PMID: [20551794](#) DOI: [10.1097/SLE.0b013e3181dfbc05](#)]
  - 15 **Ross SW**, Oommen B, Kim M, Walters AL, Augenstein VA, Heniford BT. Tacks, staples, or suture: method of peritoneal closure in laparoscopic transabdominal preperitoneal inguinal hernia repair effects early quality of life. *Surg Endosc* 2015; **29**: 1686-1693 [PMID: [25294540](#) DOI: [10.1007/s00464-014-3857-3](#)]
  - 16 **Ross SW**, Groene SA, Prasad T, Lincourt AE, Kercher KW, Augenstein VA, Todd Heniford B. Does peritoneal flap closure technique following transabdominal preperitoneal (TAPP) inguinal hernia repair make a difference in postoperative pain? *Surg Endosc* 2017; **31**: 2548-2559 [PMID: [27924394](#) DOI: [10.1007/s00464-016-5258-2](#)]
  - 17 **Oguz H**, Karagulle E, Turk E, Moray G. Comparison of peritoneal closure techniques in laparoscopic transabdominal preperitoneal inguinal hernia repair: a prospective randomized study. *Hernia* 2015; **19**: 879-885 [PMID: [26486322](#) DOI: [10.1007/s10029-015-1431-0](#)]
  - 18 **Wilson P**, Hickey L. Laparoscopic transabdominal preperitoneal (TAPP) groin hernia repair using n-butyl-2-cyanoacrylate (Liquiband®Fix8™) for mesh fixation and peritoneal closure: learning experience during introduction into clinical practice. *Hernia* 2019; **23**: 601-613 [PMID: [30506242](#) DOI: [10.1007/s10029-018-1861-6](#)]
  - 19 **Ielpo B**, Ferri Valentina, Silva J, Quijano Y, Vicente E, Diago MV, Caruso R. Laparoscopic Transabdominal Preperitoneal (TAPP) Inguinal Hernia Repair Using Fibrin Glue for Fixation of the Mesh and Peritoneum Closure. *Surg Laparosc Endosc Percutan Tech* 2020; **30**: e24-e27 [PMID: [32487858](#) DOI: [10.1097/SLE.0000000000000797](#)]
  - 20 **Chihara N**, Suzuki H, Sukegawa M, Watanabe M, Oyama R, Shimizu T, Uchida E. Absorbable barbed suture device for laparoscopic peritoneal closure after hernia repair via the transabdominal preperitoneal approach: A single-center experience with 257 cases. *Asian J Endosc Surg* 2019; **12**: 162-166 [PMID: [29992794](#) DOI: [10.1111/ases.12626](#)]
  - 21 **Zhu Y**, Liu Y, Wang M. A New Suture Technique for Peritoneal Flap Closure in TAPP: A Prospective Randomized Controlled Trial. *Surg Laparosc Endosc Percutan Tech* 2020; **30**: 18-21 [PMID: [31652193](#) DOI: [10.1097/SLE.0000000000000706](#)]
  - 22 **Moldovanu R**, Pavy G. Laparoscopic Transabdominal Pre-Peritoneal (TAPP) procedure - step-by-step tips and tricks. *Chirurgia (Bucur)* 2014; **109**: 407-415 [PMID: [24956350](#)]
  - 23 **Sartori A**, De Luca M, Clemente N, De Luca A, Scaffidi G, Piatto G, Noaro G, Campagnaro C. Small bowel occlusion after trans-abdominal preperitoneal hernia approach caused by barbed suture: case report and review of literature. *G Chir* 2019; **40**: 322-324 [PMID: [32011985](#)]
  - 24 **Tagliaferri EM**, Wong Tavora SL, Abad de Jesus JL, Bergmann H, Hammans S, Seidlmayer CM. Small bowel obstruction SBO after TAPP repair caused by a self-anchoring barbed suture device for peritoneal closure: case report. *J Surg Case Rep* 2018; **2018**: rjy165 [PMID: [30046435](#) DOI: [10.1093/jscr/rjy165](#)]
  - 25 **Filser J**, Reibetanz J, Krajinovic K, Germer CT, Dietz UA, Seyfried F. Small bowel volvulus after transabdominal preperitoneal hernia repair due to improper use of V-Loc™ barbed absorbable wire - do we always "read the instructions first"? *Int J Surg Case Rep* 2015; **8C**: 193-195 [PMID: [25704567](#) DOI: [10.1016/j.ijscr.2015.02.020](#)]
  - 26 **Köhler G**, Mayer F, Lechner M, Bittner R. Small bowel obstruction after TAPP repair caused by a self-anchoring barbed suture device for peritoneal closure: case report and review of the literature. *Hernia* 2015; **19**: 389-394 [PMID: [25112384](#) DOI: [10.1007/s10029-014-1301-1](#)]
  - 27 **Buchs NC**, Ostermann S, Hauser J, Roche B, Iselin CE, Morel P. Intestinal obstruction following use of laparoscopic barbed suture: a new complication with new material? *Minim Invasive Ther Allied Technol* 2012; **21**: 369-371 [PMID: [22145693](#) DOI: [10.3109/13645706.2011.638643](#)]
  - 28 **Khan FA**, Hashmi A, Edelman DA. Small bowel obstruction caused by self-anchoring suture used for peritoneal closure following robotic inguinal hernia repair. *J Surg Case Rep* 2016; **2016** [PMID: [27340230](#) DOI: [10.1093/jscr/rjw117](#)]
  - 29 **Zipple MK**, Bankhead-Kendall B, Roy MD, Yaldo B. Small Bowel Obstruction Secondary to Barbed Suture after Minimally Invasive Inguinal Hernia Repair. *Am Surg* 2020; **86**: e14-e16 [PMID: [32077425](#) DOI: [10.1177/000313482008600108](#)]

- 30 **Oor J**, de Castro S, van Wagenveld B. V-loc™ capable of grasping surrounding tissue causes obstruction at the jejunojejunostomy after Roux-en-Y laparoscopic gastric bypass. *Asian J Endosc Surg* 2015; **8**: 209-211 [PMID: 25913590 DOI: 10.1111/ases.12169]
- 31 **Burchett MA**, Mattar SG, McKenna DT. Iatrogenic intestinal and mesenteric injuries with small bowel volvulus following use of barbed suture during laparoscopic myomectomy. *J Laparoendosc Adv Surg Tech A* 2013; **23**: 632-634 [PMID: 23638851 DOI: 10.1089/lap.2013.0065]
- 32 **Lee ET**, Wong FW. Small bowel obstruction from barbed suture following laparoscopic myomectomy-A case report. *Int J Surg Case Rep* 2015; **16**: 146-149 [PMID: 26454501 DOI: 10.1016/j.ijscr.2015.09.039]



Published by **Baishideng Publishing Group Inc**  
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA  
**Telephone:** +1-925-3991568  
**E-mail:** [bpgoffice@wjgnet.com](mailto:bpgoffice@wjgnet.com)  
**Help Desk:** <https://www.f6publishing.com/helpdesk>  
<https://www.wjgnet.com>

