Gallbladder perforation by absorbable spiral tacker

A Wirsching, R Vonlanthen, K Lehmann

University Hospital Zurich, Switzerland

ABSTRACT

INTRODUCTION Mesh fixation with tacker systems is common in laparoscopic and open hernia repair. Complications due to absorbable tackers are rare and have not been described in the literature. However, we report a case of gallbladder erosion due to tacker dislocation.

METHODS An open hernia repair was performed using an intraperitoneal onlay mesh for a recurrent parastomal hernia after two previous mesh repairs in a 67-year-old patient.

RESULTS On postoperative day 2, the patient was reoperated because of a dislocated tacker that eroded and perforated the fundus region of the gallbladder. Putatively, tacker dislocation occurred owing to imbalanced traction forces. Initially, the mesh was fixed with absorbable tackers around the stoma on the right and transmuscular suture fixation was carried out on the left abdominal side. On revision surgery, tension forces to the right were therefore neutralised by additional transmuscular sutures on the right side.

CONCLUSIONS Absorbable tackers in open hernia repair provide a safe and effective mesh fixation if tension forces are carefully avoided.

KEYWORDS

Gallbladder – Tacker – Intraperitoneal hernia

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CORRESPONDENCE TO

Kuno Lehmann, E: kuno.lehmann@usz.ch

Increasing numbers of innovative fixation devices are now available on the market. They have been designed to facilitate and fasten surgical procedures but are they also safe? Absorbable spiral tackers are used widely for mesh fixation in laparoscopic and open hernia repair. In contrast to titanium spiral tackers, which may migrate and perforate into visceral organs¹ or cause postoperative and chronic pain,² complications due to absorbable tackers have not been reported in the literature. We present a case of gallbladder perforation after open parastomal hernia repair and describe the potential mechanism leading to tacker dislocation.

Case History

A 67-year-old man presented with a recurrent parastomal hernia 2 years after open hernia repair with an intraperitoneal onlay mesh technique. An extensive adhesiolysis was performed and an intraperitoneal mesh (DynaMesh®-IPOM, FEG Textiltechnik, Aachen, Germany) with a parastomal chimney was placed. Around the stoma and in the right hemiabdomen, the mesh was fixed with absorbable tackers (AbsorbaTack™ fixation device 5mm; Covidien, Dublin, Ireland). This approach was chosen for optimal mesh placement around the stoma. In contrast, mesh fixation in the left hemiabdomen was performed using trans-fascial non-resorbable monofilament sutures.

After an uneventful first day, the abdominal drain showed biliary ascites. Owing to a suspected small bowel leak after extended adhesiolysis, the patient was taken immediately to the operating room for a relaparotomy. A perforation of the gallbladder was discovered opposite a tacker (Fig 1). No other signs of gallbladder pathology such as chronic or acute inflammation were found. Displaced tackers were removed and replaced by transfascial sutures, and the revision was completed with a cholecystectomy. The further postoperative course was uneventful and he fully recovered from surgery.

Discussion

Complications due to tackers have only been described in a few case reports and they all involve non-absorbable titanium spiral tackers.^{1–5} Titanium tackers increase the risk of adhesions compared with suture fixation, as suggested by an experimental study in pigs.⁵ For example, complications include bowel obstruction due to adhesion formation, complications after tacker displacement^{1,3,4} and bowel perforation by protruding titanium spiral tackers.¹ In contrast, complications due to absorbable tackers have not been reported; to our knowledge, this is the first case presented in the literature.

After the correct placement of a tacker, contact with abdominal organs should be minimal. In our case, we

Figure 1 Gallbladder perforation (arrow) opposite an absorbable tacker

hypothesise that the use of tacker fixation in one hemiabdomen and transfascial sutures in the other provoked imbalanced traction forces that led to tacker dislocation, and exposed the sharp edged head (Fig 2a). On revision surgery, this was corrected by additional monofilament sutures without removing the mesh. Mesh removal was not required considering the limited inflammation and the antibiotic treatment. After a follow-up period of more than 18 months, no complications occurred.

Conclusions

Considering the small number of complications following tacker fixation in hernia repair, tackers can be considered safe; they represent an effective and quick method for mesh fixation. In order to avoid disproportional tension on the tacked mesh part, we propose the placement of ipsilateral transfascial sutures (Fig 2b). This may help to avoid tear stress and tacker displacement.

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Figure 2 Schematic axial view of the anterior abdominal wall and an intraperitoneal mesh (A). Initial tacker fixation (right) leads to increased tear stress on selected tackers on contralateral transfascial suture fixation. The midline is closed in a third step. During revision surgery, tear forces were avoided by placing ipsilateral transfascial sutures (B).