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Laparoscopic Intraperitoneal Onlay Mesh (IPOM) “Swiss Cheese” Ventral Incisional Hernia Repair with Urinary Bladder Mobilization: A Case Report

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
Literature Search F
Funds Collection G

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Patient: Female, 57-year-old
Final Diagnosis: Incisional hernia treatment • swiss cheese hernia treatment
Symptoms: Abdominal pain
Medication: —
Clinical Procedure: Parietal Surgery procedure
Specialty: Surgery

Objective: Rare coexistence of disease or pathology
Background: Incisional hernias (IH) are a common problem worldwide. The development of IH is influenced by factors related to the patient, the operative technique, and the suture material. In the treatment of ventral incisional hernias, laparoscopic IPOM and open sublay mesh repair are the most common techniques used for primary and recurrent hernias, with comparable short- and long-term outcomes.
Case Report: We report a case of a pubo-umbilical “swiss cheese” IH treated by laparoscopy with the placement of a non-resorbable mesh in intraperitoneal position. The urinary bladder was mobilized for a convenient mesh fixation and sutured to the mesh in the previous anatomical position, at the level of the upper peritoneal layer. “Swiss cheese” hernia is a particular form of IH, characterized by the presence of multiple small defects. Laparoscopic intraperitoneal onlay mesh (IPOM) IH repair for defects under 10 cm is a reliable alternative to open ventral hernia repair. Transfascial sutures represent a simple solution for the defect closure and are associated with lower incidence of seroma and recurrence. The use of a mesh allows improving the muscle functionality and preventing hernia recurrence and also is associated with reduced recurrence rates compared to primary suture repair and additionally provides superior mechanical stability.
Conclusions: In case of pubo-umbilical medial “swiss cheese” IH, mobilization of the urinary bladder is necessary and allows a complete abdominal wall approximation and convenient mesh placement.

Keywords: Case Reports • Incisional Hernia • Laparoscopy • Hernia, Ventral

Full-text PDF: <https://www.amjcaserep.com/abstract/index/idArt/937606>

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Background

Abdominal incisional hernias (IH) acquired after surgeries performed by laparotomy or laparoscopy are responsible for morbidity, impaired quality of life, and increased healthcare costs. In the first 2 years after the primary surgery, the incidence of IH is 10-20%, mostly after laparotomy [1].

The development of incisional hernias is related to a multitude of factors; factors related to the patient, the operative technique, and also the suture material. Factors related to the operative technique are type and size of incision and to the patient are high body mass index (BMI), co-morbidities like hypertension and diabetes, or poor nutritional status [2].

In the treatment of ventral incisional hernias, laparoscopic IPOM and open sublay mesh repair are the most common techniques used for primary and recurrent hernias, with comparable short and long-term outcomes [3]. Laparoscopic or robotic approaches provide minimal contact with the mesh and reduce the risk of infections by remote positioning of the trocars from the mesh [4].

We report a pubo-umbilical “swiss cheese” IH that necessitated a urinary bladder mobilization for a correct mesh placement. The bladder was sutured to the mesh in its previous anatomical position. This report is focused on the technical aspect of the dissection and mesh fixation.

Case Report

A 57-year-old female patient presented in General Surgery Consultation for abdominal pain at the level of the pubo-umbilical scar. The medical history revealed 2 caesarean sections performed by midline pubo-umbilical incision approximately 25 to 30 years ago. The patient had a BMI (body mass index) of 26 kg/m². The abdominal clinical exam revealed the presence of multiples midline small defects from the pubic bone to the umbilical scar. The taxis was positive. A parietal ultrasound exam confirmed the presence of multiple small IH all along the pubo-umbilical scar (**Figure 1**). We proposed a treatment by laparoscopy with the placement of a non-resorbable mesh in intraperitoneal position.

Operative Technique

For the surgery, we used a basic laparoscopy set and a needle-holder. A urinary catheter (Foley catheter) was placed prior to the surgery. The procedure was performed by laparoscopy with the placement of 3 trocars in the left abdominal side. We placed the trocars in the left lateral side to allow for a complete exploration of the median abdominal line and repairs to all the potential defects.

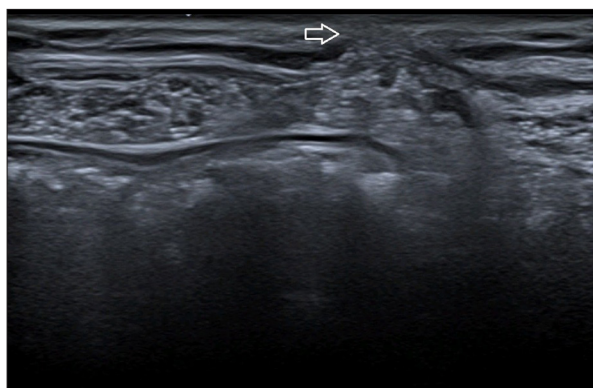


Figure 1. Ultrasound image showing the presence of one of the incisional hernias.

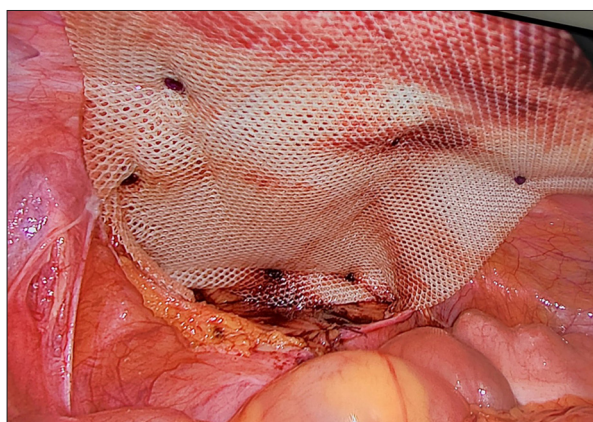


Figure 2. Intraoperative image showing mesh fixation on the pubic bone.

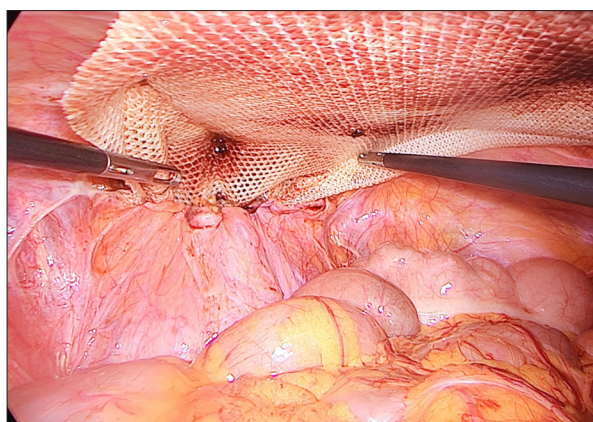


Figure 3. Intraoperative image that shows the urinary bladder fixation on the mesh in the previous anatomical position.

The exploration confirmed the presence of a “swiss cheese” IH on the pubo-umbilical scar. The parietal defect was close to the pubic symphysis and necessitated an access to the pre-vesical space (Retzius space) for a convenient abdominal wall approximation and mesh placement. The pre-vesical

space was opened by sectioning the peritoneal sheet at the apex of the urinary bladder. The Retzius plane was accessed, and the dissection was performed caudally under the pubic bone and laterally to the medial umbilical fold. The aponeurosis was approximated by percutaneous suture using resorbable stitches (Vicryl 1).

A 20×15 cm dual-mesh (Parietex™ Composite Mesh, Covidien, New Haven, CT, USA) was placed and fixed caudally to the pubic bone with resorbable tacks. The mesh was fixed to the abdominal wall with absorbable tacks (Figure 2). The urinary bladder was sutured to the mesh in the previous anatomical position, at the level of the upper peritoneal layer, using a running suture with resorbable barbed suture (Figure 3).

Postoperative Course

The postoperative course was uneventful. The urinary catheter was removed on the first postoperative day, and the patient spontaneously resumed normal voiding. The patient was discharged on the first postoperative day with analgesic medication. At 6-month follow-up, there had been no hernia recurrence or urinary problems related to the mesh placement.

Discussions

The life-time risk for developing an IH has been estimated at 5% in the general population [5]. IH is a worldwide problem that occurs in 11-20% of cases. The risk of IH is higher in surgeries performed by laparotomy [6]. Multiple factors are involved and may be related to the patient, the type of primary surgery, and biological factors related to the patients [7].

In 1992 Le Blanc et al described the first IPOM laparoscopic approach, which has proved to be a safe alternative to open ventral hernia repair [8]. With the multitude of techniques by laparotomy and mostly by laparoscopy, the most effective technique or the standard procedure for the treatment of IH is undefined [9]. Laparoscopic repair of IH is associated with shorter hospital stay, lower rates of wound infection, earlier recovery, and recurrence rates under 5% [10].

According to the guidelines, laparoscopic IPOM repair is indicated when the size of the defect is under 10 cm. For larger defects, laparoscopic treatment can predispose to recurrence and is no longer indicated [11]. For the treatment of defects larger than 10 cm, studies indicate significantly higher rates chronic pain requiring treatment [12]. In cases of lower abdominal hernias, the treatment is complex, necessitating not only the repair of the abdominal wall, but also mobilization of the urinary bladder for convenient mesh placement. Fan et al, in a

study on 98 patients with ventral hernias, found that the bladder mobilization with mesh placement is safe and effective [13].

Köckerling et al, in a systematic review, found that the laparoscopic approach compared with the open IPOM technique had a significantly lower postoperative complication rate and hospital stay and similar recurrence rate [14].

In case of laparoscopy or robotic approach, hernia defect closure by transfacial suture is a simple method of repair and has a lower incidence of seroma and recurrence. The minimal invasive approach facilitates mesh positioning and allows early functional recovery of the abdominal muscles [14].

The use of mesh is associated with reduced recurrence rates compared to primary suture repair and additionally provides superior mechanical stability [16]. Mesh placement allows correcting loss of domain and helps to maintain the rectus muscles in the midline [17]. Potential complications related to urinary bladder mobilization include bladder injury, urinary retention, and hematoma. Regarding the mesh, Kok et al described a urinary bladder erosion, with fistulation to the abdominal wall resulting in necrotizing fasciitis [18].

“Swiss cheese” hernia is a particular form of IH, characterized by the presence of multiple small defects. This type of IH is a reliable indication for the laparoscopic approach because the defects are usually small and despite the increase number of defects, the wall approximation can be performed conveniently.

In our case, the presence of a parietal defect closely to the pubic bone necessitated access to the Retzius space for appropriate placement of the mesh. For mesh fixation on the pubic bone, we used resorbable tacks to prevent development of chronic pain. We performed suturing of the bladder on the mesh to avoid an internal hernia and to prevent problems related to the abnormal umbility of the bladder.

Conclusions

In pubo-umbilical “swiss cheese” IH, mobilization of the urinary bladder allows abdominal wall approximation and correct mesh placement. The laparoscopic repair of this type of a hernia provides rapid recovery and minimizes the risk of infection as well as reducing the incidence postoperative pain.

Declaration of Figures' Authenticity

All figures submitted have been created by the authors who confirm that the images are original with no duplication and have not been previously published in whole or in part.

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