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Late rejection of the mesh after laparoscopic hernia repair

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Abstract. We report the first case of late rejection of a mesh after laparoscopic hernia repair. It occurred in a 48-year-old man who had had a laparoscopic hernia repair by transabdominal preperitoneal approach 3 years earlier. The most characteristic finding was the slow development of a firm mass in the right groin, without pain or fistula. At admission 3 months later, US and CT scans demonstrated a necrotic mass extending into both iliac fossa. The mass was approached through a midline incision. Pus was taken for microscopic examination (negative), and the mesh was removed, along with several staples. Ultramicroscopic examination of the mesh showed breakdown of the fibers, collagen reduction, and no chronic inflammatory cells. No infectious cause of inflammation was identified.

Key words: Hernia — Biomaterials — Laparoscopy — Polypropylene — Infection

Laparoscopic hernia repair is typically done by one of three different techniques: the intraperitoneal onlay mesh, the transabdominal preperitoneal, or the totally extraperitoneal method [4]. All of them require the use of a piece of mesh, generally made of polypropylene, to cover the parietal defect. Its use makes the operation relatively safe and easy. The rate of complications is low, and so is recurrence in short-term follow-up [3–5]. The laparoscopic approach reduces the risk of early postoperative infection, which ranges from 0.3% to 0.5% [3, 5]. However, early mesh infectious rejection has been described by Slim et al. [6] and Fitzgibbons et al. [3], though the rate (0.1%) is lower than that associated with open surgery. Late rejection of the mesh has never been described. We report herein the first case of late mesh rejection after laparoscopic repair of hernia.

Case Report

A 48-year-old man was admitted to our department for a right abdominal mass. He had had laparoscopic bilateral hernia repair 3 years earlier (transabdominal preperitoneal approach, polypropylene mesh, uneventful postoperative course).

Three months before his admission, the patient noticed a cutaneous swelling in the right groin. At admission, the mass was firm and painful. It extended from the right iliac region to the groin. The white blood cell count was 14,000/μl. Ultrasound (Fig. 1) showed a large hypoechoic-anechoic mass closely adhering to the small bowel. A CT scan (Fig. 2) showed a double mass, which appeared to be larger on the right side, extending through the Bogros

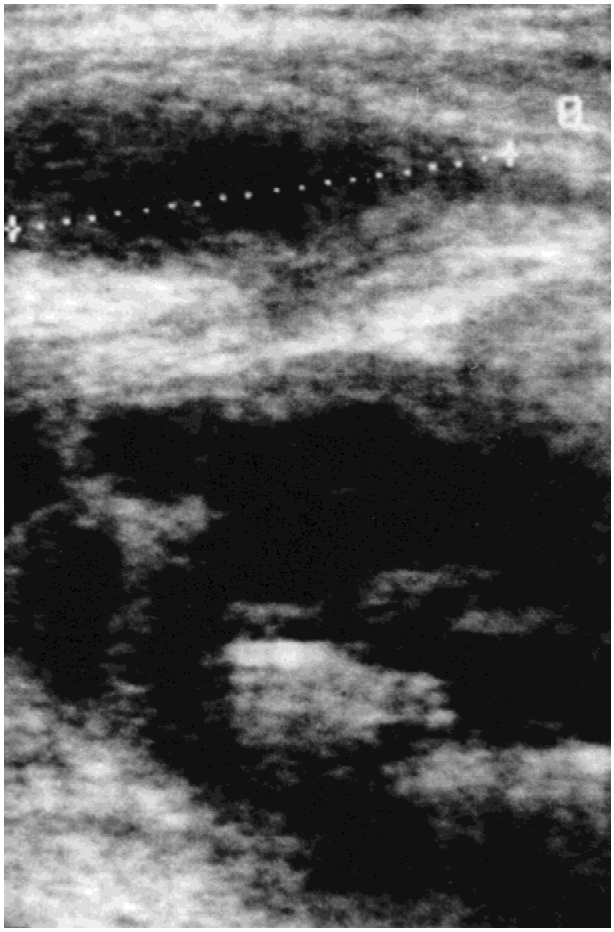

Fig. 1. Ultrasonography of the right iliac fossa. A large anechoic-hypoechoic mass was evident.

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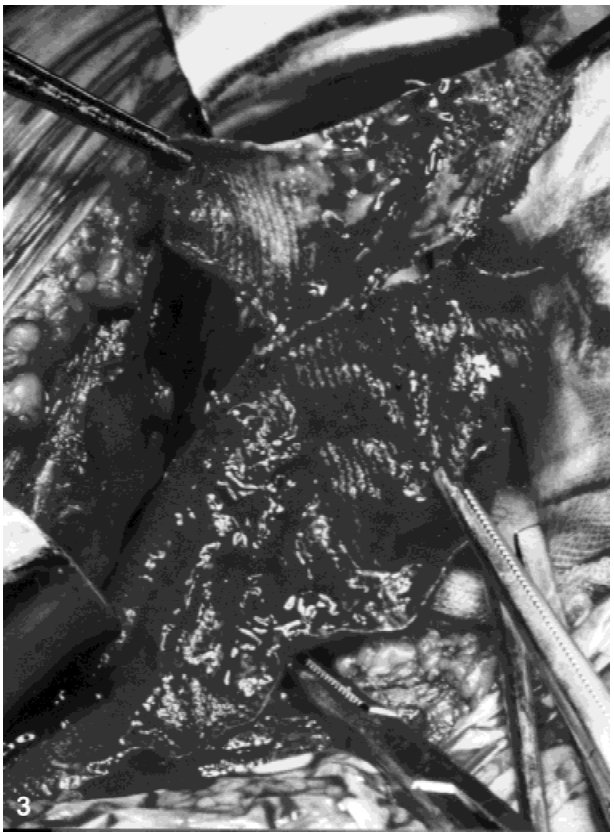

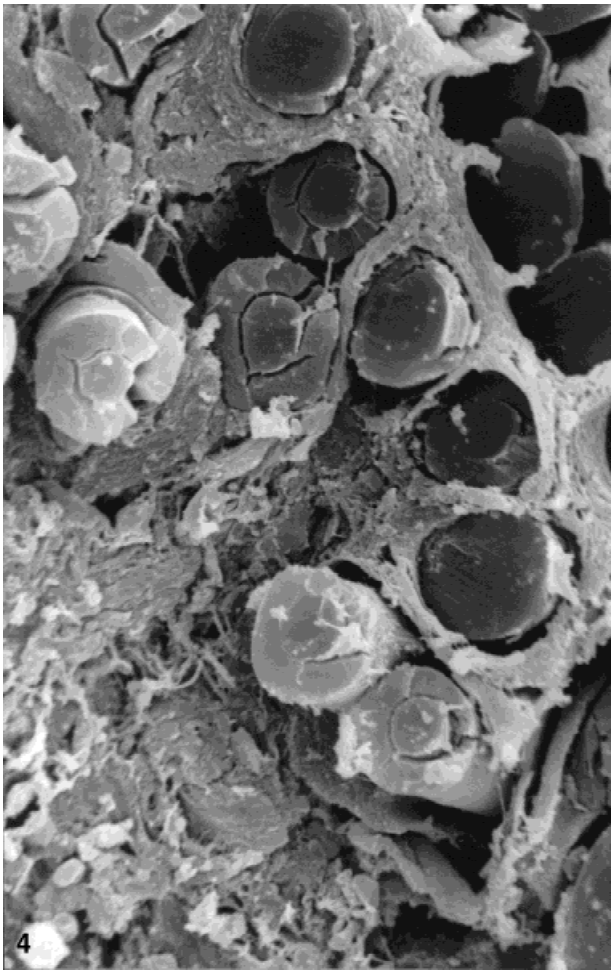

Fig. 2. CT scan of the lower abdomen. A large right extraperitoneal mass was evident. It caused swelling of the groin. Staples were detached from the abdominal wall. A lesser necrotic tissue collection was found on the left.

Fig. 3. During the operation, the mesh was removed from the pseudoascess, along with several staples.

Fig. 4. Scanning electron microscopy (×600) of the mesh on the right side. Migration of red blood cells and granulocytes into the mesh. Some fibers showed structural breakdown.

space into the left side. For this reason, we approached the mass through a midline incision. Pus taken for microbiologic examination was negative.

Both pseudoabscesses were opened and the mesh, which had become sequestered in necrotic tissue, was removed, along with several staples (Fig. 3). The immediate postoperative course was uneventful except for serous discharge through the wound, which continued for 2 weeks.

Samples of the mesh taken from the right side, where it was surrounded by pus, and from the left, where it was still integrated with the host tissue, were processed for scanning and transmission electron microscopy [8]. Two different pictures were evident: on the right side, the mesh was full of red blood cells and granulocytes. Most of the fibers showed breakdown (Fig. 4). On the left side, there were fewer than usual or no giant cells of foreign body rejection. Activated macrophages were seen in direct contact with the fibers. Collagen bundles were still evident.

Discussion

Mesh repair of abdominal defects in animals is characterized by the development of chronic inflammatory tissue around the fibers and connective tissue deposition, with encapsulation and anchoring of the mesh to the host tissue [1]. As with all inflammatory tissue, it is prone to the attachment of bacteria, which makes infection more frequent

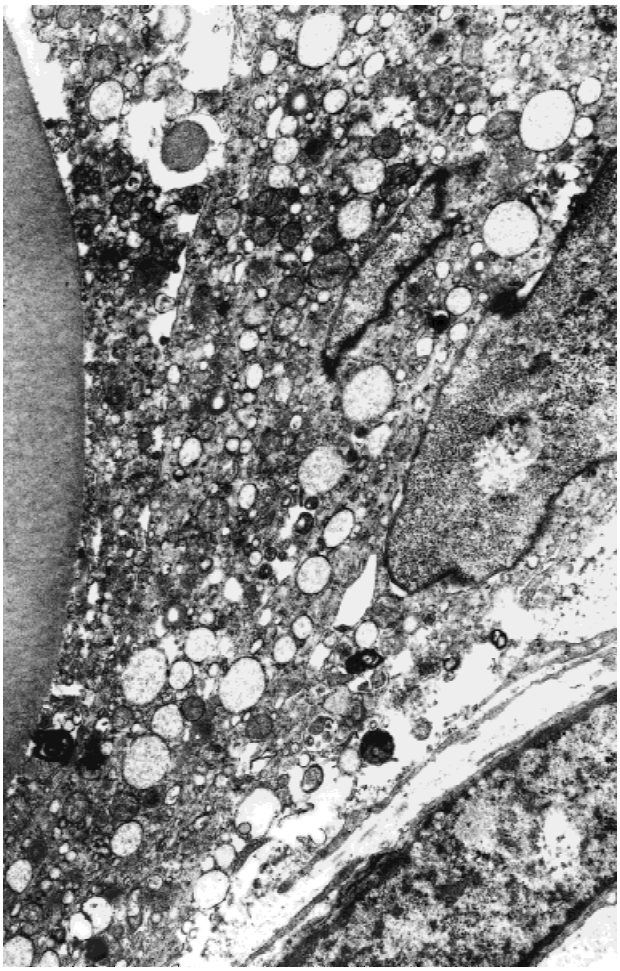

Fig. 5. Transmission electron microscopy (×5200) of the mesh on the left side. No giant cells were evident. The fibers were surrounded by macrophages. Connective tissue bundles were still evident in the extracellular matrix, but debris was also present.

and rejection of the mesh more likely [2]. In nonlaparoscopic hernia repair, infection through the wound is said to be 0.5% to 3% [7, 9]. With laparoscopy, the infection rate is lower because the site of the mesh is distant from the trocar wounds used to introduce it.

However, other factors, such as a visceral injury, may alter this situation at the time of operation or when the mesh is folded after the operation. Breakdown or splippage of the mesh, with concomitant loss of giant cells, could stimulate an acute inflammation, which is easily colonized by hematogenic bacteria.

The clinical picture of late mesh rejection after laparoscopic hernia repair differs from the usual finding after open surgery. Our case showed no fistula tract through the wound. The absence of a preferential route of exteriorization led to slow growth of a pseudoabscess (with sterile pus on the microbiological examination) 3 months after the beginning of the swelling in the groin and only mild symptoms. For this reason, we think that late rejection of the mesh after laparoscopic operations is a specified clinical picture that might be called chronic ‘‘meshoma’’ without fistula formation.

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