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Retroperitoneoscopic tension-free repair of lumbar hernia

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Abstract Lumbar hernia is an infrequent pathology that is difficult to treat through open surgery. A 65-year-old man presented with a right-sided lumbar mass responsible for pain. This was a fatty mass of 10×15 cm, located in the lumbar fossa. A CT scan showed the hernia and the defect. Through a small incision in the flank, dissection was initiated with one finger; a 10-mm trocar was inserted into this incision and the retroperitoneal space inflated. Under direct vision, dissection of retroperitoneal fat was undertaken with the scope. A 5-mm trocar was inserted beyond the 11th rib. Fat in the lumbar hernia was reintegrated into the retroperitoneal space, allowing the lumbar wall defect to be seen. A polypropylene mesh was applied and stapled onto the lumbar wall to widely cover the defect. Under trans-abdominoretroperitoneal laparoscopy, lateral peritoneum, colon, and ureter are detached to explore the lumbar wall and are reinserted at the end of the procedure. Under retroperitoneoscopy, even if the space is small, retroperitoneal fat is easily detached at a distance from the colon and ureter. The defect is covered with a polypropylene mesh. It is covered with an ePTFE mesh if the retroperitoneal space cannot be closed. Surgery and follow-up were uneventful with no recurrence in this case or in the published cases. Retroperitoneoscopy and trans-abdominoretroperitoneal laparoscopy are two easy approaches for a tension-free repair of lumbar hernia.

Keywords Lumbar hernia · Grynfeltt-Lesshaft hernia · Petit's hernia · Laparoscopic surgery · Retroperitoneoscopic surgery · Surgical technique

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Introduction

In adulthood, lumbar hernia is primary or secondary to a lumbotomy, a bone resection on the iliac crest, or to a lumbar trauma [1, 2]. Primary lumbar hernia can be located in the superior lumbar triangle, the Grynfeltt-Lesshaft triangle, which is under the 12th rib. It is limited by the quadratus lumborum, the erector spinae, the serratus posterior inferior, and the obliquus internus and is covered by the latissimus dorsi [2]. Primary lumbar hernia can be located in the inferior lumbar triangle, the Petit's triangle, which is limited by the iliac crest, the erector spinae, and the obliquus externus and is partially covered by the latissimus dorsi [1]. Primary lumbar hernia can extend all over the lumbar wall. Open repair of lumbar hernia needs a wide opening with muscle flaps or intraparietal prosthesis [1, 3, 4]. Since 1996, treatment of lumbar hernia through trans-abdominoretroperitoneal laparoscopy or through retroperitoneoscopy has been proposed.

Patient

A 65-year-old-man had for 10 years a right-sided subcutaneous lumbar mass that was responsible for pain and that disappeared in ventral decubitus. This 10×15-cm mass contained fat and was easily reducible, showing a lumbar wall defect of 3×4-cm width located under the 12th rib and external to the erector spinae. A CT scan showed a lumbar hernia in the superior lumbar triangle and identified the 12th rib and the lumbar wall defect (Fig. 1).

Technique

The patient was placed in a left lateral position. Through a 15-mm incision located along the right-sided anterior axillary line, at an equal distance from the inferior border of the chest wall and the anterior superior iliac spine, retroperitoneal fat was detached first with one finger and then with a smooth instrument.



Fig. 1 On CT scan, the right-sided lumbar hernia (LH) is well seen laterally to the vertebral muscles and internally to the oblique muscles and to the 12th rib. It contains retroperitoneal fat that extends 10 cm. The defect has a 4-cm width

A 10-mm trocar was placed through this incision, and the retroperitoneal space was explored under low-pressure inflation. Using the up and down movements of a 30° scope, the retroperitoneal fat was detached flush with the lumbar wall muscles to reach the anterior extremity of the 11th rib beyond where a 5-mm operating trocar was placed under video control. With the help of a grasper placed into the operating trocar, the detachment of the retroperitoneal fat was achieved, reaching the iliac crest and the lumbar spine. The few adhesions of the retroperitoneal fat to the lumbar wall defect were divided. The retroperitoneal fat that slipped through the defect was grasped and reintegrated into the retroperitoneal space. The defect of 3×4-cm width was well identified (Fig. 2) as well as the space in the lumbar wall, into which the retroperitoneal fat had slipped.

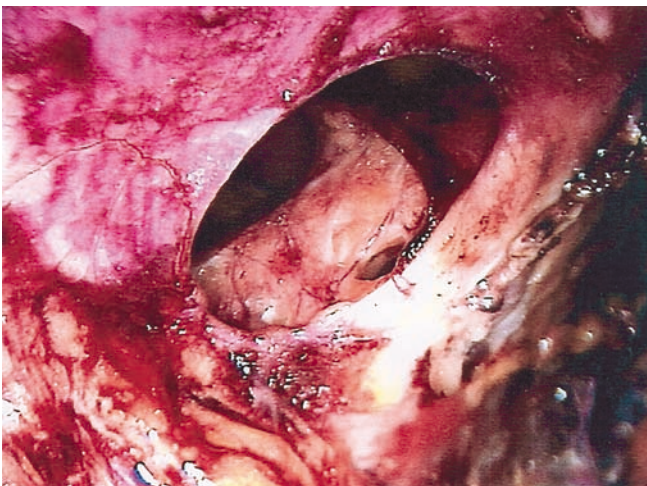


Fig. 2 Under retroperitoneoscopy, once the retroperitoneal fat that slipped into the lumbar wall is reintegrated into the retroperitoneal space, a 3×4-cm defect is well identified and, through it, the space into which the retroperitoneal fat had slipped

An octagonal polypropylene mesh with a 13-cm diameter was rolled, introduced into the retroperitoneal space through the 10-mm trocar, and unrolled on the lumbar wall to cover the defect widely. The mesh was tacked onto the lumbar wall along its superior, inferior, and external borders and around the defect. The mesh was not tacked along its internal border in order to avoid injuring sympathetic and lumbar nerves. A Redon drain was placed into the retroperitoneal space through the 5-mm trocar site, and the 10-mm trocar site was closed in two layers with absorbable sutures.

The patient was autonomous on day one and pain-free on second postoperative day when he was discharged. A subcutaneous seroma in the lumbar wall that needed needle suction was diagnosed on twelve postoperative day. There is no recurrence of the lumbar hernia 2 years after this retroperitoneoscopic tension-free repair.

Discussion

The treatment of primary, traumatic, or postoperative lumbar hernia could be undertaken under retroperitoneoscopy [4, 5] or under trans-abdominoretroperitoneal laparoscopy [3, 6, 7, 8] on a patient in a lateral position.

Retroperitoneoscopy is undertaken with a 10-mm trocar placed into the retroperitoneal space through an open technique, along the anterior axillary line, between the inferior border of the chest wall and the anterior superior iliac spine [4, 5]. Even if the operating space is small, the retroperitoneal fat is detached at a distance from the colon and the ureter, flush with the lumbar wall in a nonvascular plane, first with the finger or with a balloon [4, 5] and then with the up and down movements of a 30° scope. In the space created here, one or two 5-mm operating trocars are placed along the anterior axillary line to achieve the dissection.

Trans-abdominoretroperitoneal laparoscopy is undertaken with three trocars placed into the peritoneal space along the midline [3] or along the external border of the rectus abdominis [6, 7, 8]. Surgery is undertaken in a wide intraperitoneal space with a 0° scope. In the traumatic lumbar hernia, the peritoneal cavity is explored, looking for traumatic lesions of the digestive tract [7]. Lateral peritoneum, colon, and ureter have to be detached to enter the retroperitoneal space. At the end of the procedure, lateral peritoneum and colon have to be reinserted on the lateral abdominal wall, which increases operating time [6, 7].

Under retroperitoneoscopy and under trans-abdominoretroperitoneal laparoscopy, the lumbar wall defect is identified easily; the retroperitoneal fat and the colon that slipped through the defect are reintegrated into the retroperitoneal space [4, 5, 6, 7]. The defect is covered with a polypropylene mesh with a margin of about 5-cm all around it [1, 2, 6, 8]. An ePTFE mesh [8] or a composite mesh [3] can be used if the retroperitoneal space cannot be closed, such as in traumatic lumbar hernia. The mesh is fixed on the lumbar wall with transfixing

sutures [8] or tacked onto the lumbar wall [3, 4, 5, 6, 7]. Fixing the mesh close to the spine has to be avoided to avoid injuring sympathetic nerve and lumbar radicals. Depending on the site and the size of the defect, the mesh can be fixed on the 12th rib or on the iliac crest [5, 8] with specific material. To avoid such a fixation, a wide mesh with more than 5-cm margins can be used, the abdominal pressure applying it on the lumbar wall.

In the published cases [3, 4, 5, 6, 7, 8] and in the case described here, surgery was undertaken without intraoperative complications. Patients had to benefit from the advantages of minimally invasive approaches. Retroperitoneoscopic and trans-abdominoretroperitoneal laparoscopic approaches avoid wide opening and muscle flaps that are needed during an open repair [1, 2]. The lumbar wall is explored, looking for another same-sided lumbar hernia [8]. As the defect is not closed with sutures, but widely covered with a mesh, such a lumbar hernia repair is tension-free. Compared to open repair, these approaches and techniques lessen the operative time, reduce postoperative pain, accelerate autonomy recovery, shorten hospital stay to 1 or 2 days [2, 5, 6, 7, 8], and make ambulatory surgery possible [3]. In the case described and in the published cases, there were no major postoperative complications, and no recurrence was described up to 30 months after surgery [4, 5, 6, 7, 8].

Conclusion

The intraoperative and postoperative results of retroperitoneoscopic and trans-abdominoretroperitoneal

laparoscopic tension-free repair of lumbar hernia are encouraging in the six published cases and in the case described here. These approaches avoid wide muscle dissection. Patients had to benefit from the advantages of minimally invasive approaches and tension-free repairs with better postoperative comfort. We think that retroperitoneoscopic tension-free repair is indicated in primary and postoperative lumbar hernia, and trans-abdominoretroperitoneal laparoscopic tension-free repair in traumatic lumbar hernia.

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