

# Transperitoneal laparoscopic repair of a dorsal lumbotomy incisional hernia

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## Abstract

Hernias are a rare complication following muscle-splitting dorsal lumbotomy surgery. At our centre, before the introduction of laparoscopic surgery, donor nephrectomy for renal transplantation was performed via a dorsal lumbotomy approach. We present a case of transperitoneal laparoscopic repair of a dorsal lumbotomy incisional hernia following donor nephrectomy using a quilted 2-sided expanded polytetrafluoroethylene (ePTFE) mesh. The procedure was uncomplicated and required 2 hours operating time to complete. A 2-day stay in hospital was observed for convalescence and the patient quickly returned to routine activity after discharge. Advantages of the laparoscopic approach include excellent visualization and wide coverage of the hernia defect under direct vision. This case illustrates the benefits of laparoscopic repair of a rare lumbotomy complication.

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## Case report

A 46-year-old woman presented with a postsurgical hernia 2 years following an uncomplicated right donor nephrectomy via a dorsal lumbotomy incision. After returning to work, which involved heavy lifting, she began noting increasing discomfort and a bulge over the operative site. The patient also relayed symptoms of a partial bowel obstruction, including diarrhea up to 4 times daily without accompanying nausea or vomiting. A CT scan showed a hernia defect measuring 6.3 cm transversely and 5.5 cm vertically directly under the lumbotomy incision. The patient's colon protruded about 2 cm through the fascial defect into the subcutaneous fat while supine.

Management options were discussed and the patient elected to have a transperitoneal laparoscopic approach for definitive repair. At the time of surgery, the patient was placed in the left lateral decubitus position and access to the peritoneum was established with the Hasson cannula. Two further working ports were placed for the operation, a 5-mm working port in the right upper quadrant and a 10/12-mm disposable trocar in the right lower quadrant. The edges of the fascial defect were identified superior to the right iliac crest and lateral to the psoas muscle (Fig. 1). A significant length of ascending colon was observed within the gaping defect, and once the lateral peritoneum was incised, the colon was easily mobilized medially back into the abdomen. The hernia defect was explored and the fascial defect edges were defined in preparation for mesh placement (Fig. 2). Double-sided polypropylene/expanded polytetrafluoroethylene (ePTFE) hernia mesh

(Bard Composix E/X, C.R. Bard Inc., Helsingborg, Sweden) was positioned to allow about 2–3 cm overlap with the hernia defect edges. We used single-use 5-mm titanium screw clips (Protack, United States Surgical Corp., Norwalk, Connecticut) to tack the hernia mesh in position at 4 quadrants (Fig. 3), and placed interrupted 3-0 nylon sutures evenly in a circumferential fashion around the perimeter of the repair at 1-cm



Fig. 1. Laparoscopic view of the lumbotomy hernia defect.

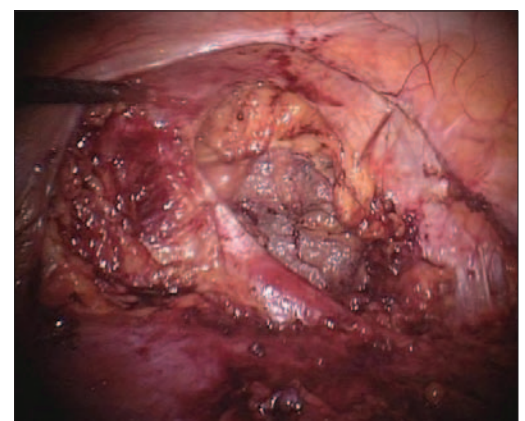


Fig. 2. Laparoscopic view showing the dissection of the peritoneum off the hernia defect.

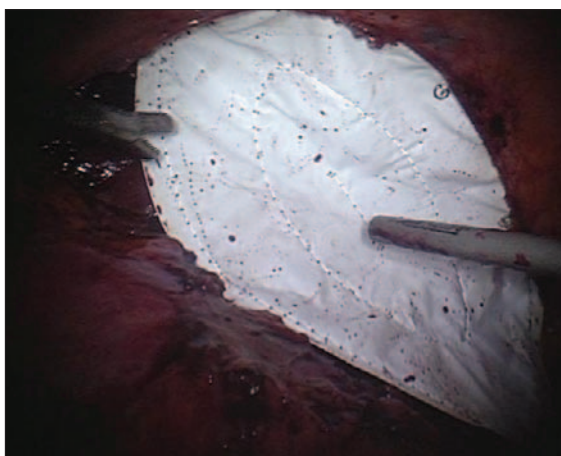
intervals. When fixation of the mesh was completed (Fig. 4), a 10-mm flat suction drain was placed on top of the mesh repair, and the abdominal incisions were closed in the usual fashion. The drain was kept in place for 2 days to minimize any possible fluid collection behind the mesh. This allowed the posterior body wall to coapt with the mesh repair to provide a seal that would eventually form scar tissue. The drain was left just on the peritoneal side of the mesh and the sutures and screws were placed far enough apart that any fluid building up superficial to the mesh would drain into the peritoneal cavity and be sucked up by the drain or absorbed by the peritoneum itself. Total operative time for the procedure was 2 hours. During her 2-day hospital

stay, the patient was prescribed an abdominal binder to support the repair in the short term.

At 6 weeks follow-up, the patient reported that she was very satisfied with the repair and that there was no evidence of recurrence. She returned to normal activities excluding heavy lifting within 4 days after surgery. Examination of the dorsal lumbotomy incision demonstrated an excellent result; there was no palpable defect, and no bulging with Valsalva manoeuvre, coughing or straining (Fig. 5).

## Discussion

In contemporary adult urological practice, dorsal lumbotomy approaches are rare for renal surgery because they offer limited exposure of the hilum, potentially increasing the risk of a major intraoperative complication, including hemorrhage.<sup>1</sup> Nevertheless, this technique is still occasionally used for nephrectomy of small kidneys, bilateral nephrectomy or adrenal surgery, open



**Fig. 3.** Laparoscopic view showing the tacking of the double-layer expanded polytetrafluoroethylene hernia mesh to the edges of the fascial defect.



**Fig. 4.** Laparoscopic view of completed expanded polytetrafluoroethylene mesh placement.



**Fig. 5.** Six weeks after laparoscopic hernia repair, showing no evidence of recurrent hernia.

renal biopsy, pyeloplasty and pyelolithotomy procedures.<sup>2</sup> Advantages of the dorsal lumbotomy approach include a direct approach to the kidney and ureteropelvic junction, less incisional tissue trauma because of its muscle-splitting nature, decreased pain and earlier oral intake with less ileus.<sup>3</sup>

Very few cases of hernia after lumbotomy have been described in the literature, owing both to the low usage of the lumbotomy incision and to the inherent low risk of herniation through a muscle-sparing incision. Instead, most of the literature regarding posterior abdominal wall hernias refers to lumbar hernias. These are distinct from lumbotomy hernias but share many of the same features. On the one hand, lumbotomy hernias occur between the abdominal wall muscles, laterally, and the erector spinae and quadratus lumborum, medially. In contrast, lumbar hernias occur through a weakness of the transversalis fascia and transversus abdominis muscle aponeurosis and occur between the 12th rib superiorly, erector spinae muscle medially, crest of the iliac bone inferiorly and posterior edge of the external oblique muscle laterally. Hernias after flank incisions (e.g., post-nephrectomy) are a type of acquired lumbar hernia. Although lumbar hernias are also relatively rare, with only 300 cases described in the literature,<sup>4</sup> they provide the best available experience with regard to posterior abdominal wall hernia presentation, workup and repair. The first lumbar hernia was reported in 1672 by Barbette<sup>5</sup> and the first open repair was reported in 1750 by Ravaton.<sup>6</sup> Since the first laparoscopic repair in 1996,<sup>7</sup> at least 40 cases of laparoscopic lumbar hernia repair have been reported.<sup>8–13</sup>

Lumbotomy hernias are often asymptomatic but usually come to medical attention because of pain, bulging over the incision or altered bowel habits. Provocation manoeuvres such as standing or coughing may cause ballooning. Bowel sounds may be heard over the defect, and palpation of the area will often cause pain. The differential diagnosis on exam would include lipoma or tumour, as well as postoperative hematoma, abscess or muscle wall denervation atrophy.<sup>4</sup> The lumbar hernia literature estimates a 25% risk of incarceration and an 8% risk of strangulation if untreated.<sup>12</sup> CT scan is the diagnostic test of choice because it details the anatomy of the hernia and allows preoperative planning.<sup>14,15</sup>

There is no recommended approach to the treat-

ment of lumbotomy hernias because the presentation is so rare. We chose a laparoscopic approach mainly because of the published success of laparoscopic acquired lumbar hernia repair and the recognized benefits of minimally invasive surgical approaches in the postoperative recovery of the patient. Advantages of laparoscopy include precise identification of the location and type of hernia, excellent exposure, accurate placement of mesh, avoidance of major dissection or injury to surrounding structures (e.g., nerves, ureter), excellent cosmetic result and short postoperative convalescence.<sup>9</sup> Most described cases of laparoscopic repair of lumbar hernias have been transperitoneal, although there are also reports of extraperitoneal repair.<sup>16–18</sup>

Options for fascial defect coverage include primary closure of the defect in cases of small hernias, use of fascial flaps and synthetic mesh closure. Synthetic mesh options include polypropylene-, polyester- and ePTFE-based mesh. ePTFE material is optimal for the transperitoneal laparoscopic approach because it results in fewer adhesions when placed intraperitoneally.<sup>19</sup>

Common complications described for laparoscopic lumbar hernia repair include seroma and hematoma. Clinically detected seroma formation occurs in 13%–27% of cases based on the larger series.<sup>8,9</sup> Hematoma occurs in 0%–20% of cases.<sup>8,9</sup> Recurrence following repair is possible, although only 1 case has been published.<sup>9</sup>

The largest series of lumbotomy hernia repair was reported by Tobias-Machado and colleagues<sup>11</sup> in 2005 in which they describe 7 patients treated successfully with transperitoneal laparoscopic mesh repair. The lumbotomy incision has historically been the classic approach in Brazil for nephrectomy, explaining the authors' relatively large series. Of the 7 patients, 3 had undergone donor nephrectomy, 2 had nephrectomy for renal tumours, 1 had nephrectomy for hydronephrosis and 1 had undergone pyelolithotomy.

## Conclusion

Dorsal lumbotomy incisional hernias are extremely rare, with less than 10 cases reported in the literature. Most of our knowledge concerning these hernias is extracted from the literature on lumbar hernias, which are located in the same general region.

The approach chosen for lumbotomy hernia repair should be determined by the size of the hernia and the experience of the surgeon. The transperitoneal laparoscopic approach allows for excellent exposure of the fascial defect, minimal dissection and wide mesh coverage that overlaps with normal tissue. Furthermore, the peritoneal cavity is often devoid of adhesions and postsurgical scarring as the original dorsal lumbotomy incision is retroperitoneal. This case represents the first such laparoscopic repair undertaken at our institution and illustrates the technical feasibility, safety and effectiveness of this type of approach.

Transperitoneal laparoscopic repair of lumbotomy hernias appears to be a well-tolerated procedure. Owing to the low number of reported cases, it is not possible to make recommendations as to its applicability; however, a number of case series suggest concordance with our findings. Based on this experience, it would seem that a laparoscopic approach to lumbotomy hernia repair should be attempted before undertaking an open approach.

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