

## Using a modified component separation technique and polypropylene mesh for large hernia with stoma: A case report

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### ABSTRACT

**Introduction:** Ventral hernias result from the failure of abdominal wound closures along previously created surgical incisions, and occur in 10–20% of cases. The ventral hernia can be caused by several factors. The only definitive treatment for a ventral hernia is surgery. The component separation technique is a useful method for reducing tissue tension through the use of a myofascial advancement flap. **Case Report:** A 67-year-old man who had undergone a radical cystectomy, with an ileal conduit urinary diversion, complained of a protruding mass on his laparotomy scar. Computed tomography revealed a presence of a 12-cm defect of the abdominal wall. Unilateral component separation method was performed at the opposite stoma site, and polypropylene mesh was used in the onlay method to provide reinforcement.

**Conclusion:** In case of a large ventral hernia with a stoma, unilateral component separation technique and polypropylene mesh can be useful treatment method.

**Key words:** Component separation technique, Prosthetic mesh, Stoma, Ventral hernia  
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**INTRODUCTION:** Ventral hernias result from the failure of abdominal wound closures along previously created surgical incisions, and occur in 10–20% of cases<sup>1,2</sup>. Repairs of this type of hernia can be performed using either open or laparoscopic techniques. Recently, following the development of a laparoscopic technique, laparoscopic hernia repairs are increasing. Laparoscopic ventral hernia repair is an intraperitoneal underlay technique involving mesh placement and, if the patient has a

stoma, is not easy to perform. Moreover, the prosthetic mesh cannot use in the condition of contamination. The component separation technique, as described by Ramires et al<sup>3</sup> is a useful method for reducing tissue tension through the use of a myofascial advancement flap. This method can also be used to reconstruct large abdominal wall defects without the use of prosthetic mesh. Here, I describe a case involving a large ventral hernia, with a stoma (urostomy), that was repaired using a unilateral component

separation technique and polypropylene mesh used in the on-lay method to provide reinforcement.

**CASE REPORT:** A 67-year-old man who had undergone a radical cystectomy, with an ileal conduit urinary diversion, complained of a protruding mass on his laparotomy scar (Figure 1). He also complained of intermittent discomfort and pain during

specific activities and movements. Otherwise, his medical history was significant only for diabetes mellitus. Abdominal computed tomography was performed and confirmed the presence of a 12-cm defect of the abdominal wall. As a result, the patient underwent a ventral hernia repair.

Figure 1: Large ventral hernia is observed in the midline incisional scar.



Under general anesthesia, the patient was placed in the supine position and a skin incision was created lateral to the defect. A large hernia sac was taken down, and adhesions between the peritoneum and small bowels were meticulously dissected until the rectus muscles were entirely exposed. Because an ileal conduit was located in the right lower quadrant of the abdomen, only the subcutaneous fat on the left side was dissected from the anterior rectus sheath and from the aponeurosis of the external oblique muscle. An aponeurosis of the external

abdominal oblique muscle was transected longitudinally over its full length, 2-cm lateral from the left rectus sheath. The avascular plane between the external abdominal oblique muscle and the internal abdominal oblique muscle was separated; the left posterior sheath was incised posteriorly. The abdominal wall closure was performed using a running suture of nonabsorbable material and reinforced using polypropylene mesh (Figure 2). Close suction drains were placed at the dissection sites and the skin was closed (Figure 3).

Figure 2: Intra-operative view. (a) Tension free abdominal wall closure was attained by taking big bites of fascia with polypropylene continuous running sutures (b) Completed on lay repair with unilateral component separation.

Figure 2(a)



Figure 2(b)

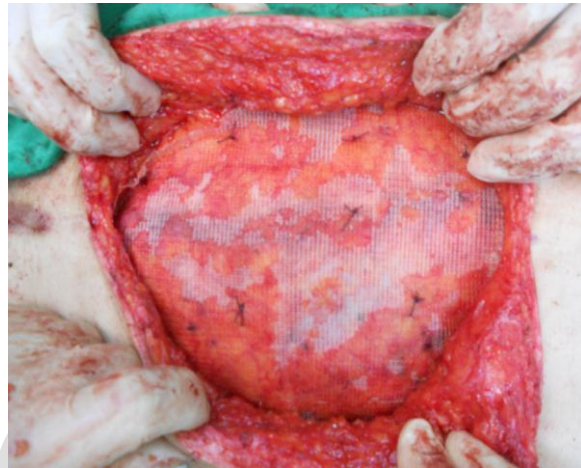


Figure 3: Postoperative view



The patient recovered well, without significant problems. The tubes were removed 7 days later and the patient was discharged on the tenth post-operative day. He has not experienced any problems during the 8 months of follow-up since the surgery.

**DISCUSSION:** In general, the factors causing or facilitating ventral hernia can be divided into 3 groups. The first group of factors includes those that generally impair wound healing, such as old age, diabetes, or wound infection. Second, increased intraabdominal pressure, such as that caused by coughing, ascites, constipation, or ileus and lung problems, may also lead to wound failure and subsequent hernia development.

Third, surgical factors, such as the type of suture material, incision type, or suture technique, may also play an important role in hernia development<sup>4</sup>.

Patients who have a ventral hernia usually complain of a bulging lump at their incision site. In addition, they also feel pain and discomfort during particular activities and movements. Large hernias may cause disability, skin ulceration, respiratory problems, or incarceration of the abdominal wall defect. Moreover, incarceration may lead to strangulation and necrosis of the hernia content.

The only definitive treatment for a ventral hernia is surgery, via laparoscopy or an open method. However, attempts to suture larger defects during open surgery may result in tension and recurrence. As an alternative repair method, many surgeons choose laparoscopic hernia repair as it permits shorter hospital stays, faster returns to normal activity, and decreased possibilities of wound infection<sup>5,6</sup>. However, in cases involving large (>10 cm) abdominal wall defects, the presence of a strangulated bowel, or loss of abdominal domain (where the use of a prosthetic mesh is impossible), the repair cannot be performed laparoscopically<sup>7</sup>. A ventral hernia with a stoma is also difficult to repair using the laparoscopic approach. In such cases, the

component separation technique can be considered. A separating the external oblique fascia with an incision just lateral to the linea semilunaris produces mobility of the rectus abdominis muscle-internal oblique-transversus abdominis muscle complex and allows significant freedom for medial transposition of this entire complex. This innervated muscle complex can be advanced approximately 4cm at the subxiphoid level, approximately 8cm at the waist region, and 3cm in the suprapubic region on each side, allowing the surgeon to reconstruct defects up to 16cm in width at the waist level. A separating the deep surface of the rectus abdominis muscle from the underlying posterior rectus sheath above the arcuate line can contribute an additional 2cm medial advancement for each side. Therefore, it is possible to close extremely large midline defect<sup>8</sup>.

The use of mesh is associated with reduced rates of recurrence, and the use of prosthetic mesh in conjunction with the component separation technique can further reduce the recurrence rate<sup>9</sup>. In our case, in order to prevent damage to the stoma, component separation method was performed on the left abdominal wall. And to reinforce the abdominal wall and decrease the risk of recurrence, polypropylene mesh was also used.

**CONCLUSION:** The ultimate goal of hernia surgery is to reduce the risk of recurrence and minimize complications after hernia surgery. Thus, the treatment option should be determined from the point of view of the risks and benefits. In case of a large ventral hernia with a stoma, unilateral component separation technique and polypropylene mesh can be useful treatment method.

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