

# TRANSVERSUS ABDOMINIS RELEASE: A CASE REPORT

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## ABSTRACT

**Introduction:** Patients with large abdominal wall defects experience significant deformity, pain and decreased energy due to a loss of normal abdominal wall mechanics, severely impacting their quality of life. Reconstructive techniques for complex ventral hernia repair are numerous but most of them are unable to achieve the goals of hernioplasty. Posterior component separation with transversus abdominis muscle release (TAR) is a novel approach that offers a solution for complex ventral hernias.

**Case:** A 59 year old patient was admitted to our hospital for treatment of clinically and radiologically verified incisional hernia with 20% loss of domain characteristics, acquired after cesarean section and hysterectomy.

**Discussion/Conclusion:** Typical reconstructive techniques may struggle to reestablish abdominal domain and to create a lasting repair. Posterior component separation with transversus abdominis release is a novel technique that offers a durable solution to a variety of complex ventral hernias. The lack of sufficient tissue requires the insertion of prosthetic material or transposition of autologous material to bridge the fascial gap. Retromuscular or sublay hernia repair with mesh has proven to be a durable technique for ventral hernia defects, and completely avoids subcutaneous flap elevation.

TAR allows for significant posterior rectus fascia advancement, wide lateral dissection, preservation of the neurovascular supply, avoids subcutaneous tissue undermining and provides a large space for mesh sublay which allows for bilaminar growth of the mesh.

**Keywords:** Complex hernia, incisional hernia, abdominal hernia repair, transverse abdominal muscle release, TAR.

## INTRODUCTION

Patients with large abdominal wall defects often experience significant deformity, pain and decreased energy due to the loss of normal abdominal wall mechanics, severely impacting their quality of life (Figure 1). Thus it is important to remember that abdominal wall reconstruction should almost always be performed as an elective procedure and as one with potential burden for significant morbidity.[1]

Because herniorrhaphy failure and complication rates

appear proportional to the number of previous repairs, multiply recurrent hernias represent a formidable challenge.[2]

Many surgeons are discouraged in abdominal wall reconstruction procedures because of the technical difficulties, the high morbidity and the relatively high recurrence rate associated with these procedures. However, many patients with large hernias have infirmity complaints such as bulging of the abdominal wall, chronic wounds, immobility and back pain, necessitating surgical treatment. [3]

Reconstructive techniques for complex ventral hernia

repair are numerous but most of them are unable to achieve the goals of hernioplasty. Posterior component separation especially transversus abdominis muscle release (TAR) is a novel approach that offers a solution for complex ventral hernias. [4]

## CASE

A 59 year old patient was admitted to our hospital for treatment of clinically and radiologically verified incisional hernia with 20% loss of domain characteristics, acquired after cesarean section and hysterectomy. (Figure 2) The patient is operated under general anesthesia.

Median laparotomy incision with the scar excision was performed. Sharp dissection of the subcutaneous tissue is made to the point of identification of the hernia sac which is then opened. The abdominal cavity is visualized and full adhesiolysis of the viscera from the abdominal wall is conducted.

At the level of the medial border of the rectus is entered in the retromuscular plane. Using combined sharp and blunt dissection, the posterior layer of the rectus abdominis muscle is released laterally to the level of the posterior vagina of m. rectus abdominis and m. transversus abdominis.

At this level, the aponeurosis is incised and the dissection is brought to the posterior axillary line. The same procedure is done on the other side after which an additional 7-10 cm of tissue is obtained. (Figure 3)

The peritoneum is then closed using absorbable suture (Figure 4) and a 30x30 cm polypropylene mesh was diagonally placed (diamond shaped). The mesh is fixed to the Cooper ligament and the pubic crest with simple non absorbable sutures. Due to the magnitude of the defect, additional 15x15 cm polypropylene mesh is placed fixed with sutures just beneath the xiphoid processus and the superior edges of the previously diagonally placed mesh.

A drain is applied in this sub muscular plane. The retracted rectus muscles are then reapproximated with single sutures on the medial anterior rectus sheet, recreating the linea alba. Another drain is added in the subcutaneous tissue. The skin incision is closed with staples. Postoperative recovery was uneventful; abdominal binder was applied from day one, preperitoneal drain was extracted on the third postoperative day and the subcutaneous drain was extracted on fourth

postoperative day, the same day the patient was discharged.

## DISCUSSION/CONCLUSION

Ventral hernia formation is a frequent and increasingly difficult problem. Nonmidline hernias, parastomal hernias, hernias near bony landmarks, and recurrent ventral hernias (especially after anterior component separation) present particular challenges. Typical reconstructive techniques may struggle to reestablish abdominal domain, reconstruct abdominal wall function and to create a lasting repair. Posterior component separation with transversus abdominis release is a novel technique that offers a durable solution to a variety of complex ventral hernias. [5]

The lack of sufficient tissue requires the insertion of prosthetic material, transposition of autologous material or both to bridge the fascial gap.

Retromuscular or sublay hernia repair with mesh has proven to be a durable technique for ventral hernia defects and completely avoids subcutaneous flap elevation. Technically, the retromuscular technique requires developing the space dorsal to the rectus abdominis muscles up to the edge of the rectus sheath. In the average patient, this translates into a 6-8 cm lateral space on each side of the midline. Repair of large hernia defects with diameters greater than 15 cm may require a larger mesh overlap than can be afforded by dissection limited to the confines of the rectus sheath. By incising the posterior rectus sheath and creating the plane between the internal oblique and transversus abdominis muscles ("classic" posterior CST), there is a space virtually unlimited in size in which to place large meshes for hernia repair. [6]

The component separation technique (CST) was introduced to abdominal wall reconstruction to treat large, complex hernias. It is very difficult to compare the published findings because of the vast number of technical modifications to CST as well as the heterogeneity of the patient population operated on with this technique. [7]

Novitsky and Rosen developed a novel technique of posterior component separation using transversus abdominis muscle release (TAR). This modification allows for significant posterior rectus fascia advancement, wide lateral dissection, preservation of the neurovascular supply, avoids subcutaneous tissue undermining and provides a large space for mesh sublay [8].

Transversus abdominis release (TAR), as a type of posterior component separation is a new myofascial release technique in complex ventral hernia repair. TAR creates an immense retromuscular plane and allows bilaminar ingrowth of the mesh. [9]

This novel technique for posterior component separation is associated with low perioperative morbidity and a low recurrence rate. Overall, transversus abdominis muscle release may be an important addition to the armamentarium of surgeons undertaking major abdominal wall reconstructions. [10]

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Figure 1. Hernia before pre operation

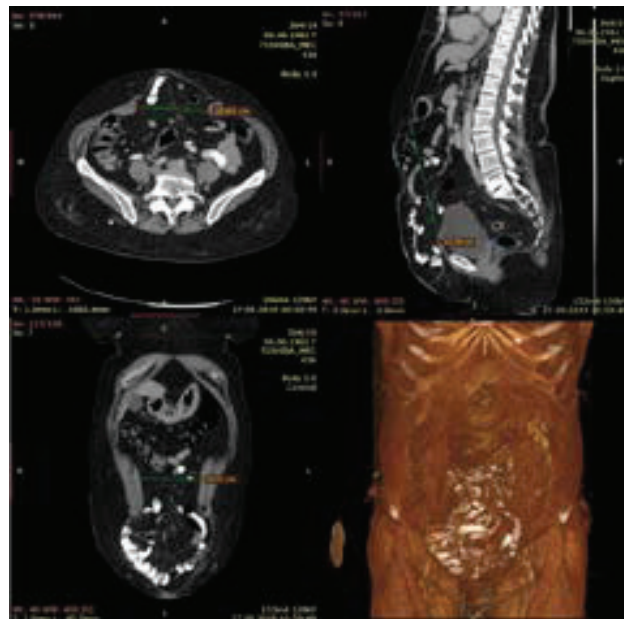


Figure 2. Abdominal defect

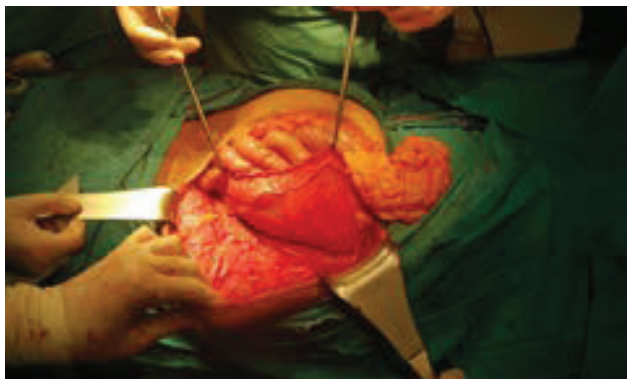


Figure 3. Flap after releasing transversus abdominis muscle



Figure 6. One month after surgery



Figure 4. Closed peritoneum

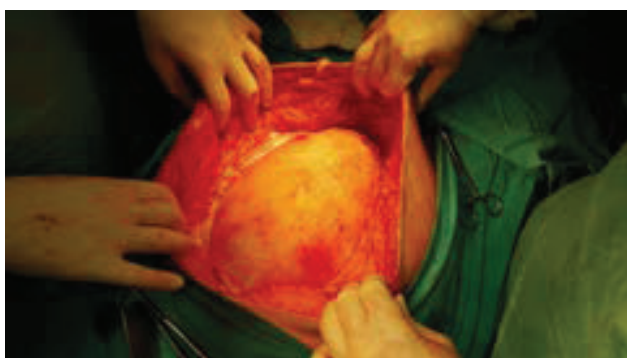


Figure 5. Applied mesh