

Surgical Approaches for Abdominal Wall Reconstruction

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This video presents an in-depth description of surgical approaches for abdominal wall reconstruction: posterior sheath (PS) release, transversus abdominis (TA) release, and external oblique (EO) release.¹⁻¹¹ (See Video [Online], which displays surgical approaches for abdominal wall reconstruction.) Here, we provide a brief overview of each approach, summarizing relevant anatomical structures and highlighting important technical considerations.

PS release is used to access the retromuscular plane. First, the PS is separated from the rectus abdominis muscle. The dissection between layers proceeds into the spaces of Reitzius inferiorly and Bogros laterally. Once mobilized, a fasciotomy along the PS is made just below the linea alba to enter the retromuscular space. Careful dissection is important to minimize injury to muscle, the inferior epigastric artery, and intercostal mixed motor-sensory nerves. Dissection proceeds from medial to lateral, stopping short of the linea semilunaris. After complete mobilization of the PS bilaterally, the posterior layer of the fascia is closed with mesh placed in the retromuscular plane. Securing a closure at the PS is critical because failure can result in postoperative complications, such as bowel incarceration/strangulation, fascial dehiscence, and subsequent exposure of the retromuscular mesh to peritoneal contents.

TA release is an extension of the PS release. This technique involves disinserting the medial insertion of the TA and dissecting in a pretransversalis plane, which permits a wide overlap and retromuscular placement of mesh. The approach begins by incising the rectus complex, specifically the top fascial layer, which is a continuation of the posterior lamella of the internal oblique. The TA, which is medial in most cranial portions of the PS,¹ is then divided. Once the plane (pretransversalis or preperitoneal) has been established, the TA is separated from the transversalis fascia and peritoneum. This dissection is carried laterally with the entirety of the lateral muscle of the abdominal wall, including neurovascular bundles lifted superiorly. After completion of the bilateral TA release,

there is an intact posterior layer and a large retromuscular plane for mesh placement.

EO release leverages the power of the anterior lamella of the abdominal wall to close the largest of defects. First, the linea semilunaris is identified via direct palpation. Releasing too medial to this structure can result in a defect in the rectus complex, and release at the linea semilunaris can destabilize the abdominal wall. The EO is then divided under the chest wall. A skin flap is created, and the linea semilunaris is marked and then released. The release proceeds superiorly and ultimately onto the chest wall. Inferior dissection proceeds toward the external inguinal ring, releasing the aponeurotic portion of the EO. Division of the EO muscle belly on the chest wall helps mobilize the rectus complex. Separation of the EO from the internal oblique directly supports medialization of the rectus complex as a bipedicle flap for abdominal wall reconstruction.

In the following video, a comprehensive step-by-step description of these surgical approaches is provided, as well as highlights of the clinical benefits of each unique approach to abdominal wall reconstruction.

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