

Preoperative Botulinum Toxin a and Transversus Abdominis Release for Complex Incisional Hernia Repair: A Case Report

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ABSTRACT

Complex incisional hernias may prevent tension-free midline closure and require advanced abdominal wall reconstruction. Posterior component separation with transversus abdominis release (TAR) expands the retromuscular plane while avoiding the broad subcutaneous dissection associated with anterior component separation. We describe a 34-year-old woman who developed an incisional hernia six months after intestinal resection with colostomy followed by restoration of bowel continuity. During preoperative optimization, 200 units of botulinum toxin A were infiltrated into the oblique and transversus abdominis muscles. Six weeks later, open abdominal wall reconstruction with TAR was performed. Intraoperative findings included multiple loose interloop adhesions and dense bowel-to-abdominal-wall adhesions; no intraoperative complication was documented. The patient had an uncomplicated early postoperative course and was discharged on postoperative day 2. This case illustrates a staged strategy combining chemical relaxation of the lateral abdominal wall with posterior component separation. Current evidence supports TAR as a versatile option for selected large or complex midline defects.

KEYWORDS: incisional hernia; transversus abdominis release; posterior component separation; botulinum toxin type A; abdominal wall reconstruction; case report.

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INTRODUCTION

Incisional hernia is a frequent late complication of abdominal surgery and can substantially impair function and quality of life. The contemporary objective of repair is not merely to cover the defect, but to restore the linea alba whenever feasible, re-establish abdominal wall mechanics, and reinforce the reconstruction with appropriately positioned mesh. European Hernia Society guidance emphasizes individualized planning, patient optimization, cross-sectional imaging when clinically appropriate, and retromuscular mesh placement for many midline incisional hernias [1].

Large defects, reoperative abdomens, loss of domain, scarred tissue planes, and inability to approximate the fascia without tension define a technically demanding subgroup. Transversus abdominis release (TAR), introduced as an extension of posterior component separation, provides wide medial advancement of the myofascial complex and a large retromuscular space for mesh while preserving the

neurovascular supply of the rectus muscles [2]. In selected patients, preoperative botulinum toxin A can produce temporary flaccid paralysis and elongation of the lateral abdominal wall, potentially facilitating fascial closure [3].

We report the perioperative management of a young woman with a complex incisional hernia treated with botulinum toxin A followed by open TAR. The report follows the CARE framework to the extent permitted by the source clinical poster; missing elements requiring confirmation are explicitly identified.

CASE PRESENTATION

A 34-year-old woman with no reported chronic degenerative disease was evaluated for an incisional abdominal wall hernia. Her surgical history included cesarean delivery and bilateral tubal occlusion complicated by intestinal perforation in 2021, requiring bowel resection and colostomy formation. Intestinal continuity was restored in 2022. Approximately six

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months after restoration of bowel continuity, she noticed an incisional bulge of the abdominal wall and was referred to the outpatient general surgery service.

Cross-sectional imaging demonstrated a large incisional abdominal wall defect with herniation of intra-abdominal contents (**Figure 1**). After multidisciplinary surgical

assessment, preoperative chemical component relaxation was selected. On March 16, 2023, a total dose of 200 units of botulinum toxin A was injected into the oblique and transversus abdominis muscle groups. No injection-related adverse event was reported in the source record.

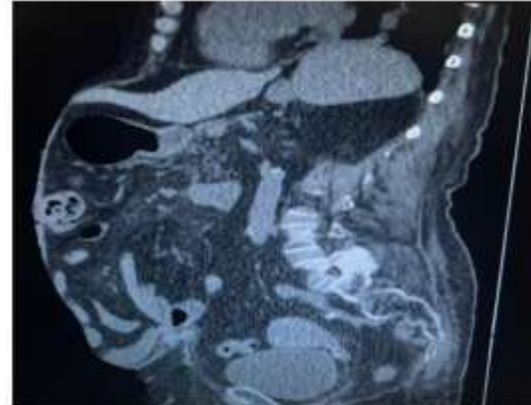


Figure 1. Preoperative computed tomography. Axial (left) and sagittal (right) images demonstrate the incisional abdominal wall hernia. Exact defect and loss-of-domain measurements should be added after radiologic review.

Surgical Technique and Outcome

On April 27, 2023, 42 days after botulinum toxin administration, the patient underwent open abdominal wall reconstruction with posterior component separation and TAR. Exploration revealed multiple loose interloop adhesions and dense adhesions between bowel and the abdominal wall.

Adhesiolysis and creation of the retromuscular plane were completed, followed by transversus abdominis release and reconstruction of the abdominal wall (**Figure 2**). The operation was completed without a documented intraoperative incident or complication.



Figure 2. Selected intraoperative steps of open abdominal wall reconstruction with posterior component separation and transversus abdominis release.

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Postoperatively, the patient was admitted to the general surgery ward for surveillance. Her immediate recovery was described as clinically favorable, and she was discharged on April 29, 2023 (postoperative day 2). No early wound, respiratory, gastrointestinal, or systemic complication was reported in the poster.

DISCUSSION

This case demonstrates the practical combination of preoperative botulinum toxin A and open TAR in a reoperative abdomen. The six-week interval between injection and surgery is biologically plausible because maximal chemodenervation is generally expected within the weeks after administration. A 2024 consensus proposal recognized botulinum toxin as an adjunct in abdominal wall prehabilitation while also underscoring heterogeneity in patient selection, dose, injection pattern, and outcome reporting [3]. Therefore, the intervention should be described as part of a tailored strategy rather than as a universally required step.

TAR addresses several limitations of classic anterior component separation. By accessing the transversus abdominis from the posterior rectus compartment, the surgeon can extend the dissection laterally, obtain medial advancement, close the posterior visceral sac, and place a large mesh in a well-vascularized retromuscular position [2]. Avoidance of extensive skin and subcutaneous flaps may reduce ischemic wound morbidity. However, TAR remains technically demanding and carries risks including enterotomy, surgical-site occurrence, infection, seroma, ileus, chronic pain, and recurrence.

Recent evidence supports favorable outcomes but also calls for measured interpretation. A 2024 systematic review of open posterior component separation with TAR found the technique effective for complex incisional hernia repair, while emphasizing heterogeneity across predominantly observational studies [4]. Longitudinal data have shown durable improvement in disease-specific patient-reported outcomes and low recurrence in experienced centers, although delayed wound healing and seroma remain relevant [5]. In a 2022 abdominal wall reconstruction series, TAR enabled complex repair with acceptable morbidity, reinforcing the importance of standardized technique and specialized teams [6].

Minimally invasive and robotic TAR have expanded the available approaches. An updated 2024 meta-analysis of seven comparative studies (780 patients) found robotic TAR associated with fewer overall complications and shorter hospital stay but longer operative time than open TAR; one-year recurrence did not differ, and the authors stressed the need for randomized trials [7]. These data do not make open repair obsolete. Approach selection depends on anatomy, adhesions, prior operations, surgeon expertise, platform

availability, and resource constraints. In the present patient, the history of bowel injury, colostomy, restoration of continuity, and dense bowel-to-wall adhesions provides a reasonable context for an open operation.

The early outcome in this case was favorable: no intraoperative complication was recorded and discharge occurred on postoperative day 2. Nonetheless, early discharge is not a surrogate for durable repair. Hernia recurrence, abdominal wall function, chronic pain, quality of life, and meshrelated complications must be assessed over months to years.

The principal learning point is the value of planned, anatomy-based reconstruction. Chemical relaxation may assist selected patients with lateral muscle retraction or anticipated difficult closure, whereas TAR provides a reproducible anatomical route to posterior component separation and broad retromuscular reinforcement. Both interventions should sit within comprehensive prehabilitation that addresses smoking, obesity, glycemic control, nutrition, pulmonary risk, and infection when applicable [1,3].

CONCLUSION

Preoperative botulinum toxin A followed by open TAR achieved uncomplicated short-term reconstruction in this patient with a complex incisional hernia and multiple previous abdominal operations. The case supports the feasibility of combining chemical muscle relaxation with posterior component separation.

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