

Importance of Preoperative Botox Injection for Abdominal Wall Reconstruction

Gabrielle Dabrowski, DO¹; Kellie Hon, MD¹; Tara Ranjbar, MD¹ ; Indraneil Mukherjee, MD¹
¹ Zucker School of Medicine at Hofstra/Northwell at Staten Island University Hospital



Background

Chemical component separation with botulinum toxin A (BTA) induces flaccid muscle paralysis, easing primary closure and reducing complications in large ventral hernia repairs.

Patient Presentation

We present a case of a 64-year-old female who arrived at the ED due to 2 days of sharp abdominal pain and multiple episodes of NBNB vomiting.

PMHX:
-HTN, obesity (BMI >40), OSA (CPAP), SBO x3 resolved with conservative management

PSHx:
-Roux-en-Y Gastric Bypass (2001)

Physical Exam:
-Abdominal: Umbilical and ventral hernia, TTP, distended

Medications: omeprazole, sucralfate

Laboratory Data:
-CBC: normal
-CMP: normal
-Lipase: 12 (normal)
-Urine Cx: + E.coli
-Lactate: 0.9 (normal)
-PT/INR, PTT: normal

Resources

Sripathi S, Khan MI, Patel N, Meda RT, Nuguru SP, Rachakonda S. Factors Contributing to Anastomotic Leakage Following Colorectal Surgery: Why, When, and Who Leaks?. *Cureus*. 2022;14(10):e29964. Published 2022 Oct 5. doi:10.7759/cureus.29964

Rodriguez-Acevedo O, Elstner KE, Jacombs ASW, et al. Preoperative Botulinum toxin A enabling defect closure and laparoscopic repair of complex ventral hernia. *Surg Endosc*. 2018;32(2):831-839. doi:10.1007/s00464-017-5750-3

Hospital Course

Day 1: Presents to ED
Day 7: OR for lap converted to open repair of large ventral hernia, incarcerated small bowel with two areas of perforation requiring SBR, underlay vicryl mesh, primary closure of fascia. NGT placed perioperatively. SICU for abdominal compartment syndrome monitoring.
Day 8: Cardiovascular compromise. Creatinine 3.0 from 1.0. Phosphorus 7.2 from 3.1. Potassium 4.7. WBC 30 from 6. Lactate 1. Intubated, paralytics initiated. Bladder pressure 23. IR completed intra-abdominal muscle Botox injection to transverse abdominis, internal and external obliques bilaterally.
Day 12-14: Extubated. CK 1,502. 2 days of bilious/murky fluid in JP drain. Persistent hypotension without response to IV fluids. RTOR: identified bowel perforation requiring SBR and placement of wound vac.
Day 15-18: Extubated. Off pressors. NGT removed. A fib RVR on monitor. Metoprolol started. PE on CTA Chest. Hep GTT started.
Day 19: Meropenem started. Interventional Radiology placed percutaneous 8.5 French drainage catheter into lower abdominal wall fluid collection, retrieved 150 mL of bowel appearing fluid.
Day 20-23: Diet advanced to bariatric clears then full liquid. TPN discontinued. Bilious drainage noted from wound vac.
Day 24: Patient unresponsive, palpable femoral pulse. Intubated, femoral line placed. Hgb 5.9. Received 2U pRBC and pressors started.
Day 25: 2uPRBC, 1U FFP, 1U Plt, TXA 1g. RTOR for re-exploration and evacuation of old clot.
Day 26: Expansion of PE. 1U pRBC for Hgb 6.8. Expansion of pulmonary embolism.
Day 28-36: Extubated. Finished meropenem. Tolerated room air. Downgraded to floor.
Day 37-44: JP drains removed. Bowel movement and passing gas. Minor ambulation even with physical therapy. Right and left femoral DVT. IR consulted for IVC filter, unable to place due to anatomy. Therapeutic lovenox to Eliquis.
Day 45-51: Condition improved. Patient hemodynamically stable. Discharged to LTAC with wound vac and subsequent visits.
8 months later: Patient pending skin graft to abdomen after prolonged midline laparotomy wound healing.

Images

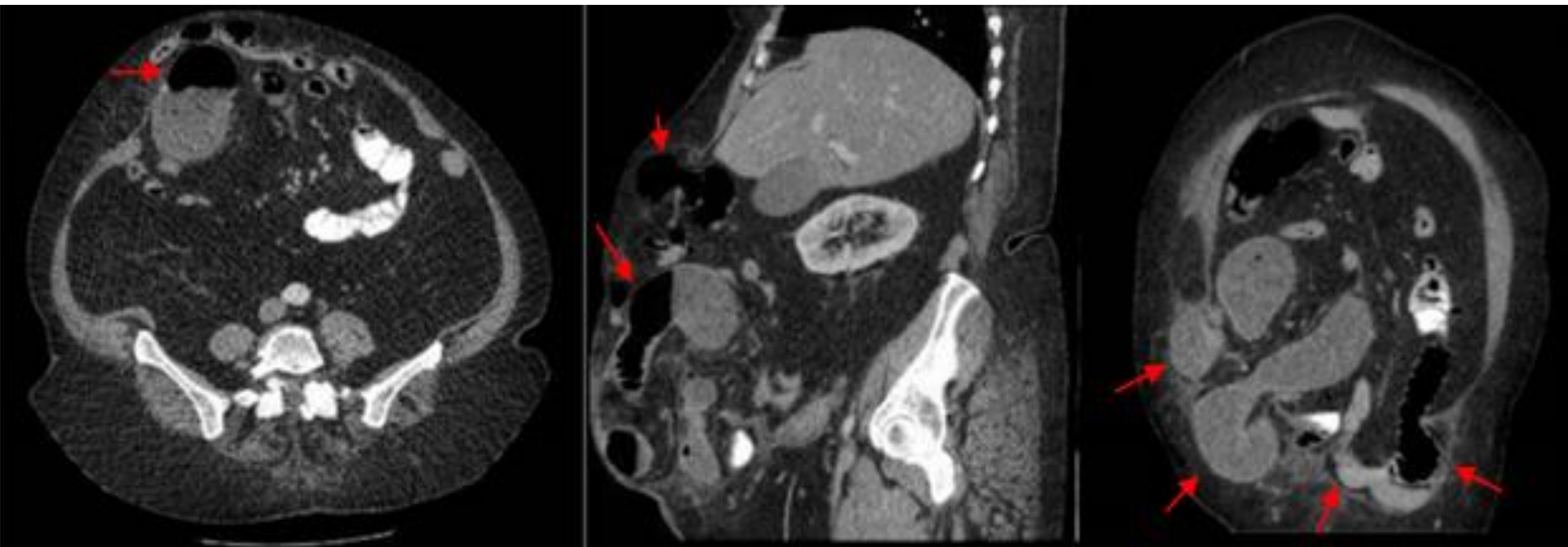


Figure 1: Axial, sagittal and coronal view of CT Abdomen/Pelvis with oral and IV contrast on initial presentation identifying complex small bowel obstruction with multiple ventral abdominal wall hernias.

Discussion

Pre-operative BTA injections to bilateral oblique muscles have been shown to provide unstretched length gain on average 4cm per side. This corresponds to an overall mean length gain of 8cm of the lateral abdominal wall. Such length gain results in achievable primary abdominal closure without increased intra-abdominal pressure, especially in patients with a BMI greater than 30. Obesity with BMI greater than 30 is a risk factor for anastomotic leak. The believed association is that greater abdominal pressure reduces blood supply, due to its effect on the microcirculation of the anastomosis. Our patient’s complications can be hypothesized to be correlated with her increased abdominal pressure, noted by bladder pressures in low 20s after index procedure and increasing hepatic plus renal failure. While she underwent BTA injection post operative day 2 and bladder pressures lowered to 17, her anastomotic site was hindered by her risk factors and led to her prolonged wound recovery due to abdominal wall compromise.