

Transabdominal stapled keyhole robotic technique (TASK-RT): a novel technique for parastomal hernia repair in a patient with complex Crohn's disease

Charles Coker, DO; Alexandra Bloss, MD; Moein Mobini; Yasir Khan, DO; Cory Barrat, MD

Background

Parastomal hernias are a frequent complication following stoma formation, particularly in patients with Crohn's disease due to chronic inflammation, multiple prior surgeries, and impaired wound healing. Traditional parastomal hernia repair techniques (Sugarbaker and keyhole) often yield high recurrence rates, especially in complex cases. In efforts to improve outcomes, multiple techniques have been developed including the SMART (stapled mesh stoma reinforcement technique) and STORRM (Stapled Transabdominal Ostomy Reinforcement with Retromuscular Mesh) procedures. Current techniques result in recurrence rates ranging from 3.5% to 24% with complications ranging from 6.3% to 31%.

Case Report

A 25-year-old female patient with severe Crohn's disease presented with a painful parastomal hernia. She underwent end ileostomy, redo ileocecal resection, and a transabdominal stapled keystone robotic technique (TASK-RT) parastomal hernia repair. Her parastomal hernia fascial defect was repaired primarily leaving 3cm defect to accommodate the ileostomy, and an intraperitoneal mesh was placed. An end-to-end stapling device was used to create a perfectly circular defect in the mesh and simultaneously stapled the mesh to the abdominal fascia. The terminal ileum was then brought through the transabdominal defect and matured. She recovered well from her procedure with return of bowel function on post operative day one and was discharged on post operative day four. Her outpatient course was complicated by peristomal skin irritation and superficial skin ulceration. At six months post operatively, she has no evidence of parastomal hernia recurrence.

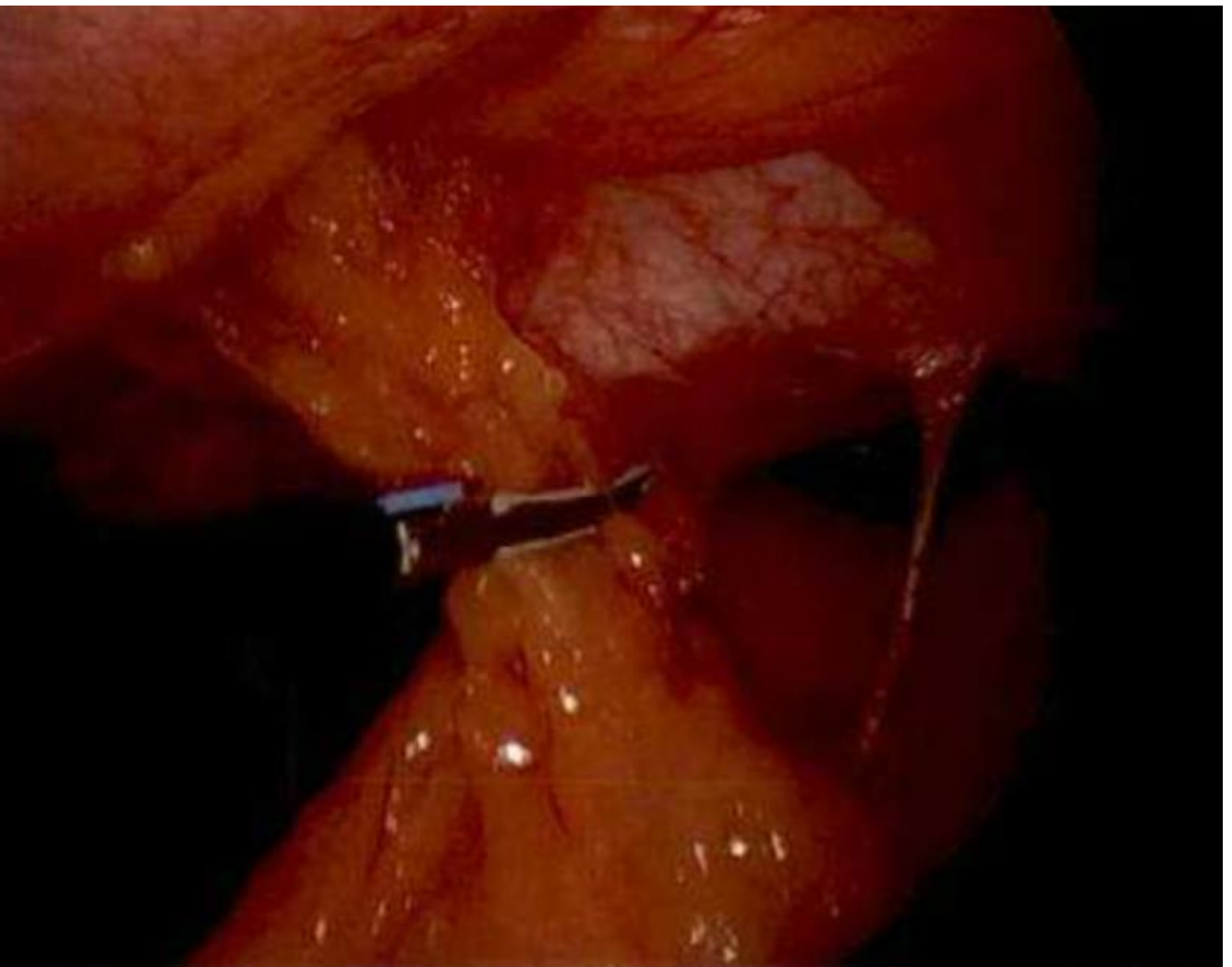
Discussion

The TASK-RT procedure mimics a keyhole repair. The key difference is that the trephine cut into the mesh in a TASK-RT procedure is uniform and joins the layers of the abdominal wall to the mesh along the exact border of the stoma. Therefore, there is no digital stretching of the fascia which is traditionally done to ensure adequate sizing during ostomy creation. This can independently control for risk factors associated with parastomal hernia formation as it has been found that defects >34mm are at increased risk of parastomal hernia development. Additionally, there is no linear defect in the mesh as in a standard keyhole repair which maintains a greater level of mesh integrity. This is beneficial as the slit is a known predisposing factor of hernia recurrence due to shrinkage or migration over time. Our method combines principles of stapled trephine techniques and traditional intraabdominal parastomal hernia repair methods resulting in unique option. To our knowledge, this is the first time an intraperitoneal onlay mesh was used in conjunction with an end-to-end stapler for trephine formation.

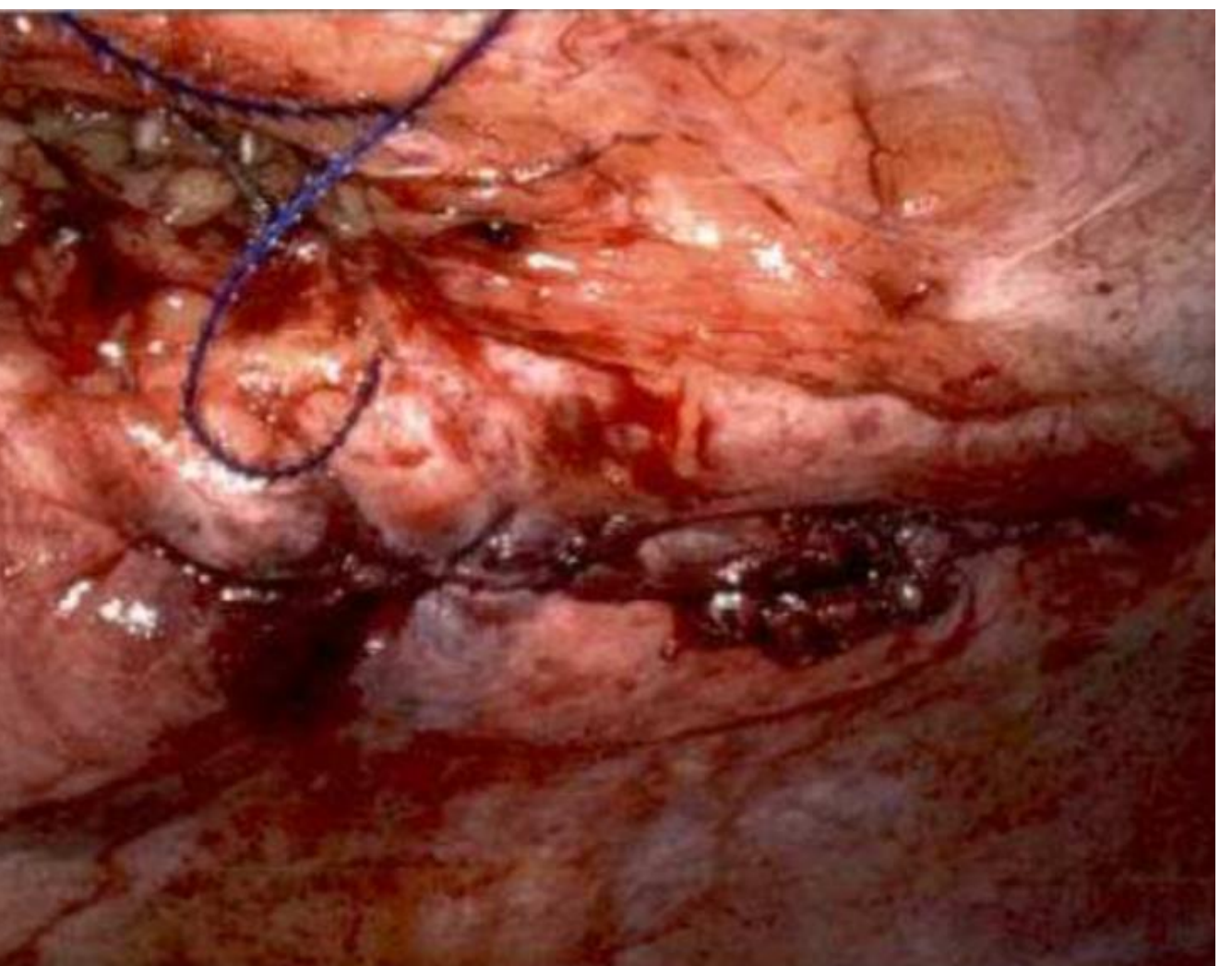
Conclusion

This technique appears to be a safe and effective novel method for parastomal hernia repair in a patient with Crohn's disease. By creating a uniform trephine that incorporates the mesh and layers of the abdominal while simultaneously resulting in minimal modification to the mesh, the TASK-RT method is more precise and accounts for multiple fail points associated with a traditional keyhole repair. Further utilization and study of the technique is necessary to determine its long-term efficacy.

Operative images



Parastomal reduction



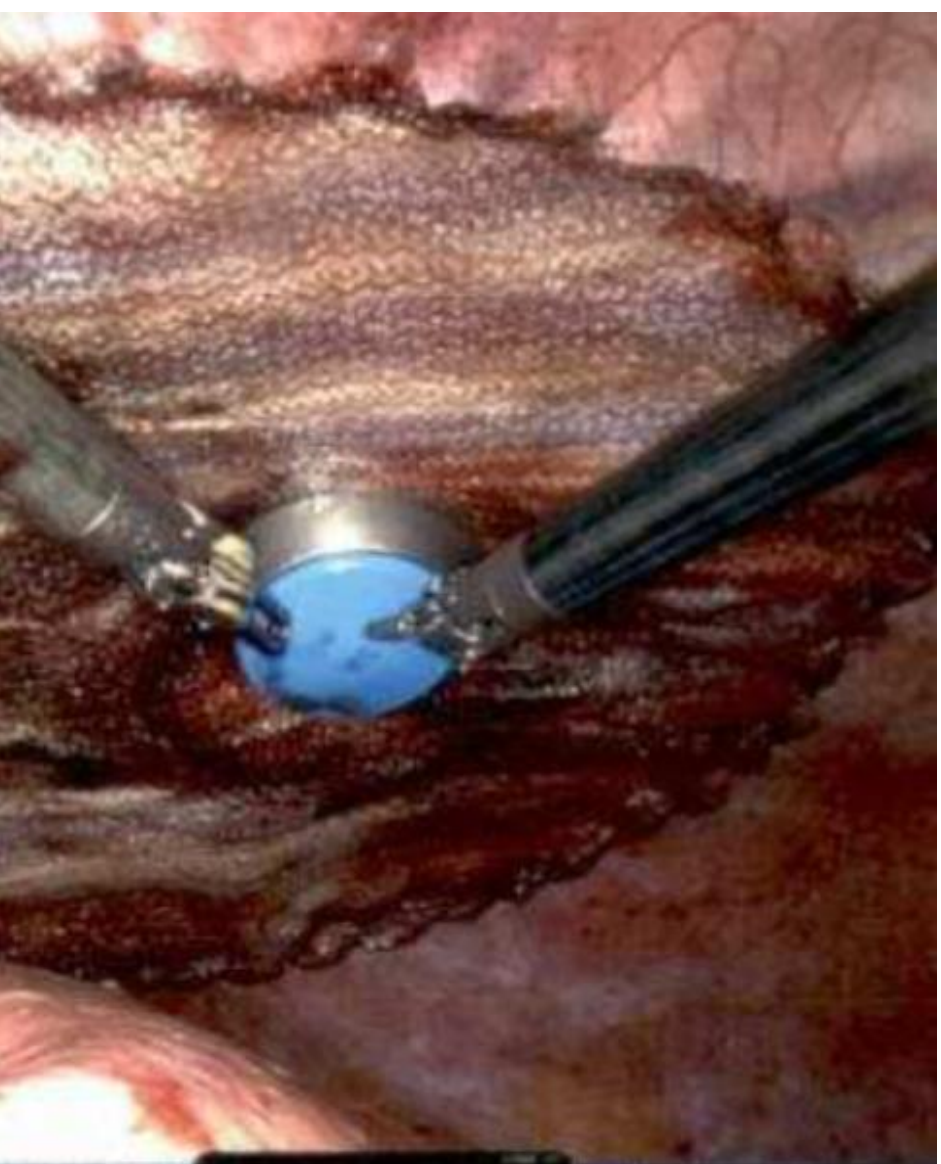
Defect closure



Onlay mesh placement



EEA spike



EEA anvil



Stapled Trephine



Ileostomy maturation

Resources

Aboulian A. Ostomy Complications in Crohn's Disease. Clin Colon Rectal Surg. 2019 Jul;32(4):314-322. doi: 10.1055/s-0039-1683924. Epub 2019 Jun 17. PMID: 31275079; PMCID: PMC6606323

Carne PW, Robertson GM, Frizelle FA. Parastomal hernia. Br J Surg. 2003 Jul;90(7):784-93. doi: 10.1002/bjs.4220. PMID: 12854101.

Williams NS, Nair R, Bhan C. Stapled mesh stoma reinforcement technique (SMART)—a procedure to prevent parastomal herniation. Ann R Coll Surg Engl. 2011 Mar;93(2):169. doi: 10.1308/rcsann.2011.93.2.169. PMID: 22041152; PMCID: PMC3293318.

Majumder A, Orenstein SB, Miller HJ, Novitsky YW. Stapled Transabdominal Ostomy Reinforcement with retromuscular mesh (STORRM): Technical details and early outcomes of a novel approach for retromuscular repair of parastomal hernias. Am J Surg. 2018 Jan;215(1):82-87. doi: 10.1016/j.amjsurg.2017.07.030. Epub 2017 Jul 21. PMID: 28754535.

Romain B, Villemain A, Suciu S, Brigand C, Rohr S, Manfredelli S. Parastomal hernia repair according to Modified Stapled Mesh Stoma Reinforcement Technique (mSMART): which are the results ? Hernia. 2024 Jun;28(3):883-886. doi: 10.1007/s10029-024-03005-z. Epub 2024 Apr 12. PMID: 38607609.

Ng ZQ, Tan P, Theophilus M. Stapled Mesh stomA Reinforcement Technique (SMART) in the prevention of parastomal hernia: a single-centre experience. Hernia. 2017 Jun;21(3):469-475. doi: 10.1007/s10029-016-1548-9. Epub 2016 Nov 22. PMID: 27878459. <https://link.springer.com/article/10.1007/s10029-016-1548-9>

Kritharides N, Papaconstantinou D, Kykalos S, Machairas N, Schizas D, Nikiteas NI, Dimitroulis D. Laparoscopic parastomal hernia repair: keyhole, Sugarbaker, sandwich, or hybrid technique with 3D mesh? An updated systematic review and meta-analysis. Langenbecks Arch Surg. 2023 Nov 29;408(1):448. doi: 10.1007/s00423-023-03177-9. PMID: 38017096; PMCID: PMC10684625.

Disclosures

None