

Natural Orifice Specimen Extraction: An Incisionless Approach for Colorectal Cancer (Technical Report)

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ABSTRACT

Background: Natural orifice surgery represents a great step to the future. Difficulties arose on our current practice. Reviewing the literature does not solve all the debates.

Report: The author suggests a simple algorithm for transanal natural orifice specimen extraction (NOSE).

Conclusion: Transanal extraction of colectomy and/or proctectomy specimen is a readily feasible technique.

Keywords: Colon, Natural orifice, Rectum, Specimen extraction, Transanal.

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BACKGROUND

Natural orifice specimen extraction (NOSE) for colon and rectal cancer is still taking its first steps in oncology practice. Several safety questions, as well as, technical difficulties arose with practicing this technique.¹ As a part of Oncology Center Mansoura University (OCMU) center current clinical trial on natural orifice transluminal endoscopic surgery (NOTES) for colorectal cancer with ClinicalTrials.gov Identifier: NCT02549456, transanal NOSE is practiced. Different technical steps in our practice, as well as, in published series are displayed in an algorithm with videos when possible.

TECHNIQUE

Excluding cases of intersphincteric resection and some cases of ultralow anterior resection where specimen extraction is straight forward and anastomosis is done on the anal verge, the classic transanal NOSE technique is depicted in Flowchart 1 and below:

Step I: Laparoscopic sigmoidectomy, anterior, low, or ultralow resection is done.

Step II: Cut the distal end by advanced bipolar for the mesentery or mesorectum, then use scissors to cut the lumen (to avoid sealing of the wall that may hinder specimen extraction).

Step III: Either.

- A: Use a long instrument to grip the colon and retrieve it through the anal canal. Cut the proximal end and insert the anvil extracorporeal (preferred method if feasible). Here you can close the distal end with V-Loc® suture (Covidien, MA, USA) transanally or laparoscopically, so implementing a one-stapling technique (much reducing the cost) (Video 1). Otherwise, you may choose to close the stump by a linear stapler, implementing a double-stapling technique.
- B: Insert the anvil transanally, then choose.

B1: If you are planning for an end-to-end anastomosis, then cut the proximal end, insert the anvil, then take a manual purse string suture,¹ or do a colotomy to insert the anvil through and use a linear stapler to close just around the anvil's tip (author's technique) (Video 2).

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B2: If you are planning for a side-to-end anastomosis, then do colotomy and insert the anvil with its auxiliary trocar and push against wall to make a new narrow colotomy (with/without purse string reinforcement), or use a guide tube to facilitate the anvil exteriorization.²

B3: If you are planning for a pouch reconstruction, then do the pouch with a linear stapler, then insert the anvil through the resultant opening.³

Step IV: Only applies for technique IIIB, extract the specimen either by an Endobag® (Covidien, MA, USA) (Video 3), or a camera sleeve,⁴ or a Cai tube,⁵ or a rigid platform; transanal endoscopic microsurgery (TEM) (Richard Wolf, IL, USA) or transanal endoscopic operation (TEO) (Karl Storz, Tuttlingen, Germany).

Step V: Close the distal stump (as in step IIIA), but here you are mostly implementing either a double- or triple-stapling technique.

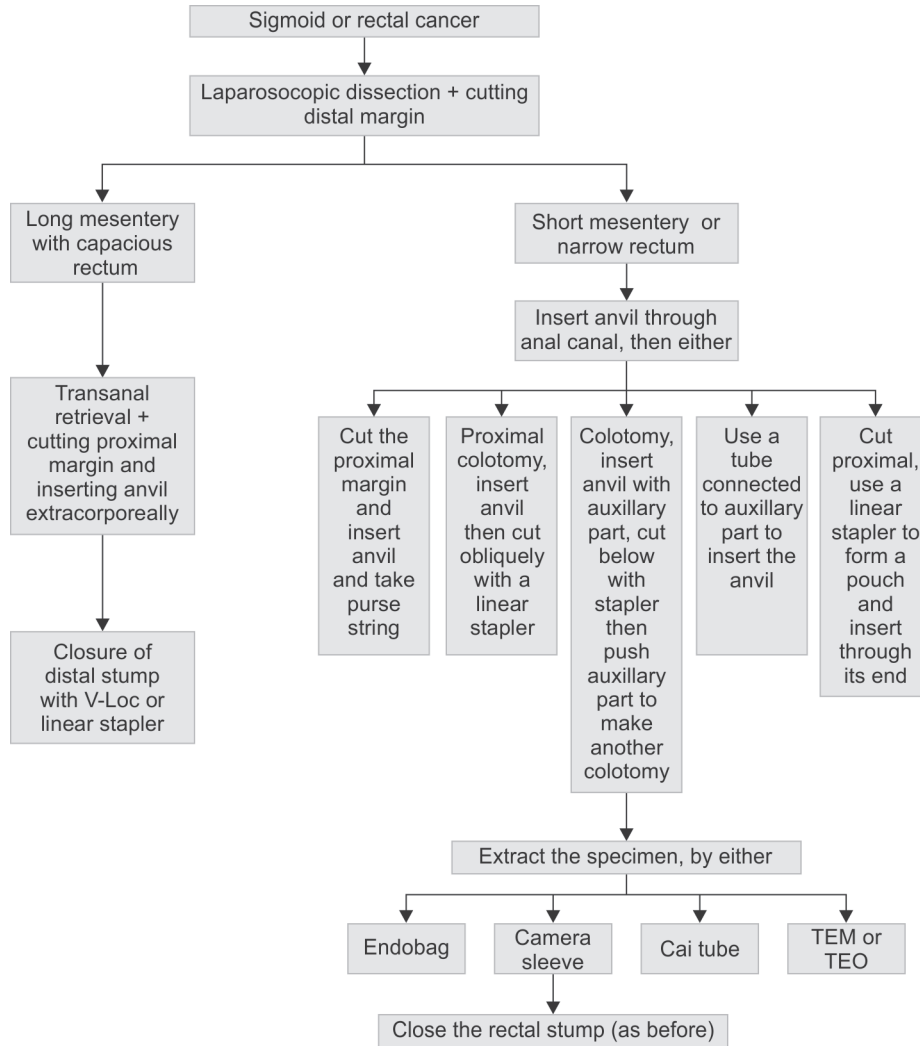
CONCLUSION

Transanal NOSE is a feasible and flexible method that can minimize the complications associated with rectal and sigmoid resection. To our opinion, any surgeon experienced in colorectal laparoscopy can easily apply this technique with a short learning curve.

SUPPLEMENTARY MATERIALS

Video 1: Closing the rectal stump after transanal NOSE after low anterior resection using the direct exteriorization and

Flowchart 1: An algorithm summarizing steps of transanal NOSE for colorectal cancer



extracorporeal insertion of the anvil. <https://www.dropbox.com/s/c2morvt85od2d45/video%201%20M.mp4?dl=0>

Video 2: Insertion of a trans-anally pushed anvil of a circular stapler into the proximal colonic stump (OCMU technique). <https://www.dropbox.com/s/r95q142vil5i4w7/Video%202%20M.mp4?dl=0>

Video 3: A second method for extraction of the specimen transanal using an endobag. <https://www.dropbox.com/s/tvvkmbhj3t159x2/Video%203%20M.mp4?dl=0>

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