



Donuts and Safe Margins in Rectal Cancer Resection

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Editorial

There is no controversy in the management of upper and mid rectal cancer. Everyone will attempt an anterior or low anterior resection. Similarly proximal margin is not an issue and extent of resection is determined by technical considerations to obtain adequate lymphadenectomy and reconstruction with a minimum of 5 cm margin. The difficult decision lies in deciding what to do for a low rectal cancer, the one that lies just around the levators as whether to go for sphincter preserving procedure or Abdominoperineal Resection (APR) with permanent stoma. Factors which should be considered for deciding the type of resection are:

- Physical handicaps- significant difficulty in managing a stoma.
- Body habitus and patient gender influence surgeon's ability to perform a sphincter saving operation because of difficult pelvic anatomy. In Obese male with narrow pelvis it is difficult but in multiparous thin females resection is usually straight forward.
- Pelvic irradiation for non-rectal pelvic malignancy-difficult dissection.

For favourable tumours (well differentiated, early lesions, low CEA levels, down staged tumours or complete regression after pre op radiation) with short distal margins, sphincter preservation is recommended. For unfavourable tumours abdominoperineal resection and those with long distal margins Low anterior resection is advised.

Donuts

There is also misunderstanding about donuts. Actually donuts do not represent the whole/real circumference of proximal & distal margins. With positive Donuts distal resection margin will also be positive and negative donuts do not rule out involvement of distal margin as it contains only part of a distal staple or suture line. So it is not important to send donuts routinely for H/P Exam. Of course donuts need to be looked for completeness of anatomise.

Distal Margin

The extent of resection of distal margin in rectal cancer especially for distal tumours remains controversial and continues to decrease. Increasing knowledge about microscopic distal intramural spread usually occurs within 2 cms of the tumour unless it is poorly differentiated, widely metastatic, obstructed or with proximal lymphatic obstruction. The 5 cm rule was changed to 2 cm since intramural spread more than 1-2 cm was found to be related to advanced and metastatic tumours in which the length of Distal Resection Margin (DRM) has little importance in terms of outcome. Therefore it is reasonable to conclude that 2 cm distal margin is justified for low rectal cancers. In expert hands negative margin of < 2 cm can be oncologic ally adequate to facilitate very low colorectal anatomises. Smaller margin may be acceptable in patients for whom there is no option for sphincter preservation. However frozen section should be done to confirm cancer free margin. Positive resection margin means presence of tumour 1 mm or less from the margin according to American Joint Committee on Cancer (AJCC). Oncologic ally safe DRM should be 1 cm for T1-2 lesions and 2cm for T3-4 lesions. However DRM of less than 1 cm does not seem to adversely affect the survival and recurrence rates. However for upper & mid rectal tumours, distal margin of 5 cm margin is adequate to remove lymph nodes in the peri rectal fat as provision is there, since determinants of acceptable outcome are adequate clearance of intramural cancer (1.2 cms) and lymph nodes in pericolic fat (up to 5 cms distally).

Technical Tips for Safe Margins

- Distal margin length should be measured in fresh anatomically stored *ex-vivo* conditions immediately after removing.

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- Distal aspect of the tumour should be marked or carefully measured at the time of initial assessment.
- Mesorectum in bowel edge must be transected transversally to avoid coning towards distal margin and possible loss of lymph nodes. This can be made possible by adequate retraction of other pelvic organs for placement of clamps.
- The bowel shrinkage occurs during the first 10-20 minutes after removal of specimen and additional shrinkage occurs after fixation.
- Correction factor of 12% reduction in anatomically restored (pinned) fixed specimens and 50% reduction in non-restored fixed specimens has been proposed.

A Systematic Review reported by Krzysztof including 17 studies with < 1 cm- 948 patients vs. > 1 cm (4626 patients), 5 studies with margin of less than 5 mm (173 pts) vs. more than 5 mm (1277 patients) and 5 studies with margin of less than 2 mm (72 pts).In most studies pre or post operative radiation was provided. Local recurrence was found to be 1% higher in less than 1 cm margin group compared to more than 1 cm margin group (P=0.175). For less than 5 mm group it was 1.7% (P=0.375%) and for Less than 2 mm margins it was 2.7% (95% confidence interval 0-6.4). Long term survival did not differ statistically in all the three groups. In selected group of patients less than 1 cm margin did not jeopardise oncologic safety.

Circumferential Resection Margin (CRM)

A CRM of less than 1 mm, whether as direct tumor extension, lymph node metastasis, or intravascular growth, should be considered

as a positive margin (Naagtegaal). In a report by Adam local failure with a margin of <1 mm was 74% compared with 10% for a margin >1 mm. Similar results were confirmed from the North central cancer treatment study. We now know that CRM is not maximized by doing an APR, unless a tumor has invaded the sphincter complex therefore we legitimately believe that the sphincter complex and anus should not be removed unless involved in the tumor. Radial margins are most critical in determining prognosis as compared to distal margin, since positive CRM is associated with high risk of local recurrence and distal metastasis. CRM of < 2mm has been reported to have local recurrence of 16% and CRM >2mm As 5.8% (Quirke).

Summary

- Donuts do not represent the real distal margin.
- For Proximal rectal tumors distal margin should be 5cms.
- For low rectal tumors distal margin of 1-2cms is safe depending on various patient and Surgeon related factors.
- A negative distal margin must not be compromised in an effort to avoid permanent colostomy.
- When in doubt do frozen section to confirm cancer free margin.