Brief communication

Histopathological assessment of mesorectum in surgical specimens of rectal carcinoma

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Total mesorectal excision (TME) is widely accepted as the preferred method of treatment for rectal cancer and currently considered as the "gold standard" method of treatment [1]. TME results in a lower recurrence rate than the traditional approaches such as the abdominoperineal resection. The circumferential resection margin positivity rate is about 5% or less for low anterior resections with TME, whereas it is between 10% and 25% for abdominoperineal excision of the rectum [2]. There is understandably, a higher local recurrence rate following the traditional methods of surgery for rectal cancer.

Total mesorectal excision incorporates the rectal cancer along with en bloc excision of all pararectal lymph nodes buried within the mesorectum. These lymph nodes are the first group that drains the tumour cells. Removal of the pararectal lymph nodes is a major factor that improves the disease free interval [3]. In minimizing local recurrence TME is far superior to the older surgical techniques as the probability of obtaining a clear circumferential margin is much higher when the rectum is resected with the preservation of the integrity of mesorectal fascia. The essence of minimizing local recurrence is largely attributed to the completeness of the excision of mesorectum. In the histological assessment of rectal carcinoma specimens with total mesorectal excision, it is important to include information of proven relevance [4]. For rectal cancer specimens with TME, it is best to examine the mesorectum, photograph if facilities are available and document the important findings such as the plane of excision of the mesorectum, mesorectal bulk, any defects in the mesorectum and the distance to the non-peritonealised circumferential margin in addition to the macroscopic core data items of the tumour which is usually recorded as for any other colonic cancer. Prospective randomized control trials [3] have demonstrated that the macroscopic assessment of the plane of excision of rectal cancers predicts not only margin positivity but also local recurrence and survival. Excision in the mesorectal plane with an intact fascia has the best outcome, while that extending into the muscularis propria has the worst. Any defects in the mesorectum can be detected during gross examination. Distance to the non-peritonealised circumferential margin should be carefully assessed [5]. This margin represents the bare area in peri-rectal tissue at the surgical plane of excision that is not covered by a serosal surface. Extent of this margin varies greatly according to

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the site of the tumour. Lower rectal tumours will be completely surrounded by a circumferential non-peritonealised margin, while upper rectal tumours have a non-peritonealised margin posteriorly and laterally (which should be inked) and a peritonealised (serosal) surface anteriorly which should not be inked.

Figure 1. Circumferential (non-peritonealised) margin which has been inked

After inking the circumferential margin as shown above, the specimen should be opened anteriorly, except in the vicinity of the tumour which is left intact, in order to assess the status of the serosal surface and the circumferential margin. However, some pathologists prefer to open the bowel throughout its length including the area of the tumour, to aid in fixation. This method is also acceptable as long as careful attention has been paid for the accurate assessment of the circumferential & serosal margins. After opening the specimen, it should be ideally pinned to a cork board. It is recommended that the specimen should be kept in the fixative for 24 – 48 hours before taking histology sections. Following adequate fixation, the macroscopic data items should be recorded and the area of the tumour, along with the bowel segment up to 30 mm proximally and distally from the lesion and the attached mesentery should be transversely sliced at 3–4 mm intervals with a sharp knife [6]. At the maximum depth of invasion sections should be taken to assess the status of the serosal surface and the distance to the circumferential margin, in addition to the sections taken to obtain microscopic details of the tumour. Distance of the tumour to the longitudinal margins (proximal & distal) should also be recorded.

If the minimum distance between the tumour and the circumferential margin is ≤1 mm then the circumferential margin is regarded as involved. Such involvement may be through direct continuity with the main tumour, by tumour in veins, lymphatics or lymph nodes or by tumour deposits discontinuous from the main growth [7]. The frequency of circumferential margin involvement may give a feedback for the surgeons with regard to the quality of the surgical procedure. Communication of the pathological findings at the MDT (multidisciplinary meeting) will be extremely useful for the surgeon and the oncologist to get a clear idea of the extent of the spread of tumour, status of the resection margins and the presence of nodal involvement.

It is important to sample all the lymph nodes that are present in the specimen. Lymph nodes are distinguished from extramural lymphoid collections by the presence of a peripheral sinus. The majority of perirectal nodes are small. Some studies have shown that the minimum number of nodes should be twelve. The identification of nodes should begin with the highest lymph node. This is the first lymph node identified by serial sectioning of perirectal tissue from the sutured vascular margin. It should be blocked separately. Remaining lymph nodes can be detected by transverse sectioning of the mesorectum. There are few lymph nodes within the mesentery of the lower third of the rectum and relatively few in the right and left lateral portions of the mesorectum. Majority of nodes are located in the proximal two-thirds of the posterior rectal mesentery. Small nodes less than 4 mm in diameter should be submitted entirely while a single section from an obviously involved node is known to be adequate [8]. Total mesorectal excision includes all of these nodes, and removal of these nodes is the main reason for achieving commendable results with TME, in contrast to more traditional surgical techniques.

Status of the circumferential margin is thus, considered as an independent prognostic marker, hence it is mandatory to emphasize the importance of proper handling of TME specimens in view of providing useful pathological & prognostic information for the surgeon and the oncologist.

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