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Title Page

Lateral Pelvic Lymph Node Dissection for rectal cancer – unfinished business?

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Anatomy remains the cornerstone of surgical oncology, with removal of the tumour and its primary draining lymph node basins being a fundamental principle. The advent of refinements such as sentinel node biopsy to aid selection of which patients require radical nodal dissection has gained traction in many fields of surgical oncology such as breast cancer. However, there remains uncertainty as to which nodes require resection for the management of rectal cancer and in particular whether resection of lateral pelvic sidewall lymph nodes is required.

The primary lymphatic drainage of the rectum follows the principle of lymphatics following the arterial supply, and hence is to the mesorectum, and along the route of the inferior mesenteric artery. There is also however a proportion of drainage to the lateral pelvic sidewall lymph nodes which increases as one moves down the rectum[1]. The majority of these findings were derived from work in Japan and this strongly influenced the management policy for low rectal cancer in Japan, with lateral pelvic lymph node dissection (LPLND), in conjunction with total mesorectal excision (TME), considered standard of care for extraperitoneal rectal cancers. The Japanese guidelines highlighted that in locally advanced low rectal cancers, up to 30% had involved lateral pelvic sidewall lymph nodes, sometimes in the absence of mesorectal nodal involvement[2]. This 'Eastern' approach is in sharp contrast to the 'Western' approach to locally advanced rectal cancer which utilizes neoadjuvant chemoradiotherapy prior to surgical

resection with TME, with the assumption that neoadjuvant therapy will sterilize any nodal metastasis present outside the mesorectum, thus negating the requirement for LPLND[3].

The debate between the two approaches has been present for decades[4], however there is now the realisation that neither individual approach completely addresses the problem of lateral pelvic recurrence, with lateral recurrence gaining more prevalence as overall rectal cancer treatment improves[5,6].

The concept of selective application of both neoadjuvant therapy and LPLND has been raised in both the East and the West with the utilization of both modalities resulting in a reduction[7-9], or even elimination[10], of lateral recurrences. LPLND however does result in increased morbidity with increased blood loss and longer operating time, even in the hands of experienced surgeons, as demonstrated by a Japanese randomized controlled trial of LPLND [11]. This may be a greater issue in western patients with a generally higher body mass index. Therefore, when considering the potential benefit for some patients though at the expense of increased morbidity, the selection of patients for LPLND becomes a very important factor. The majority of the discussion has focused on the preoperative identification of lymph node involvement, with nodal size and appearance being the main assessment criteria on imaging, with the size ranging from >10mm[11], down to 7mm[9]. The concept that neoadjuvant therapy will sterilize a significant proportion of pelvic side wall lymph nodes[12], means that it may be the lymph node size post neoadjuvant therapy that is most important. Oguru et al reported that whilst pretherapy lymph node size of 7 mm was significant, post neoadjuvant therapy 4mm

should be the criteria for persistent involvement[13], with another study reporting 5 mm[10]. However, restaging following neoadjuvant therapy is not routinely undertaken across Australasia, and in Australia rectal cancer restaging with an MRI scan is not covered by Medicare.

With increasing evidence and interest in LPLND, patient selection and surgeon experience remain challenges in Australasia. A recent survey on lateral pelvic lymph nodes in rectal cancer across members of the Colorectal Surgical Society of Australia and New Zealand (CSSANZ) identified a number of issues. Neoadjuvant chemoradiotherapy was recommended by 92% of respondents for involved lateral pelvic nodes and 86% recommended LPLND for persistent nodal involvement. Almost 60% of surgeons however, had received no exposure to lateral pelvic lymph node dissection during their training, and only 21% reported undertaking more than 1 to 2 LPLND per year, with only 4% undertaking more than 10 LPLNDs per year.

Management of lateral pelvic lymph nodes in rectal cancer is likely to remain an area of controversy in rectal cancer management with more evidence required to determine who will benefit from LPLND and to what degree.

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