

Gastric cancer resection: D1 or D2?

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‘ It is now clear that the extent of gastric resection requires only that an R0 be performed and that a total gastrectomy is not necessary for all patients with gastric carcinoma’ states Brennan [1] and Nakajima [2] believes ‘ the key to further improvement of the management of gastrointestinal cancer is individualisation’ . These proposals were put at the recent World Congress of Gastric Cancer in Yokohama.

What is an R0 resection? This is a resection that leaves no macroscopic or microscopic residual disease and is based on a concept that nodal disease progresses through tiers. There is much support for this and the incidence of skip lesions is low [3] and a R0 resection is done by removing the appropriate tiers of lymph nodes. The Japanese have an anatomical description of nodes, the N1 are those around the stomach (perigastric), the N2 nodes are those from the left gastric and along the major vessels (splenic, hepatic, coeliac axis) and the N3 nodes are more distant (para-aortic). The resections that excise the N1, N2 and N3 nodes are described as D1, D2 and D3 respectively. The TNM system of 1997 followed this classification of nodes, however more recently the N1, N2 and N3 nodes have been altered to indicate the number of nodes involved. This is useful in terms of prognosis but offers nothing as a descriptive method of surgical procedures. For the purposes of this article where we need an anatomical description we will continue with the Japanese system and annotate it as aN1, aN2 and aN3 for anatomical and where the numerical system is used, nN1, nN2 or nN3. While the Japanese have developed an enthusiasm for D3 resections, it is widely accepted that an aN3 node involvement is consistent with metastatic disease and incurable by surgery. However, there are protagonists for routine D2 surgery irrespective of nodal involvement. Two [4,5] randomised controlled trials of D1 versus D2 surgery have failed to show any benefit in terms of long term survival but have demonstrated increased post operative morbidity and mortality associated with the D2 resection. This data demonstrates that 63% [5,6] of the left gastric nodes has no metastasis and needed only a D1 to achieve clearance and an R0 resection.

Conversely it can be extrapolated that in the D1 there were 37% of patients who needed a D2 to achieve R0. In fact on subgroup analysis there is an indication that D2 resections do benefit the nN2 [7] positive patients. Thus the argument evolves that a D2 resection is necessary for all so that the benefits of surgery are not denied to 30% of node positive patients. This is a reasonable argument when performed in expert centres with a high volume of work with low post operative mortality and good long term survival.

With regard to the total versus partial gastrectomy argument, again the aim is to achieve the same, an R0 resection. Resection line involvement has been clearly demonstrated to be detrimental to long term survival [8]. Frozen sections should be used to ensure clearance and if this is not achieved then further surgery is indicated.

The standard surgical care for gastric cancer should be a D2 resection but it is now reasonable for this approach to be altered and guided by certain principles. If a lesion is confined to the mucosa T1, a mucosal resection would be appropriate. The evidence base for developing this approach is considerable. The Japanese Gastric Cancer Association has been meticulous in the collection of data and is able to predict the risk of node involvement. The development of endoscopic ultrasound has allowed us to establish the depth of penetration of the primary tumour and the identification of early gastric cancers suitable for endoscopic mucosal resections [7]. It is clear that when an aN2 node is free from tumour that a D1 resection is sufficient. Recent developments would support this approach. Identifying junctional nodes by frozen section has led to targeted or individualised surgery with good results [6]. Sentinel node identification has been used to limit dissections and to result in function preserving gastrectomies.

Surgery for gastric cancer should be developed along these lines and whilst there is a case for prescriptive D2s as a standard of care, it should be accepted that units without sufficient experience will have increased post operative mortality and morbidity, a risk that does not need to be taken for 70% of the

patients. To achieve R0 resections, the use of sentinel or junctional nodes is the way forward to producing R0 resections for all patients.

References

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