Head & Neck Oncology

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Introductory lecture

The surgical resection margin

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In the treatment of cancer the fundamental surgical goal is to remove all local malignant disease and leave no residual malignant cells. Studies have demonstrated the benefit of achieving negative resection margins in terms of disease free local recurrence and overall survival. The surgical margins for Head & Neck cancer may vary widely depending on the site of disease. This variation reflects the biological and anatomical environment of the tumour site at macroscopic and microscopic levels.

There is no accepted standard for the quantity of normal tissue to be removed and the effect of positive margins on recurrence rate appears to be considerably dependent on the site of the tumour. The extent of tumour volume resection is determined by the need for cancer control and the peri-operative, functional and aesthetic morbidity of the surgery.

Resection margins are assessed intra-operatively by frozen section and retrospectively after definitive histological analysis of the resection specimen. There are limitations to this assessment. The margin may not be consistent in three dimensions and may be susceptible to errors in sampling and histological interpretation. Assigning the true excision margin may be difficult due to post-excision changes secondary to shrinkage and fixation.

Local recurrence occurs even among tumours with extensive histological demonstration of adequate resection margins. Sites with significant recurrence rates after negative resection margins are oral cavity, submandibular region, tonsil and pharynx. Therefore, it is accepted that cancers at these sites require larger margins of excision than tumours elsewhere in the head and neck.

Achieving the histologically adequate margin is insufficient to predict clinical outcome. Multiple parameters in the histological assessment have been developed and refined to predict outcome based on a number of variables including pattern of invasion, keratinisation, nuclear pleomorphism and mitotic rate. Recently molecular technology has been employed to provide a more objective assessment of the margins but these techniques are not yet validated.

The current approaches to histological risk assessment and evaluation of the surgical margin in Head & Neck cancer and the limitations will be discussed.