

## Surgical Specimens : Source of Solution

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One of the aims of head and neck surgical procedures is to remove the pathology adequately. For benign neoplasm, complete removal of the lesion is adequate while for malignant tumor, resection with a clear margin is mandatory for eradication of the disease. The extent of resection should include all pathological tissue while at the same time maintain as much as possible, the function of the organ and aesthetic aspect of the individual. This optimal resection status is particularly difficult to determine in the head and neck region, as there is a wide range of anatomical structures, organs and pathologies. We have carried out whole specimen step serial sectioning studies for a range of frequently encountered pathologies to study the three dimensional extent of the diseases and their relationship to surrounding normal structures. All these information will greatly aid the surgical planning for adequately eradicating the pathology without removing excessive normal tissue.

In the early eighties, total laryngectomy specimens performed for carcinoma of the larynx were studied following whole specimen axial sectioning. The findings showed that the resection margins were close at the anterolateral and posterolateral aspect. When a resection margin of >2mm was achieved at these regions, a higher local control rate can be achieved.

A similar study on 57 surgical specimens of hypopharyngeal cancer performed in the late eighties showed that the submucosal extension pattern in this disease is more extensive if the patient had previous radiotherapy. Thus in salvage hypopharyngectomy, a wider surgical margin has to be carried out to effect a curative resection. Thus sometimes the esophagus has to be removed to achieve an adequate lower resection margin. This generates an implication on reconstruction which naturally should follow adequate resection.

For carcinoma of the tongue, a study of 50 surgical specimens in early nineties showed that a three dimensional resection margin of 1.5 cm is essential to achieve a low local

recurrence rate. The pattern of tumor invasion of the mandible was studied in another 24 segmental mandibular specimens. The optimal resection margin for carcinoma involving the mandible was determined to be 1cm.

For benign parotid gland pathologies, whole specimen section studies of superficial parotidectomies were carried out for 15 pleomorphic adenoma and 24 adenolymphoma. The findings were that for the former, there was nearly invariably a bare area over the gland which was in contact with the facial nerve and the tumor outline was mostly irregular. Resection of the tumor with a cuff of normal parotid gland tissue was essential to ensure adequate removal of the pathology. On the other hand, over 50% of patients with adenolymphoma were found to have more than one tumor nodule in the parotid gland, thus a total superficial parotidectomy should be carried out to eradicate the disease.

For nasopharyngeal cancer, the primary treatment modality is radiotherapy and chemotherapy. For the patient who developed recurrence in the neck nodes, radical neck dissection was performed. In the nineties, serial sectioning of 43 radical neck dissection specimens performed for these patients showed that there were three times more pathological lymph nodes in comparison to those demonstrated by imaging studies or clinical examination. Nasopharyngectomy via the maxillary swing approach were employed for the salvage of locally recurrent tumor after radiotherapy and chemotherapy in our center. Serial sectioning of 19 nasopharyngectomy specimens showed extensive submucosal involvement in all the specimens. Wide exposure is essential for surgical eradication of the recurrent tumor.

Whole specimen serial sectioning provides knowledge on three dimensional extension of various neoplasms in the head and neck region. This information is important for surgeons aiming to achieve tumor eradication without jeopardizing normal function.