Surgical oncology is an integral component of maxillofacial surgery. The incidence and management of head and neck cancer is a major challenge throughout the world. There is an increase in occurrence of human papilloma virus-related cancers in the developed world and tobacco-related cancers in the developing world. Despite advances in the treatment modalities, the 5-year survival rate of head and neck squamous cell carcinoma has not significantly changed in the recent decades. Maxillofacial surgeons, with their understanding of regional anatomy and pathology, are well positioned to lead the research to improve functional and survival outcome in patients.

**Optical Imaging**

Optical imaging techniques such as chemiluminescence, autofluorescence spectroscopy and narrow band imaging may help in the earlier detection of cancer. Intraoperative infrared fluorescence and micro-endoscopy may also help in identifying tumour margins and facilitate more accurate clearance whilst preserving normal tissues.

**Radiological Techniques**

Improvements in the quality of computed tomography (CT), magnetic resonance imaging and positron emission tomography/CT are leading to improved diagnosis, staging and more accurate resection.

**Tumour Biology**

A targeted approach to diagnosis and intervention, focusing on cytostasis, apoptosis, interference with protein dynamics, tumour vasculature, microenvironments and cellular signalling mechanisms, may alter our approach to management. The biological signature of a tumour may be helpful in determining the probability of a local and distant spread, thus rationalizing the need for neck dissection and better determining prognosis.

**Transoral Robotic Surgery (TORS)**

TORS is a promising technique for oropharyngeal surgery as it can be performed with minimal access. TORS is yet to be validated by long-term studies and further data is required for its validation.

**Tissue Engineering**

Tissue engineering techniques are evolving rapidly; the challenge in curing malignant disease is the urgency to provide surgical treatment and reconstruction. In order for tissue engineering to be utilized, developments must include increased speed at which this engineered tissue will be available to surgeons.

**List of Abbreviations**

CT, Computed tomography; TORS, transoral robotic surgery.

**References**


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