

## Pathophysiology, diagnosis, and management of oral cancer.

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Oral cancer, also known as mouth cancer, is cancer of the lining of the lips, mouth, or upper throat. In the mouth, it most commonly starts as a painless white patch, that thickens, develops red patches, an ulcer, and continues to grow. When on the lips, it commonly looks like a persistent crusting ulcer that does not heal, and slowly grows. Other symptoms may include difficult or painful swallowing, new lumps or bumps in the neck, a swelling in the mouth, or a feeling of numbness in the mouth or lips. Oral squamous cell carcinoma is the end product of an unregulated proliferation of mucous basal cells. A single precursor cell is transformed into a clone consisting of many daughter cells with an accumulation of altered genes called oncogenes. What characterizes a malignant tumor over a benign one is its ability to metastasize. This ability is independent of the size or grade of the tumor (often seemingly slow growing cancers like the adenoid cystic carcinoma can metastasize widely). It is not just rapid growth that characterizes a cancer, but their ability to secrete enzymes, angiogenic factors, invasion factors, growth factors and many other factors that allow it to spread.

Diagnosis of oral cancer is completed for (1) initial diagnosis, (2) staging, and (3) treatment planning. A complete history, and clinical examination is first completed, then a wedge of tissue is cut from the suspicious lesion for tissue diagnosis. This might be done with scalpel biopsy, punch biopsy, fine or core needle biopsy. With the first biopsy, the pathologist will provide a tissue diagnosis (e.g. squamous cell carcinoma), and classify the cell structure. They may add additional information that can be used in staging, and treatment planning, such as the mitotic rate, the depth of invasion, and the HPV status of the tissue. When the cancer has spread to lymph nodes, their exact location, size, and spread beyond the capsule (of the lymph nodes) needs to be determined, as each can have a significant impact on treatment and prognosis. Small differences in the pattern of lymph node spread, can have a significant impact on treatment and prognosis. Panendoscopy may be recommended, because the tissues of the entire upper aerodigestive tract are generally affected by the same carcinogens, so other primary cancers are a common occurrence.

Oral cancer (squamous cell carcinoma) is usually treated with surgery alone, or in combination with adjunctive therapy, including radiation, with or without chemotherapy. With small lesions (T1), surgery or radiation have similar control rates, so the decision about which to use is based on functional outcome, and complication rates. In most centres, removal of squamous cell carcinoma from the oral cavity and neck is achieved primarily through surgery. This also allows a detailed

examination of the tissue for histopathologic characteristics, such as depth, and spread to lymph nodes that might require radiation or chemotherapy

Chemotherapy and radiotherapy are most often used, as an adjunct to surgery, to control oral cancer that is greater than stage 1, or has spread to either regional lymph nodes or other parts of the body. Radiotherapy alone can be used instead of surgery, for very small lesions, but is generally used as an adjunct when lesions are large, cannot be completely removed, or have spread to the lymph nodes of the neck. Chemotherapy is useful in oral cancers when used in combination with other treatment modalities such as radiation therapy but it is not used alone as a monotherapy. Monoclonal antibody therapy (with agents such as cetuximab) have been shown to be effective in the treatment of squamous cell head and neck cancers, and are likely to have an increasing role in the future management of this condition when used in conjunction with other established treatment modalities, although it is not a replacement for chemotherapy in head and neck cancers.

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