Cancer Association of South Africa (CANSA)

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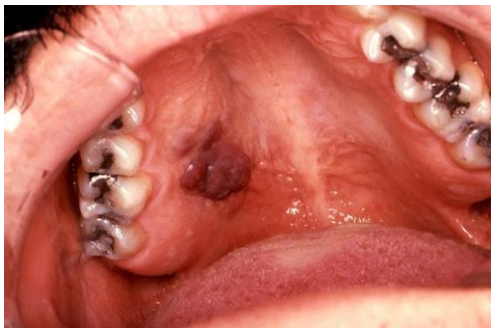
Fact Sheet on Cancer of the Palate

Introduction

Mouth cancers, of which cancer of the palate is one, most commonly begin in the flat, thin cells (squamous cells) that line one's lips and the inside of one's mouth. Most oral cancers are squamous cell carcinomas. It is not clear what causes the mutations in squamous cells that lead to mouth cancer, but doctors have identified various factors that may increase the risk of mouth cancer.



[Picture Credit: Cancer of the Palate]

Mouth cancer is a general term that applies to cancers that occur on the lips and throughout the mouth.

More-specific terms for these types of cancer include:

- Cancer that affects in the inside portion of the cheeks (buccal mucosa cancer)
- Floor of mouth cancer
- Gum cancer
- Lip cancer
- Roof of mouth (hard palate) cancer
- Salivary gland cancer
- Tongue cancer

Cancer of the Palate

Cancer of the palate usually occurs when the squamous cells in the mouth area divide in an uncontrolled manner.

The palate is commonly called the roof of the mouth. It is divided into two parts: the bony hard palate in the front, and the fleshy soft palate (called the velum) in the back of the mouth. The hard palate is part of the oral cavity and the soft palate is part of the oropharynx.

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The hard palate creates a barrier between the mouth and the nasal cavity. A natural opening in the palate for nerves and blood vessels (near the third molar teeth) can create a passageway for a tumour to spread into the nasal cavity.

The soft palate closes the nasal passage during swallowing so food does not enter the nose. It also helps create speech sounds. If the palate does not function correctly during speech, air escapes through the nose, and the speech has a nasal sound. During a sneeze, the soft palate closes the nasal passage to protect it. Substances in the sneeze are thrown out into the mouth.

Incidence of Cancer of the Palate

The National Cancer Registry (2017) does not provide information regarding the incidence of Cancer of the Palate.

Signs and Symptoms of Cancer in the Palate and Mouth

Mouth cancer symptoms can include:

- Sores or lesions in the mouth that do not heal and bleed easily for no reason
- Red or white patches on the mouth's surface
- Constant mouth pain that does not go away
- A lump or mass in the mouth
- Constant ear pain
- Difficulty chewing, swallowing, talking or moving one's jaw
- Numbness in any area of the mouth
- Swelling in the mouth that causes dentures to fit poorly
- Weight loss as a result of difficulty eating
- Constant bad breath
- Loose teeth
- Dentures no longer fit
- Difficulty in swallowing
- Changes in speech
- A lump in the neck
- Inability to open the jaw

Causes and Risk Factors for Cancer of the Palate and Mouth

By far the most common factor contributing to most head and neck cancers is using tobacco, particularly smoking it. Drinking too much alcohol also adds to the risk of developing head and neck cancers.

Major factors that increase the chance of developing palate cancer include:

- Smoking or tobacco use is one of the main causes of palate cancer. It is estimated that up to 90% of oral cancers are caused by cigarette, pipe or cigar smoking

- Those who chew tobacco and snuff are also at risk of developing this cancer
- Alcoholic beverages also contribute in the development of palate cancer
- Leukoplakia is a condition that causes white patches in the mouth is also said to be a risk factor for this cancer
- Reverse smoking is also a risk factor. This type of smoking is where the lit end of the cigarette is placed inside the mouth, which generates intense heat inside the mouth
- Heavy alcohol use
- Excessive sun exposure to one's lips
- The sexually transmitted virus - human papillomavirus (HPV)
- Exposure to radiation in the past. Being exposed to radiation through previous treatment for another disease, certain working conditions or even a natural disaster can increase the chances of some cancers
- Genetic factors. This is important in all cancers, and the details are still being determined
- Spicy foods.
- Lack of some vitamins
- Poor oral hygiene might also be associated with oropharyngeal cancers

In the early stages, cancer of the palate may not manifest any symptoms and can look like a harmless sore. If a mass growth is observed in one's mouth, it is best to have a dentist or medical practitioner examine it, because early detection of the cancer increases and improves the survival rate. If one regularly visits one's dentist, the dentist will be able to notice any suspicious changes in one's mouth.

Schernberg, A., Canova, C., Blanchard, P., Gorphe, P., Breuskin, I., Mirghani, H., Moya-Plana, A., Janot, F., Bidault, F., Chargari, C., Bellefqih, S., Ruffier, A., Even, C., Nguyen, F., Temam, S. & Tao, Y. 2019.

BACKGROUND: To define the prognostic factors associated with outcome in patients with soft palate squamous cell carcinoma (SCC).

METHODS: Previously untreated patients with soft palate and uvula SCC treated in our institution between 1997 and 2012 were collected. The prognostic value of clinical, hematological, and treatment characteristics was examined.

RESULTS: We identified 156 patients, median age 58 years, with 71% drinkers, 91% smokers; 19% had synchronous cancer. Front-line treatment was chemoradiotherapy in 58 (37%), radiotherapy alone in 60 (39%), surgery in 17 (11%), and induction chemotherapy in 21 patients (14%). The 5-year actuarial overall survival (OS) and progression-free survival (PFS) were 41% and 37%, respectively. In univariate analysis, T3-T4 vs T1-T2 stage, N2-N3 vs N0-N1 stage, and neutrophil count >7 g/L were associated with worse OS and PFS ($P < .05$).

CONCLUSION: In patients with soft palate SCC, inflammation biomarkers were associated with OS.

Recurrent (Relapsed) Cancer

This is not an actual stage in the TNM system. Recurrent (relapsed) disease means that the cancer has come back (recurred) after treatment. Recurrent oral cavity or oropharyngeal cancer may return in the mouth or throat (local recurrence), in nearby lymph nodes (regional recurrence) or in another part of the body, such as the lungs (distant recurrence).

Talk with a doctor in case of any questions about the stage of the cancer or how it affects treatment.

Treatment of Cancer of the Palate
Treatment will be discussed under cancer of the hard palate and cancer of the soft palate:

Treatment for soft palate cancer depends on many factors, such as the size and location of your cancer, your overall health and your preferences. Treatment options may include:

Treatment of Soft Palate Cancer:
Surgery**.** During surgery for soft palate cancer, skilled surgeons trained in removing throat cancers will work to remove your cancer.

If the cancer is small, it may be removed during a short operation that won't require a hospital stay. Larger cancers may require more-extensive operations. When the cancer has spread to the neck lymph nodes, lymph node removal may be necessary.
Mayo Clinic's innovative surgical techniques can remove the cancer and provide the best possible function. For example, in transoral robotic surgery, which is less invasive than conventional surgery, skilled surgeons use special instruments to view the soft palate through the mouth and nose.

Chebib, E., Lechien, J.R., Chekkoury, Y. & Hans, S. 2020, Transoral robotic surgery for cancer of the soft palate posterior surface. *Ear Nose Throat J.* 2020 Dec ;145561320977463.
"The surgical treatment of oropharyngeal squamous cell carcinoma (OSCC) has undergone a considerable evolution, with, among others, transoral robotic surgery (TORS). However, TORS is rarely used for the surgery of soft palate. A 73-year-old man presented a human papilloma virus OSCC of the posterior soft palate. The tumor was resected using TORS. This report describes the surgical technique step by step of the tumor resection. The resection of early stage OSCC of the posterior surface of soft palate is possible through TORS. The procedure is noninvasive, rapid, and seems to be associated with excellent functional outcomes."

Herzog, M., Grafmans, D., Plontke, S.K., Bartel, S. & Plößl, S. 2020. Functional results after soft palate reconstruction in oropharyngeal cancer patients. *HNO*. 2020 Mar 3. doi: 10.1007/s00106-020-00839-8. Online ahead of print.
Background: Surgery of the soft palate in patients with oropharyngeal cancer can result in functional deficiencies of swallowing and speech. Reconstruction of the resected structures can contribute to regaining sufficient functionality after therapy.
Objective: The current study used frequency analysis to evaluate the change in speech characteristics after resection and reconstruction of the soft palate during post-therapeutic follow-up.
Materials and methods: In 18 patients with oropharyngeal carcinoma and involvement of the soft palate, resection and reconstruction by free radial forearm graft (FRFG) and adjuvant chemoradiotherapy was conducted. The spoken German numbers "eins", "zwei", "drei", "vier", "fünf" were recorded during follow-up and objectively assessed by frequency analysis. Additionally, food intake status and the necessity of a tracheostomy were evaluated.
Results: The maximum peak frequencies of the numbers analysed increased from 150-300 Hz before up to 1000 Hz after therapy. Two years post therapy, the peak frequencies again declined to levels comparable to those before tumour therapy. One year after therapy, complete oral nutrition was possible in two thirds of patients and the tracheostomy was closed in 80%.
Conclusion: Reconstruction of the soft palate by FRFG during the course of oropharyngeal cancer treatment allows function to be regained with respect to speech and swallowing. In the majority of patients, it is possible to reach a level of function comparable to the state before tumour treatment.

Radiation therapy**.** Radiation therapy can be used alone or with chemotherapy or surgery to treat soft palate cancers of all stages.

Highly skilled radiation oncologists provide state-of-the-art radiation therapy at Mayo Clinic, including intensity-modulated radiation therapy, 3-D conformal radiation therapy, stereotactic radiosurgery, brachytherapy, and small field conformal radiation therapy.

Chemotherapy**.** Experienced medical oncologists prescribe chemotherapy — which can be administered through a vein, by mouth or both — to treat soft palate cancer that has spread beyond the throat. Chemotherapy may also be combined with radiation therapy.

Reconstructive surgery**.** Depending on the location and spread of the cancer, reconstructive surgery may be necessary. Experienced surgeons work to improve appearance and function through reconstruction of the soft palate to restore speech and swallowing function.

Herzog, M., Grafmans, D., Plontke, S.K., Bartel, S. & Plößl, S. 2020. Functional results after soft palate reconstruction in oropharyngeal cancer patients. *HNO*. 2020 Mar 3. doi: 10.1007/s00106-020-00839-8. Online ahead of print.
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Rehabilitative services**.** To assist in recovery, health care providers offer many rehabilitative services like speech therapy, dietary counselling and physical and occupational therapy. In addition, they can help people who want to stop using tobacco (Mayo Clinic).

Treatment of Hard Palate Cancer:

Surgery. Surgery is the preferred treatment for cancer of the hard palate. The bone closest to the tumour often contains cancer cells and part of it may also need to be removed. If the tumour is small, the excised area can easily be closed after surgery.

If the tumour is large, the excised area cannot be closed and a prosthetic device is needed to cover the opening in the roof of the mouth. The prosthesis looks similar to a denture plate. If the lymph nodes in the neck are affected, a neck dissection may be needed to remove the nodes.

Radiation Therapy. Radiation therapy can be prescribed before surgery, after surgery, or sometimes as the only treatment. Radiation uses high-energy X-rays, electron beams, or radioactive isotopes to destroy cancer cells.

Intensity-Modulated Radiation Therapy (IMRT) uses a computer to deliver precise doses of radiation to a tumour or an area of a tumour. This minimizes radiation exposure to the surrounding normal tissue. IMRT allows the use of more effective radiation doses with fewer side effects than conventional radiotherapy techniques.

Radiation therapy, including IMRT, stops cancer cells from dividing. The growth of the tumour is slowed. Radiotherapy also destroys cancer cells and can shrink or eliminate tumours.

Radiation therapy involves 5-6 weeks of daily treatments.

Chemotherapy. Medical oncologists administer chemotherapy if the cancer has spread to lymph nodes or other organs. The medicine circulates in the blood and disrupts the growth of the cancer cells. Chemotherapy medications are taken by mouth or given through a vein for several months.

Chemotherapy is prescribed for different reasons:

- together with radiotherapy as an alternative to surgery (called chemoradiation)
- after surgery to decrease the risk of the cancer returning
- to slow the growth of a tumour and control symptoms when the cancer cannot be cured (palliative treatment)

Radiation Therapy and Chemotherapy. A combination of radiation therapy and chemotherapy (chemoradiation) is an effective treatment.

Radiation therapy used alone or with chemotherapy is the primary treatment for moderate or advanced cancers in order to preserve the soft palate and its function.

Radiotherapy can be combined with chemotherapy and surgery.

Ealla, K.K.R., Prakash, S.K.C., Manidanappanavar, P., Katthuri, S., Gurran, K. & Shyamilee, T.K. 2019. **INTRODUCTION:** Treatment of T1N0M0 (T1 = greatest tumor size < 2 cm, N0 = regional lymph nodes not palpable by clinical examination, M0 = No evidence of distant metastasis) (Green FL, Page DL, Fleming ID, Fritz AG, Balch CM, Haller DG, Morrow M. AJCC Cancer Staging Manual. New York: Springer; 2002) lesions of hard palate carcinoma by radiotherapy carries equal results with the advantage of cosmesis and can avoid surgical complications. External beam radiotherapy (EBRT) will

last for 6-8 weeks. Feasibility of high-dose-rate (HDR) intraoral mold brachytherapy is an alternative to EBRT, which is highly effective and reduces treatment time and is also cost-effective one, which can be practiced in a center without Linac facilities.
MATERIALS AND METHODS: Custom-made surface molds were prepared for each patient with dental wax, and HDR after loading tubes were placed as per tumor volume. After simulation, with the help of simulation check films, treatment was planned with PLATO Treatment Planning System (TPS) and optimization was carried out.
RESULTS: We treated six cases of T1N0M0 hard palate carcinoma by HDR intraoral mold brachytherapy. A total dose of 42-45 Gy in 14-15 fractions with 3 Gy per fraction, two fractions per day with a gap of minimum 6 h was administered between two fractions. (Gray [Gy] is the unit of absorbed dose of radiation by tissues. A total radiation dose of 42-45 Gy will be delivered as per radiobiological principles, in divided number of fractions, thereby the given dose of radiation will kill the major portion of the tumor cells, which were in various sensitive phases of cell cycle and at the same time, less damage to the normal tissues. The time between two fractions of radiation is 6 h, which is the experimentally proven optimal time for recovery of normal tissues from radiation damage and tumor tissues to enter into the sensitive phases of the cell cycle to radiation damage-late G2 and S phases). There was confluent mucositis and all the patients had a complete response and none of the patients had relapse.
CONCLUSION: Early (T1N0M0) lesions of hard palate carcinoma with HDR intraoral mold brachytherapy will shorten overall duration of treatment time with excellent local control and toxicities as compared with EBRT.

Lancellotta, V., Pagano, S., Tagliaferri, L., Piergentini, M., Ricci, A., Montecchiani, S., Saldi, S., Chierchini, S., Cianetti, S., Valentini, V., Kovács, G. & Aristei. C. 2019.
J Prosthet Dent. 2019 Apr;121(4):690-693. doi: 10.1016/j.prosdent.2018.06.016. Epub 2018 Nov 30.
"This clinical report describes the use of a 3-dimensional (3D) printer to create an individual mold for delivering high-dose-rate interventional radiotherapy for hard palate cancer. The maxillary teeth and palate were scanned with an intraoral scanner (3Shape TRIOS 3). The scan was transformed into a mesh using the standard tessellation language (STL) format and aligned with Digital Imaging and Communications in Medicine (DICOM) computed tomography (CT) images using free Blue Sky Plan 4 planning software. A mold was generated by tracing a guideline around the gingival margins of the maxillary teeth and palate on the scan mesh in accordance with established parameters. All data were imported into computer-aided design (CAD) software. For this patient, 3 parallel 2.2-mm-diameter ducts were placed 10 mm from each other in the mold mesh. A CT scan of the patient's mouth with the mold in place was used for treatment planning. Treatment was delivered by means of microSelectron digital afterloading."

About Clinical Trials
Clinical trials are research studies that involve people. They are conducted under controlled conditions. Only about 10% of all drugs started in human clinical trials become an approved drug.

Clinical trials include:

- Trials to test effectiveness of new treatments
- Trials to test new ways of using current treatments
- Tests new interventions that may lower the risk of developing certain types of cancers
- Tests to find new ways of screening for cancer

The South African National Clinical Trials Register provides the public with updated information on clinical trials on human participants being conducted in South Africa. The Register provides information on the purpose of the clinical trial; who can participate, where the trial is located, and contact details.

For additional information, please visit: www.sanctr.gov.za/

Medical Disclaimer

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Head and Neck Cancer Guide
http://www.headandneckcancerguide.org/teens/cancer-basics/explore-cancer-types/throat-cancer/oropharyngeal-cancer/soft-palate-cancer/#Causes of soft palate cancer

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http://www.mayoclinic.org/diseases-conditions/soft-palate-cancer/care-at-mayo-clinic/treatment/con-20037463

Mouth Cancer Symptoms
http://mouth-tongue-gum-throat-cancer.com/oral-cancer-symptoms/mouth-cancer-symptoms/

National Cancer Institute
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