

Neoplasms of the Palate: A Review

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ABSTRACT

Background: The palate is defined as the roof of the mouth. It is alienated into soft palate which is essential for nasal passage protection and formation of speech sound and the bony hard palate which acts as a barrier between the mouth and the nasal cavity. A natural opening in the palate for nerves and blood vessels can create a passage for neoplasms to spread into the nasal cavity such as epidermoid carcinoma, adenocarcinoma and benign mixed tumors and rarely Melanoma, lymphosarcoma and Myosarcoma.

Neoplasms of the palates results in significant masticatory, speech and swallowing disturbance and surgery remains the recommended treatment modality. However, provided the profound functional and cosmetic importance of the oral cavity, management of Palates cancers requires a thorough understanding of disease progression, approaches to management and options for reconstruction.

Aim of the study: was to review the different types of neoplasms of the Palates along with the etiology, diagnosis and with emphasis on the surgical intervention.

Methods: electronic search of available Literature review in the scientific database of retrospective studies and systematic reviews investigating incidence, prevalence, etiology, symptoms, risk factors, diagnosis and surgical intervention of different types of oral cavity particularly palatal neoplasm from 1960 to 2017– (Medline, Embase, the Cochrane Library , NHS center websites as well as an individual Dentistry journals such as International Journal of Prosthodontics, International Journal of Periodontics and Restorative Dentistry. Search included English Publications which were obtained from both reprint requests and by searching the database.

Conclusion: Cancer of the oral cavity is mostly trigger by smoking, alcohol abuse. The most common neoplasms of the hard palate are MSGTs and SCCs for the soft palate. Primary surgical resection with or without postoperative adjuvant therapy remains the upmost recommended treatment approach. It is also critical to have a Multidisciplinary treatment to help improve the oncologic and functional results in oral cancer patients.

Keywords: Oral cavity, Hard palate, surgical intervention, carcinoma, neoplasm, tumors.

INTRODUCTION

The oral cavity contributes to a complex array of functions that include speech, mastication, salivation, early digestion, and oral/oronasal competence. The anatomic subsides of the oral cavity include the labial mucosa, buccal mucosa, floor of mouth, alveolar ridge and gingiva, anterior two-thirds of the tongue (anterior to the circumvallate papillae), hard palate, and retromolar trigone^[1]. The palate is divided anatomically into the hard palate (part of the oral cavity) and the soft palate (part of the oropharynx). The hard palate is the anterior bony subsection of the palate of the mouth the most common site of minor salivary gland tumors in the oral cavity.

The function of the hard palate includes both feeding and speech. Before modern surgeries were developed, infants with defective palates couldn't suckle and would often die. It is used to create a vacuum which forces the liquid into the mouth so that it can be ingested. It is also essential, along with the tongue, to create certain phonetic sounds. When a person has a cleft palate for example, they are either unable to pronounce these sounds or they do

but with a distinct nasal vibration which makes their diction very unclear^[2].

Neoplams of the oral cavity

Oral cavity cancer ranks among the top ten most prevalent malignancies affecting patients worldwide^[3]. Cancer of the soft palate accounts for approximately 2% of head and neck mucosal malignancies. Half of all hard palate cancers are squamous cell carcinomas (SCCs) as seen in the image below. Nonsquamous cell cancers, including minor salivary gland cancers, sarcomas, and melanomas, account for the other half (see the histologic distribution of hard palate malignant neoplasms and the histologic types and frequencies of minor salivary gland neoplasms of the palate below)^[3]. Palatal tumors commonly arise from the minor salivary glands, and benign tumors account for approximately half of all minor salivary gland tumors. Minor salivary gland tumors have an affinity for the posterior hard palate and soft palate and virtually never arise in the midline, probably because of the distribution of palatal salivary glands. The majority of benign salivary gland tumors of the

palate are pleomorphic adenomas, while the most common malignant salivary gland tumor is adenoid cystic carcinoma, followed by mucoepidermoid carcinoma, adenocarcinoma, and polymorphous low-grade adenocarcinoma. Epithelial tumors frequently arise from the soft palate. The majority of benign epithelial tumors of the palate are papillomas, while most malignant epithelial tumors are squamous cell carcinomas. Various types of mesenchymal tumors, including fibromas, lipomas, schwannomas, neurofibromas, hemangiomas, and lymphangiomas, also involve the palate^[4].

Tumors of the soft palate tend to be like other tumors of the oral cavity, with 69.7% of these tumors being squamous cell carcinoma. In contrast, the tumors of the hard palate have much more varied histology with non-squamous cell tumors, including minor salivary gland tumors, causing a greater portion of the tumors seen in the hard palate, as well as rare cases of melanoma, sarcoma and malignant lymphomas^[5]. Malignant squamous epithelial neoplasms—such as squamous cell carcinoma, verrucous carcinoma, and carcinoma of the maxillary sinus—may also appear in this area. Carcinoma of the maxillary sinus usually remains asymptomatic for a long period of time^[6]. Eventually, the tumor grows to fill the sinus and the diagnosis is made because the lesion has produced a bulge of the palatal or alveolar ridge area. This is a tumor usually associated with elderly patients^[6].

Squamous cell carcinoma from the soft palate is often painful, may cause dysphagia, and offers a worse prognosis than tumors located in more anterior locations. Squamous cell carcinomas extending from the maxillary alveolar ridge onto the hard palate may present a diagnostic challenge as they mimic periodontal disease or pyogenic granulomata. Alveolar and palatal carcinomas are usually painless. Verrucous carcinoma is a type of squamous cell carcinoma that exhibits a papillary, white clinical appearance, behaves indolently, and rarely metastasizes. The most common locations for this condition are the hard palate and the alveolar ridge, and they are often associated with elderly patients wearing complete denture prostheses^[6].

The most common benign salivary gland tumor of the palate is the pleomorphic adenoma. The most common malignant tumors of the palate are adenoid cystic carcinoma (cylindroma), followed by polymorphous low-grade adenocarcinoma and then mucoepidermoid carcinoma^[7]. Most of these tumors, both benign and malignant, are asymptomatic masses or are associated with a low level of discomfort. As previously mentioned, constant pain in the palate associated with a gradual increase in intensity, and usually present before any noticeable swelling, is a common and important

finding of adenocystic carcinoma. Malignant tumors of the palate may show radiographic evidence of bone destruction and sometimes a radiopacity produced by the neoplastic mass. Intraosseous salivary gland tumors also may develop within the jaws^[8]. Lymphoma (lymphosarcoma) constitutes a diverse and complex group of malignancies of lymphoid histogenesis.^{10,11} The most frequent locations of extra nodal lymphoma in the head and neck are the posterior hard and the soft palate. Lymphomas usually appear as a non-tender diffuse mass and are rarely ulcerated. Many salivary gland lymphocytic infiltrates of the palate are actually non-Hodgkin's B-cell lymphomas of the mucosa-associated lymphoid tissue (MALT)^[9].

General symptoms of palatal neoplasm include Foul odor in the mouth, Bleeding as the mass grows, Dentures no longer fit, Difficulty in swallowing, Changes in speech, loose teeth. Symptoms vary in severity with accordance to the stage and location of the tumor. A variety of surgical procedures and techniques Laser microsurgery and reconstructive surgery. Can be used to treat malignancies of the hard palate and inferior maxilla.

In the present study, we aim to review the different forms of palatal neoplasms and the surgical intervention needed.

MATERIALS AND METHODS

Data Sources

We carried out a retrospective study of English publications investigating incidence, prevalence, etiology, symptoms, risk factors, diagnosis and surgical intervention of different types of oral cavity particularly palatal neoplasm from January 1960 to 2017.

Data Sources: Literature searches of MEDLINE, EMBASE, SCOPUS, Current Contents, Cochrane Library, Google Scholar, and individual Dentistry journals such as International Journal of Prosthodontics, International Journal of Periodontics and Restorative Dentistry and Clinicaltrials.gov between 1960.

The search terms were used in combinations and together with the Boolean operators OR and AND. Search terms included “Oral cavity”, “Hard palate”, “surgery”, “carcinoma”, “neoplasm”, “tumors”, “palate”, “resection”.

Etiology and risk factors of palatal neoplasms

Factors that can increase your risk of mouth cancer include^[10]:

- Tobacco use of any kind, including cigarettes, cigars, pipes, chewing tobacco and snuff: Based on sufficient evidence of carcinogenicity in humans, the International Agency for Research on Cancer

classifies tobacco smoking as a group 1 carcinogen for both the oral cavity and the pharynx and classifies smokeless tobacco as a group 1 carcinogen for the oral cavity. Smoking-associated risk appears to be dose-dependent and correlates with daily or cumulative cigarette consumption. For patients who quit smoking, the risk for OC-SCC and OP-SCC declines over time and may approach that of nonsmokers after 10 or more years of cessation

- Heavy alcohol use: Ethanol is metabolized by epithelial cells and microflora into acetaldehyde, which is a known carcinogen. Accordingly, risk polymorphisms in alcohol-metabolizing genes (e.g., alcohol dehydrogenase 1B gene [ADH1B], alcohol dehydrogenase 1C gene [ADH1C], aldehyde dehydrogenase 1 gene [ALDH1], and aldehyde dehydrogenase 2 gene [ALDH2]) have been identified.
- ** Remarkably, combined cigarette smoking and alcohol consumption exhibits a synergistic effect, with a reported relative risk for HN-SCC of 15 or more among heavy users of both products.
- A sexually transmitted virus called human papillomavirus (HPV)- HPV 16 virus, has been shown have shown an increased odds ratio of 2.2 for squamous cell CA in individuals who were seropositive for HPV 166 the exact role of HPV in oral carcinogenesis is still being defined.
- Diet lacking in antioxidants and a weak immune system: HIV-positive patients and organ transplant recipients exhibit a higher incidence of lip, oral cavity, and pharyngeal cancer.
- Excessive sun exposure to your lips

Staging of Oropharyngeal tumors

Table 1. TNM classification ^[11] of Oropharyngeal primary tumor (T)

TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
Tis	Carcinoma in situ
T1	Tumor ≤2 cm in greatest dimension
T2	Tumor >2 cm but not more than 4cm in greatest dimension
T3	Tumor >4 cm in greatest dimension or extension to lingual surface of the epiglottis
T4a	Moderately advanced, local disease Tumor invades the larynx, deep/extrinsic muscle of the tongue, medial pterygoid, hard palate, or mandible
T4b	Very advanced, local disease Tumor invades lateral pterygoid muscle, pterygoid plates, lateral nasopharynx, or skull base or encases the carotid artery

Table 2. Staging of distant metastasis (M) ^[11]

M0	No distant metastasis
M1	Distant metastasis

Table 3A: Clinical Differential Diagnosis Soft Tissue Enlargements ^[12]

Reactive	Tumors
Regress, resolve	Persistent and progressive
Often symptomatic	Often asymptomatic
Growth rate: hours, days, weeks	Growth rate: weeks, months, years
Fluctuate in size	Persistent & progressive
Sometimes associated with tender, soft lymph nodes	Lymph nodes not enlarged unless associated with metastatic cancer; then they are firm & non-tender
Sometimes associated with systemic manifestations	Systemic manifestations occur late in the course of cancer

Table 3B: Clinical Differential Diagnosis Soft Tissue Enlargements ^[12]

Benign Tumors	Malignant Neoplasms
Slow growth: months, years	Rapid growth: weeks, months
Overlying mucosa is usually normal unless traumatized	Overlying mucosa more likely to be ulcerated
Often not fixed to surrounding structures	Fixed to surrounding structures
May move teeth	May loosen teeth
Asymptomatic	More likely to be painful
Well circumscribed	Poorly circumscribed

DIAGNOSIS ^[13]

One of the keys to improving accuracy in diagnosing oral lesions is forming an appropriate differential diagnosis

1. CT scan

- Axial:** define the anterior-posterior dimension; assess bone destruction, especially of erosion of pterygoid plates and skull base
- Coronal:** superior extension and paranasal sinus involvement

2. MRI : primarily useful in evaluating cranial base and CNS.

3. **Orthopantomography (Panorex):** a panoramic X-ray of the upper and lower jaw shows a view from ear to ear and helps determine if a tumor has grown into the jaw bone.
4. **Chest X-ray:** particularly to detect lung metastasis.
5. **Biopsy:**
 - a. For Ulcerated and exposed lesions: Transoral punch or cup forceps’.
 - b. Mucosa covered: Incisional biopsy
 - c. Small, well circumscribed covered with intact mucosa: complete excision since defect will granulate

*When nodes are present: **Fine needle aspiration (FNA)** procedure is used.

Common Tumors of the palates

The **palate** is the most common site for minor gland neoplasms.

Cancer of the soft palate accounts for approximately 2% of head and neck mucosal malignancies. Half of all hard palate cancers are squamous cell carcinomas (SCCs) Nonsquamous cell cancers, including minor salivary gland cancers, sarcomas, and melanomas, account for the other half these include benign tumors such as pleomorphic adenomas, and malignant tumors such as mucoepidermoid carcinoma, adenoid cystic carcinoma, and polymorphous low-grade adenocarcinoma. Other histologist less frequently encountered include

Nevertheless, verrucous carcinoma, sarcoma, melanoma, and lymphoma^[3]. However, in the soft palate, 80% of cancers are SCCs. Nonsquamous malignancies account for the other 20%.

Squamous cell carcinoma of the palate accounts for 5% to 15% of intraoral carcinomas, depending on whether it is on the hard or soft palate^[3]

A. Benign squamous Epithelial Tumors of the palates

➤ Minor salivary gland tumors (MSGT)

1. Papilloma, verruca, and condyloma are warts caused by human papillomavirus.

a. **Papilloma (squamous papilloma):** is a benign epithelial enlargement that is caused by human papilloma virus infection. It is firm, non-painful, and pedunculated. They usually involve the soft palate, tongue, frenulum linguae and the lower lip. In most of the cases, the papillomas are single and small (<1cm). They have an exophytic growth and show up both as a broad based ovoid bulging, or a pedicle lesion. The surface may present small finger-like projections, giving it a rough verruca contour. The color varies from white to pinkish, depending on the levels of keratinization and vascularization^[14]. It arises from the surface stratified squamous epithelium, is exophytic, and it

does not invade underlying tissue. Excisional biopsy including the base of the lesion is the treatment. However, recurrence is unlikely.



Figure 1: squamous papilloma^[12]

b. **Verruca vulgaris:** is a benign epithelial enlargement of skin and mucosa caused by human papilloma virus. It is asymptomatic, exophytic, and has a broad base. The surface is white, rough, and warty. Verruca may be solitary or multiple. Verrucae may spread to other body surfaces by autoinoculation. Sometimes they resolve spontaneously. Verrucae on the skin are usually treated by liquid nitrogen, chemical agents, or surgical excision. Oral verrucae are treated by excisional biopsy^[12].

c. **Condyloma acuminatum:** is a warty soft tissue enlargement caused by human papilloma virus. It is a sexually transmitted disease and is most common in the anogenital region. It often has multiple lesions. Condyloma is treated by surgical excision. The patient's sexual partner should also be treated^[12].

2. **Benign Pleomorphic adenoma:** is the most common salivary gland tumor, it is known as a benign mixed tumor composed of epithelial and myoepithelial cells arranged with various morphological patterns, demarcated from surrounding tissues by fibrous capsule. PA (mixed benign tumor) is one of the salivary gland tumors affecting both major and minor salivary glands and accounts for 40–70% of all tumors^[15].



Figure 2: Pleomorphic adenoma^[15]

B. Malignant squamous Epithelial neoplasms

1. Mucoepidermoid Carcinoma (MEC)

MEC is believed to arise from pluripotent reserve cells of excretory ducts that are capable of differentiating into squamous, columnar, and

mucous cells. It occurs commonly in parotid glands with minor glands being the second most common site. It accounts for <3% of all head to neck tumors with a female predilection^[16]. the majority of palatal MEC appears as firm, painless swellings, and may mimic mucoceles or vascular lesions. Clinical findings and investigations in the present case indicated a surface lesion. Blue to red color of the lesion may suggest it to be either of vascular or of salivary gland origin. As in this case, mucus was discharged from the tumor through a small sinus tract.

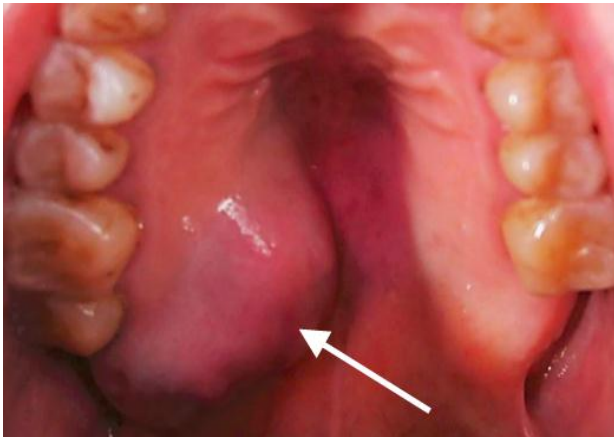


Figure 3: Mucoepidermoid Carcinoma (MEC)^[17].

1. Adenoid cystic carcinoma

Adenoid cystic carcinoma is a rare tumor of head and neck region. It accounts for <1% of all head and neck malignancies and about 4-10% of all salivary gland tumors. However, it is the commonest malignant tumor of the minor salivary glands. Intraorally 50% of ADCCs occur on the palate. ADCC accounts for 8.3% of all palatal salivary gland tumors and 17.7% of malignant palatal salivary gland tumors (AFIP series). The other less common sites are lower lip, retromolar tonsillar pillar area, sublingual gland, buccal mucosa and floor of the mouth^[18].

2. Polymorphous low-grade adenocarcinoma

Polymorphous low-grade adenocarcinoma (PLGA) is a malignant epithelial tumor characterized by cytological uniformity, morphological diversity, an infiltrative growth pattern and low metastatic potential the most common location of PLGA is the palate, although other locations have been described. It occurs more frequently in women affecting mainly the sixth and seventh decade of life^[19].

Other malignant neoplasm include:

3. Ductal cystadenoma.
4. Acinic cell adenocarcinoma.
5. Sialadenoma papilliferum.
6. Adenocarcinoma NOS.

Benign Mesenchymal Tumors

Mesenchymal tumors are composed of fibrous connective tissue, smooth muscle, skeletal muscle, blood and lymphatic vessels, adipose tissue, and peripheral nerve tissue. Overlying mucosa is normal unless traumatized; usually well-circumscribed, asymptomatic, slowly growing. Types of Benign Mesenchymal Tumors are listed below^[12].

6. **Irritation fibroma:** Firm or compressible
7. **Epulis fissuratum (inflammatory fibrous hyperplasia):** Located adjacent to flange of removable denture; firm or compressible
8. **Peripheral ossifying fibroma:** Occurs only on gingiva; firm; sometimes ulcerated; sometimes vascular; may move teeth
9. **Leiomyoma:** Firm; sometimes vascular.
10. **Rhabdomyoma:** Firm; located in areas of skeletal muscle
11. **Peripheral giant cell granuloma:** Occurs only on gingiva or attached alveolar mucosa; vascular
12. **Hemangioma:** Congenital; compressible; vascular; circumscribed or diffuse
13. **Lymphangioma:** Congenital; compressible; usually diffuse; not vascular
14. **Pyogenic granuloma:** Vascular; compressible; frequently has rapid growth, ulcerated, bleeds easily
15. **Lipoma:** Encapsulated; compressible; sometimes yellow
16. **Neuroma (traumatic or amputation neuroma):** Firm; usually tender to palpation; size of lesion is dependent upon size of involved nerve
17. **Neurofibroma:** Firm or compressible; non-tender; circumscribed or diffuse; may occur with neurofibromatosis
18. **Schwannoma (neurilemoma):** Encapsulated; firm; non-tender;
19. **Granular cell tumor:** Firm; sometimes overlying surface is rough
20. **Congenital epulis:** Firm; congenital; occurs only on attached alveolar mucosa.

TREATMENT OF PALATE NEOPLASMS

The main objectives of cancer treatment is to eradicate the cancer, preserve or restore form and function, minimize the sequelae of treatment and finally prevent any subsequent new primary cancers. Different treatment modalities serve these goals such as surgery, radiotherapy, chemotherapy, combined modality treatments and primary and secondary prevention strategies including lifestyle changes as well as chemoprevention.

Factors affecting choice of treatment are classified into ^[20]:

1. Tumor factors (location of the tumor (hard vs. soft palate), stage of the tumor, and pathologic type of the cancer)

2. Patient factors (age, general medical condition, tolerance of treatment, occupation of the patient, acceptance and compliance by the patient, lifestyle (smoking and drinking) and other socioeconomic considerations. In general, older age is not a contra-indicator for implementation of appropriate surgical treatment, etc.)

3. Physician factors (surgery, radiotherapy, chemotherapy, rehabilitation services, dental and prosthetic support, and psycho-social support are all crucial in bringing about a successful outcome of the therapeutic program).

In selection of optimal therapy for oral carcinoma one should consider these three sets of parameters in initial treatment planning.

SURGICAL APPROACHES

The factors that influence the choice of a particular surgical approach for primary tumors of the oral cavity are the

- Size of the primary tumor,
- Depth of infiltration,
- The site of the primary tumor (that is anterior versus posterior location), and proximity of the tumor to mandible or maxilla.

In addition to pre-operative clinical assessment of the primary tumor, examination under anesthesia is often indicated to accurately delineate the extent of the tumor. The proximity of the tumor to the maxilla or mandible mandates the need for adequate clinical and radiographic assessment to rule out the possibility of bone invasion.

The most commonly employed imaging studies are a panoramic radiograph of the mandible (Orthopantomogram).

In addition to this, a more detailed assessment of mandible invasion can be accomplished with a CT scan and a dental scan. On the other hand, magnetic resonance imaging provides a detailed assessment of the extent of tumor infiltration in the soft tissue.

Surgical access

The transoral approach is foremost used for premalignant lesions and small, superficial tumors of the anterior floor of mouth, alveolus and tongue. A more invasive approach becomes necessary for posteriorly located tumors or if there are limitations due to trismus or inadequate surgical exposure. The lip-splitting paramedian mandibulotomy approach is used for larger posteriorly located tumors of the tongue. The upper cheek flap and midfacial

degloving approaches are useful for gaining access to the maxilla ^[21].

A variety of surgical approaches are available for resection of the primary tumor in the oral cavity. The choice of a particular approach depends on the factors mentioned above, such as the site and size of the primary tumor as well as its depth of infiltration and proximity to mandible or maxilla. The surgical approaches commonly used are peroral, mandibulotomy, lower cheek flap approach, visor flap approach, and upper cheek flap approach ^[22].

Furthermore, Visor flap avoids a lower lip splitting incision and provides satisfactory exposure only for the anterior aspect of the oral cavity yet it results in numbness of the skin of the chin due to the necessity to divide both mental nerves. Similarly, a sublabial degloving approach avoids an upper lip splitting Weber-Ferguson incision for resection of tumors of the anterior part of the nasal cavity and the infrastructure of the maxilla ^[22]

A maxillectomy/ palatotomy

Palatotomy is a surgical procedure removing all or part of the hard or soft palate. The resulting defect makes swallowing, speaking, chewing, and the use of regular denture appliances almost impossible.

Nevertheless, A maxillectomy/ palatotomy prosthesis or "obturator" restores the surgical defect and aids in the function of speaking, chewing, or swallowing. It fills the void left by the surgery and artificially replaces loss of tissues and teeth ^[23] :

Fabrication of prosthodontic appliances Fabrication of obturators is usually accomplished in three phases ^[23] :

1. Immediate - This is the surgical prosthesis it will be placed at the time of surgery and is secured in place by either wires or small screws. It will remain in place until your 1st post op visit with the prosthodontist.
2. Transitional - this phase is started 10-14 days after surgery when surgical dressings or immediate prosthesis are removed. The transitional prosthesis is placed and modified until healing is complete. This phase may extend from 2-24 months.
3. Definitive - this phase begins when healing is complete and involves fabrication of prosthesis intended for long term use. Definitive treatment may involve fixed prosthesis (crowns) and / or removable prosthesis. Any phase of treatment may be altered dependent on the nature of the disease and its staging, radiation, chemotherapy, surgical complications, and the morbidity of the disease.

Prosthodontic treatment involves:

- ✓ Patient counseling and instruction
- ✓ Physical therapy (oral - physical)
- ✓ Dietary counseling

✓ Hygiene maintenance and instruction.

RECONSTRUCTIVE SURGERY

Resection of small parts of the upper gum and palate doesn't demand major reconstructive effect. On the other hand, those defects can be easily rehabilitated by a maxillofacial prosthetic device (dental obturator). On the other hand, larger defects of the upper gum and hard palate may be considered for immediate reconstruction using an osteocutaneous free flap from fibula, iliac crest or scapula^[24]. However for the elderly patients, repair of the large surgical defect of the upper gum and hard palate can be accomplished with a soft tissue free flap, such as a rectus abdominus or anterolateral thigh flap.

Postoperative surveillance

It's highly recommended that a follow-up examination is done every 2–3 months for the first year, 3–4 months for the second year, 4 months for the third year, and 5 months for the fourth and fifth years. This is mainly intended to minimize the risk of recurrence or the development of a new primary warrants. Hence, a close follow-up is a must for all individuals treated for oral cavity cancer.

Subsequently, patients are followed every 12 months. High-risk patients may be monitored more often while low risk patients may be monitored less frequently. Regular follow-up for over 10 years is indicated for all patients treated for cancer of the oral cavity^[25].

CONCLUSION

Cancer of the oral cavity is mostly trigger by smoking, alcohol abuse. The most common neoplasms of the hard palate are MSGTs and SCCs for the soft palate. Primary surgical resection with or without postoperative adjuvant therapy remains the upmost recommended treatment approach. It is also critical to have a Multidisciplinary treatment to help improve the oncologic and functional results in oral cancer patients.

The study was done after approval of ethical board of King Abdulaziz university.

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