

Maxillofacial Prosthodontics & Oral Oncology

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Maxillofacial Prosthetics is a subspecialty of Prosthodontics that involves rehabilitation of patients with defects or disabilities that were present when born or developed due to disease or trauma. Prostheses are often needed to replace missing areas of bone or tissue and restore oral functions such as swallowing, speech, and chewing. In other instances, a prosthesis for the face or body may be indicated for cosmetic and psychosocial reasons. Prosthetic devices may also be created to position or shield facial structures during radiation therapy.

- 1 Year fellowship program upon graduation of a Prosthodontics residency
- Treat a wide range of patients
 - *Genetic anomalies*
 - *Trauma victims*
 - *Cancer and other disfiguring diseases (Most of our population)*
- Able to bill medically and dentally (Medical is always a challenge, but can be done)

Treatments available for the Maxillofacial Prosthodontic Patient:

- Oral Oncology Treatment
 - *Pre-radiation dental clearance*
 - *Extensive counselling*
 - *Coordination of appts between dental specialties*
 - *Radiation mouth guards*
 - *Radiation tongue positioning splints*
 - *Fluoride Gel Carriers*
 - *Obturator for closure of oral defects acquired from oncologic resection*
 - Surgical (Immediate post op – used for 10 days) – No teeth added – delivered to our surgeons for placement
 - Interim (Use for 10 days to 4 months) – Anterior teeth added
 - Definitive (Use upon completion of healing) – All teeth included
 - *Close follow up appointments every 3 weeks during radiation treatment or more frequently if surgical resection/reconstruction is required*
- Surgical guides for trauma/cancer
- Mandibular Repositioning Devices – In the case a portion of the mandible needs to be resected and cannot be reconstructed
- Mandibular Resection Prostheses
- Mandibular Advancement Devices for Obstructive Sleep Apnea
- Speech appliances – Palatal lift prosthesis, Speech bulb prosthesis, Palatal Augmentation prosthesis, tongue prosthesis – Used for a wide range of defects related to cancer, genetics, or trauma
- Facial Prosthesis – Orbital, Ocular, Nasal, Auricular, Large facial prosthesis
- Combination facial and intraoral prosthetics

Head and Neck cancers account for about 4% of all cancers diagnosed in the US.
Twice as common in Men than Women.
Diagnosed more often in people above 50 years old.
Oral, Oropharyngeal and voice box cancers are most common. Paranasal sinuses, nasal cavity and salivary gland tumors are less common.

Most common Types of Head & Neck Cancers:

- Squamous Cell Carcinomas
- Ameloblastomas
- Mucoepidermoid Carcinomas
- Adenoid cystic carcinomas
- Pleomorphic Adenomas
- HPV related oral or oropharyngeal carcinomas

Most common Types of Facial Cancers:

- Basal Cell Carcinoma
- Squamous Cell Carcinoma
- Melanomas
- Retinoblastomas

Predisposing factors

- Tobacco use
- Alcohol use
- Betel Quid use
- HPV infection, especially Type 16
- Epstein Barr Virus infection
- Occupational exposures to harmful chemicals inhaled
- Radiation Exposure
- Ancestry
- Underlying genetic disorders

Cancers of the head and neck are generally treated with surgery, chemotherapy, radiation therapy, immunotherapy or a multimodality combination of approaches.

Multidisciplinary Approach to treatment involves a combination of the following specialists:

OMF surgeons and microvascular trained OMFS, Periodontists, Orthodontists, Pediatric dentists, Endodontists, Prosthodontists, Maxillofacial prosthodontists, Dental Hygienists, Nurses, Patient coordinators, Anaplastologists, Dental lab technicians & coordinators, Oral oncologists, Otolaryngologists (ENT), Plastic surgeons, Radiologists, Oncologists, Pathologists, Immunologists, Nutritionists, Audiologists, Centers for Cleft lip and palate, Speech, language and swallowing pathology and rehab, H&N Oncology support groups

Components of a thorough H&N cancer screening:

- Most common site for OC – Lateral Borders of the tongue, although it can occur anywhere i.e. Lips, FOM, gums, tonsils, oropharynx, cheek, ROM, salivary glands, posterior to the wisdom teeth
- Be extremely thorough
 - *Start outside and work in*
 - *TMJ palpation*
 - *Temporal Lymph nodes*
 - *Posterior auricular nodes*
 - *SCM muscle*
 - *Thyroid area*
 - *Swallowing*
 - *Lips*
 - *Back of the throat*
 - *Stick tongue out and say “Ahh”*
 - *Evaluation of the tonsillar region*
 - *Evaluation of the posterior oropharynx*
 - *Tongue – hold with gauze and check the base of the tongue on either side and examine the tongue in its entirety*
 - *Floor of mouth visually and palpable*
 - *Gingival and alveolar tissues around teeth*
 - *Palate hard and soft*
 - *Buccal mucosa*
 - *Distal to the most distal molars*
- Looking for anything abnormal – Red lesions, White, combo of both, black, purple, brown, papillary like, ulcerations
- Most commonly I see white (or Leukoplakia) like lesions or ulcerated lesions that do not resolve with time or have a known traumatic cause

I follow the 2 week rule. If I see something questionable, I will follow up in 2 weeks. If the lesion is still present and I can't find a reason for it that is not cancerous I'm sending for a biopsy.

- Cancers of the head and neck are generally treated with surgery, chemotherapy, radiation therapy, immunotherapy or a multimodality combination of approaches.

By far the radiation treatment is going to have the most detrimental side effects to the head and neck region. 6-7 weeks of daily radiation therapy on average.

Side effects can be broken down into short term side effects and long term side effects:

Short term side effects of radiation (last about 2-3 months)

- Oral mucositis
- Radiation burns on the skin
- Altered sense of taste/metallic or cardboard taste
- Fungal infections

Long term side effects of radiation

- Xerostomia – due to almost total obliteration of the parotid glands and other salivary glands in the field of radiation/ much less common for hyposalivation
- Radiation related dental caries
- Trismus
- High risk for Osteoradionecrosis of the jaws up to 40-50% in patients who have not undergone a pre-radiation dental examination. Only about 4-8% of patients who have had a pre-radiation dental examination.

Considerations for Treating these patients in a general practice setting:

- Every H&N radiation patient needs a pre-radiation dental eval to determine which teeth have a poor prognosis and need to be removed. Any tooth that may not last the rest of the patient's life within the field of radiation should be planned for extraction.
- Extractions should occur minimum of 10-14 days prior to initiation of radiation treatment so initial healing can occur.
- If planning to treat the patient make sure close communication exists between you, the H&N surgeon and the Radiation Oncologist.
- Prescribe every patient: Prevident 5000 for dry mouth (neutral or fruit flavor – Mint burns them too much) or Clinpro 5000
- Fluoride gel carriers with Prevident gel to wear every night for the rest of their life
- MI Paste + to apply for extra boost of FI
- Biotine Products for Xerostomia
- Bring water with them everywhere
- Brush and floss after every meal
- Use of water pic if manual dexterity is an issue (Addition of 1 tsp of baking soda – to neutralize acidic environment)
- Baking soda mouth rinses with 1tsp baking soda per cup water.
- 3 month recall exams and cleanings with topical FI application
- Jaw stretching exercises especially if Pt. needs radTx. As much as humanly possible. Trismus can become devastating.
- Magic mouthrise – (Ex. 1/3 Lidocaine, steroid, antifungal) for oral burns/lesions that appear during treatment
- Kamillosan liquid or salve – (Chamomile extract has soothing effects for radiation related mucositis)
- Aloe vera lotions for the skin related radiation burns.
- MOST Importantly!!! – NO ELECTIVE DENTAL SURGERY INCLUDING EXT, IMPLANTS, GINGIVAL SURGERY, ALVEOLOPLASTY FOR LIFE – 40 - 50% RISK OF DEVELOPING AN ORN AND NEEDING A MAJOR SURGERY IF SURGICAL PROCEDURES OCCUR AFTER RADIATION.

If the patient does develop severe caries post radiation treatment. Some treatments available:

- RCT hopeless teeth and Decoronate
- There are ways to extract teeth safer than your average extraction with these patients but best to refer to OMFS for these procedures
- If There is no option but to extract due to inability to have Endo or VRF or pain
 - HBO Therapy for 30 sessions – Literature is inconclusive on if this is helpful or not
 - *Extraordinarily expensive like \$30,000*
 - Drug regimen
 - *1 Week Before extraction: Pentoxifylline 400mg BID, Tocopherol 400mg BID, PenVK 500mg QID, CHX rinse (0.12%) BID*
 - *7 Weeks post extraction: Pentoxifylline 400mg BID, Tocopherol 400mg BID, PenVK 500mg QID, CHX rinse (0.12%) BID*

Hygiene Considerations for prophylaxis:

- Schedule longer visits, as a simple prophylaxis can and does cause more pain for these patients. Especially the patients suffering from severe trismus/mucositis.
- Consider hand scaling if there is a large communication present between the oral cavity and the sinus cavity that was left as a result of surgical procedures.
- If Cavitron/Piezo scaling is necessary, especially for the patients with partial or complete hybrid prostheses, consider taking a 4x4 gauze covered in copious amounts of Vaseline and inserting it into the defect site to scale the teeth to prevent regurgitation.
- Do your best with cleaning as it can be a challenge to reach some teeth.
- Topical Fluoride varnish should be applied after every prophylaxis.
- For the first 2 years during and after oncologic treatment I recommend prophylaxis every 3 months. If the patient is doing well after the first two years, I put the patient on a 6 mo. Hygiene regimen.
- Encourage patients to get dental needs completed quickly after discovery of dental caries to prevent further damage and possibility of developing a non-restorable tooth that could and does lead to ORN.
- Encourage patients to constantly do jaw stretch exercises to prevent or lessen the burden of trismus.
- Encourage the patient to use sinus rinses upon healing from surgery if it is ok with their head and neck surgeon. i.e. Netti pot, “snot rockets”, electric sinus rinses. Distilled water only and saline packets.

Hygiene Considerations for maintenance and care of facial prosthetics:

- Facial prosthetics have an average lifespan of 2-3 years.
- They can cause fungal infections or skin irritation if not properly maintained and replaced, especially if prosthesis is adhesive retained as opposed to implant retained.
- I recommend maintenance appointments for facial prosthetics every 6 months.

- Defect sites should be cleaned with antimicrobial soap and warm water.
- If the patient has crusted build up it can be removed by using pediatric grade mineral oil on a cotton tip applicator or gauze to dissolve and remove.
- Implant components should be scaled with an ultrasonic scaler with chlorhexidine/water mixture and an implant plastic scaler tip. Again, if there is a large defect site place a well vaselined 4x4 or 2x2 gauze in the defect site. Even with small defect sites this is a good idea to cover the site, especially if you do not know where the hole leads.
- Prosthetics themselves should be removed and cleaned daily with medical grade adhesive remover and antimicrobial soaps
- Once a week I recommend cleaning the prosthesis with isopropyl alcohol.
- Bleaches should not be used to clean prosthetics.

