His Mouth

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As adopted by the 1997 American Dental Association House of Delegates, dentistry is defined as the evaluation, diagnosis, prevention, and/or treatment (*nonsurgical*, *surgical*, *or related procedures*) of diseases, disorders, and/or conditions of the oral cavity, maxillofacial area, and/or the adjacent and associated structures and their impact on the human body, provided by a dentist, within the scope of his/her education, training, and experience, in accordance with the ethics of the profession and applicable law. In addition to general dentistry, the American Dental Association (ADA) currently recognizes the following dental specialties:

1. Pedodontics (*children*)
2. Orthodontics and dentofacial orthopedics (*braces*)
3. Endodontics (*root canals*)
4. Periodontics (*gums*)
5. Prosthodontics (*fixed and removable dentures*)
6. Oral and maxillofacial surgery (*OMFS*)
7. Oral and maxillofacial radiology
8. Oral and maxillofacial pathology
9. Dental public health (*dental epidemiology and community health policies*)

Note that "cosmetic dentistry" is NOT a recognized dental specialty!

While that definition seems relatively straightforward in print, in actual practice it can be a confusing miasma for both patients and healthcare providers to determine when an oropharyngeal condition is best treated by a dentist or physician. Equally important is the confusing issue of whether treatment should be paid for by dental or medical insurance.

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For example, a patient is in a bicycle accident not protected by a helmet and sustains Le Fort II fx, nasal fx, midline AP palatal fx, mandibular condylar fx, mandibular angle fx, mandibular midline symphysis fx, maxillary and mandibular alveolar ridge fx's, several tooth avulsions, multiple coronal fractures into dentin and pulp of various teeth, and extensive facial and perioral lacerations. Treatment includes an initial major multi-hour surgery to reduce and stabilize the bone fractures, repair soft tissue lacerations, as well as extract all non-restorable teeth. A couple of weeks after the initial surgery, endodontic treatment is performed on the teeth with exposed pulps; dental restorations are placed to cover dentin and repair coronal fractures, along with interim fixed and removable partial dentures to restore some oral function and aesthetics. Several months later, implants are inserted to more definitively replace the missing teeth, followed by implant-supported crowns and bridges after several additional months of healing. Over the course of recovery, this patient also benefited from the care of a physical therapist well versed in head and neck injuries, as well as an orthodontist. Certainly an OHNS/ENT physician, facial plastics surgeon, or OMFS could provide the initial acute surgical care, but which provider is going to coordinate and provide the requisite follow-up reconstructive care that may take up to 24 months to complete in such situations? Will medical or dental insurance pay for all these very expensive services?

Another patient had oropharyngeal cancer treated with surgical resection of the tumor and extraction of all nonviable teeth, head and neck radiation therapy, and chemotherapy. The patient was advised to have professional dental prophylaxis every 2–3 months due to the radiation-induced xerostomia, but unfortunately the patient's dental insurance plan only covered two dental cleanings a year, and the patient did not have sufficient disposable income to afford the additional suggested cleanings. Several dozen months after surviving cancer, the patient developed multiple painful dental caries extending the pulp, resulting in dental abscesses and requires endodontic treatment on 17 teeth along with 21 crowns. The patient's medical insurance carrier stated these were dental problems and refused to offer coverage. The patient's dental insurance provider stated the problem was a result of the patient's cancer, so treatment should be covered by the medical insurance; complicating the issue is the fact that the patient only had a $1500 maximum dental benefit per year which would not adequately cover the necessary costs in any event. Unfortunately the patient did not have $50,000 lying around to pay for this care. How will this patient be able to afford the necessary care to get out of pain and restore normal oral function?

Since the teeth are part of the maxilla and mandible—which incidentally are anatomically attached to and physiologically part of the rest of the body—it would seem much more logical and efficient if all healthcare needs, including those of an odontogenic origin, would be covered by a patient's health insurance. The current system of having dental insurance separate and not integrated with overall healthcare insurance does not make any logical sense.

This chapter will provide a brief overview of many common oral issues that we have seen in both our hospital dental clinic and the author's private practice; it is not meant to be a comprehensive source for dental research, but rather a practical

overview. It was primarily extracted from a series of lectures on oral health concerns given annually at Stanford Medical School by the author.

What can a person do to help ensure a lifetime of healthy teeth? Like many other aspects of healthcare, most dental problems can be broken down to those injuries caused by outside factors, such as trauma and those problems caused by lifestyle choices. It turns out that most dental problems are *PREVENTABLE* with a modicum of daily care! A man's journey to dental health starts at a young age; parents can help their children develop healthy teeth by establishing a daily home care regimen once the teeth begin erupting, encouraging a diet that is low in sugar and acids, implementing biannual visits to the dentist beginning around age 3–4 years old for professional care including placement of sealants as posterior adult teeth erupt, initiating orthodontic care to ideally align teeth if needed, and modeling healthy lifestyle choices.

Good daily home dental hygiene care includes:

- Carefully brushing all the teeth for at least 2 min with a manual or powered brush with soft, compact bristles, at least once and preferably twice per day—also be sure to replace the toothbrush/brush head every 3 months or so
- Meticulous daily flossing of all teeth
- Use of a non-alcohol fluoride rinse or gel each day
- Use of a antibacterial mouth rinse, if needed
- Adherence to a healthy diet low in sugars and acids

Recommended periodic professional dental care includes:

- Routine radiographic studies (*full mouth X-ray (FMX) q/5 years, bitewings (BW) q/12–30 months*)
- Routine clinical examination (*q12 months*)
- Routine dental prophylaxis (*q3–6 months*)
- Sealants and preventive resin restorations (PRN)

Sadly, most research and surveys on oral health by organizations such as the ADA and CDC demonstrate that men are at higher risk for intraoral problems and also fail to care for their dentition as well as women. Men frequently make lifestyle choices that can place the mouth at risk: contact sports, tobacco chewing, excess alcohol intake, smoking various substances, and over working—all of which can lead to systemic medical issues and oral health problems. For example, men have higher rates of oral cancer, as well as increased likelihood of cardiovascular disease, both of which are often treated with medications that can cause xerostomia. According to the American Academy of Periodontology, females are twice as likely to seek routine professional dental examinations compared to males and are 26 % more likely to perform recommended daily home care; in addition, men are much less likely to follow through with completing proposed treatment.

Note that home oral healthcare can become more problematic in disabled and elderly patients. Decreased visual acuity associated with normal aging can limit the ability of older patients to see plaque and tarter. Reduced manual dexterity can also be

a significant issue with disabled and geriatric patients, as problems such as arthritis, Parkinson's, and stroke can interfere with the ability to properly brush and floss. Powered toothbrushes are often beneficial at improving plaque removal; flossing tools can also be helpful. Cognitive changes associated with mental illness as well as aging frequently impact home oral healthcare. Older patients may exhibit short-term memory loss; these patients may simply forget to brush and floss. Depression can also impact home care. More serious cognitive functional challenges such as severe autism, schizophrenia, senility, dementia, and Alzheimer's can preclude patients from being able to care for themselves, cause difficulty for in-home caregivers, and limit the ability of these patients to receive dental care in a routine outpatient setting.

Access to dental care can also become an issue. During the majority of their lives, most adults exercise a great deal of control over their oral health status and retain full responsibility for their home healthcare. However, in times of disability and when reaching geriatric stages of life, some patients may no longer be able to drive themselves to dental appointments, may have reduced mobility, may frequently become dependent upon others for their daily living needs, and may often feel they have lost their ability to influence and control their dental health status. Currently in America, many caregivers assisting disabled and elderly patients are immigrants that speak English as a second language. Dental care may not have been a cultural priority in many caregivers' homelands, so caregivers may need to be educated on the expected standards of dental care in the United States, so they may properly assist with the required routine dental needs and daily home care regimen necessary to maintain the oral health of their elderly patients. Over 1.5 million elderly Americans are living in assisted care facilities. Over 60 % of these facilities do NOT have a dentist either on staff or on call to treat inpatients. A survey of skilled nursing facilities in California found that over 30 % of patients were in need of emergency dental care, and over 90 % of nursing home residents required some form of dental therapy. Financial barriers blocking appropriate dental care are also a significant concern for disabled and geriatric patients. Many adults lose their dental insurance benefits upon retiring from work and Medicare does NOT cover dental procedures. Likewise, during times of temporary or permanent disability, disposable income may be reduced. Many disabled and elderly patients present with challenging oral health conditions that require costly, complex, multidisciplinary care to resolve. Unfortunately many such patients no longer have the financial resources to fund such efforts and are forced to defer comprehensive dental care.

Obviously avoiding tobacco products, limiting alcohol intake, not placing very high temperature items in the mouth (*including smoke, liquids, and food*), not engaging in tooth damaging habits or body modifications (*such as tongue piercings and cheek gauging*), and skipping other behaviors potentially injurious to the dentition can all be of help in preserving a healthy oral environment. Likewise, given the high incidence of head and maxillofacial trauma, the severe potential risks, along with enormous personal and societal costs, taking a basic protective step like wearing a helmet is appropriate for ANY activity involving motion and the risk of falling or being struck, particularly common activities like—bicycling, rollerblading, skate boarding, skiing, snowboarding, etc. In addition to a helmet, wearing protective eyewear and an athletic mouth guard can also be prudent for many other activities and sports.

Numerous systemic medical problems impact oral health, particularly as patients age:

- Diabetes
- Cancer
- Hypertension
- Cardiovascular disease
- Pulmonary problems
- Organ transplant
- Osteoporosis
- Joint replacement
- Alzheimer's
- Parkinson's
- Depression and other mental health conditions
- Sleep apnea
- Vision issues
- Arthritis
- Sjögren's syndrome

Orofacial pain can be placed into two categories: odontogenic pain that arises from the teeth or supporting structures and non-odontogenic pain. Diagnosis can be complicated by pain referral and other factors; however, in most cases of odontogenic discomfort, the dental cause can eventually be found with careful history, thorough exam, appropriate imaging, and a degree of patience.

Common odontogenic causes of orofacial discomfort:

- Caries/cavities/decay
- Broken or lost dental restorations
- Dentin exposure
- Attrition/erosion of teeth
- Pulpitis/abscesses
- Periodontal problems
- Cracked tooth syndrome
- Gross tooth fracture
- Vertical and horizontal root fractures
- Malocclusion
- Congenital malformation of teeth
- Tooth displacement trauma

Examples of non-odontogenic causes of orofacial discomfort:

- Sinusitis/allergic rhinitis
- Myofascial pain dysfunction of the muscles of mastication (*MPD*)
- Temporomandibular disorders (*TMD/TMJ disorders*)

- Recurrent aphthous ulcers
- Herpetic gingivostomatitis
- Herpes zoster (*shingles*)
- Maxillofacial trauma
- Sialadenitis
- Maxillofacial pathology
- Neuralgia and headaches
- Angina pectoris (*radiating to left posterior mandible*)

Note that patients receiving immunosuppressive therapy are at considerable risk for sepsis if active odontogenic disease is not identified and treated before initiation of care. Patients requiring dental screening prior to medical care include those having:

- Chemotherapy
- Radiation therapy to head and neck
- Bone marrow transplant (*BMT*)
- Solid organ transplant (e.g., *heart, kidney, liver*)
- Cardiac prostheses (e.g., *valve replacement, LVAD*)
- Orthopedic appliances (e.g., *total joints*)

Dental caries is a complex disease with many contributing factors. It is a transmissible bacterial infection, caused primarily by *Streptococcus mutans*, *Streptococcus sobrinus*, and *Lactobacilli*, as well as *Actinomyces viscosus* and *Nocardia* spp. The enamel and dentin are demineralized and destroyed by acid, primarily through bacterial fermentation of food debris—principally carbohydrates. When the oral pH drops below 5, then demineralization exceeds the natural remineralization, resulting in caries formation. Caries confined to the enamel may remineralize in the right circumstances, but once caries extends into the dentin, a dental restoration is required to restore the tooth and prevent the caries from reaching the pulp. Once the caries reaches the pulp, the only treatment options are endodontic therapy or tooth extraction. Fortunately dental caries is completely preventable with good home care and regular professional dental visits. One of the best clinical tools available for limiting dental disease is the Caries Management by Risk Assessment (CAMBRA) protocols developed over the last decade or so.

Periodontitis is a bacterially induced, localized, chronic inflammatory disease that destroys the connective tissue and bone that support the teeth. With good home care, it is completely preventable. Periodontal disease is the most common reason adults over the age of 30 lose teeth; approximately 50 % of older adults suffer from periodontal disease. Common periodontal problems include:

- Gingivitis
- Necrotizing ulcerative gingivitis (*NUG*)
- Periodontitis
- Periodontal abscess

- Pericoronitis
- Gingival recession/root exposure
- Recurrent aphthous ulcers
- Herpetic stomatitis

Once it progresses, periodontitis can be difficult to treat, so the key is prevention and early intervention!

Fortunately most odontogenic infections still respond to penicillin (*Pen VK 500 mg, po qid for 5–7 days*). Metronidazole (*500 mg, po qid for 7–10 days*) can be added for more virulent mixed infections. For more severe odontogenic infections, Augmentin (*875 mg, po bid for 7–10 days*) also works well. If allergic to penicillin, then clindamycin (*300 mg, po tid for 5–7 days*) is a good choice. Other common options include azithromycin and clarithromycin. Be sure to review current guidelines from the American Dental Association, American Heart Association, and the American Academy of Orthopedic Surgeons, as routine antibiotic prophylaxis for dental treatment for patients with heart murmurs and prosthetic joints are no longer recommended.

Edentulism refers to the loss of adult teeth and can be either partial or complete. Partial edentulism can place patients at risk for collapse of the dental arch form, increase the risk of periodontal disease, and result in higher dental decay rates. Both partial and complete edentulism can cause difficulties with eating and nutritional intake, interfere with normal speech and phonation, precipitate jaw bone resorption, cause problems with the TMJ and muscles of mastication, and alter normal facial appearance resulting in negative psychosocial effects, poor self-image, and depression. Edentulous patients can be treated using a traditional removable prosthesis for far less cost than with implant prosthetics or fixed crown and bridge restorations. A complete denture (*CD*) or partial removable denture (*RPD*) can cost $2500 or less. Although offering a reduced cost, removable prostheses are unfortunately not a panacea, as they result in other sequela. Most edentulous patients prefer the stability and security of implant-supported prostheses whenever possible—particularly on the mandible. Implants also have the added advantage of preserving residual bone. However, implants are more invasive, costly, and time consuming than removable prostheses. Looked at in aggregate, implant-retained prosthesis are clearly the best current option for restoring function in most patients suffering from tooth loss. Unfortunately, patients who have received radiation treatment for oropharyngeal cancer and those who have had bisphosphonate treatment may not be candidates for implants. After oropharyngeal radiation therapy, treatment of edentulism should be deferred for several months. In addition, post-cancer treatment sequelae can significantly impact prosthetic options due to limited mouth opening, insufficient residual tissue to support prosthesis, mucositis preventing use of removable prostheses, and radiation damage limiting reconstructive surgical options—including placement of dental implants. In some cases functional limitations occurring in the oral cavity as a result of oropharyngeal cancer treatment may prevent ANY dental prostheses from being successfully utilized.

Recurrent aphthous ulcers often occur in response to stress and appear as discrete, shallow ulcerations that are often quite painful. They are usually located on moveable, unattached intraoral mucosa surfaces—initially presenting with an erythematous halo then turning while. They are typically at a different location each episode and are usually self-limiting in 7–10 days. There is no effective treatment, just palliative care using topical medications.

In contrast, herpetic gingivostomatitis is caused by the HSV (herpes simplex virus). A brief period of prodromal tingling and itching may occur. The primary form is accompanied by fever and pharyngitis, followed by the eruption of small irritating vesicles on the oral mucosa, especially the tongue, gums, and cheeks. Ninety percent of the population has HSV ABs; 40 % develop secondary HSV infection. The secondary form repeats in the same location and generally manifests only as pain and vesicles. These diffuse vesicles form on the attached (*bound down*) mucosa and then rupture, leaving painful ulcers, followed by a yellowish crust. Other findings can include submaxillary lymphadenopathy, increased salivation, halitosis, anorexia, and keratoconjunctivitis. Treatment includes topical and systemic antiviral agents, no steroids.

Herpes zoster or shingles is another virus that can occasionally manifest as pain or sores in the mouth, typically in older adults. Before cutaneous signs emerge, it can present a confusing mix of symptoms that can mimic odontogenic disease. Herpes zoster classically presents as small red nodules erupting unilaterally around the thorax or vertically on the arms and legs, which rapidly become vesicles filled with clear fluid or pus; these vesicles dry and form scabs about 10 days after eruption. However, herpes zoster may produce painful vesicles in the oral cavity on the buccal mucosa, tongue, uvula, pharynx, or larynx. Fever and general malaise accompany pruritus, paresthesia or hyperesthesia, and tenderness along the course of the involved sensory nerve. Treatment includes supportive therapy and systemic antiviral agents.

Candidiasis can afflict many people and is a common infection during chemotherapy. It characteristically produces soft, elevated plaques on the buccal mucosa, tongue, and sometimes the palate, gingivae, and floor of the mouth; the plaques may be wiped away. The lesions of acute atrophic candidiasis are red and painful. The lesions of chronic hyperplastic candidiasis are white and firm. Localized areas of redness, pruritus, and a foul odor may be present. *Treatment includes topical and systemic antifungal agents.* Do NOT use the destructive sugar containing oral troches and rinses! Finding nonsugar-containing oral medications can be challenging. For years the best option for a nonsugar-containing oral antifungal preparation was for patients to place nystatin vaginal pastilles in their mouth and let them dissolve. Unfortunately, this formulation is no longer available. Sadly the current nystatin suspension and clotrimazole oral troches contain sugar compounds which in debilitated and immune-compromised patients can rapidly decay teeth in a matter of weeks. The best currently available sugar-free options are to prescribe either:

- Nystatin USP powder and allow patients to mix it with water prior to each use (*RX: dispense 60 g powder*, *have patients dissolve 1 tsp of powder into 2–4 oz water*, *and swish for 60 s QID*).
- Miconazole seven vaginal suppository dissolved in the mouth QID.

Xerostomia (*chronic dry mouth*) affects numerous people, including approximately 30 % of persons over the age of 65. Xerostomia can lead to a variety of problems including dysphasia (*difficulty in swallowing*), dysgeusia (*inability to taste*), dysphonia (*difficulty in speaking*), halitosis (*bad breath*), rampant ectopic tooth decay, inability to wear dentures, and an increase in oral infections, especially yeast (*thrush caused by Candida albicans*).

Xerostomia can be caused by a variety of medications, including some antihistamines and decongestants, certain antidepressants, anticholinergics, anorexiants, antihypertensives, antipsychotics, anti-Parkinson agents, diuretics, and some sedatives, along with some illegal recreational drugs including methamphetamine, cocaine, and ecstasy. A variety of medical conditions can also induce xerostomia, including radiation therapy for the treatment of head and neck cancer, chemotherapy for cancer, poorly controlled diabetes, sarcoidosis, Sjögren's syndrome, systemic lupus erythematosus (*SLE*), obstructive sleep apnea (*OSA*), and rheumatoid arthritis (*RA*).

There is no definitive treatment for xerostomia; however, multifocal palliative care includes:

- Increased intake of cold, nonsugar-containing fluids, including water.
- Chewing/sucking on sugarless gum or candy (*particularly those with xylitol*).
- Hourly use of saliva substitutes and moisturizing agents (*Biotene, Oasis, etc.*) as needed.
- Daily application of non-alcohol topical fluoride preparations (*ACT, Phos-Flur, Gel Kam, Prevident, Natural Dentist, etc.*); consider fluoride tray use.
- Daily use of alcohol-free antibacterial rinses (*0.12 % chlorhexidine gluconate USP: NDC 052376-021-02*).
- Salivary gland inductive medications (*pilocarpine and cevimeline HCl*).
- Meticulous daily home oral hygiene care with flossing and brushing:
  - Consider power brush (Oral B-Braun or Philips Sonicare) with small compact soft heads changed q3 months or extra soft compact manual brush (e.g., Nimbus).
  - Consider flossing tool (Johnson & Johnson Reach Access).
  - Use dry cotton swabs (Q-tips) to clean sensitive areas.
- Increased frequency of dental prophylaxis (*q3 months*).
- Low-sugar/low-acid diet.

It is critical for patients with xerostomia to avoid food with high sugar and high acid. Beware of hidden sources (*simple carbohydrates, corn syrup, low pH, etc.*). For example, 20 oz of one of the most common sports drinks has a pH of 3.3 and 34 g of sugar; soft drinks are even worse—20 oz of an average cola has a pH of 2.46 and 69 g of sugar. Likewise, some common nutrition beverages used in healthcare have 20 g of sugar, while others only contain only 1 g; patients and providers need to be vigilant.

Oral mucositis is a painful condition that can severely compromise oral and pharyngeal function, inhibit adequate nutrition and hydration, as well as lead to local

and systemic infections. It effects 40 % of chemotherapy patients and 80 % of head and neck radiation therapy patients. It can make oral tissue so painful and friable that removable prosthetic devices cannot be tolerated. Treatment includes aphthous ulcer rinse, alcohol-free CHG rinse, viscous lidocaine, 0.1 % hydrocortisone rinse, Caphosol rinse, MuGard rinse, NeutraSal rinse, GelClair, and Palifermin KGF.

Patients are often referred to our clinic after being told they have TMJ. My response is typically yes, you have two of them, which often leaves the patient somewhat baffled until they are informed that TMJ actually means temporomandibular joint—kind of like saying you have a knee or elbow joint. Temporomandibular disorder (TMD) is the more accurate designation for discomfort emanating from the TMJ; TMD is typically caused by either injury to the supporting soft tissue or damage to the actual joint. The vast majority of patients we see for purported TMJ problems actually have very little issues with their joint but in fact have problems with the muscles of mastication—referred to as myofascial pain dysfunction syndrome (MPD). Clenching and bruxism are associated with MPD and situational stress is often a contributing factor. MPD treatment is almost always NONSURGICAL and includes:

- NSAIDs and short-duration muscle relaxants—benzodiazepines work well for this role (e.g., *Temazepam 30 mg po QHS for 7 days*).
- Moist heat alternating with ice to affected muscles.
- Limit opening and unnecessary function.
- Soft diet.
- Bite splint/night guard.
- Physical therapy with a provider well versed in head and neck problems.
- Steroid, local anesthetic, or Botox injections in muscles.

Conversely, damage can occur to the actual TMJ resulting in temporomandibular joint internal derangement, including intra-articular damage, with disk displacement, joint capsule rupture, or other pathologic changes in the TMJ. These are frequently associated with traumatic injury or blow. Another major cause is degenerative joint disease (DJD). Asymptomatic joint noises are typically not a cause for concern and are not always predictive of future problems. Note that temporomandibular joint internal derangement therapy is frequently SURGICAL:

- Initially may be treated as MPD; if no resolution, then surgery
- Arthrocentesis, steroid injection, manipulation under sedation or GA
- Arthroscopy
- Arthroplasty: disk repositioning, diskectomy, articular eminence recontouring, and total joint replacement
- Fracture repair with MMF, rigid fixation

Osteonecrosis of the jaw results in jaw bones being unable to meet increased repair needs following tooth removal, infection, and even the simple day-to-day physiological stress of mastication. ONJ leads to bone pain, bone destruction, and

overlying tissue loss and results in various conditions that result in the impairment of blood supply to bone. ONJ is defined as an area of exposed bone in the jaw region that does not heal within 8 weeks of identification. During the past century, the primary cause of ONJ was vascular disturbances in the jaws following radiation therapy for cancer treatment. These cases of osteoradionecrosis generally respond to hyperbaric oxygen treatment, antibiotics, and non-alcohol chlorhexidine gluconate rinses to prevent the onset of osteomyelitis. In the last decade, there has been a dramatic surge of ONJ in patients that have NOT received radiation treatment. Beginning in 2003, the first case studies linking bisphosphonate use to the increased incidence of non-radiation related ONJ cases were published. Since then, several antiresorptive and anti-angiogenic therapies have been linked to medication-related osteonecrosis of the jaw (MRONJ). MRONJ typically affects the mandible twice as frequently as the maxilla; however, both jaws can be involved. Concomitant corticosteroid use, poor oral hygiene, and smoking seem to increase the risk of MRONJ. There is NO current consistent effective treatment for MRONJ; classic ONJ treatments tend to be ineffective for MRONJ, and cessation of antiresorptive and anti-angiogenic therapy prior to oral surgery does not seem to reduce the incidence of MRONJ. Thus, it is CRITICAL that any patient in need of antiresorptive and anti-angiogenic treatments that are linked with MRONJ receive a thorough clinical and radiographic dental examination, along with any required dental surgical care prior to the initiation of such treatment.

Suggested Reading

Diringer JD, Phipps K, Carsel B. Critical trends affecting the future of dentistry: assessing the shifting landscape. ADA; 2013.

Young DA, Featherstone JDB, Roth JR. Curing the silent epidemic: caries management in the 21st century and beyond. CDA J. 2007;35(10):681–5.

Regezi JA, Sciubba JJ, Jordan RCK. Oral pathology–clinical pathological correlations. Saunders; 2008.

Sollecito TP, et al. The use of prophylactic antibiotics prior to dental procedures in patients with prosthetic joints: evidence-based clinical practice guideline for dental practitioners—a report of the American Dental Association Council on Scientific Affairs. JADA. 2015;146(1).

AAOMS. Position Paper: Medication related osteonecrosis of the jaw—2014 update.