



# ORAL, FACIAL and DENTAL IMPLANT SURGERY UPDATE

*"Personalized care in an increasingly impersonal world"*

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## Dr. B's Corner

The purpose of this quarterly newsletter is simply to enhance the dental quality of life of local residents by keeping doctors informed and educated on the latest research and techniques that are available in the world of oral and maxillofacial surgery. While many dentists strive to exceed the standard of care every day with every patient, we are often lacking good scientific data to support our actions. Rather, we make decisions based on anecdotal evidence or individual experiences. How many times do we tell our patients, "It's been my experience..." or "In my hands..." We tend to work in our own little world and gain knowledge from occasional courses that interest us; usually not the latest in oral surgery. We owe it to our patients to be better informed so that we make better decisions that are based on good science and ultimately lead to better patient care.

How many of you read last month's Journal of Oral and Maxillofacial Surgery or attended lectures on managing a post injection lingual anesthesia? Is an apicoectomy an apicoectomy or are there new techniques to enhance chances of success? Why are we condemning teeth sooner than in the past? What are the things to look for in a patient that had head and neck cancer and received post-operative radiation 12 years ago? What protocol do I need to follow for a needle stick?

These are just a few of the real things we face in our practices every day. Could you confidently answer the proceeding questions? That is where this newsletter comes in. I will attempt to fill in some of the

missing links, question marks and empty spaces with current, informative evidence-based science. I promise to be brief and succinct; nobody has time to waste. Through better education and real science, we will all make better decisions which ultimately will lead to better patient care and overall quality of life... for you and your patients.

Our first issue will deal with third molars. I have news for you... our understanding of oral disease and specifically, the role of third molars in the progression of systemic disease has changed dramatically in recent years. Research at The University of North Carolina over the last five years has resulted in more than 40 original articles detailing the pathophysiology of retained wisdom teeth. The results are compelling and will change the way we treat third molars and practice oral medicine. Current research published in the journal, Circulation, implicates oral pathogens in the etiology of carotid artery disease and coronary heart disease. Just last month, the *New York Times* published an article detailing the virtues of early wisdom tooth extraction to optimize oral and systemic health. As a profession, we must understand this new information and implement changes in our practices today so that we stay at the forefront of dental health.

I hope that this quarterly report proves to be insightful and thought provoking. Knowledge truly is power and together, we can raise the bar of acceptable patient care.

Sincerely,

Christopher E. Bonacci, DDS, MD

## Current Standard of Care: Third Molars

Proponents have long advocated removal of third molars during one's teen years or, "The age of wisdom." The American Association of Oral and Maxillofacial Surgeons Parameters of Care clearly identify pain, infection, caries, limitation of periodontal disease, pathology, ectopic position, abnormalities of tooth size, facilitation of prosthetic rehabilitation, facilitation of orthodontic movement and disturbed tooth structure as indications for therapy, AAOMS, Par Path, 01, 2001.



Fig. 1: Panoramic radiograph demonstrating ideal age for third molar extraction

The optimal time for third molar removal is when root development is 1/3 developed. The likelihood of complications, especially neurovascular injury, is smallest at this point in tooth maturation. As impacted third molars develop, they are often unable to mature coronally, leading to tooth development in an apical fashion. This often results in an intimate relationship between the third molar root and inferior alveolar neurovascular bundle. The likelihood of neurovascular injury is less than 1% when roots are 1/3 formed but increases dramatically as one gets older. Removing impacted lower third molars in a 40 year old may carry a 25% risk of nerve injury, increasing to 50% in the same 60 year old patient. When nerves are injured, there is an 80% chance of full recovery

that can take as long as 12 months. The remaining 20% of injuries may improve somewhat, but there remains some degree of permanent anesthesia to the lower lip, chin, oral mucosa, attached gingiva and teeth. This does not take into account the co-morbidity associated with more advanced systemic disease such as diabetes and cardiovascular disease in these older populations. Everything we know about third molars suggests that early intervention results in lower morbidity for the patient, Peterson et al.

What about the effect of retained third molars on the periodontal condition of patients? Ash et al recognized 40 years ago that doctors were dismissing the pathology of second molar teeth associated with adjacent third molars. Blakely et al reported that 25% of 329 asymptomatic patients had at least one probing depth of 5mm or greater with 2mm of attachment loss on the distal of a second molar or its adjacent third molar. Recently, the Third National Health and Nutrition Examination Survey (NHANES) examined 5,831 adults aged 18 to 34 and found the presence of third molars was associated with twice the odds of having periodontal pockets 5+mm deep on the adjacent second molar. Elter et al found that visible third molars are associated with more severe periodontal conditions in older Americans aged 52 to 74.

What is the microbiology of these findings? Current models of periodontal disease implicate specific pathogenic bacteria with periodontal tissue destruction. Socransky et al and Haffajee et al found that once pathogenic bacteria colonize one periodontal site, adjacent teeth in the quadrant and other quadrants in the mouth will eventually harbor the same bacteria. The progression of periodontal disease over time, resulting in increased probing depths and attachment loss,

is the culmination of the interaction between the host immune response and the pathogenic bacteria. As White et al concluded in their landmark 2002 JOMS articles, the microenvironment surrounding third molars is a wonderful petri dish that allows for the introduction of pathogenic organisms into the oral flora. The more anaerobic environment with characteristic pH changes allows for the proliferation of these destructive organisms that essentially "seed" the mouth and allow for progressive periodontal disease as the host mounts an immune response to combat the new invaders.

So, is it acceptable to observe third molars since they are not presently causing problems? Every case is unique and special situations warrant sound judgment in the decision-making process. Our current evidence-based understanding of third molars suggests few reasons for them to be retained. Recent studies suggest an evolving understanding of periodontal disease and its impact on cardiovascular disease, diabetes and pregnancy. Clearly, early intervention is preferable to late intervention from a morbidity, microbiology and general overall quality of life standpoint.

From a practical standpoint, patients aged 15-18 should be referred to a Board Certified Oral and Maxillofacial Surgeon for routine third molar screening.

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**Morbidity and Mortality Grand Rounds: Third Molars**

*As a general surgery intern at Columbia University, I had the pleasure to work with some of the finest surgeons in the United States. Surgeons learn from success and failures, both their own and those of their peers. One Thursday a month, M&M rounds were held for the purpose of discussing one case from the prior month that had an unusual diagnosis, mistake in management or unexpected complication, sometimes resulting in the death of the patient. The results of these open and frank discussions invariably led to improved patient care. Dentistry is a cottage industry with little opportunity for such open discussions. Thankfully, we don't deal with death issues often. This section represents an opportunity to bring relevant M&M discussions in Oral and Maxillofacial Surgery into dental offices in Northern Virginia.*

**Clinical Case**

60-year-old male with cystic mass around impacted tooth #17

The patient is a 60-year-old male with a history of gout and hypercholesterolemia who saw his dentist regularly for most of his adult life. By the patients report, nobody ever suggested that his third molars be removed because they were, "too impacted." As a result of insurance changes, he elected to see a new dentist for the last 5 years. After a disappointing experience, he returned to his original dentist who took a screening panoramic radiograph. A large 2cm lucency was discovered

around a complete bony impaction of tooth #17 and the patient was referred for evaluation. Physical examination of the patient revealed a blood pressure of 152/96 with a resting heart rate of 86. Head and neck exam was remarkable for shoddy lymphadenopathy in the left neck and a normal cranial nerve neurosensory exam. Intraoral exam revealed periodontal probing of 10mm on the direct distal of #18 with pain and easy bleeding. The mandible was symmetric with no evidence of bony expansion. Tooth #18 was a natural tooth and tested vital. Radiographs demonstrated a 2cm lucency associated with a horizontally

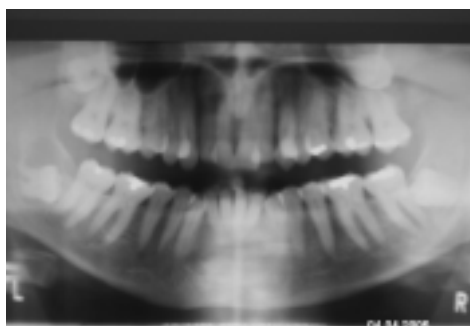


Fig. 2: Preoperative panoramic radiograph demonstrating pathology associated with tooth #17

impacted tooth #17. There were root dilacerations and the underlying neurovascular bundle appeared to be in intimate contact with the inferior aspect of the impacted tooth.

On 1/14/2004, the patient underwent an expected difficult full bony extraction of tooth #17 with curettage and debridement of the soft tissue mass that was sent for pathologic examination. At surgery, the surrounding bone was dense and thick and did not bleed. The neurovascular bundle was preserved and appeared not to be traumatized during the procedure. A prescription for Amoxicillin 500mg was given. The patient was seen one week postoperatively still in discomfort, neurologically intact and improving

daily. An irrigating syringe was provided to aid in cleaning the surgical site. Pathologic analysis revealed a diagnosis of dentigerous cyst with no areas of degeneration.

On 1/28/2004, the patient called the office complaining of new onset of left lip numbness. On examination, a partial trigeminal nerve parasthesia was noted and localized to the vermilion of the left lip ending at the midline and commissure. The patient had otherwise normal findings. The wound appeared to be granulating well. A radiograph demonstrated no foreign body or sequestra. A prescription for Amoxicillin 500mg TID was given.

On 2/10/04, the patient was seen on follow up. The patient still complained of Motrin level discomfort in the area. The wound continued to granulate and the parasthesia was unchanged. A diagnosis of postoperative osteomyelitis was made and Amoxicillin was continued.

On 3/8/04, the patient presented with a mild swelling of the left mandible, resolved discomfort and improving parasthesia but a persistent fistula tract that measured 10mm on probing. Amoxicillin was continued and the patient was planned for re-exploration, removal of the fistula and debridement.

On 3/12/04, the area was surgically opened and debrided. At surgery, mature connective tissue was found with some granulation tissue. The bone appeared normal and bled easily. The wound was left open to granulate. The parasthesia normalized post operatively and the patient did well for 2 months, appearing to heal uneventfully. I was contacted on 5/2/04, and the patient complained of new left sided face swelling and discomfort. A panoramic radiograph

showed dramatic changes in the bony anatomy in the #17 area. A CT was ordered and showed complete resorption of the buccal plate to the level of the inferior border of the mandible, with only a thin lingual plate of bone holding the jaw together. The patient was placed on pathologic fracture precautions and planned for exploration. A presumptive diagnosis of osteomyelitis continued to be the most likely explanation for the clinical findings. Preoperative and postoperative hyperbaric oxygen was considered.

On 5/12/2004, the patient was sedated and the left posterior mandible was opened. Cultures for aerobic, anaerobic, AFB and fungus were obtained. The entire lateral border of

the mandible was exposed revealing an impressive defect. A peripheral ostectomy was performed with round bur until the bone bled easily. All soft tissue was excised. The wound was irrigated with Bacitracin irrigation and closed primarily. The patient was placed on a new regimen of Augmentin and Flagyl.

On 6/11/04, that patient was doing well and had completed antibiotic therapy. He was no longer taking pain medication.

The cultures from 5/12/04 were all negative. Clinically, the wound was closed with no swelling, no fistula and no tenderness. The patient was instructed to return to his dentist for maintenance and continued

surveillance of tooth #18. To date, there have been no changes in his status. This case illustrates an unusual example of the morbidity associated with removing wisdom teeth in older patients. This individual lost countless workdays, incurred significant financial and emotional costs, and the quality of his life suffered immeasurably because of one impacted wisdom tooth. The question to ask is, "What could have been done differently to minimize the morbidity associated with this particular case?"

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