Journal for Re Attach Therapy and Developmental Diversities
eISSN: 2589-7799
2023 August; 6 (10s): 380-387

Unleashing the Healing Potential: The Interdisciplinary Nexus of Maxillofacial Surgery, Periodontology and Patient Psychological Benefits

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Received: 15- June -2023
Revised: 12- July -2023
Accepted: 09- August -2023

ABSTRACT:

Contemporary Evidence has helped us realize that interdisciplinary approaches, as opposed to individualized periodontal approaches, are needed for most patients with a variety of dental or medical treatment needs. Increased life expectancy, better-quality biomaterials used in dentistry, and the quick evolution of clinical techniques have resulted in more complex treatment options and more exacting patient demands. It necessitates integrated management. This review aims to highlight the advantageous interprofessional relationship between periodontists and oral and maxillofacial surgeons, particularly in the context of dental education and clinical multidisciplinary groups, by specifically addressing maxillofacial science and its connection to periodontics. Through this relationship, a healthy referral protocol could be created to benefit patients psychologically.

Keywords: Block graft, impacted canine, interdisciplinary, mandibular tori, Perio-Oral Maxillofacial relation, symphysis, synergistic.

INTRODUCTION

Consequently, clinicians should endorse a multidisciplinary "merge to emerge" philosophy. Understanding these connections can help doctors make accurate diagnoses, assess the prognosis of the damaged tooth or teeth, and plan and execute an effective therapy based on biological and clinical data. Interdisciplinary dentistry is defined as the mutual infiltration of different dental disciplines along with the increase of each's own scope. Synergy is the term used to describe when two or more different influences or agents work together to produce an effect that is greater than what can be predicted by merely knowing the individual effects of the agents. This term applies to the traditional connections between different dental specialties that must coexist for the patient's overall health.

Although oral and maxillofacial surgery and periodontology, are both surgically focused dental disciplines, their training and areas of practice are very distinct. Oral and maxillofacial surgery is regarded as both a dental and medical profession, but periodontology is also regarded as a dental specialty. If restorative procedures restricted to dental hard tissues are eliminated, oral surgery includes operations on the mucosa of the mouth, connected gingiva, and the bone, which are regions shared by both specialties. This review will showcase various dental operations that can be handled by either profession and provide instances of how periodontists and oral and maxillofacial surgeons can collaborate closely to provide patients with the best results rather than making a case for one specialty being better than the other.

Following ten themes were determined to be the qualities of an effective interdisciplinary team: (Figure 1)
1. Management and leadership - Having a clear team leader, such as a periodontist, with management and direction that is apparent.
2. Effective communication.
3. Interdisciplinary Periodontics class and workshop for personal growth and development.
4. Appropriate processes and resources - Team members working from the same location, making sure the right procedures are in place.
5. The right blend of skills.
6. Climate - Need to foster an interprofessional environment and foster a culture of trust within the team.
7. Personal traits such as knowledge, experience, initiative, awareness of strengths and weaknesses, etc.
8. Vision clarity.
9. Care quality and results.
10. Honoring and comprehending roles.

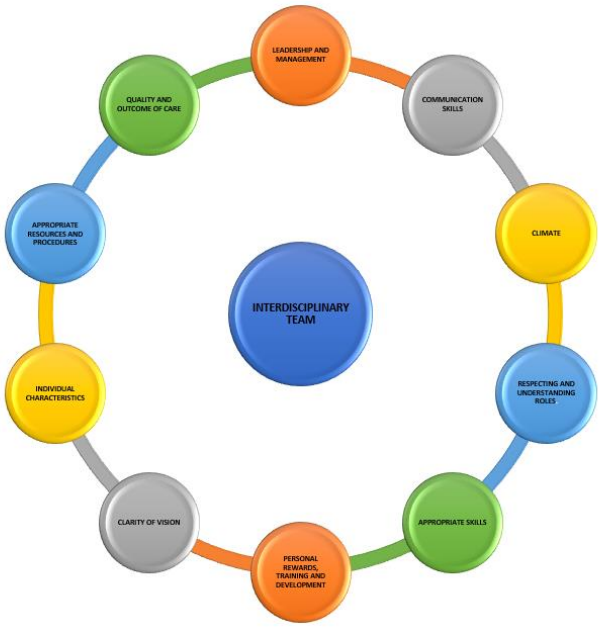

Figure 1: Qualities of an effective interdisciplinary team

HUB FOR INTERDISCIPLINARY STRATERGY:

Mandibular Tori Removal:

Frequent, benign osseous growths known as lingual tori may require surgical removal if they regularly cause trauma, interfere with general oral hygiene, or are required for prosthetic purposes.[1,2,3] The literature indicates that the general incidence of mandibular tori varies by race, gender, and even geography within the same nation, falling between 12% and over 40%. The aetiology of mandibular tori is unknown, despite the fact that a few studies suggest parafunctional stressors may influence to develop mandibular lingual tori.[4,5,6] One biomechanical study found that mandibles with acute angles and a square shape are more likely to concentrate loads, which may increase the likelihood of developing mandibular tori. On three-dimensional mandibular models for this biomechanical study, finite element analysis was performed. [7] Relapse after removal is uncommon, although it is possible; in one case study, it occurred up to 11 years after surgery.[8]
While there are other ways to remove mandibular lingual tori, the most common technique includes lingually elevating a full-thickness mucoperiosteal flap to reveal the tori, followed by its removal using osteotomes and a high-speed rotary handpiece.[9,10] Short-pulsed lasers and piezoelectric handpieces Er:YAG lasers can also be used

to remove bone during third-molar surgery or to treat other oral cavity conditions.[11] The main drawbacks of Er: YAG laser surgery are the lack of depth control and the longer surgical time, but overall wound healing and clinical outcomes are comparable to those of other procedures.[12]

Fig 2: Mandibular Tori

Adapted from: Tong, Darryl C. (2017). Surgical management in dentistry: the interdisciplinary relationship between periodontology and oral and maxillofacial surgery. Periodontology 2000, 74(1), 168175. doi:10.1111/prd.12196

The case of a 39-year-old lady with severe mandibular tori bilaterally serves as a demonstration of this. The left and right lingual tori were almost touching in the center and measured 20x9x11 mm and 21x9x13 mm, respectively **(Fig. 2).** Patient frequently complained damage and ulceration onto the tori, and occasionally on lingual frenum of the tongue getting lodged in between the tori, which was quite uncomfortable. The patient agreed to participate in a split-mouth clinical comparison for the excision of tori, with one side treated with an Er: YAG KaVo Key Laser 3TM and the other using a conventional surgical handpiece and osteotome. **(Fig. 3).**[13] The patient asked for anesthetic agent (GA), which was made available by an oral surgeon who carried out traditional surgery on one side and laser removal on the other. The rehabilitation went without a hitch, and there was no discernible difference in the speed of healing between the two techniques, according to the patient. The conventional technique took substantially less time than the laser therapy, which was the sole clinically significant difference.

Fig. 3. Removal of a large lingual torus from the patient in Fig. 2 using an Er:YAG laser.

Adapted from: Tong, Darryl C. (2017). Surgical management in dentistry: the interdisciplinary relationship between periodontology and oral and maxillofacial surgery. Periodontology 2000, 74(1), 168175. doi:10.1111/prd.12196

SURGICAL EXPOSURE OF AN IMPACTED CANINE

As is well known, molars are the most prevalent site for impactions, followed by the maxillary canines at a rate of one to five percent depending upon the ethnicity, with the lower frequency among the Non-Caucasian

people.[15,16,17] Maxillary canines can be palatally or labially placed which most tilting towards the palatal (ranging from 66% to 85%).[18,19]

During orthodontic therapy, surgical intervention might be essential for the movement and eruption of palatally impacted canine.[20,21] This can be done using open and closed technique. Open technique wher-in just the canine tooth is exposed out in the oral cavity and closed technique is where we will have to raise a full thickness mucoperiosteal flap so that the impacted tooth is exposed, following to which **(Fig 5)**, the flap is repositioned **(Fig 6)**.[22] When a surgeons intervenes with a doubt to which technique could be best for the patient, the decision making tree[23] is used which could guide us to exposed the tooth for active orthodontic therapy.**(Fig 7)**

Fig 5: Open Technique- Flap reflected and part of crown is exposed.
Fig 6: Closed Technique- Flap is sutured in its initial position.
Adapted from: Dersot, Jean-Marc (2017). *Periodontal surgery of the maxillary impacted canine for orthodontic purposes: Proposal for a surgical decision tree. International Orthodontics, 15(2), 221–237.* doi:10.1016/j.ortho.2017.03.003

Periodontists and maxillofacial surgeons can successfully treat an impacted maxillary canine. It is firstly determined by the orthodontist's referral pattern and the surgeon's experience. Regardless of who performs the treatment, the patient's follow-up care is critical. A proper interdisciplinary approach is required, as is communication between the referring dentist and the orthodontist. This follow-up management for the first 2 to 3 months should be adjusted to the patient.

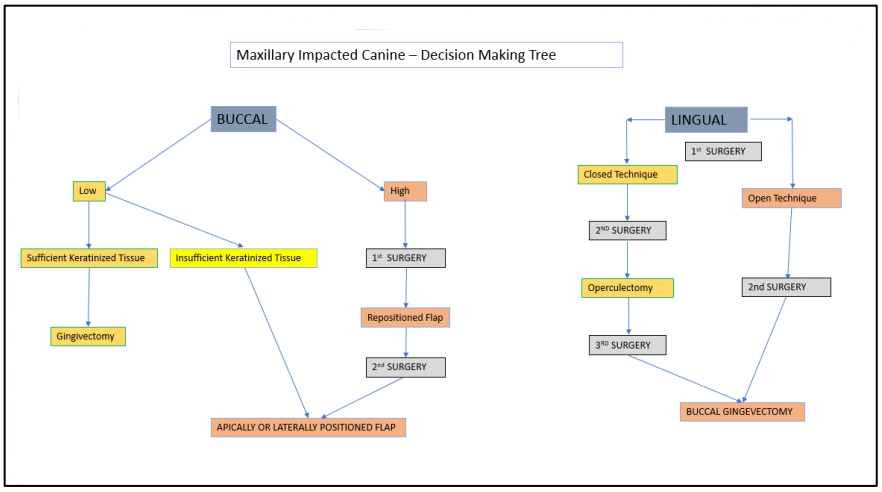

Fig 7: The Surgical Decision Tree

REGENERATION, RE-ATTACHMENT, REHABILITATION TAG TEAM: MAXILLIOFACIAL AND PERIODONTAL SURGEONS.

AUTOLOGOUS BLOCK BONE GRAFT FOR IMPLANT PLACEMENT.

When there is inadequate quality of bone and volume, the integrity of a dental implant continues to be in question. There are various approaches to improve bone density, including autogenous onlay bone grafts. Intraoral donor points for bone extraction include the symphysis, retromolar area, mandibular ramus, and maxillary tuberosity.

Though surgeons tend to be more adept in dealing with invasive bony surgeries of different complexity, periodontists can continue implant therapy for a patient who necessitates a block bone transplantation.[14] Interdisciplinary recommendations amongst periodontists and maxillofacial surgeons could be influenced by the accessibility of facilities and services within the vicinity, preferences of the patient, and personal and professional connections between specialists. A multidisciplinary strategy including a maxillofacial surgeon and a periodontist can be beneficial in a variety of situations.[14] Therefore it's in the patient's greatest advantage to recognize and value whatever other disciplines have to offer.

The following case study could be thought of as the best example of a successful multidisciplinary strategy for the patient's best outcomes and exceptional learning opportunities for a resident or trainee. A twenty two year-old patient, male, who had lost his 21, as a result of trauma was examined in the multidisciplinary postgraduate clinic at the Faculty of Dentistry, University of Otago (Dunedin, Otago, New Zealand). With the help of radiographic diagnostic aid, it was seen that the patient had insufficient bone height and width, for which bone augmentation along with two-stage implant surgery was planned .[13] Surgical planning included inputs from 3 specialties of dentistry: Periodontic, Prosthodontic, and Maxillofacial surgery.

Under intravenous anaesthesia, the patient underwent autogenous block bone graft augmentation from the mandibular symphysis to the left anterior maxilla **(Figs. 4 and 5).** To access the anterior jaw, a three-sided full-thickness mucoperiosteal flap with vertical relief incisions distal to the mandibular canines was employed. Using a piezo-electric osteotome (Piezosurgery; Mectron SpA, Carasco, Italy), the anterior jaw's bone transplant was removed. A single 8 mm titanium screw was used to attach the recipient location to the bone graft. The postgraduate periodontology student underwent surgical supervision from the consultant periodontist and the oral and maxillofacial surgeon who cared for this patient. A single tooth implant-borne crown was successfully used to restore the edentulous gap.

Fig 3: Block bone graft from symphysis region.
Fig 4: Block bone-graft augmentation to the left anterior maxilla. The graft is being placed before screw fixation to the underlying maxillary bone.
Adapted from: *Tong, Darryl C. (2017). Surgical management in dentistry: the interdisciplinary relationship between periodontology and oral and maxillofacial surgery. Periodontology 2000, 74(1), 168175. doi:10.1111/prd.12196*

THE REGENERATIVE MEDICINE

Regenerative medicine is a new technological discipline that merges medicine, cell and molecular biology, material sciences, and bioengineering to regenerate, repair, or replace tissues.

Maxillofacial and periodontal surgeons have been involved of the management of traumatic or progressive degenerative conditions that result in tissue loss: to recuperate from these, we must regularly utilize treatments that have been developed through time. We began using growth factors and platelet concentrates in the field of periodontics and maxillofacial surgery in 1990; later, we began using biomaterials, as well as other types of scaffolds and autologous tissues. The cutting edge in the field of regenerative medicine today is represented by mesenchymal stem cells (MSCs): overcoming moral dilemmas through the application of mesenchymal stem cells from adult patients, and with advancements in technology that facilitates their manipulation, MSCs are without a doubt the next phase of regenerative biology, and they have demonstrated viewpoints beyond comprehension just a few years ago.

The latest research investigations focus on regenerating tissue using MSCs obtained from sites that are more readily available and rich in stem cells: the oral cavity has been demonstrated to be a significant reservoir of

MSCs with the benefit of being easily accessible to the surgeon, preventing patient complications. The potential future involves the regeneration of full organs or biological structures composed of a variety of distinct tissues, beginning with an initial stem cell line possibly utilizing novel scaffolding in conjunction with biological tissue nano-engineering.

INTERDISCIPLINARY CONSULTATIONS AND APPOINTMENTS

Interdisciplinary referrals may be affected by patient choices, local practitioner availability, and doctors' professional and social ties.[24] Although no studies on the interdisciplinary relationship between maxillofacial surgery and periodontology were found, there were many cases where Maxillofacial and Periodontal surgeons had to work hand in hand or had to refer where there was no such stronghold or weakness of one of either specialty, just rectifying and appreciating which specialty has to offer a better treatment option for the improvement of the patient current oral status.

The healing of neighboring 2nd tooth following surgical removal of the impacted 3rd molar is another excellent illustration of how these two disciplines can work together. Following surgical excision of the mandibular 3rd molars, periodontal pockets, alveolar bone loss, and clinical attachment loss are all common periodontal issues.[25,26] Many studies regarding various flap designs for extracting third molars, i.e. triangular, flaps including vertical incisions and envelope flaps were done which concluded that there were no clinically significant results in periodontal parameters based on the above-mentioned designs.[26,27,28] One more good example could be understanding the fact that oral hygiene is commonly neglected in patients who have undergone radiotherapy and they often develop dry mouth, mucositis due to radiation therapy, etc., as side effects.[29] So, the need for formulation of mouthwashes with the incorporation of such herbal ingredients would stand out as another interdisciplinary approach also providing psychological benefit to the recovering patients.

Numerous studies have shown that in young patients, the second molar's periodontal apparatus benefits from the angulation of the nearby third molar.[25,26] Nevertheless, when assessing the grounds for third molar extraction with healthy periodontal elements around the second molar, this must be balanced because it might worsen the attachment levels and probing depths post-surgery. Immediate implantation of bone grafts, along with membranes has been proven to provide positive results to reduce the periodontal abnormalities following the third molar surgery but more research is required at this extent to justify the extra charge and probable risk of infection.[30]

PSYCHOLOGICAL BENEFITS OF MULTIDISCIPLINARY HEALTH CARE TEAM FOR PATIENTS

Enhanced patient outcomes

When multidisciplinary teams collaborate, it results in complete patient care and ample delivery of comprehensive care. Having every healthcare professional attentive to a distinct component for the well-being of the patient, surgeons are with more likelihood to discover and effectively handle points of concern.

While cooperating to offer suggestions that enhance patient outcomes, each team member can speak with the patient in their own specialty. One year following their stroke, patients at a specialized stroke centre who received care from a team of specialists as compared to a single clinician had a higher likelihood of still being alive, independent, and residing at home.[31]

Time saving and Streamlined workflow

Multidisciplinary care increases productivity and reduces waiting times within your healthcare organization. Delivering care in a medical facility where there isn't teamwork can lead to communication and treatment issues, which can delay treatment. It has been shown that participating in a care team reduces the need for duplication services because tasks are clearly assigned to team members to reduce these occurrences.

Improved patient and practitioner satisfaction

If patients' health outcomes improve, they will be happy. They now have easier access to a multidisciplinary healthcare team that can meet all of their demands. Through integrated team care, especially in-home care, the amount of time patients spend in hospitals and other healthcare facilities is reduced. Patients wait less for specialists to attend to their requirements and carry out the treatment plan when there is teamwork and good communication. The multidisciplinary healthcare team breaks up the work so that patients remain in the hospital as little as possible and may concentrate on completing their therapy and getting better.
The satisfaction of both patients and providers is increased by care teams. Care teams not only improve practitioner and patient satisfaction but also patient satisfaction. Specialists from many disciplines are happier with the surgical outcome due to better task allocation and communication. The chance to collaborate with other experts and take part in decision-making makes providers feel like valuable team members. Providers are more aware of their coworkers' responsibilities as a result of this greater collaboration.

CONCLUSION

Maxillofacial and Periodontal Surgeons have a lot in common when it comes to doing minor oral surgical operations in dentistry. Rather of debating the distinctions and fueling any latent proficient contention, this study focuses on cases wherever surgical procedures might be achieved by either field or an interdisciplinary approach. The fundamental principles of patient care ought to focus on patient care, the clinician's experience, and the corporal resources which are required, particularly when general anesthesia or hospital facilities are in the picture. Periodontists and oral and maxillofacial surgeons must be routinely included amidst the multidisciplinary approach to the patients undergoing dental implantology procedures. Finally, the ultimatum is straightforward: all stages of clinical and experimental dentistry are inextricably linked to a single goal: the conservation and upkeep of the healthy natural dentate is critical in a unified multidiscipline slant to periodontal care.

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