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Case Report

Simultaneous endodontic & periodontal management of extraoral submental sinus tract: Case report

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Abstract

The present case report aimed to assess the effects of xenogenic bone graft (Bio-oss) with periapical surgery for the treatment of an extraoral submental sinus tract associated with a large periapical lesion of traumatized lower central incisor teeth. A year prior, due to an injury to the mandibular central incisor teeth, the patient had complained of an extraoral submental draining sinus tract for the previous six months. A radiographic examination revealed a periapical lesion related to the lower central incisor teeth. The patient was scheduled for root canal therapy, periapical surgery (apicoectomy), and guided tissue regeneration periodontal management. The full-thickness flap was elevated, the periapical lesion was debrided, obturation was performed, the defect was filled with the xenogenic bone graft (Bio-oss), and the flap was sutured back to its initial position. This study highlighted the possibility of an effective endo-perio relationship. Six months after the apicoectomy, the periapical lesion had completely healed, new bone had formed, and the patient was symptom-free.

Keywords: Sub-mental sinus, Apicoectomy, Periapical surgery, Xenogeneic graft

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1. Introduction

A sinus is an opening or communication between an enclosed inflammation, infection, or abscess region and an epithelial body surface or cavity. Pulpal necrosis and the subsequent microbial invasion of the periapical region culminate in an inflammatory periapical lesion of the affected tooth, forming a dental sinus tract. Dental caries or trauma are the two main reasons for creating such sinus tracts.[1] Extraoral sinus tract openings can occur anywhere on the face or neck; the mandibular angle, chin, and cheek are common sites. 50% of mandibular sinus tracts originate from lower incisors or canines, with mandibular teeth being the common site over maxillary teeth representing a 4:1 ratio. Therefore, it is not unexpected that the chin or sub mental area would have the most frequent cutaneous sinus tract.[2]

Lower molars might point to the face or submandibular skin, whereas premolars typically point to the submandibular region. While canine teeth often point below the inner canthus of the eye, maxillary incisors may point to the nose floor.[3] Molars and premolars on the maxilla may indicate the cheek.[4] But unless the odontogenic cause is found and removed, recovery cannot take place.[5]

The goal of conventional endodontic therapy is to remove bacteria from the root canal system and provide strong barriers to stop root recontamination.[6] For endodontic therapy to be successful, the entire root canal system needs to be cleaned, shaped, and filled. Traditional root canal therapy failure causes are often associated with either persistent bacteria (permanent infection) or secondary infection (reinfection in a canal that has just been cleansed and sanitized).[7] When endodontic surgery is the only way to save the tooth, it should not be avoided. Nevertheless, a thorough understanding of the many anatomical structures and the surgical process is important.[8]

This case report aimed to observe the effect of xenograft when combined with periapical surgery for the treatment of extra oral sub mental sinus tract associated with periapical lesions of traumatized mandibular central incisors teeth.

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2. Case report

A 22-year-old female came with a chief complaint of pus discharge & pain in the lower front buccal surface for 4 months. The patient's medical history confirmed that she was ASA I.

The extra oral examination revealed a fixed, non-tender, erythematous nodulocystic lesion on the skin below the lower border of the chin. (**Figure 1**) The sinus tract was closed, with no active pus discharge observed. Normal probing depth was noted in the mandibular anterior teeth region. Upon percussion, both the mandibular central and lateral incisor teeth were non-tender. Vitality tests for both teeth, conducted using cold and hot stimuli, yielded a negative response.

Radiographic examination revealed a radiolucent lesion with an ill-defined border associated with the roots of mandibular central incisors teeth (**Figure 2**). Before treatment, verbal and written consent was taken from the patient. The patient underwent basic periodontal treatment of phase I therapy including scaling, root planning, and instructions for proper oral hygiene were given.

This was followed by endodontic treatment, including root canal treatment, which was planned at the time of surgery. The patient was instructed to do a pre surgical mouth rinse with 0.2% chlorhexidine solution 10ml twice a day for 60 sec for 7 days. The facial skin was scrubbed with a 5% povidone-iodine solution.

A vertical incision was given at the mesial of the 33 & 43 regions followed by a mucoperiosteal flap reflected to the root apex under local anaesthesia with 1.8mL of 2% lidocaine with 1:80000 epinephrine (**Figure 3**). In the apical region, a cord-like tract attached to bone was visualized. The attachment to bone was released using a periosteal elevator. The periapical pathology was identified and removed using a spoon excavator and irrigated using a normal saline solution (**Figure 4**)

Apical root-end excision was performed using a taper diamond bur at high speed with sterile water, around 2-3 mm, after the granulation tissue on affected roots was fully removed. (**Figure 5**) Next, using the vertical condensation technique, gutta-percha was used to obdurate the root canals. A Bio-Oss graft is currently used to fill the periapical defect.

A mucoperiosteal flap was approximated and sutured at its original position with 3-0 black silk sutures and 5-0 silk sutures (**Figure 6**). Antibiotics (amoxicillin clavulanic acid 625 mg, one tablet BD), aceclofenac + paracetamol + serratiopeptidase (one tablet every 12hr), pantoprazole (one tablet OD), and Lactic Acid Bacillus (120 million spores, 1 capsule OD) were given for 5 days. Suture removal was done after 15 days and post-endodontic restoration was done. Clinical and radiographic follow-up was performed at one month, three months and six months after surgery (**Figure 7**).

The extra oral sinus tract was healed completely after three months. The improvements on the extra oral sites at one month, two months, and 3 months follow up respectively. (**Figure 8**)

Figure 1: Pre-operative facial profile

Figure 2: Pre-operative radiographic profile

Figure 3: Full thickness mucoperiosteal flap was elevated and exposure of lesion

Figure 4: Debridement of granulation tissue and defect was filled with Bio-oss bone graft

Figure 5: Granulation tissue

Figure 6: Approximation of the flap done.

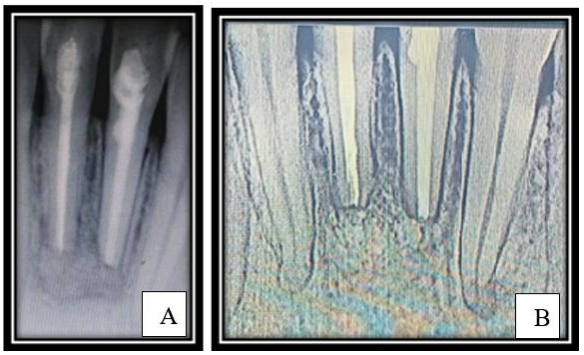

Figure 7: A) Radiograph after 1 month. Periapical defect filled with Bio-oss graft, B) Radiograph after 6 months.

Figure 8: Improvements in facial profile post endodontic follow-up: A) At 1 month follow up, B) At 3 month follow up and at 6month follow up

3. Discussion

The low occurrence and the similar appearance to skin lesions have traditionally made it challenging to diagnose cutaneous sinus tracts of odontogenic origin.[9] Mandibular teeth account for 35% of cases, while maxillary teeth are involved in 65%, with 94% of sinus tracts exhibiting labial apertures. This is attributed to the lingual bone being more compact than the labial/buccal bone in both jaws, and mandibular teeth being embedded within thicker cortical bone than those in the maxilla.[1]

The differential diagnosis should encompass traumatic lesions, bacterial and fungal infections, neoplasms, foreign body presence, local skin infections (such as carbuncles and infected epidermoid cysts), pyogenic granulomas, chronic tubercular lesions, osteomyelitis, actinomycosis, and gummas associated with tertiary syphilis. Less common considerations include developmental defects stemming from thyroglossal duct cysts or brachial cysts, salivary gland and duct fistulas, dacryocystitis, and suppurative lymphadenitis. A thorough history and caution that any cutaneous lesion of the neck and face could have a dental origin are essential in the examination of a cutaneous sinus tract.[10]

Periapical granulomas are chronic inflammatory processes that appear as lesions around the apex of teeth. They are caused by the growth of granulomatous tissue composed of lymphocytes, plasmocytes, some polymorph nuclear cells, macrophages, eosinophil, multinucleated giant cells, fibroblasts, and new capillaries. They arise from endodontic failures, infected root canals, or severe pulp-affecting caries.[11,12] Periapical lesions are mostly caused by a leaky apical seal that permits the outflow of microorganisms and their toxins. Peri-radicular curettage of the injured periapical tissue eliminates only the leak's effect. Thus, even if the peri-radicular lesion is excised, it could reappear if the root end is not resected. Removing all lateral canals and apical ramifications, a 3mm root-end amputation lowers the risk of reinfection and failure.[13]

Following root canal therapy, the healing of peri-radicular tissues is frequently linked to the development and organization of a fibrin clot, the maturation of granulation tissue, the reduction of inflammation, and, finally, the restoration of the periodontal ligament's normal architecture. As a result, the goal of the treatment must be to eradicate the infection's origin.[14] In their study, Taschieri et al.[15] stated that regenerative material may be successfully used for through-and-through periapical defects when combined with endodontic surgery.

As a result, it is critical to provide an accurate diagnosis, administer the proper care, and eradicate the infection's source. Our treatment showed no indications or symptoms at the one-year follow-up; radiography revealed the lesion had improved.

4. Conclusion

The current case observation indicates that xenogeneic bone graft in conjunction with peri-apical surgery for the treatment of extra oral sub mental sinus tract associated with large periapical lesions of traumatizing lower central incisor teeth creates an environment that is conducive to both soft-tissue healing, or sinus tract resolution, and periapical repair.

5. Source of Funding

None.

6. Conflict of Interest

None.

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