



Symphysis Grafting In Apicoectomy – Case Report

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Abstract

Periapical lesions involving anterior teeth pose esthetic and functional challenges, especially when associated with large osseous defects. This case report describes the management of a 20-year-old female patient with a large (>10 mm) periapical lesion in relation to the maxillary left central incisor. The treatment included periapical surgery (apicoectomy) with retrograde filling and simultaneous autogenous bone grafting harvested from the mandibular symphysis. The case highlights surgical considerations, regenerative techniques, and long-term prognosis.

Keywords: symphysis graft, Apicoectomy, large osseous defect, bone regeneration

Introduction

Periapical pathology is a common sequela of pulpal necrosis and chronic infection, often manifesting as granulomas or cystic lesions. Nonsurgical endodontic therapy remains the first-line treatment; however, persistent or large lesions may require surgical intervention. Apicoectomy, combined with curettage and retrograde restoration, facilitates complete debridement of the periapical area. When lesions exceed 10 mm, osseous healing may be compromised, necessitating adjunctive regenerative procedures. Autogenous bone grafts, particularly from the symphysis region, offer osteogenic, osteoinductive, and osteoconductive potential, providing an ideal material for defect repair.

Case Presentation

A 20-year-old female reported to Department of Conservative Dentistry & Endodontics, Jaipur Dental

College, Jaipur with the complaint of swelling and intermittent pain in the upper front tooth region for the past two months. The swelling was localized and recurrent, occasionally associated with discomfort during chewing. Clinical examination revealed a diffuse swelling in the labial vestibule corresponding to the maxillary left central incisor. The tooth appeared slightly discolored compared to the adjacent anterior teeth, was tender on percussion, and failed to respond to pulp vitality testing. The adjacent teeth responded within normal limits. No extraoral swelling or lymphadenopathy was detected, and the patient's medical history was non-contributory.

A periapical radiograph revealed a well-circumscribed unilocular radiolucency, approximately 9.5 × 4.2 mm in dimension, involving the apex of the left central incisor and extending toward the nasopalatine region.

The margins were corticated, suggestive of a chronic lesion of endodontic origin. Based on the clinical and radiographic findings, a provisional diagnosis of a radicular cyst was made. Since the lesion was around 10 mm and root canal therapy previously attempted on the tooth had not resulted in healing, surgical endodontic management was considered the treatment of choice. The plan involved apicoectomy with curettage of the lesion followed by reconstruction of the defect using an autogenous symphysis bone graft.

Under local anesthesia, a trapezoidal mucoperiosteal flap was reflected in the maxillary anterior region to expose the periapical area. The lesion was carefully enucleated in its entirety and sent for histopathological examination. Approximately 3 mm of the root apex of the central incisor was resected using a surgical bur under irrigation. A retrograde cavity was then prepared with ultrasonic tips and filled with mineral trioxide aggregate to ensure a hermetic apical seal. The periapical defect created after enucleation and apicoectomy was large and would not have healed predictably without regenerative assistance. To overcome this, autogenous bone was harvested from the mandibular symphysis.

Through a separate intraoral incision in the anterior mandible, a corticocancellous block graft measuring approximately 3×3 mm was obtained using a round bur and chisel under copious irrigation. The donor site was packed with hemostatic material, sutured primarily, and postoperative care instructions were provided. The harvested graft was crushed and mixed with platelet rich fibrin to place it into the periapical defect of the maxillary left central incisor. It was stabilized in the cavity, and the flap was repositioned and sutured with 3-0 black silk sutures.

The patient was prescribed amoxicillin 500 mg three times daily for five days, ibuprofen 400 mg three times daily for three days, and chlorhexidine mouth rinse to be used twice daily for two weeks. She was advised to maintain meticulous oral hygiene, avoid trauma to the surgical site, and follow a soft diet. Sutures were removed after one week, at which point healing was satisfactory and the patient was free of symptoms.

Radiographic and clinical follow-up was carried out at regular intervals. At three months, the patient was asymptomatic and radiographs revealed early evidence of bone regeneration within the defect. By six months, a distinct trabecular bone pattern was visible, and the radiolucency had reduced considerably in size. Histopathological evaluation of the excised tissue confirmed the diagnosis of a radicular cyst.

This case illustrates the significance of a combined surgical and regenerative approach in the management of large periapical lesions. Although nonsurgical retreatment may be considered for periapical pathology, lesions exceeding 10 mm in diameter often do not heal predictably without surgical intervention. Apicoectomy is effective in eliminating the diseased root apex, removing the infected periapical tissues, and providing a retrograde seal. However, the resultant bony defect, especially in the esthetically critical anterior maxilla, requires reconstruction to restore both function and appearance. Autogenous bone grafts remain the gold standard for such procedures because they possess osteogenic, osteoinductive, and osteoconductive properties. Among intraoral donor sites, the mandibular symphysis is particularly suitable for small to medium osseous defects due to its accessibility, proximity, and minimal morbidity.

In this case, the symphysis graft provided an ideal scaffold for new bone formation and promoted predictable regeneration of the periapical region. Previous studies have documented the high success rates of using autogenous grafts in periapical surgery, and the present case corroborates these findings. The patient being young, with high esthetic demands, benefitted significantly from the approach, as it not only resolved the pathology but also preserved the integrity of the anterior maxillary esthetics.

The outcome of this case emphasizes that apicoectomy combined with autogenous bone grafting from the symphysis can be considered a reliable modality in the management of large periapical lesions. It ensures elimination of the lesion, regeneration of lost bone, restoration of function, and preservation of esthetics, particularly in young patients where long-term tooth retention is paramount.

FIG.1 PRE-OPERATIVE RADIOGRAPH & PHOTOGRAPH



Fig.2 CBCT EVALUATION



FIG.3: SPLINTING, INCISION AND CURETTAGE



FIG.4: VESTIBULAR INCISION,3*3 WINDOW MARKING AND BONE EXTRACTION



FIG 5: HAEMOSPONGE PLACEMENT AND FLAP CLOSURE



FIG 6: BONE MILLER, PRF, CRUSHED BONE MIXED WITH PRF

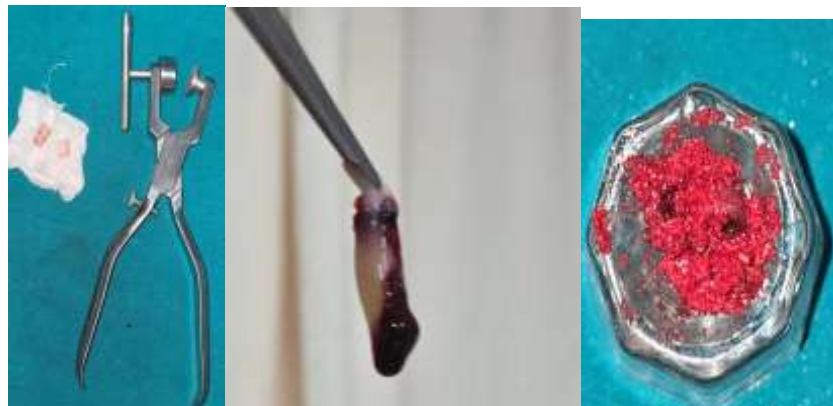


FIG 8: OBTURATION AND BIOPSY REPORT

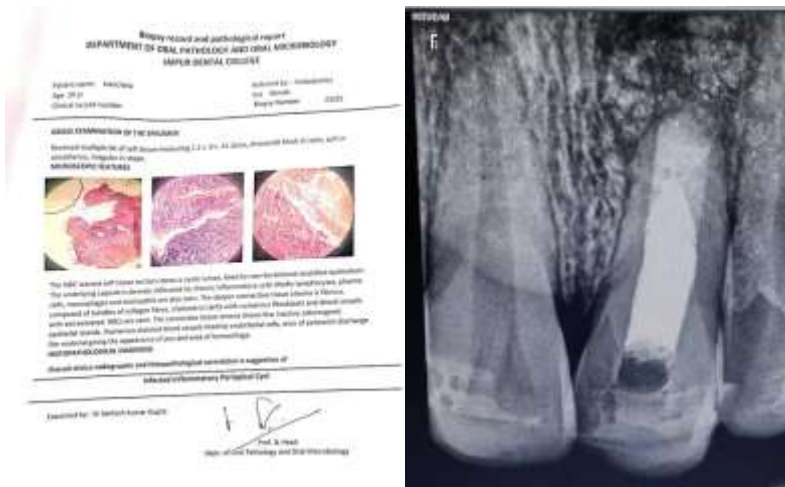


FIG 9: FOLLOW UP



Discussion

Large periapical lesions (>10 mm) present a surgical challenge, often compromising natural bone healing. While alloplastic and allogenic grafts are available, autogenous grafts remain the gold standard due to their osteogenic properties. The mandibular symphysis provides sufficient cancellous bone with minimal donor site morbidity.

The combination of apicoectomy, retrograde sealing, and symphysis grafting ensures thorough infection control and accelerated osseous regeneration. Reports suggest that such combined therapy offers predictable long-term outcomes in young patients, preserving natural dentition and esthetics.

Conclusion

Apicoectomy with autogenous bone grafting is a reliable treatment modality for large periapical lesions unresponsive to conventional therapy. The mandibular symphysis serves as an excellent donor site in young patients, ensuring successful bone regeneration and functional restoration.

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