Radicular cysts are the most common (52–68 per cent) cystic lesions affecting the jaw. They are commonly found at the apices of involved teeth and sometimes lateral to accessory root canals. They are a direct sequel of chronic periapical infection. Most of them are asymptomatic and are discovered when periapical radiographs are taken of teeth with non-vital pulps. Patients often complain of slowly enlarging swellings. Radiographically, most radicular cysts appear as round or pear-shaped unilocular radiolucent lesions in the periapical region. The cyst may displace adjacent teeth or cause mild root resorption.

The following case report presents the successful treatment of radicular cysts using autologous periosteum and platelet-rich fibrin (PRF) with demineralized freeze-dried bone allograft (DFDBA).

**Case Report**

A 17-year-old female patient reported to the Department of Periodontics, HKESS’s S. Nijalingappa Institute of Dental Sciences and Research, Gulbarga, India, with a chief complaint of pain, swelling ongoing and pus discharge in the lower anterior region since two months. Past history revealed trauma in the lower anterior region five years ago with recurrent swelling and pus discharge.

On intraoral examination, inflamed and swollen gingiva was seen in relation to 41, 42, and 43 (FDI notation). A draining fistula was seen on the labial aspect in relation to 41 (Fig. 1). 42 had grade I mobility, whereas no mobility was noticed with 31, 41, and 43. A pulp vitality test was negative with 41, 42, and 43, while adjacent teeth showed normal response. Periodontal probing depth was < 3 mm for concerned teeth, and no clinical attachment loss was seen. They were also painless on vertical percussion. On radiographic examination, two radiolucent areas of size approximately 2 x 2 mm were seen in relation to 41, 42, and 43 (Fig. 2). No root resorption was seen.

The treatment plan comprised of endodontic treatment of non-vital teeth followed by surgical enucleation of cystic lesions if necessary. The treatment plan was explained to the patient, and a written informed consent was obtained. In the same visit, root canal treatment was started under rubber dam application followed by working length determination. After complete biomechanical preparation, two per cent chlorhexidine gluconate was used as an irrigant and intracanal medication. In the subsequent visits, root canal treatment was completed. Persistent pus discharge was observed at three months after endodontic treatment, and surgical enucleation was planned.

The procedure was as follows: local anaesthesia was administered, crescentic incisions were given, and a full thickness mucoperiosteal flap from 41 to 43 and a split thickness flap in region 31 and 32 were reflected. The area was degranulated revealing two small perforations of the buccal cortical plate in the regions of 41 to 43 (Fig. 3). The remaining buccal cortical covering was carefully removed with rotary and hand instruments to expose the rest of the lesions of size 3 x 3 x 2 mm. The remaining buccal cortical covering was carefully removed with rotary and hand instruments to expose the rest of the lesions of size 3 x 3 x 2 mm. Fragmented pieces of the lesion were freed from the bone, and a complete curettage of the cystic lesions was done (Fig. 3). The cystic cavities were thoroughly irrigated, and a root biomodification of involved teeth was done using tetacycline. DFDBA was mixed with sterile saline solution and grafted in an attempt to close the defect via osteoconduction (Fig. 4). Autologous healthy periosteum was harvested from region 31–32 (Fig. 5), and PRF was prepared from the patient's blood, as described by Choukroun et al. The lesion was covered with periosteum, over which PRF was placed as a second layer of barrier membrane covering the graft (Figs. 6 & 7).

The flap was coronally advanced and closed with interrupted sutures using 5-0 black braided silk (Fig. 8). A periodontal dressing was applied at the surgical site. The patient was prescribed amoxicillin 500 mg TID and diclofenac sodium 50 mg TID both for 5 days with 0.12 per cent chlorhexidine gluconate rinse BD for seven days. The patient was asked to report after a week for suture removal, and the curedt tissue was submitted for histopathological examination. The patient returned for the post-operative visit, and the healing was uneventful.

Histopathology revealed the presence of a varying thickness of epithelium with fibrocellular connective stroma. The epithelium was disrupted with infiltration of chronic inflammatory cells along with vasculatures within the epithelium. The connective tissue showed dense infiltration of lymphocytes and plasma cells with few macrophages (Fig. 9). A diagnosis of radicular cyst was given. The patient was followed up for nine months. A radiograph at six months shows a healing lesion (Fig. 10). A subsequent radiograph nine months after operation (Fig. 11) reveals increased radiopacity where the bone graft was placed, and no evidence of recurrence of the lesion was seen (Fig. 12).

**Discussion**

A radicular cyst is an odontogenic cyst of inflammatory origin preceded by a chronic periradicular granuloma and stimulation of cell rests of Malassez found in the periodontal membrane. The pathogenesis of radicular cysts comprises of three distinct phases: the phase of initiation, the phase of cyst formation, and the phase of enlargement. The initial swellings of these radicular cysts are usually bony hard, but as they increase in
...in large or non-healing lesions, the endodontic treatment alone is not efficient..."