IMMEDIATE IMPLANT TRANSFIXING A CYSTIC CAVITY: A CASE REPORT

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ABSTRACT

Despite the great success achieved in oral rehabilitation with dental implants, some obstacles should be taken into consideration to obtain a better rate of success, such as systemic diseases, smoking, alcoholism, and pathologies involving the receptor site of these implants. Among these pathologies, cysts are commonly found in regions of alveolar bone, considered by some authors a contraindication to immediate implant placed just after the tooth extraction. The aim of this study was to report a case of removal of a periapical cyst of large proportions, with approximately 1.0 cm^3 and immediate implant installation, transfixing it through the cystic cavity and filling the defect with synthetic grafting material. A 35 year old female patient, Kennedy's Class III, presented herself complaining about the use of removable partial denture. After undergoing panoramic radiography a circumscribed radiolucent area in the region between the apices of the central lower incisors was detected (suggesting Periapical cyst) and generalized periodontal involvement. As the teeth were compromised, the rehabilitation planning was teeth euthanasia, cyst enucleation, and immediate implant installation transfixing the cystic cavity and filling the cavity with synthetic graft material (β-Tricalcium phosphate and hydroxyapatite) and finally proceeds to prosthetic rehabilitation after the osseointegration process with a Bränemark protocol. The literature presents few references of immediate implant related to cystic cavities. The purpose of this paper is to report a case of rehabilitation in a large cystic area.

Keywords: dental implants, odontogenic cysts, graft material, cyst treatment

INTRODUCTION AND LITERATURE REVIEW

The advent of Osseointegration by Bränemark et al., 1969[1], made possible the rehabilitation of many patients suffering by the absence of teeth all over the world. Nowadays, oral implant is the first choice of treatment when a tooth is lost, giving back the patients, the confidence to smile again.

Among several techniques, immediate implants after tooth extraction is well accepted because this technique allows a faster rehabilitation with lower costs, and also help to maintain the alveolar bone improving aesthetics[2].

As a disadvantage immediate implants offers risk of gingival recession and consequent exposure of the implant platform, which can compromise the aesthetic and the rehabilitation. One of the most effective ways to avoid this situation is the use of bone grafts materials like autologous, allogenic, or alloplastic materials, which represent an excellent alternative to oral rehabilitation[3,4].

However, some doubts appears in situations where the implants are placed in regions with periapical lesions, especially because there is a lack of information in the literature[5].

Traditionally contraindications for immediate implant placement are, endodontic lesions, periodontal or root fracture. However, Villa & Rangert, (2005)[4] states that 97.4% of implants placed in these conditions were successful. Lima Junior et al., (2006)[6] reported removal of an odontoma with immediate implant placement in the same region in a female patient of 19 years.

Siegenthaler et al., (2007)[7], have compared the survival rates of 13 implants placed immediately in areas of periapical pathologies with 16 implants placed immediately in non pathological areas. The results presents 100% of survival rates for both groups in 12 months of clinical follow up.

Recently, Fugazzotto, (2012)[8] published a retrospective review with 418 cases of implant insertion on sites of periapical lesions in a period of at least 24 months, with a 97,8% of success rates.

Although some authors[9] consider that radiographs and CT scans should be indicated to avoid implant placement in cystic areas and therefore increase the risk of implant loss, some studies[10, 11], showed that

immediate implant placement in infected sites is not contraindicated since that appropriate therapies are conducted[9].

Odontogenic cysts are pathologies derived from stimulation and proliferation of dental epithelium remaining after the odontogenesis process and can be divided into development cysts (keratocyst, primordial, dentigerous and calcified) and Inflammatory Cysts (periapical or radicular, Lateral and Gingival)[9].

The cyst is a pathological cavity lined by epithelium and often presents in its interior, fluid or semi solid content. This fluid contains a high protein concentration and cholesterol crystals, which generates high osmotic pressure. The difference between osmotic and hydrostatic pressures between the cyst fluid and plasma determine a centrifugal growth, responsible for bone resorption in the region. The cysts occur in all ages more frequently in adults with no difference in gender or race. Most cysts found in the maxilla and mandibles are classified as inflammatory ones. Among these the most prevalent one is the periapical or radicular cyst, which does not present clinical symptoms[12].

The treatment of periapical cysts can be performed by enucleation or marsupialization[13]. Large cystic lesions treated by the technique of enucleation may cause sequelae after treatment, such as impairment of adjacent teeth, loss of supporting bone, and paresthesia in addition to the morbidity caused to the patient[14]. Enucleation may be contraindicated when the cysts are massive and are close to critical areas[15]. Marsupialization, consists in reducing cystic cavity by excision of the lesion, in order to drain and consequently eliminate the hydrostatic pressure of the cavity, allowing surgical removal thereof preserving bone structure[16].

For a while the immediate implant placement was contraindicated in the presence of infection or periapical lesions. Pathologies treatment should be conducted before the implant placement[4].

Barry & Kearns, (2003)[17], states that after the cyst removal, a cavity filling with grafting material should be performed and the installation of the implant should take place after a 4 months healing period of the cystic cavity.

Patel, (2011)[18] reports a case of a patient with lateral periodontal cyst

in the right lower pre molar. In this case the cyst was removed and the cavity was filled with hydroxyapatite mixed with tetracycline. No membrane was used to accomplish the synthesis. Due to extensive destruction of the alveolar crest and the presence of the lesion the author chose to place the implant 12 months after the removal of the cyst, successfully concluding the case.

Takeuchi et al., (2007)[19] reported enucleation of nasopalatine duct cyst in a female patient (30 years) and immediate implant placement in the region of a missing central incisor. The gaps around the implant were filled with autogenous bone removed from the mandibular ramus. After one year, the authors showed bone remodeling and implant stability.

OBJECTIVE

The purpose of this report is to present an alternative therapy using immediate implants in cystic cavity.

CASE REPORT

Female patient, 35 yo, attended to the private practice for oral rehabilitation. The patient was submitted to an interview which was not detected any systemic problem. On clinical examination it was noted loss of several teeth, generalized periodontal problem, slight swelling in the anterior region of the mandible (asymptomatic) and a marked divergence between the lower central incisors leaving the patient with severe diastema (Figure 1). The radiographic evaluation showed an extensive circumscribed radiolucent area between the apexes of the dental elements mentioned above suggesting periapical cyst (Figure 2).

Figure 1 - Pronounced diastema and periodontal disease between the lower central incisors.

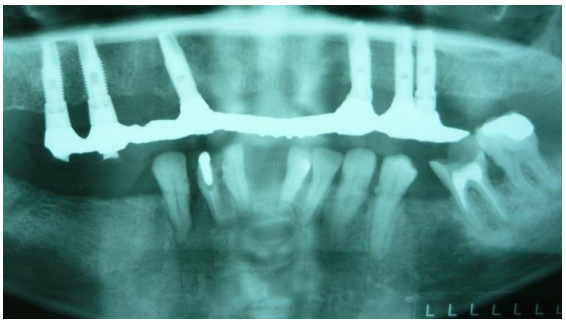

Figure 2- Radiolucent area between the root apexes of the lower central incisors, suggesting periapical cyst.

Treatment planning in agreement with the patient, was teeth extraction of the elements (43, 42, 41, 31, 32, 33, 34, 36, 37), enucleation of the possible "periapical cyst" between the elements 31 and 41, filling the cystic cavity with alloplastic graft material and placement of 6 immediate implants. Two of them temporary ones (single body with O-ring attachment) with the purpose of retaining an immediate temporary denture, and planned to be removed after 4 months to rehabilitate the patient with a fixed protocol.

The patient was advised to take Amoxicillin (500 mg) 8/8 hours and metronidazole (400mg) of 12/12 for ten days beginning 48 hours before surgery, Nimesulide (100 mg) of 12/12 hours beginning half an hour before surgery, Dipirona (500 mg) of 6/6 hours starting just after the end of the surgical procedure.

Infiltrative anesthesia was performed for the extractions and implant placement on the anterior region and a pterygomandibular mandibular nerve block for the left posterior region was performed using 4% Articaine Hydrochloride + Epinephrine. 1:100,000.

After the extractions an incision was performed over the crest of the alveolar ridge and a mucoperiosteal flap was reflected extending from the region of 46 to 36, exposing a fenestrated cystic cavity. As the cortical bone was already reabsorbed by the installed pathology, there was no need for the use of rotatory instruments to obtain access to the cyst, which was entire removed without disrupting the capsule (Figure 3), the cavity was cleaned and showed no traces of the cyst.

Figure 3 - Total removal of the cyst.

The installed implants were surface treated titanium screws and were distributed as follows: 35 - 3.75 X 10 mm, 33 - 4.3 X 15 mm, 32 - 2.5 X 16 mm, 42 - 2.5 X 16 mm, 23 - 4.3 X 15 mm, 45 - 3.75 X 10 mm.

Noting up the good conditions of the bone around the cystic cavity, it was decided to install an implant in the cystic area, transfixing it (Figure 4). After the implant installation the gaps were filled with alloplastic graft material, β-Tricalcium Phosphate - TPC GenPhos HA (Genius, Baumer AS. ® Mogi Mirim SP, Brazil) and

covered with bovine cortical bone membrane (Gen-Derm Genius, Baumer AS. ® Mogi Mirim SP, Brazil), (Figure 5). The mucoperiosteal flap was closed with 5.0 nylon suture, and a temporary prosthesis was installed. After 6 months a fixed protocol was installed (Figure 6 and 7).

Figure 4 - The implant transfixing through the cystic cavity.

Figure 5 - Filling the gaps with alloplastic material.

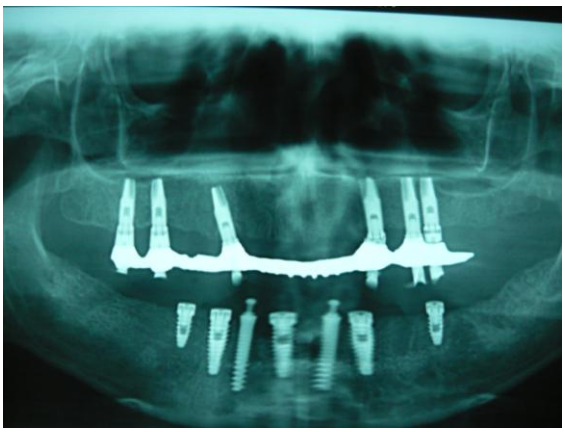

Figure 6- Panoramic radiograph 6 months after surgery.

Figure 7- Installation of lower fixed prosthesis.

DISCUSSION

Immediate implants has a series of advantages such as, faster rehabilitation and lower costs, which is well accepted by patients, also helps to maintain the alveolar bone height and width favoring aesthetics[2]. As a disadvantage there is the risk of gingival recession, consequently exposing the implant platform. This disadvantage can be overcome with the use of bone grafts materials[3,4].

Although studies[4, 7, 8] claims through experiments that almost 100% of immediate implants installed in regions with endodontic lesions, periodontal or root fracture was successful, reports of immediate implant placement in the cavities after enucleation cyst are not very common[5]. The most common reports are cases of cyst removal, filling the cavity with bone substitutes and posterior implant placement as

reported by Patel (2011)[18] and Barry; Kearns (2003)[17].

CONCLUSION

Immediate implants placed into cystic cavities after its removal appear to be a viable technique under controlled situations.

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