

OKC: from diagnosis to prosthetic rehabilitation–A case report

Akhilesh Prathap¹, Geethu Philo Varghese², Nidhin R S², Aiswarya R B²

¹ Associate Professor, Pushpagiri College of Dental Sciences, Thiruvalla, Kerala, India

² Pushpagiri College of Dental Sciences, Thiruvalla, Kerala, India

Abstract

The treatment protocol of odontogenic keratocyst tumor is a very controversial topics in oral and maxillofacial surgery. Numerous articles have been published regarding its classification as a cyst and as a tumor with inconclusive debates on its ideal management and treatment. Aggressive treatment plans for young patients might lead to a complete cure but also cause severe morbidity and a compromise in the quality of life. An attempt is made in this paper to present a patient centered rather than pathology specific treatment.

Keywords: OKC, treatment, rehabilitation

Introduction

Odontogenic keratocyst was first reported by Phillipsen in 1956 ^[1]. OKC is considered to be very aggressive, characterized by mural growth ^[2]. Most of the OKCs in the jaws take its origin from the cell rests of dental lamina. OKC show a slight male predilection and commonly affects age group of 20 to 40 years³. The lower jaw accounts for about a total of 70% to 80% keratocysts and are most commonly found in the angle between jaw and mandibular branch and in the maxilla in the area of the third molar. OKC spreads in an anteroposterior dimension. Due to its mural growth lesions may reach remarkable size without significant expansion of cortical plate ^[4]. Due to the presence of microsatellite cells, they often show remarkable recurrence. The cystic cavity is filled with keratin flakes with protein content less than 4g/100ml, which is one of the characteristic features of OKC⁵. The tumor usually manifest as a multilocular radiolucency with scalloped well defined margins. Histologically OKC is para-keratinized.

Case report

A 17-year-old female reported to our OPD with chief complaint of pain and swelling in the lower left back tooth region. There was associated history of pus discharge and swelling since 6 weeks. Medical history was not contributory. On intraoral examination, the only positive finding was pericoronitis in relation to lower left back tooth region associated with pus discharge. Extraorally, no presence of asymmetry or lymphadenopathy was noted. Radiographic examination revealed a radiolucent lesion of size 5 cm X 3 cm in relation to left angle and ramus of mandible (figure 1). CT scan revealed evidence of buccal cortical bone perforation (figure 2, 3). Fluid aspirate was of white creamy pultaceous material. Later on an incisional biopsy was performed which was consistent with features of OKC. Enucleation and curettage with chemical cauterization using carnoy's solution and excision of overlying mucosa along with extraction of 36 and 37 was done under GA. Post-operative follow up was done with OPG 1 month, 12 months, 13 months, 24 months post- operatively to assess the healing. During post-operative period of 30 months, CBCT was taken to assess the bone levels and to plan for implant placement and implants were placed for 36 and 37 teeth (figure 4- 10). Prosthetic rehabilitation with crown was considered 36 months post operatively (figure11) and patient is in periodic follow up since then.



Fig 1

5x3 cm

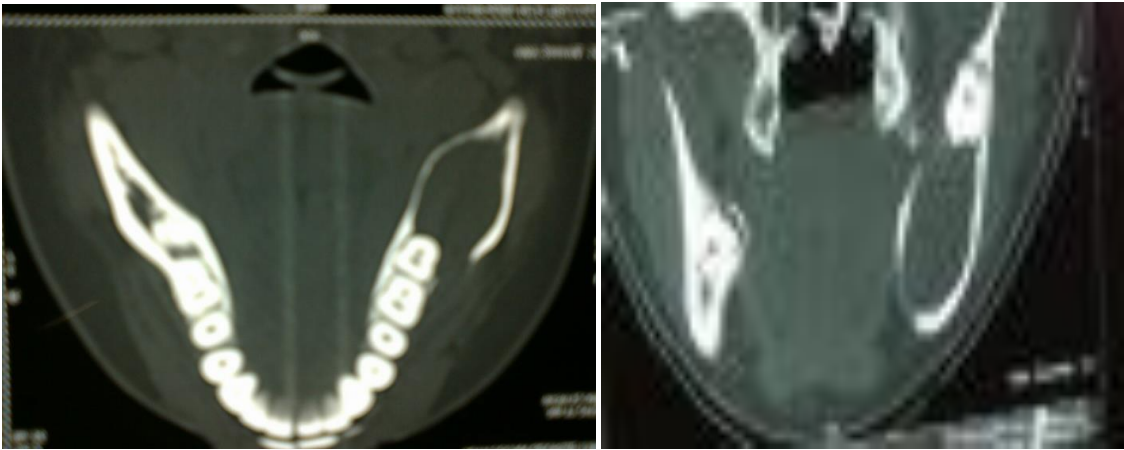


Fig: 2

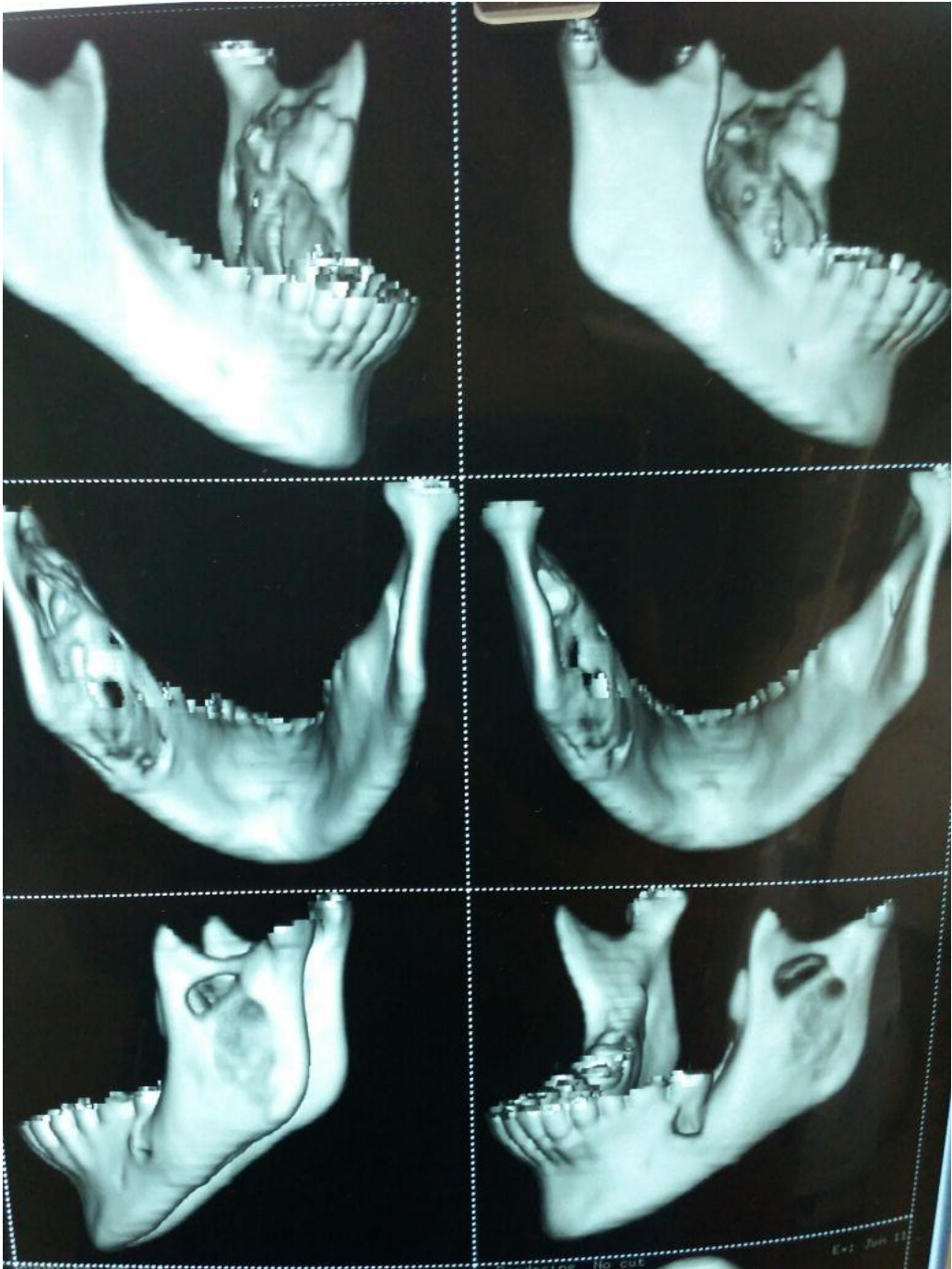


Fig 3

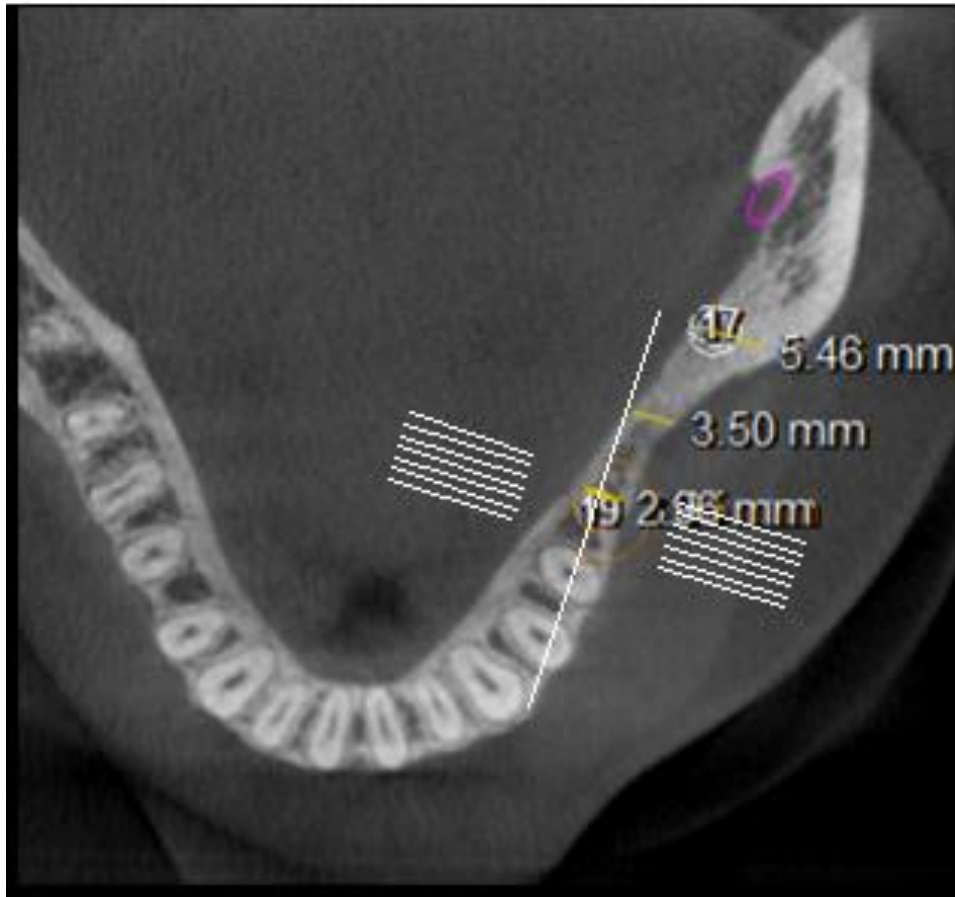


Fig 4

SICAT. GALILEOS Implant V 1.9.4370.23311		Planning Report – Implant 19			
Patient: Riya Susan, George *07-04-15 Scan: 07-Apr-15 12:01		Plan: Plan 1 [Mandible] Tooth chart: ADA			
Implant 19 Occlusal diameter: 3.5 mm Apical diameter: 3.5 mm Length: 10 mm Manufacturer: Nobel Biocare Implant line: Replace Select Tapered Serial number: 29401					

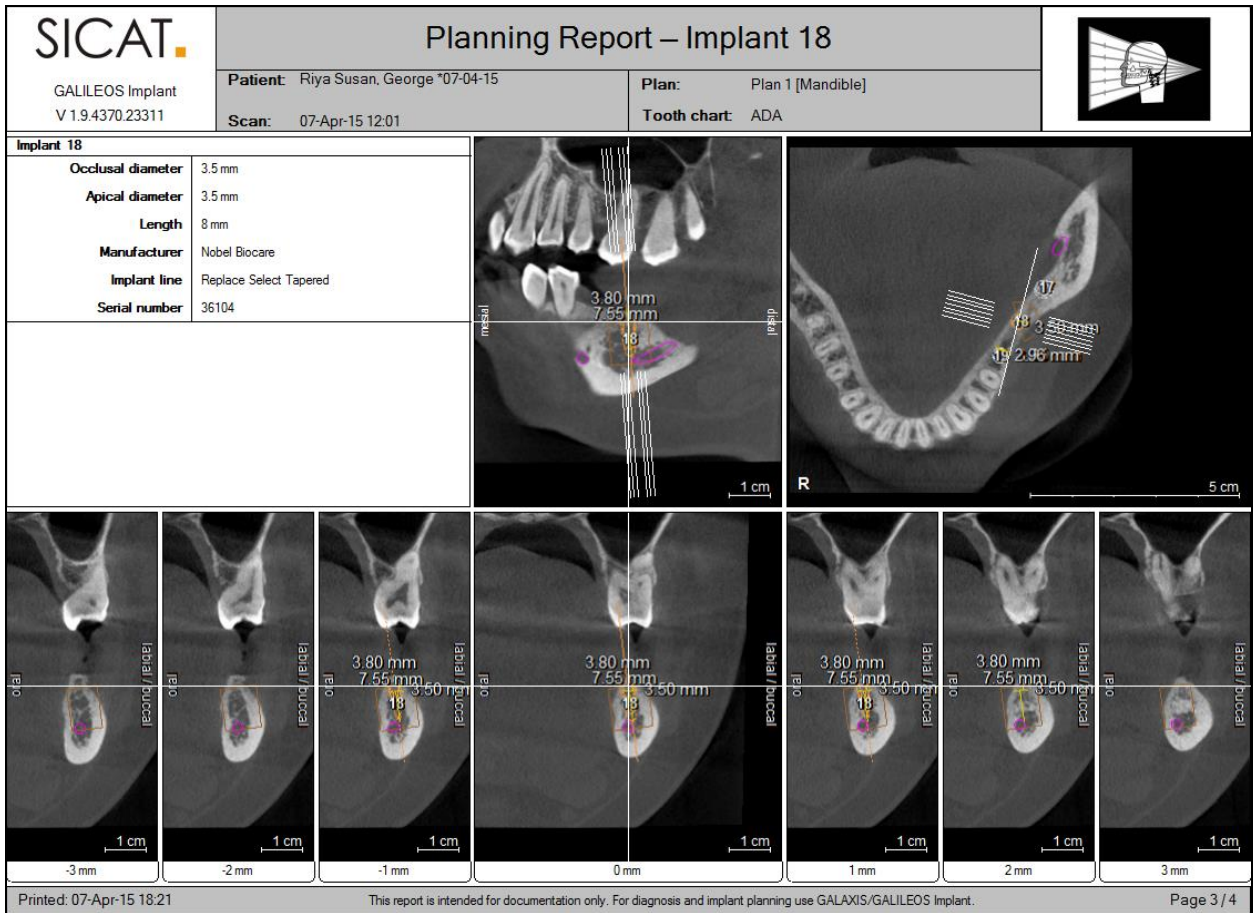


Fig 6

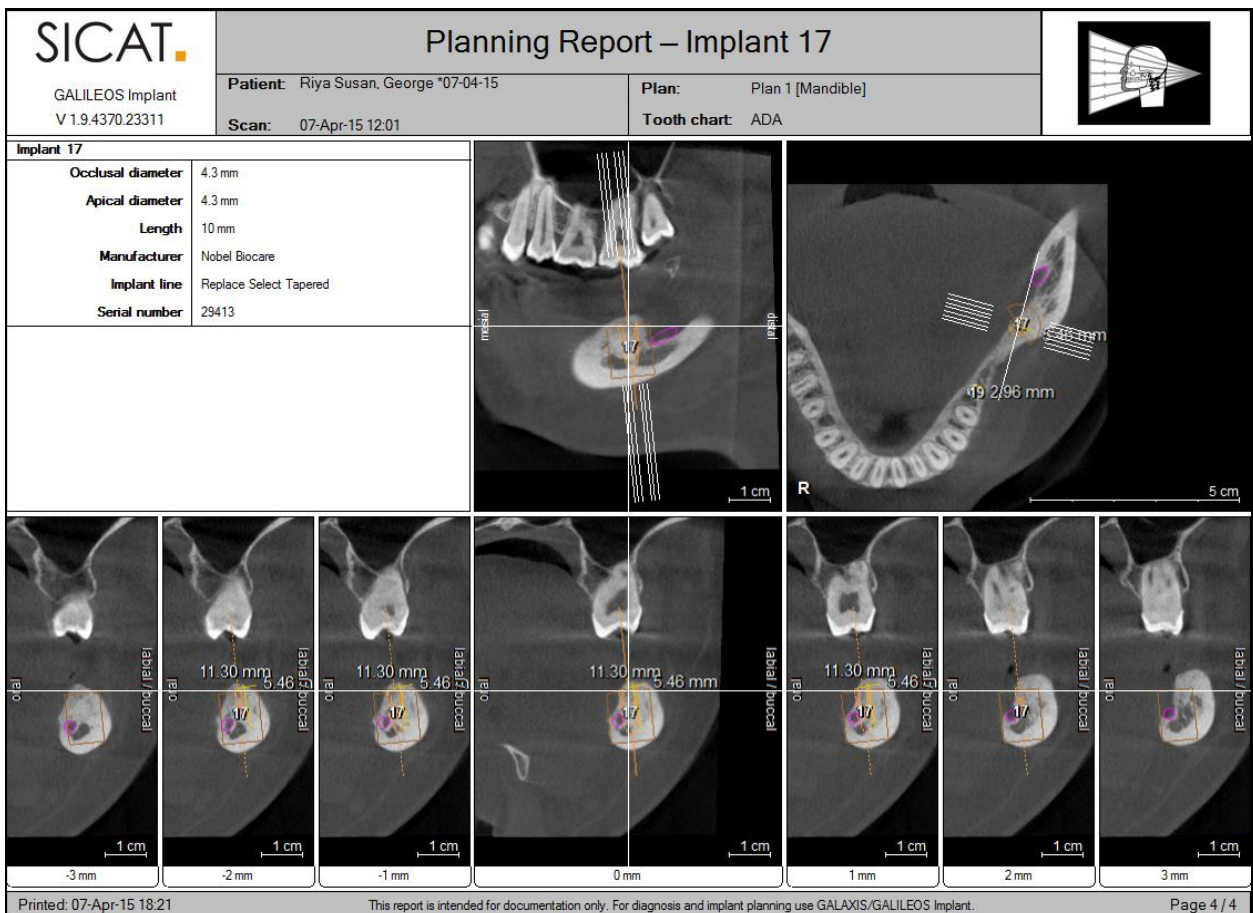


Fig 7

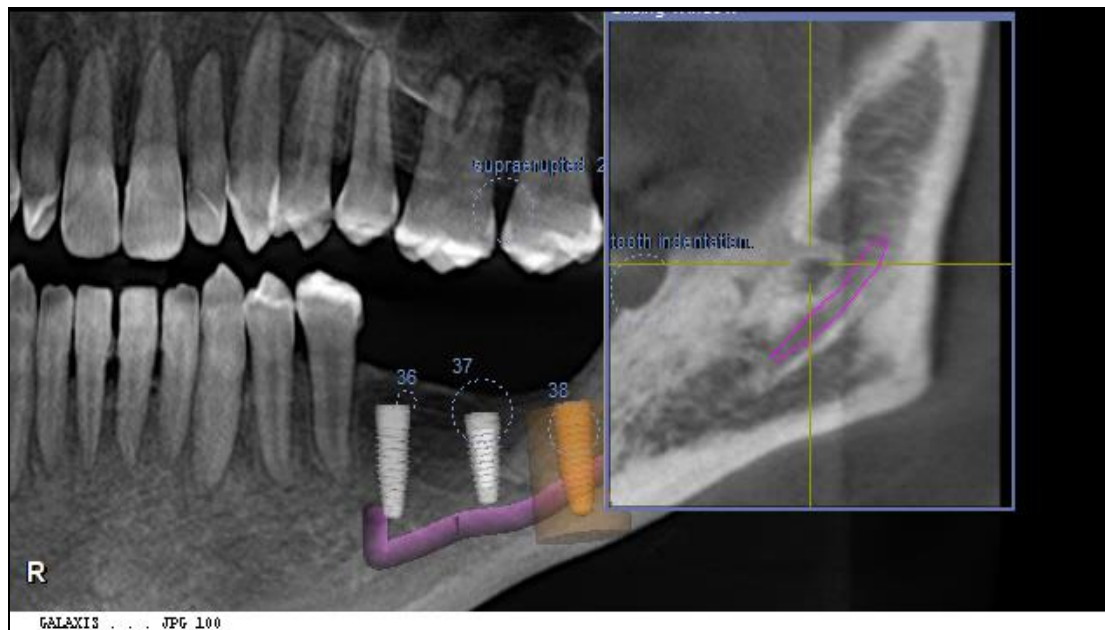


Fig 8

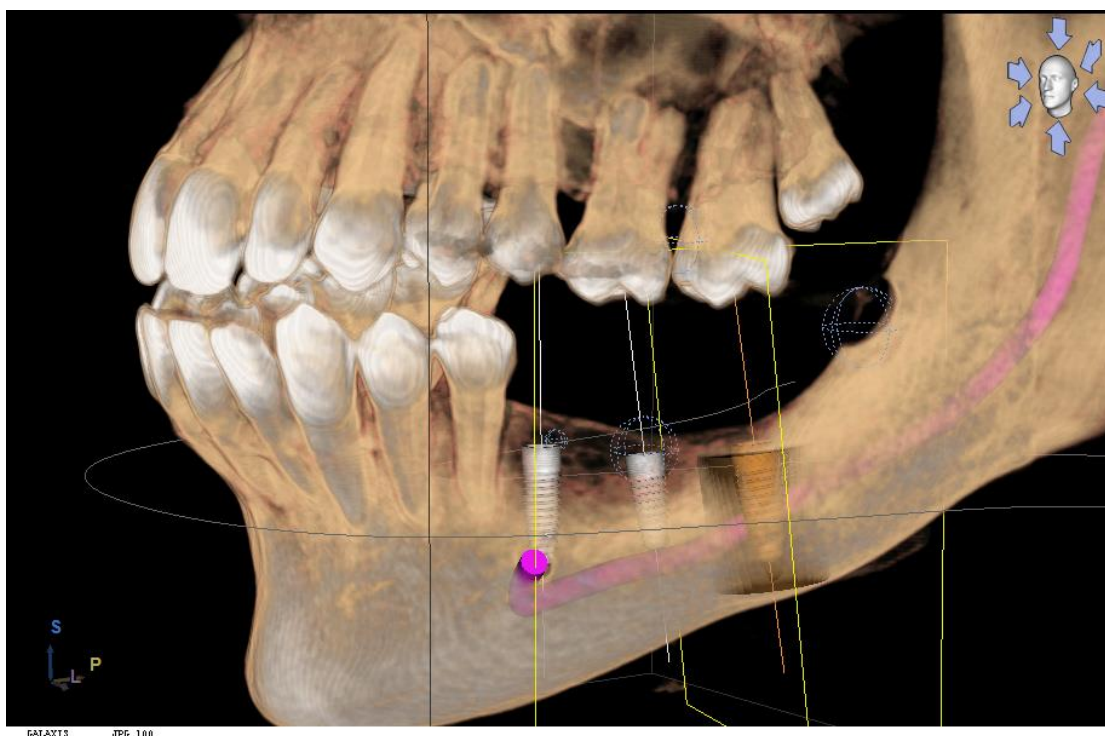


Fig 9



Fig 10

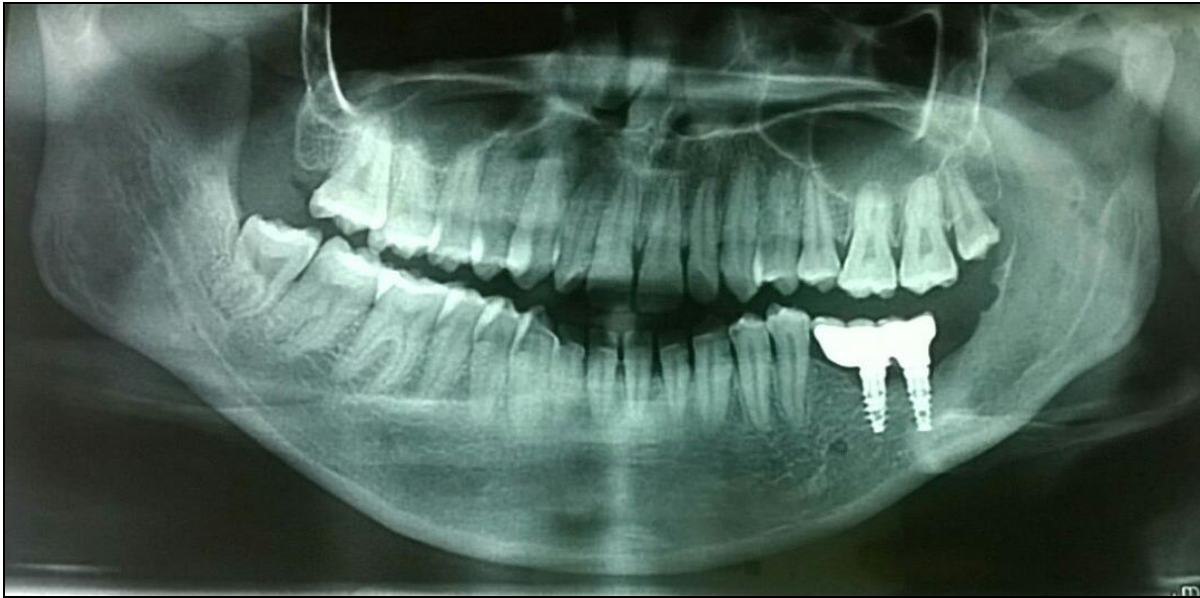


Fig 11

Discussion

Odontogenic cysts are one of the common pathological bony lesions affecting jaw. OKC is one among the common developmental odontogenic cyst accounting for 11% of all the odontogenic cysts. The term odontogenic keratocysts was first coined by Philipson in 1956 [6]. In 1967, Toller had suggested it as a benign neoplasm based on its clinical behavior [7]. Since then OKC had been known as a cystic entity for years. Due to its aggressive behavior, association with nevoid basal cell carcinoma and abnormal mitotic figures OKC was reclassified and was included in neoplastic category in 2005. And then WHO defined it as “A benign unicystic or multicystic, intraosseous tumour of odontogenic origin with a characteristic lining of parakeratinised stratified squamous epithelium and potential for aggressive infiltrative behavior [8].” Later on in 2017 OKC has been again reclassified in to cystic variety since the reasons supportive of neoplasm are considered insufficient. But Stoelting and many other surgeons vehemently oppose this reclassification.

The recurrence of OKC is very common and it is mainly attributed to therapeutic approaches, tumor location and post-operative follow-up period. The available literature gives a wide variety of treatment options ranging from simple curettage, enucleation (in combination with cryotherapy or Carnoy's solution) to resection (marginal or segmental) [8-15]. Simple curettage is not often recommended due to its aggressive nature and presence of microsatellite cysts. Marsupialization is a type of decompression characterized by relieving the intracystic pressure, which lead to reduction of the cyst size and new bone formation [12, 14]. Marsupialization and decompression are the accepted as a treatment modality of large cystic lesions which will reduce the size of lesion. Marsupialization is also accepted when cystic lesion encroaches developing tooth buds, vital structures like maxillary sinus or inferior alveolar nerve [12, 14, 15, 16]. Nakamura *et al* [14], Jung *et al*. [15] from their study had came to the conclusion that after decompression, OKC transform to a less aggressive orthokeratized, even nonkeratinizing squamous epithelium from aggressive parakeratized variety. Nakamura *et al* [14] have also concluded from their study that decompression is more successful in mandibular body than ramus region, while a bigger occurrence of recurrences is noted in cases of multilocular lesions and the lesions situated in the ramus region. In 2007, Pogrel *et al* introduced the technique whereby they decompressed large lesions until they appeared radiographically to have resolved down to about 2–3 cm in size, and then surgically enucleated the lesions followed by peripheral ostectomy of surrounding bone [17, 19-23]. This is done to remove any cyst remnants that might be in the surrounding bone. Enucleation with peripheral ostectomy and chemical cauterization using Carnoy's solution is most accepted treatment of OKC of size 2 to 4 cm. However, presence of multiple satellite cysts and the high rate of recurrence make the treatment challenging too. Enucleation shows the biggest number of recurrences [9, 14]. Rare instances of extreme cases of OKC with nonfunctional remaining bone which have been treated by resection & reconstruction have also been reported [18]. Even though segmental resection causes large morbidity the rate of recurrence is very low.

The clinical presentation and radiological features of OKC is similar to the conditions like dentigerous cyst, ameloblastoma, odontogenic myxoma and simple bone cyst. However, the above listed conditions present with their own distinct unique features helping us to come to a provisional diagnosis to be confirmed with pulstaceous fluid aspirate (which is an unique pathognomonic feature of OKC) and biopsy report

The peripheral ostectomy and extraction of associated tooth always causes functional morbidity. Majority of the patients with OKC come under age group of 20-40 years and hence prosthetic rehabilitation is always an essential part of treatment line. In our report we managed prosthetic reconstruction with dental implants, after an initial therapy. Prosthetic rehabilitation with dental implants is the best treatment option for replacement of missing teeth in the cases of acceptable bone preservation. After a 30 months follow-up period, the patient

underwent implant surgery. Presented cases of treated jaw cysts and later implant placements by other authors have also showed a good results ^[11, 13]. Barry and Kearns ^[11] and Karamanis *et al.* ^[13] had done implant placements supported by bone grafting with corticocancellous iliac crest bone and alloplastic bone substitute graft. But in our case there was no need for bone augmentation, due good bone preservation and the patient is under follow up since implant placement. Till now patient is having any complaints or complications. However, a long-time period of follow-up is needed in order to avoid any unnecessary hurdles, such as implant failure or recurrence of the tumor, which might be seen even ten years after the treatment.

Conclusion

Definite diagnosis of OKC on a clinical and radiographic basis is not always possible. But with appropriate and advanced imaging modalities, we can strongly suspect this entity, and can help us in selecting the necessary treatment protocol. For the treatment options, a biopsy should be carried out with the complete aspiration of the fluid contents that allows the thickening of the epithelium. The final treatment considered should be a conservative enucleation instead of a belligerent resection that mutilates patients, as most of these patients belong to the younger generation. None of these suggestions take away the fact that long-term follow-ups are essential along with periodic radiographic examination. Here we have presented a case of KCOT which has been surgically treated and functionally rehabilitated. Being surgeons we usually focus on the eradication of disease and are less concerned about the post op functional and cosmetic rehabilitation of the patient which actually plays a vital role in improving the quality of life of the patient, thereby providing the patient a cure for the disease as well as restoring the form and function.

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