

## MARSUPIALIZATION OF A MAXILLARY CYST – CASE REPORT

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### ABSTRACT

Cysts of the upper and lower jaw are a usual radiographic finding, sometimes detected by chance, that affect the dentition and the adjacent anatomical structures. There have been described various approaches for their management, but two of them are nowadays applied, namely marsupialization and enucleation. The aim of this study is to assess marsupialization as a usual treatment for cystic lesions and highlight the usefulness of oral radiology in their diagnosis and treatment. A clinical case of maxillary cyst is presented. The patient visited the School of Dentistry and, after the clinical examination and radiographic images (OPG and CBCT), a wide cyst was diagnosed in the anterior left region of the upper jaw. The cyst had penetrated the buccal and palatal alveolar bone, as well as the osseous floor of the left nasal cavity. The surgeons suggested marsupialization as the best surgical choice. So, after patient's consent, teeth #23 and #24 were extracted and the cyst's epithelium was excised through their post-extraction alveoli. The formation of osseous bridge was monitored with regular CBCT imaging. This clinical case is being presented to highlight the value of marsupialization in managing large cysts.

**KEY-WORDS:** cone-beam computed tomography, cysts, epithelium, marsupialization.

### INTRODUCTION

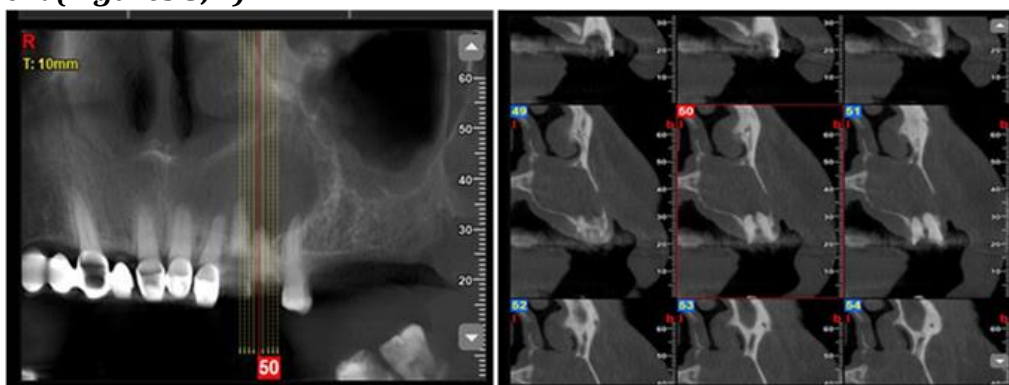
Mandibular and maxillary cysts are common osseous lesions formed into the jaws as a result of genetic factors and/or pathological conditions of mostly permanent dentition <sup>(1)</sup>. Their classification includes a wide range of cyst types, among which the most usual are radicular cysts followed by dentigerous cysts (1-3). In most cases, oral cysts follow a pattern of progressive but slow expansion, rarely provoke painful symptomatology and are usually diagnoses through radiological examination <sup>(1)</sup>. Common treatment methods are marsupialization and enucleation. The final decision depends on several criteria related to cysts' features, the dentition and the patient <sup>(4)</sup>. Between the two available techniques, surgeons seem to prefer marsupialization in cases of large cysts affecting anatomical structures <sup>(4, 5)</sup>. The aim of this study is to highlight the usefulness of oral radiology in determining the exact position of cystic lesions and assisting in the decision of the appropriate excision technique.

## MATERIALS AND METHODS

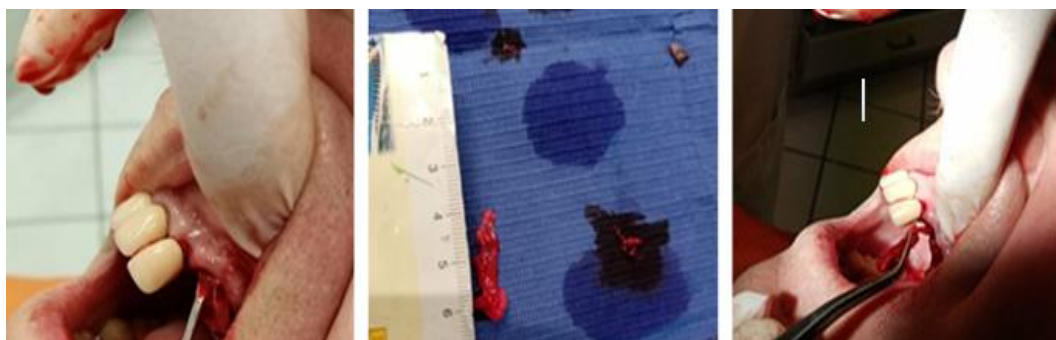
For the purposes of our study, a clinical case with maxillary cyst has been chosen and is being presented. The patient visited the School of Dentistry of Aristotle University of Thessaloniki, Greece, voluntarily with painful symptomatology as described below. Through the patient's radiological examination with an orthopantomograph, a maxillary cyst was incidentally diagnosed. So, she underwent a new radiographic evaluation with cone-beam computed tomography (CBCT), in order to determine the exact dimensions and relationship of the cyst with adjacent anatomical structures.

## RESULTS – CASE PRESENTATION

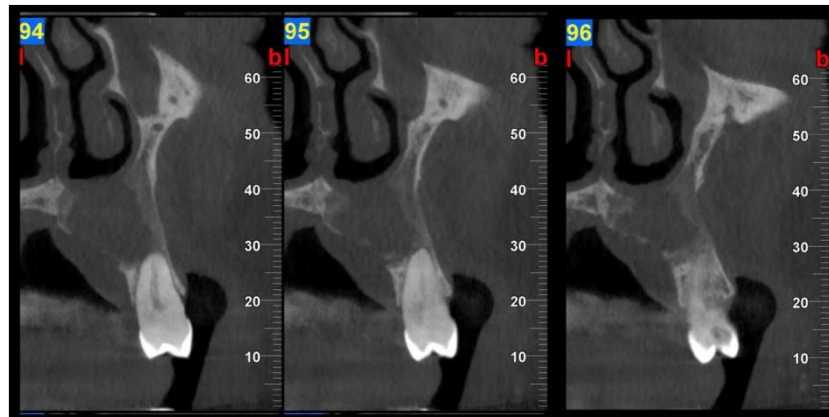
A 60-year-old female patient visited the School of Dentistry of Aristotle University of Thessaloniki with painful symptoms deriving from the nasal cavity and her left upper anterior teeth. From the clinical examination, no swelling or any clinical sign of inflammation was noticed. The radiological evaluation of the case was first performed with an orthopantomograph and afterwards with a cone-beam computed tomography (CBCT). The tomographic images confirmed the formation of a cyst into the left premaxilla. It seems that the cyst has perforated the palatal and the buccal alveolar bone, as well as the osseous floor of the left nasal cavity (**Figure 1**). Marsupialization of the cyst was suggested to the patient, as well as monitoring of its shrinkage with CBCT images during the following months. During the surgical procedure, the epithelium of the cyst was removed through the post-extraction alveoli of teeth #23 and #24 (**Figure 2**). The patient was set under regular observation with CBCT images, which revealed the formation of osseous bridge at regions of bone perforation detected with the initial CBCTs before treatment (**Figures 3, 4**).



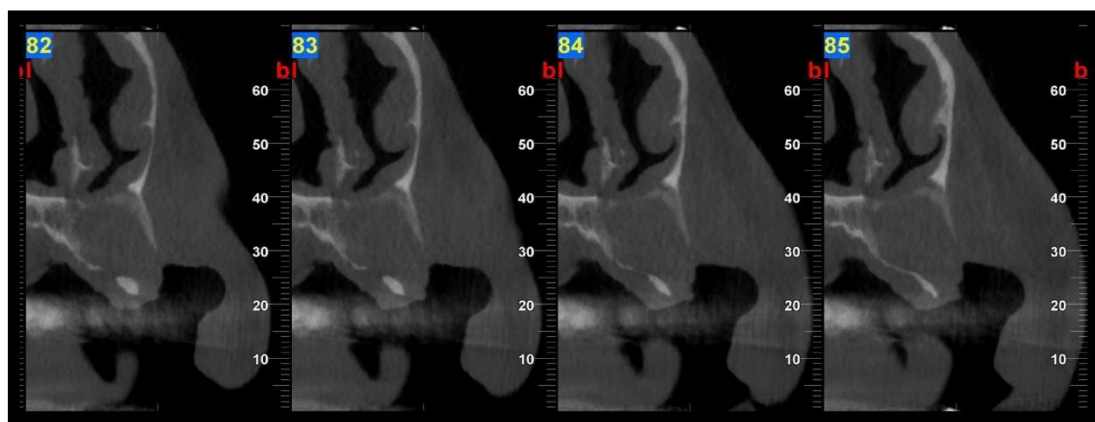
**Figure1** (Pre-operative CBCT images.)



**Figure2** (Operative procedure – excision of cyst's epithelium.)



**Figure3** (Post-operative CBCT images (2 months after the surgery).)



**Figure4** (Post-operative CBCT images (4 months after the surgery).)

## DISCUSSION

Jaw cysts are commonly single, as bilateral and multiple cysts are rarely observed in cases of patients with basal cell nevus syndrome, mucopolysaccharidosis and cleidocranial dysostosis <sup>(1, 6)</sup>. The differential diagnosis may include odontogenic keratocysts, primordial cysts, and odontogenic tumors (Pindborg tumor, adenomatoid odontogenic tumor, mural ameloblastoma, unilocular ameloblastoma, ameloblastic fibroma, odontomas, and cementomas) <sup>(1)</sup>. Clinically, patients with oral cysts do not complain about painful symptomatology, but as the cysts expand it is more likely to provoke pain and discomfort <sup>(2)</sup>. The radiological examination confirms the presence of a lesion with a diameter of at least 5mm <sup>(1, 7)</sup>. The final diagnosis of the cyst's type comes from its histological examination, so that the correct methodology of management is determined for each clinical case <sup>(8)</sup>.

The most common treatment choices are marsupialization and complete enucleation <sup>(1)</sup>. As marsupialization was the chosen management technique in the previously presented clinical case, we are going to comment on its features. Marsupialization is the conversion of a cyst into a pouch, which is accomplished by suturing the cyst lining to the oral mucosa <sup>(1, 8)</sup>. It was first described by Partsch as a treatment for cysts <sup>(4)</sup>. To marsupialize an oral cyst, the surgeon brings the lesion in communication with the oral cavity and sutures the lesion's mucosa to the oral mucosa, thus allowing the drainage of any fluid and leading to reduction of cyst's dimensions, bone formation and inversion of pathological into normal tissue <sup>(4, 9, 10)</sup>. After marsupialization, the lesion may be left to heal normally, or sometimes,

it is needed to apply total enucleation of a cyst after its initial marsupialization <sup>(8, 11)</sup>. Apart from the classical procedure, there has been described a slightly different approach for cysts' marsupialization through the nasal cavity for maxillary cysts protruding the nasal floor <sup>(12)</sup>. It is a safe, less traumatic technique with lower recurrence rate <sup>(12)</sup>.

Marsupialization is applied preferably in young patients, when the displaced teeth need to be preserved, or when the cyst is large and it is estimated that enucleation will probably lead to a pathological fracture and extended destruction of surrounding tissues <sup>(1, 13)</sup>. So, marsupialization is safer with fewer complications and less invasive in comparison to enucleation, as far as teeth preservation and anatomical structure protection are taken into consideration <sup>(1, 8, 14)</sup>. Moreover, the operating time is shorter and the result is more esthetic after the cyst healing <sup>(14)</sup>. However, in this method, pathological tissue is left in situ, so there is a risk of developing ameloblastomas, squamous cell carcinoma or intraosseous mucoepidermoid carcinoma <sup>(1)</sup>.

## CONCLUSION

The diagnosis of a jaw cyst is often incidental. When diagnosed and scheduled for surgery, the surgeon may decide between marsupialization and enucleation the best choice for each clinical case. Regarding marsupialization, which was applied on the case presented above, it has several advantages as a method, but one should always keep in mind its limitations, in order to provide patients with the best possible surgical outcome.

## REFERENCES

1. El Gaouzi R, El Harti K. Dentigerous cyst: enucleation or marsupialization? (a case report). Pan Afr Med J. 2021 Nov; 40(149).
2. Santosh ABR. Odontogenic cysts. Dent Clin N Am. 2020; 64(2020): 105-119. <https://doi.org/10.1016/j.cden.2019.08.002>.
3. Arakeri G, Rai KK, Shivakumar HR, Khaji SI. A massive dentigerous cyst of the mandible in a young patient: a case report. Plast Aesthet Res. 2015; 2(5): 294-8. <http://dx.doi.org/10.4103/2347-9264.165439>.
4. de Moraes ATL, Soares HA, Pinheiro JJV, Ribeiro ALR. Marsupialization before enucleation as a treatment strategy for a large calcifying odontogenic cyst: Case report. Int J Surg Case Rep. 2020; 67: 239-244. <https://doi.org/10.1016/j.ijscr.2020.01.031>.
5. Santos HBP, de Moraes EF, Moreira DGL, Neto LFA, Gomes PP, Freitas RA. Calcifying Odontogenic Cyst with Extensive Areas of Dentinoid: Uncommon Case Report and Update of Main Findings. Case Rep Pathol. 2018; 2018: 8323215. <https://doi.org/10.1155/2018/8323215>.
6. Ghandour L, Bahmad HF, Bou-Assi S. Conservative Treatment of Dentigerous Cyst by Marsupialization in a Young Female Patient: A Case Report and Review of the Literature. Case Rep Dent. 2018; 2018: 7621363. <https://doi.org/10.1155/2018/7621363>.
7. Vasiappan H, Christopher PJ, Kengasubbiah S, Shenoy V, Kumar S, Paranthaman A. Bilateral Dentigerous Cyst in Impacted Mandibular Third Molars: A Case Report. Cureus. 2018; 10(12): e3691. <https://doi.org/10.7759/cureus.3691>.
8. Mahfuri A Sr, Darwich K Sr, Al Manadili A Sr. Marsupialization of a Large Dentigerous Cyst in the Mandible: A Case Report. Cureus. 2022; 14(7): e27340. <https://doi.org/10.7759/cureus.27340>.
9. Emam HA, Smith J, Briody A, Jatana CA. Tube Decompression for Stage Treatment of a Calcifying Odontogenic Cyst – A Case Report. J Oral Maxillofac Surg. 2017; 75(9): 1915-1920. <https://doi.org/10.1016/j.joms.2017.02.032>.

10. Consolo U, Bellini P, Melini GM, Ferri A, Lizio G. Analysis of Marsupialization of Mandibular Cysts in Improving the Healing of Related Bone Defects. *J Oral Maxillofac Surg.* 2020; 78(8): 1355.e1-1355.e11. <https://doi.org/10.1016/j.joms.2020.02.034>.
11. Hwang MJ, Lee YP, Yu-Fong Chang J, Chiang CP. A large mandibular orthokeratinized odontogenic cyst treated by marsupialization. *J Dent Sci.* 2023; 18(3): 1400-1402. <https://doi.org/10.1016/j.jds.2023.01.004>.
12. Xu D, Han M, Cao R, Liu D, Zhang Q, Sun C. A Clinical Observation Study for Transnasal Endoscopic Marsupialization in the Treatment of Maxillary Cyst. *J Craniofac Surg.* 2023; 34(8): 2430-2432. <https://doi.org/10.1097/SCS.00000000000009707>.
13. Khandeparker RV, Khandeparker PV, Virginkar A, Savant K. Bilateral Maxillary Dentigerous Cysts in a Nonsyndromic Child: A Rare Presentation and Review of the Literature. *Case Rep Dent.* 2018; 2018: 7583082. <https://doi.org/10.1155/2018/7583082>.
14. Mumtaz S, Singh M. Transoral Marsupialization of a Large Dermoid Cyst. *J Oral Maxillofac Surg.* 2019; 77(4): 753-756. <https://doi.org/10.1016/j.joms.2018.11.033>.