

Short Case Report

Surgical treatment of unusual osteoma associated with homolateral radicular cyst of the maxillary sinus

Elena Cantone^{1,*}, Aldo Torrisi¹, Antonio Romano², Antonia Cama², Giulia Foschi¹, Antonella Miriam Di Lullo¹, Michele Cavaliere¹, Sergio Motta¹, Luigi Califano², Maurizio Iengo¹

¹ Department of Neuroscience, Reproductive and Odontostomatological Sciences – ENT section, University “Federico II”, Naples, Italy

² Department of Neuroscience, Reproductive and Odontostomatological Sciences – Maxillo-facial section, University “Federico II”, Naples, Italy

(Received: 9 March 2020, accepted: 20 May 2020)

Keywords:
Osteoma /
Odontogenic cyst /
Maxilla / Imaging

Abstract – Introduction: We described a rare clinical case of osteoma associated with homolateral radicular cyst of the maxillary sinus. **Observation:** Imaging showed two different lesions in the right maxillary sinus. We performed a combined surgical approach to completely remove the lesions and used a plasma rich in growth factors membrane to repair dental roots. No relapse after a 2 years follow-up was observed. **Commentaries:** The simultaneous presence of two large lesions, a 23,7 mm osteoma and a 33,7 mm radicular cyst in the same maxillary sinus, has been rarely described in the literature. Although nasal endoscopy and imaging are mandatory to assess the diagnosis, the definitive diagnosis was obtained after histopathologic examination. A combined surgical approach allowed a complete removal of both lesions, ensuring, at same time, an optimal surgical field. Plasma rich in growth factors membrane due to its cohesive properties was particularly useful in improving bone neoformation and periodontal regeneration. **Conclusion:** Diagnostic assessment of maxillary lesions requires nasal endoscopy, imaging and histopathological examination. If these lesions are symptomatic, they should be completely removed and minimally invasive surgery is indicated. Plasma rich in growth factors membrane ensures a good postoperative recovery.

Observation

A forty-one-year-old female came to our hospital complaining right sided nasal respiratory obstruction, homolateral mucopurulent rhinorrhea, epiphora, auricular fullness and cacosmia for about 6 months, without history of chronic rhinosinusitis, significant family, social or medical history apart from previous not well described dentistry treatments and a rhinoseptoplasty 11 years earlier.

Nasal endoscopy showed a medialization of the right lateral wall and a lift of the floor with mucosal hyperemia and abundant ipsilateral mucopurulent discharge. No nasopharynx lesions were found. Intra-buccal examination showed the absence of 16, 18, 28, 36, 37, 45, 47, 48 teeth without oroantral fistulas. Dental orthopantomography (OPG) showed a root canal treatment of the upper incisors (12, 21 and 22), prosthetic treatment of the four upper incisors and the presence of a cystic lesion departing from the tooth number 12.

Computed tomography (CT) showed the presence of two lesions in the right maxillary sinus: the first, 23.7 mm in the

largest diameter with implantation site on the lateral wall of the maxillary sinus, having calcium content; the second, 33.7 mm, completely occupying the maxilla, eroding and thinning the floor, protruded into the ipsilateral nasal cavity. The imaging showed the obstruction of the right natural maxillary ostium by the cyst, that in association with the osteoma caused sino-nasal dis-ventilation and consequent rhinosinusitis inflammation (Fig. 1).

Magnetic resonance (MR) confirmed the obliteration of the whole right maxilla and excluded contrast enhancement of both lesions (Fig. 2). Multidisciplinary clinical evaluation excluded the presence of signs suggestive of Gardner syndrome.

We planned a combined surgery choosing a double endoscopic approach with two access windows to the maxilla under general anesthesia with controlled hypotension. Before surgery the patient underwent an endodontic retreatment of the tooth number 12. The first window was a middle antrostomy. Under endoscopic guidance using a 0° endoscope, the middle turbinate was gently medialized to identify the middle meatal structures with care to avoid fracturing the turbinate–skull base junction. A maxillary ostium seeker was

* Correspondence: elena.cantone@unina.it

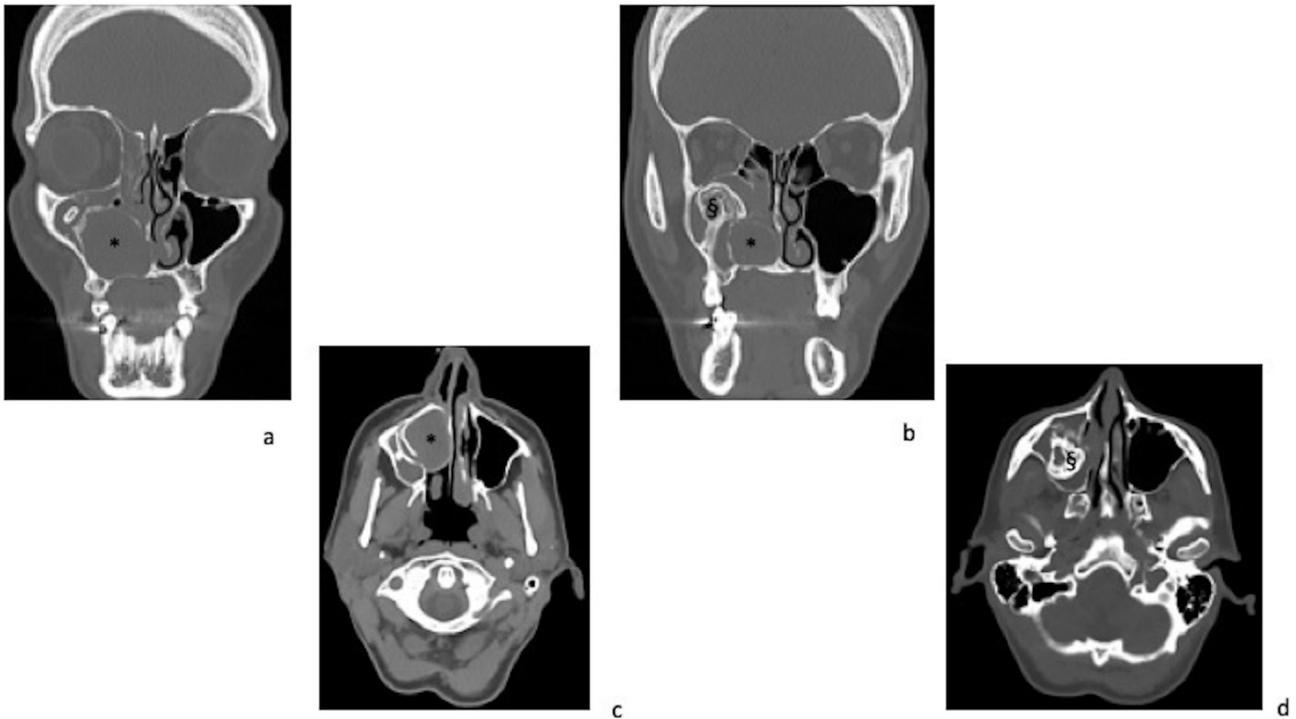


Fig. 1. CT (a, b – coronal view), (c, d – axial view). *cyst, § osteoma.

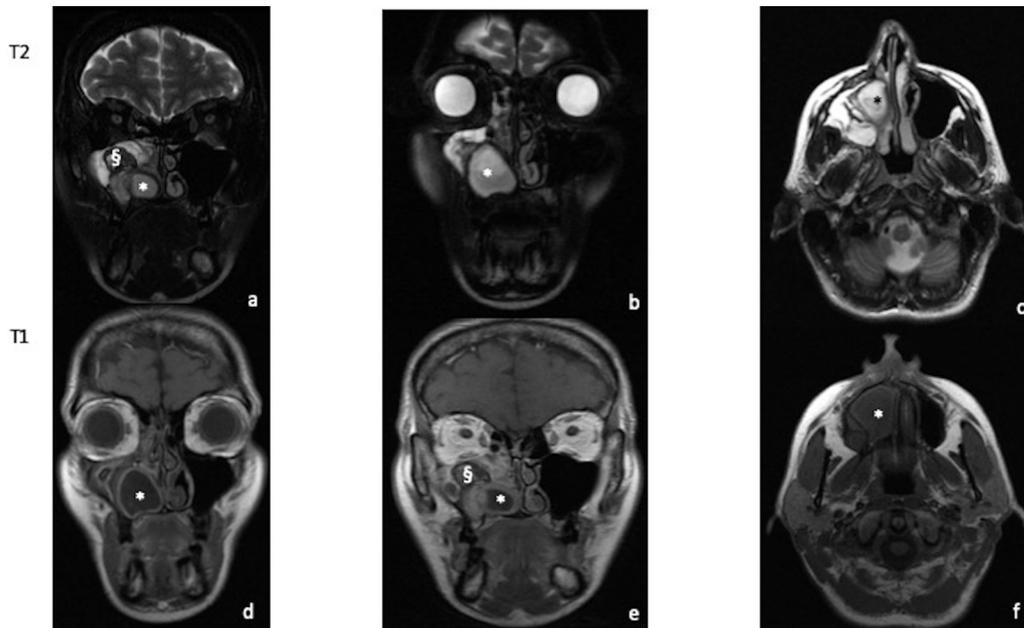


Fig. 2. MR; (a, b) T2 coronal view; (c) T2 axial view, (d, e) T1 coronal view; (f) T1 axial view. *cyst, § osteoma.

placed behind the uncinate process (UP) to displace the free edge outwardly and anteriorly, the UP was then resected using a Blakesley forceps. The maxillary natural ostium was visualized and probed with a curved suction. The ostium was enlarged with a backbiting bone punch.

The second window was obtained by making an intra-sulcular incision from the superior left central incisor (21) to the right second molar (17), elevating a mucoperiosteal flap

and skeletonizing the premaxilla and the lateral wall. At the apex of the roots of the 12 and 13, the bone was drilled and the cyst was displayed and enucleated. We found a communication with the maxillary sinus due to the osteolysis generated by the cyst. The lateral wall of the maxillary sinus was drilled to remove the lateral portion of the osteoma, whereas the remaining medial portion of the osteoma was removed through the antrostomy (Fig. 3).

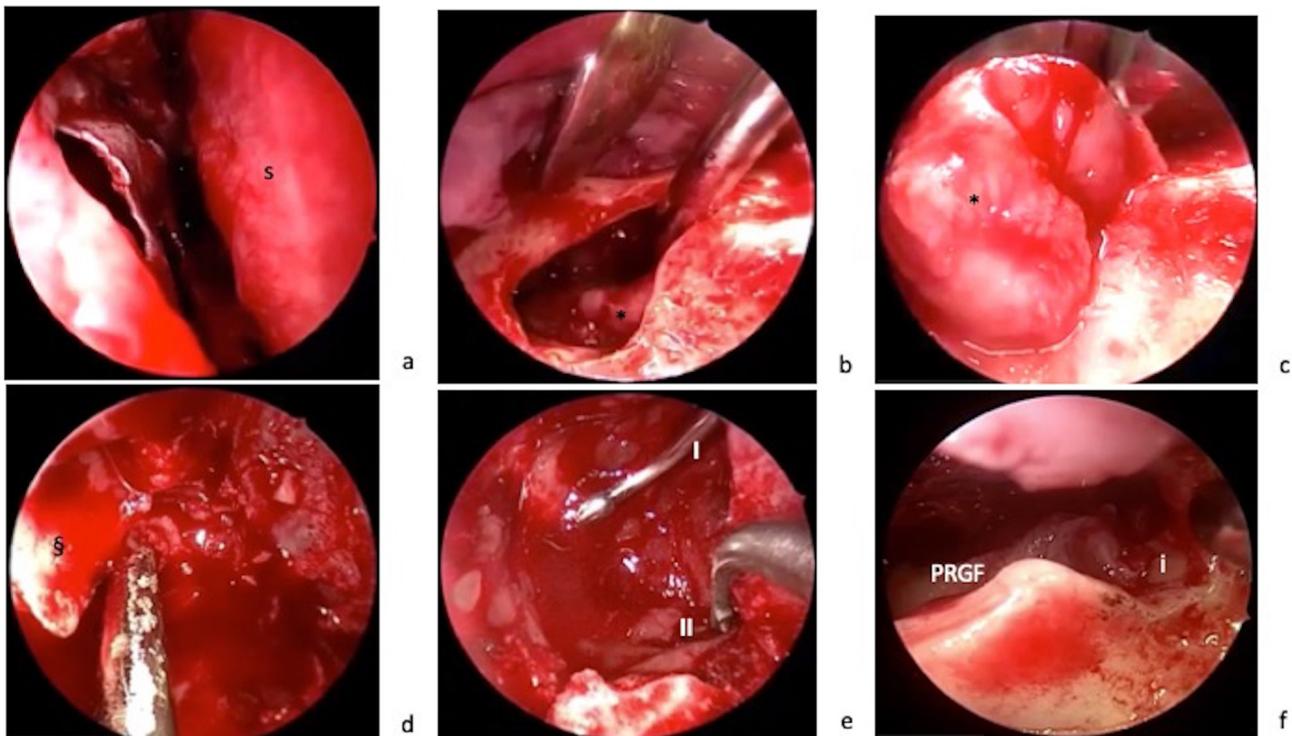


Fig. 3. Combined surgical approach; (a) I window, middle anastomosis, s nasal septum; (b) II window, antero-inferior wall fenestration, * cyst; (c) cyst enucleation through the II window, * cyst; (d) osteoma removal, § osteoma; (e) double surgical approach, I and II windows; (f) PRGF membrane positioning, i incisive.

Lastly, we prepared a plasma rich in growth factors (PRGF) membrane to cover dental roots (Fig. 3) [8]. We collected 10 ml of peripheral blood with 5 cc laboratory glass tubes without anticoagulant. The glass tube was centrifuged at 2700 RPM at room temperature for 12 min (IntraSpin-Intra-Lock System Europa™). The plasma component above the buffy coat, was the PRGF [9] (Fig. 3).

The patient underwent post-operative therapy with antibiotics, corticosteroids, mouth washes with chlorhexidine and a liquid and semi-solid diet. No peri and post-operative complications were observed. Histology was compatible with an osteoma and a radicular odontogenic cyst. Our patient underwent a weekly follow-up for the first month, monthly for the next three months, then outpatient checks every 6 months for 2 years. At 2 years follow up no recurrence of disease was observed (Fig. 4).

Comments

Head and neck osteomas are rare (0.43–1%). They are frequently found into the frontal and ethmoid sinuses, but rarely into the maxilla and sphenoid. Although osteomas prevail in males, our patient was a female [1].

Radicular cysts are quite small (5–15 mm) and commonly found into the maxilla. Only in case of infection or functional impairment they require surgical treatment [2]. In our patients

we found a 33.7 mm radicular cyst—much larger than the usual range—originating from incisive and occupying almost entirely the maxilla (Figs. 1 and 2).

The simultaneous presence of a 23.7 mm osteoma and a 33.7 mm radicular cyst in the same maxillary sinus, as found in our clinical case, is very rare, only one case is reported in the literature [3].

The rhinosinusitis found in our patient was unilateral and the osteoma was unlikely to be a consequence of rhinosinusal inflammation, but rather the cause. Indeed, the pathophysiology of rhinosinusal inflammation in our patient suggested an obstruction of the ipsilateral natural maxillary ostium by both lesions with a consequent impairment of rhinosinusal ventilation.

CT is the *gold standard* for the diagnosis of both osteoma and radicular cyst of the maxilla, but MR was useful for the differential diagnosis and the evaluation of a possible intracranial extension [4].

The presence of local infection and symptoms related to the volume of the two neoplasms required surgical treatment in our patient. Endoscopic surgery is currently the technique of choice for the treatment of both osteomas and cysts, but a personalized surgical approach should be developed. According to the literature, a minimally invasive surgical approach reducing postoperative pain, swelling, and hematoma is more tolerable for patients than other approaches [5]. Due to the extension of the two lesions, we opted for a double surgical



Fig. 4. Surgical specimen (a) cyst; (c) osteoma; (b) postoperative nasal endoscopy.

access to the maxilla. The combined surgical approach, ensuring an optimal surgical field, allowed to obtain a complete removal of both lesions.

In our patient we used PRGF membrane to promote periapical healing, isolate the exposed radicular apices in the lumen of the maxilla, and fill the area of difference in level between the cavity previously occupied by the cyst and the floor of the maxilla.

In conclusion, imaging is mandatory to assess the diagnosis, although the final diagnosis can only be obtained after histopathologic examination. Minimally invasive surgery is particularly indicated for the complete eradication of the two lesions.

Conflicts of interests: The authors declare that they have no conflicts of interest in relation to the publication of this article.

References

1. Wolf A, Safran B, Pock J, Tomazic PV, Stammberger H. Surgical treatment of paranasal sinus osteomas: a single center experience of 58 cases. *Laryngoscope* 2019; DOI: [10.1002/lary.28299](https://doi.org/10.1002/lary.28299).
2. Kolari V, Rao HTA, Thomas T. Maxillary and mandibular unusually large radicular cyst: a rare case report. *Natl J Maxillofac Surg.* 2019;10:270–273.
3. Khonsari RH, Corre P, Charpentier P, Huet P. Maxillary sinus osteoma associated with a mucocele. *Rev Stomatol Chir Maxillofac* 2011;112:107–109.
4. Cantone E, Cavaliere M, Di Lullo AM, Guadagno E, Iengo I. Immunohistochemical patterns in the differential diagnosis of rhinopharyngeal granulocytic sarcoma. *Oncol Lett* 2016;12: 2777–2781.
5. Taschieri S, Corbella S, Tsesis I, Del Fabbro M. Impact of the use of plasma rich in growth factors (PRGF) on the quality of life of patients treated with endodontic surgery when a perforation of sinus membrane occurred. *Oral Maxillofac Surg* 2013;18: 43–52.