

Postoperative maxillary cyst revealed after trauma

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Section: Head & neck imaging

Area of Interest: Ear / Nose / Throat

Procedure: Diagnostic procedure

Procedure: Computer Applications-3D

Imaging Technique: CT

Imaging Technique: Ultrasound-Colour Doppler

Imaging Technique: MR

Special Focus: Inflammation Case Type: Clinical Cases

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Patient: 99 years, male

Clinical History:

A patient known for impaired vision and repeated falls came to the emergency room because of a progressive painless right infra-orbital swelling that first appeared six months before and increased after a recent fall without causing diplopia. He described a history of nasal surgery in 1991 but no operative notes were available.

Imaging Findings:

The initial emergency CT without contrast injection (Fig. 1, 2) shows sequelae of right maxillary sinus surgery involving the floor of the orbit. There is a round, dense, expansile mass located in the surgical site, discreetly displacing the right ocular globe upwards and extending into the vicinity of the right lacrymal fossa. A complementary ultrasound examination (Fig. 3) in the emergency room revealed the liquid nature of this infra-orbital mass, suggestive of a possible postoperative dacryocystocele (history of nasal surgery in 1991). Later, MRI with gadolinium injection (Fig. 4) shows that this pre-maxillary right cystic lesion is not consistent with a dacryocystocele since there is no relation between the mass and the lacrimal apparatus. The heterogeneous signal content of the lesion on T1 and T2 weighted images is consistent with post-traumatic haemorrhagic components. FNA cytology finally excluded the presence of malignant cells, with the cytological aspect of a benign cyst.

Discussion:

Postoperative maxillary cyst (POMC) was first described by Kubo in 1927 as a late-onset complication following maxillary surgery or trauma. This entity has been reported under different terms such as postoperative buccal cyst, para-nasal cyst and surgical ciliary cyst [1, 2, 3, 4, 5]. The largest series have been reported in Japan, appearing in 3-20% of patients who underwent maxillary sinus surgery [1, 2, 6]. It appears 7 to 49 years, with the average between 10 and 25 years, after a maxillary surgery [2, 4, 5]. It seems to be less frequent in non-Eastern countries, probably because of a lack of correct diagnostics [1, 2]. Typical clinical presentations are variable degrees of pain, intra or extra-oral swelling, sometimes with nasal or orbital perturbation, and drainage in the oral cavity [1, 2, 4, 6]. CT is the imaging modality of choice to evaluate a POMC, showing the following typical characteristics: round, expansile lesion with regular contours and fine bony walls or missing bone contours (50% of cases) with sometimes locally aggressive appearance; may contain loculations with fluid accumulation of different densities and shows no enhancement; no relation with neighbouring teeth and typical extension in the floor, postero-lateral and anterior wall of the maxillary sinus, rarely it may extend to the medial and upper walls [3, 4, 6]. Rare cases of bilateral lesions

were observed [2]. POMC is usually covered by respiratory epithelium (pseudostratified ciliated columnar), but transition to simple columnar, cuboidal or squamous non-keratinized epithelium has been observed [1, 2, 5]. Differential diagnosis with benign mucous cyst or mucocele can be difficult. Mucocele develops in the antrum due to the obstruction of its natural ostium. Presence of sero-mucous glands helps to exclude the diagnosis of POMC [1, 5]. Mucous retention cyst (pseudocyst) is more common, caused by focal inflammatory exudate accumulation under the antral mucosa, usually fortuitously discovered [2]. The hypothesis of POMC formation suggests trapping of residual sinus mucosa into the scar after maxillary surgery and cystic degeneration several years later [2, 4]. The treatment of POMC is complete cyst removal and intranasal antrostomy with a risk of recurrence in case of incomplete removal of its walls. Conservative treatment by marsupialization, which avoids unnecessary bone loss and reduces risk of recurrence, is indicated to treat unilocular cysts with thin walls and bone perforations [1, 2, 6]. During maxillary sinus surgery, mucosal lesions should be carefully repaired to prevent POMC appearance [2, 4].

Differential Diagnosis List: Postoperative maxillary cyst (POMC), Mucocele, Mucous retention cyst, Benign mucous cyst, Dental periapical cyst, Haematoma

Final Diagnosis: Postoperative maxillary cyst (POMC)

References:

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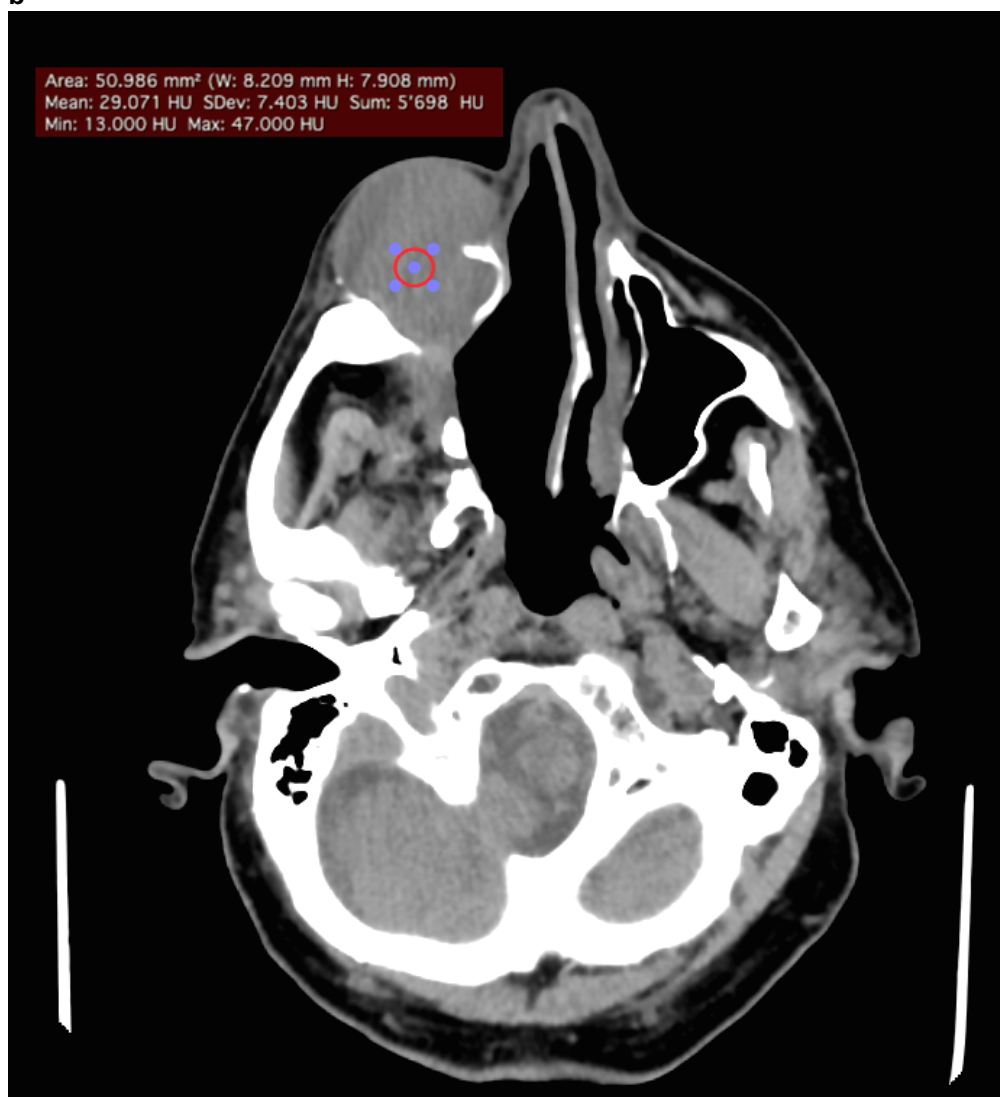
Figure 1

a



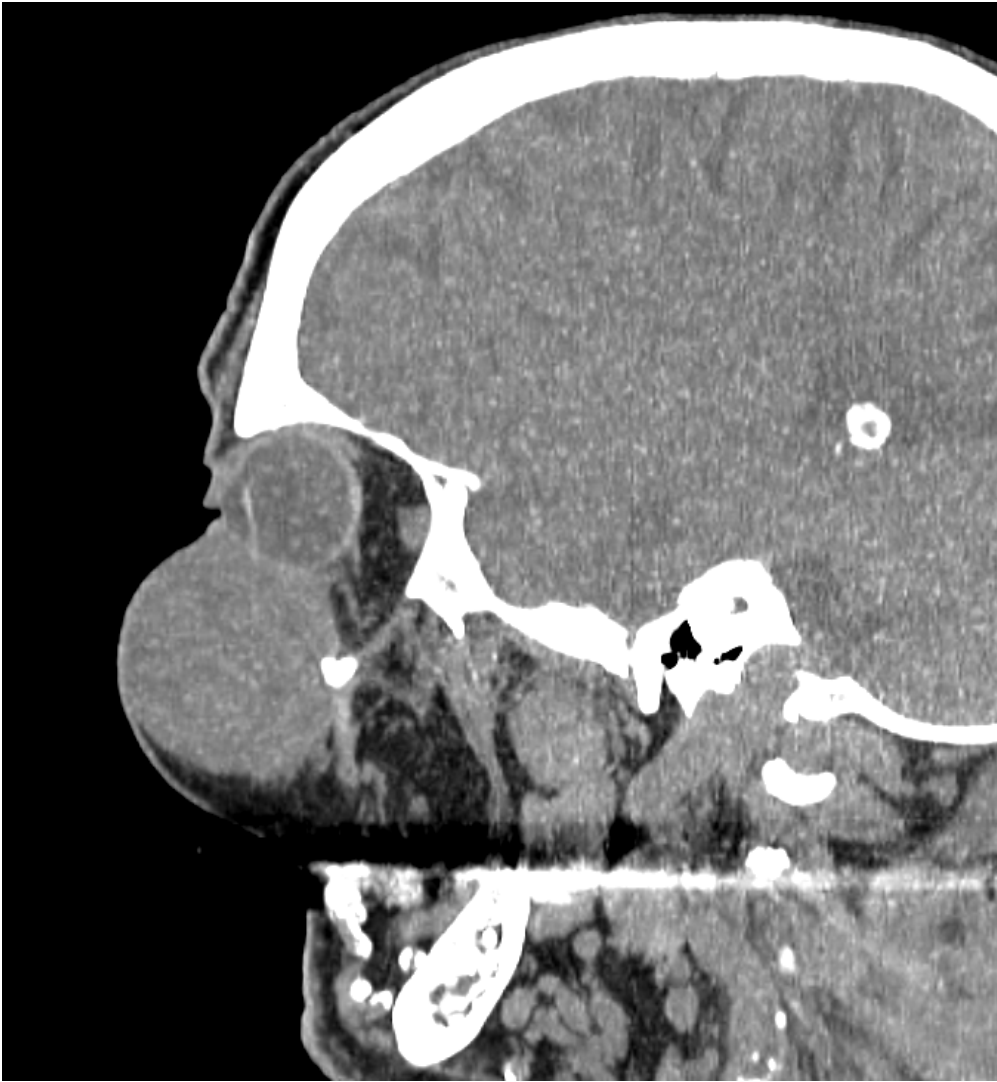
Description: Coronal MPR (bone windowing). Bone defects of right maxillary sinus, associated with a lower right turbinectomy consistent with sino-nasal surgery. **Origin:** Department of Radiology, Geneva University Hospital, Geneva, Switzerland.

b



Description: Axial MPR (soft tissue windowing). Expansile round mass situated in the right maxillary and pre-maxillary region with intermediate density (29 HU). **Origin:** Department of Radiology, Geneva University Hospital, Geneva, Switzerland.

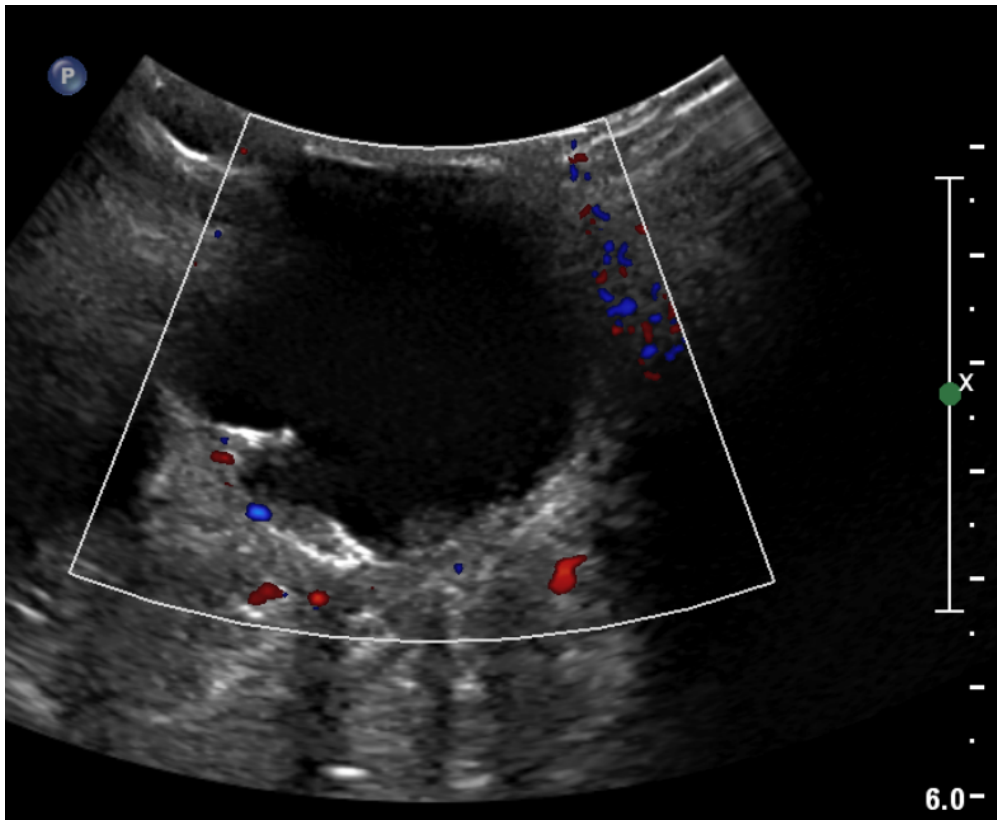
c



Description: Sagittal MPR (soft tissue windowing). Round premaxillary mass extending into the orbit, and displacing the ocular globe upwards. **Origin:** Department of Radiology, Geneva University Hospital, Geneva, Switzerland.

Figure 2

a



Description: Ultrasound of the right maxillary region shows the cystic nature of the lesion, which contains small echogenic sedimented elements, without vascularisation. **Origin:** Department of Radiology, Geneva University Hospital, Geneva, Switzerland

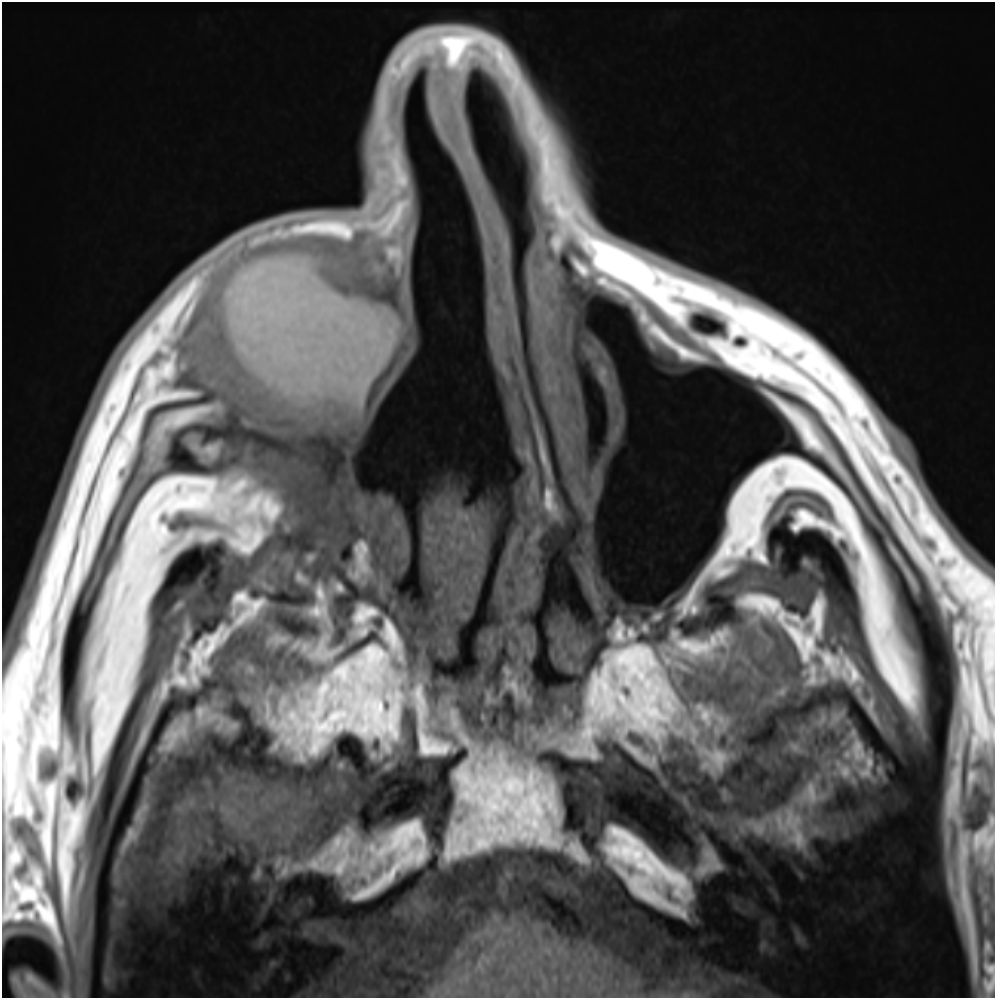
Figure 3

a



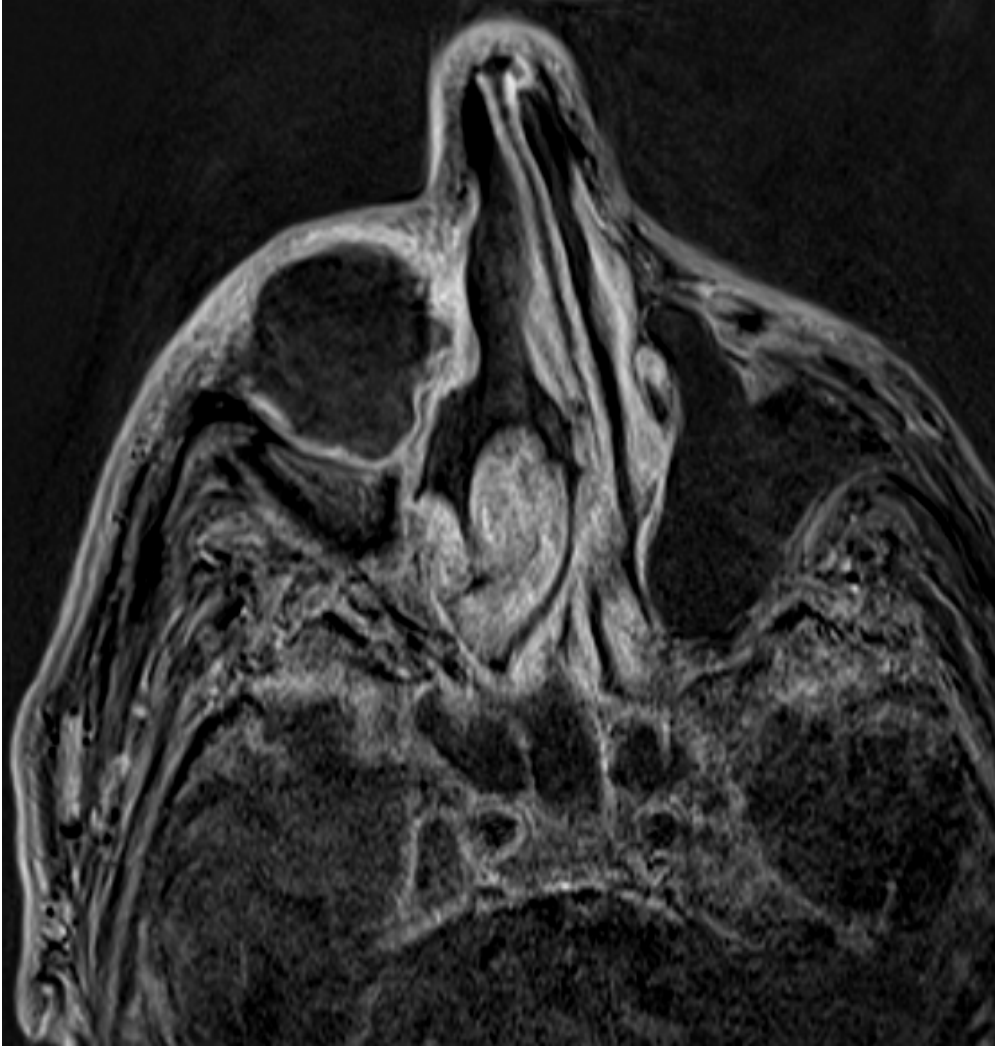
Description: Axial T2-weighted images (TR/TE = 38712/94; slice = 3mm). The lesion is hyperintense, with peripheral hypointense elements that may correspond to calcifications in the lesion margins (arrows). **Origin:** Department of Radiology, Geneva University Hospital, Geneva, Switzerland

b



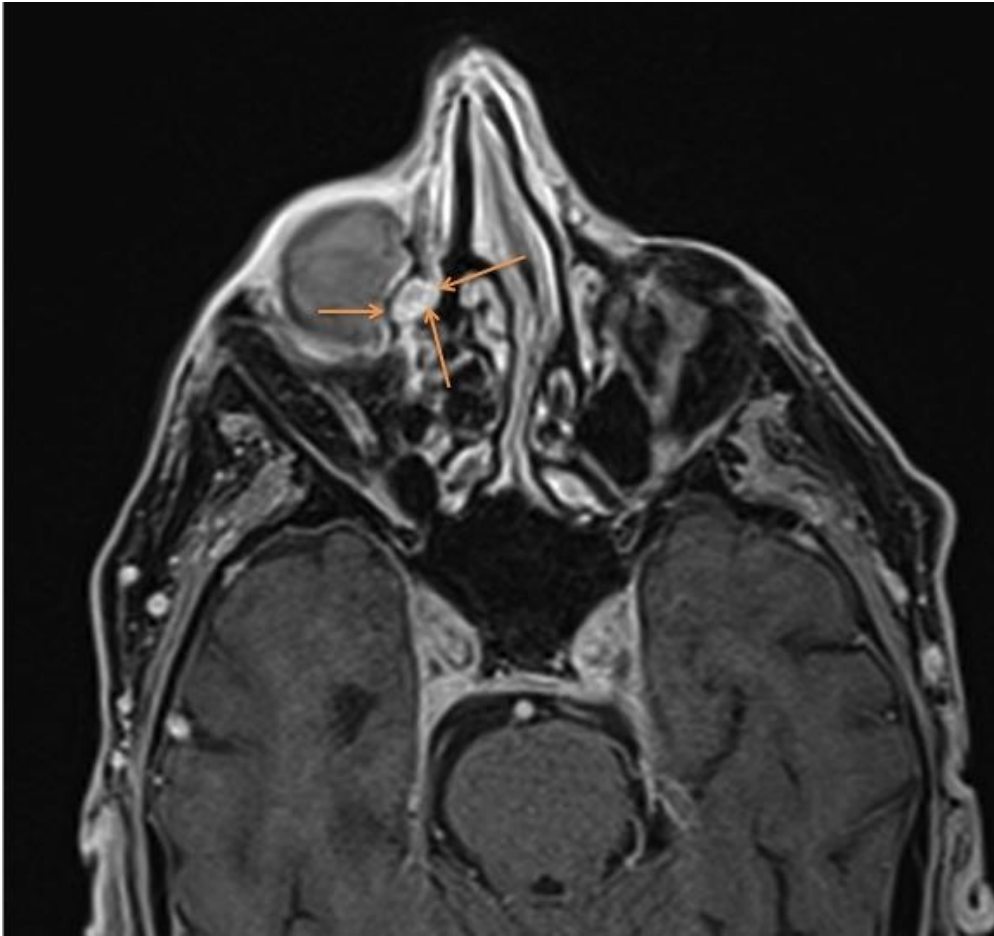
Description: Axial T1-weighted images (TR/TE = 697/13; slice = 3mm). The lesion is predominantly hyperintense due to its high protein content with a hypointense periphery. **Origin:** Department of Radiology, Geneva University Hospital, Geneva, Switzerland

c



Description: Axial T1-weighted subtraction image (TR/TE = 697/13; slice = 3 mm). The lesion shows a minimal fine peripheral enhancement after intravenous injection of gadolinium. **Origin:** Department of Radiology, Geneva University Hospital, Geneva, Switzerland

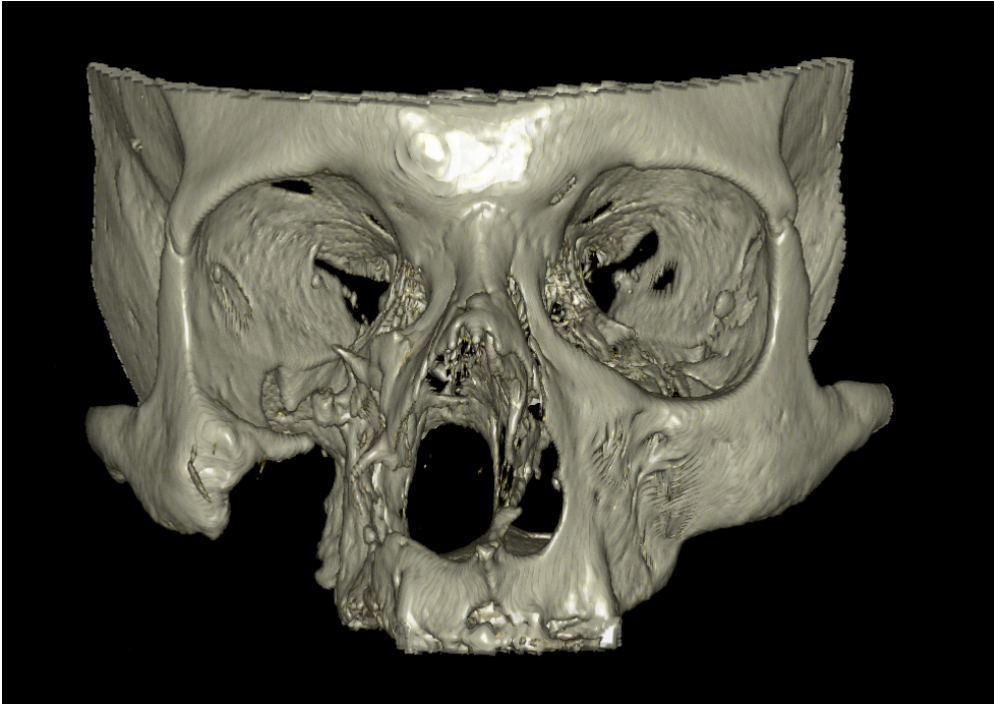
d



Description: Axial VIBE with gadolinium injection (TR/TE=6.86/2.39; slice=0.8mm). There is no relationship between the cystic mass and the lacrimal tract (arrows). **Origin:** Department of Radiology, Geneva University Hospital, Geneva, Switzerland

Figure 4

a



Description: 3D bone volume rendering reconstruction shows remodelling of the right maxillary sinus with large bony defects consistent with an old maxillary sinus surgery involving the floor of the orbit.

Origin: Department of Radiology, Geneva University Hospital, Geneva, Switzerland.