Tooth in a cyst – Is it always a dentigerous cyst?

Neelam Vaid · Ajay Kothadiya · Sushama Adwani

Abstract

We present the case report of an 18-year-old female patient who presented with unilateral nasal obstruction. Computed tomography scanning revealed an unerupted molar in the posterior wall of the right maxillary sinus with a cystic swelling in the sinus. The preoperative diagnosis was a dentigerous cyst. The patient underwent endoscopic removal of the cyst and tooth. The operative findings and histopathology showed that it was an odontogenic keratocyst. This paper stresses the importance of diagnosing this condition and that a tooth in a cyst is not always dentigerous.

Keywords Dentigerous cyst · Endoscopic removal · Odontogenic keratocyst

Case report

An 18-year-old female patient presented with complaints of unilateral right nasal obstruction for 6 months. Anterior rhinoscopy revealed a deviated nasal septum to the right side. On endoscopic examination, a concha bullosa of the middle turbinate was seen. The patient underwent computed tomography, which revealed a large, non-enhancing, fluid density lesion completely occupying the right maxillary sinus, in relation to the crown of an unerupted tooth, causing expansion of the sinus with thinning of the medial, lateral, and inferior walls (Figs. 1 and 2). The preoperative diagnosis was a dentigerous cyst in the right maxillary sinus.

An endoscopic approach was planned under general anesthesia. The lateral wall of the concha bullosa was resected to increase exposure, and uncinectomy was performed. The inferior part of the uncinate process, which was paper-thin, was removed to reveal a smooth bulge in the region of the medial wall of the maxillary sinus. The cyst wall was opened with a microdebrider, and the cyst contents were found to be caseous in nature. The walls of the cyst were dissected from the maxillary sinus mucosa by blunt dissection, and the cyst was removed *in toto*. The tooth was removed intact. The cyst was submitted for histopathologic analysis, which revealed a lining of stratified squamous epithelium with a corrugated layer of parakeratin in the luminal area and a prominent basal cell layer. A diagnosis of odontogenic keratocyst was made. Postoperatively, the patient was asymptomatic.

Discussion

The term odontogenic keratocyst was first introduced by Philipsen in 1956. A cyst is a cavity containing liquid or semisolid material lined by epithelium. The epithelial lining of odontogenic cysts is thought to arise from: (1) fragments of epithelium from the crown; (2) remnants of epithelial rests of Malassez from the development of tooth root sheaths; (3) remnants of epithelial rests of Seres from

N. Vaid M.S., D.N.B., (E.N.T.) (✉) · A. Kothadiya D.O.R.L.

· S. Adwani
K.E.M. Hospital,
Pune (Maharashtra)
India

2, National Hsg Soc,
Baner road,
Aundh,
Pune - 411 007.
E mail: v aids@vsnl.com
Tel: 9822015073

Fig. 1 Computed tomography showing a large, non-enhancing, fluid density lesion.

Fig. 2 Expansion of sinus with thinning of the medial, lateral, and inferior walls.

the development of primary tooth lamina; and (4) fragments of tooth germ cells. Odontogenic keratocysts originate from remnants of dental lamina in the mandible and maxilla [1]. It is thought that remnants of odontogenic epithelium persist after odontogenesis is complete. Squamous metaplasia can occur in this epithelium, leading to the production of keratin. Other odontogenic cysts, such as dentigerous, radicular, and residual cysts, can become keratinized by metaplasia; however, the lining of the odontogenic keratocyst is distinctly different [1]. The lining is stratified squamous epithelium with a corrugated layer of parakeratin. The basal epithelial layer has a palisaded layer of cuboidal cells which exhibit hyperchromatic nuclei. Odontogenic keratocysts do not grow by increasing osmotic pressure within the lumen but rather by active proliferation of the epithelial lining [5].

Odontogenic keratocysts are cysts of dental origin with aggressive clinical behavior and a high recurrence rate of 13–60% [5]. Approximately 65% of odontogenic keratocysts occur in the mandible, mainly in the ramus area and third molar; 35% occur in the maxilla, most commonly in the canine region [5]. Odontogenic keratocysts are seen more frequently in the third decade of life [5]. It is important to note that 25% of cases are associated with the crowns of adjacent teeth and therefore can be misdiagnosed as dentigerous cysts. In addition, 10–15% can erode the roots of adjacent teeth. Unlike dentigerous cysts, odontogenic cysts have a high rate of recurrence, which is related to the high proliferation rate of the epithelium. The presence of residual epithelium, or an epithelial remnant after enucleation of the cyst, is also thought to contribute to the high recurrence rate, as is the presence of daughter cysts in the cyst wall [2]. Some studies have shown that the application of Carnoy's solution after surgery can reduce the recurrence rate, presumably by killing epithelial remnants and dental lamina in the osseous margins. Carnoy's solution is a tissue fixative and penetrates to a bone depth of 1.54 mm [3]. Odontogenic keratocysts have been reported to recur within 5 years of surgery and as late as 15 years after surgery [2]. Thus postoperative follow-up with radiological evaluation is essential.

In our case, the presence of caseous material within the cyst aroused our suspicion. We advocate the importance of correlating preoperative imaging and operative findings and of communicating this information to the histopathologist, as this may change the prognosis for the condition. We caution that a diagnosis based solely on clinical impressions may be misleading and that a histopathologic examination of any dental cyst is essential to confirm the diagnosis. The high probability of recurrence and the ability of the odontogenic keratocyst to mimic other cysts call for the differential diagnosis of dental cysts.

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