Foreign Body (Alginate Impression Paste) in the Maxillary Sinus: A Case Report

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Abstract

A tumor-like foreign body in the maxillary sinus is reported. Examination of the paranasal sinuses by computerized tomography revealed a dense and well defined lesion equal to that of bone in the left maxillary sinus. After surgery, the lesion was found to be alginate used for impression-taking before fitting of a prosthesis, and not a tumor.

Introduction

The maxillary sinuses are the largest of the paranasal sinuses and lie symmetrically in the body of the maxilla. There is a very thin lamella of bone between the roots of the posterior teeth and the sinus floor\[1,2\]. In some individuals, this lamina does not exist and the sinus floor may be perforated by one or more of these tooth roots, which are then covered only by the Schneiderian membrane which coats the sinus. Great care must be taken by the dentist during dental procedures, as the length of the roots and the anatomy of the maxillary sinus differ among patients\[2\].

The most common foreign bodies found in the maxillary sinus are teeth, which are sometimes present in their entirety. This situation usually occurs as an undesirable consequence of surgical extraction of a deeply impacted upper third molar or during removal of previously impacted or newly fractured roots in the posterior region of the maxilla. Root canal filling materials are also sometimes found in the maxillary sinus, generally as a result of incorrect canal preparation and filling during endodontic treatment. Gutta-percha points, silver points, bullets, glass, shell fragments, zinc oxide and eugenol and rubber base impression materials are other foreign bodies that can be introduced into the sinus\[2-5\].

The main purpose of the present paper was to emphasize the close relation between the maxillary sinus and the roots of the upper posterior teeth and also to report a case of foreign body which had oozed into the antrum through an oro-antral fistula, creating a tumor-like image upon radiographic examination.
Case Report

A 37-year-old Turkish woman was referred to an oral surgeon by her dentist because of pain on the left side of her face. The patient had a total prosthesis and a history of cyst enucleated in the left maxilla.

Clinical examination revealed an oro-antral fistula in the left maxilla (Fig. 1). CT examination of the paranasal sinuses revealed an extremely radiopaque mass with a diameter of 1.5 cm in the left maxillary sinus (Fig. 2). It was believed that the mass had originated from the naso-antral wall. By tomography, the density of the mass was measured and found to be 840. In the light of this information, radiologists decided that this formation, which had originated from the medial wall of the sinus with a density equal to that of bone, was an osteoma.

Under general anesthesia, entry was made to the antrum through the original oro-antral fistula, which was widened anteriorly and posteriorly. A foreign body surrounded by granulation tissue was seen in the antrum (Fig. 3), instead of the hard mass suggested by the extremely radiodense tomographic image. This material was completely removed from the antrum and the granulation tissue was curetted. The granulation tissue had resorbed the medial wall of the antrum. The foreign body was pink in color in the center and was black on the outside when sectioned. By careful inspection, the material was identified as alginate impression paste. To confirm this, radiographs were taken using the removed material and four different types of alginate. The images obtained from the radiographs were compared from the viewpoint of opaqueness, and were found to be similar (Figs. 4, 5). The antrum was well irrigated, and the fistula margins were freshened. A buccal flap was sutured with 3-0 silk suture. The patient was advised not to blow her nose, and antibiotic (500 mg four times daily for four days) was prescribed. The postoperative course was uneventful, and the sutures were removed after 7 days.

Discussion

The facts drawn from this case strongly suggest that the material employed in the making of the maxillary impression, during setting of the tray and while the material was in a plastic state, was forced into the antrum, either through an insufficiently organized extraction wound which lay in juxtaposition with the floor of the maxillary sinus or through an existing small oro-antral fistula. After the material had set and the impression had been removed, the bulk of the material which had oozed into the antrum snapped off, remaining behind to cause the observed results.

When alginate is mixed with water, the following chemical reaction takes place:

\[ \text{Sodium alginate} + \text{Calcium sulfate dihydrate} \xrightarrow{\text{water}} \text{Calcium alginate gel} + \text{Sodium sulfate} \]

The reason why alginate gives an image as dense as that of bone is that the
alginate gel contains Ca++, as seen from the above formula.

In view of the present findings, it is necessary for the oral surgeon and exodontist, as well as the prosthodontist, to evaluate carefully patients who have recently undergone surgery before declaring them ready for impression procedures.

References

Fig. 1  Clinical view of oro-antral fistula

Fig. 2  Computerized tomograph revealing tumor-like foreign body in the left maxillary sinus

Fig. 3  The foreign body surrounded by granulation tissue in the antrum
Fig. 4  Radiograph of the removed material

Fig. 5  Radiograph of four different types of alginate impression paste