Case Report

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Dental Implant Displaced after Ten Years of Loading in the Nasal Meatus Inferior: A Case Report

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Background: The dental implant displacement into nasal and paranasal cavity represent a very rare complications in the clinical practice.
Case Description: The present investigation reported a case of a 68-year-old female subject affected by a dental implant displaced into the inferior nasal meatus.
Conclusions: The present study findings reported a particular case that did not required intervention procedure, while the dental implant migrated into the nasal cavity resulted in a spontaneous resolution by ingestion into the digestive tract.

Keywords: dental implant complications; dental implant; dental implant displacement; inferior nasal meatus; case report

Introduction

Dental implants are used with excellent long-term survivability to rebuild dental prostheses in partially or totally edentulous patients. The dental implant improves esthetics, chewing performance and biomechanics. Improved dental implant surface properties have led to an escalating demand for this material. High-level success rate, above 97% for 10 years, the reduced risk of decay, sensitivity, and bone remodeling are among the benefits of titanium implants. Long term loss of teeth causes a severe bone atrophy in posterior and anterior maxilla with an increase of local complications (1). In fact, the bone atrophy height in the maxillary sinus or the mandibular bone increases the complications that may involve the soft tissues and nerve trunks adjacent to the implant site (2). Consequently, to avoid complications, it is a priority concern for the surgeon. The presence of a not sufficient bone volume associated with horizontal/vertical alveolar ridge atrophy could represent a clinical limitation for the edentulous anterior and posterior maxilla dental implant treatment.

Posterior maxilla with alveolar resorption ridge and pneumatization of the maxillary sinus and insufficient height of bone in the edentulous does not allow the placement the dental implants.

These alterations of the bone thickness and height could produce a clinical instability of the implant fixtures and could produce an increase of the failure rate of osseointegrated dental implants positioned in the anterior region of the maxilla (3). However, one of the most important and common complications of implant treatment is improper implant placement (4). The most frequent complications and risks of the anterior maxilla area are correlated to the nasopalatine nerve injury, arterial bleeding, damage of the adjacent tooth roots during the implant positioning, and perforation of the nasal bone floor (5). The aim of the present case report was to evaluate a very rare event of a dental implant spontaneously migrating to the level of the inferior nasal meatus.

Presentation of Case

The present study was conducted in accordance to the ethical laws and the World Medical Association Declaration of Helsinki and the Surgical Case Report (SCARE) guidelines.

A 68-year-old woman was referred reporting mobility of the upper fixed prosthesis and mobile prosthesis and for this reason went to her dentist. The clinical examination of the patient revealed two mobile implants in the anterior maxilla, two in the right maxilla and for a few days the patient had suffered pain and swelling associated to the last dental implant positioned in the upper right of the maxilla (6). The dentist removed a total of 3 implants for mobility, while during the removal procedure, the implant positioned in the molar upper right maxilla was displaced.

The patient was referred to the Department of Innovative Technology in Medicine and Dentistry of the University "G. d'Annunzio" of Chieti-Pescara in Italy by her dentist for the removal of a dental implant migrated in right

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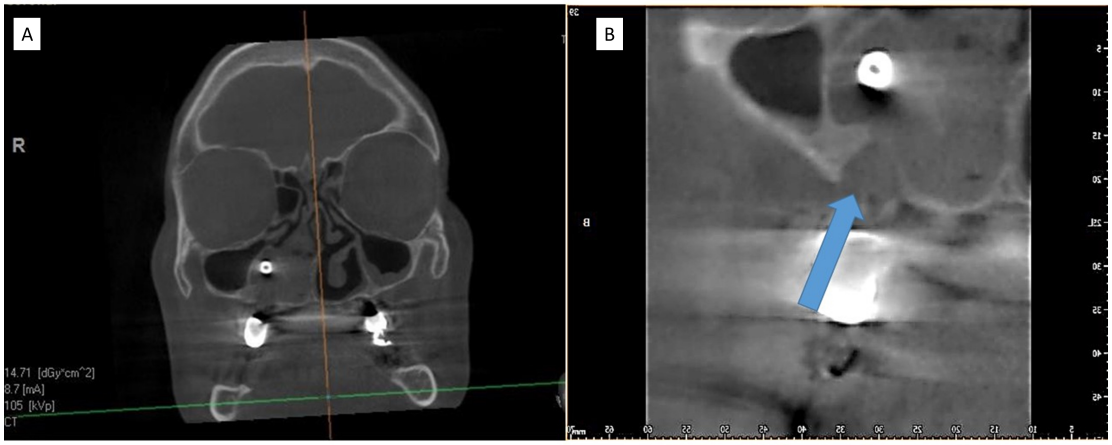

Fig. 1. (A) Coronal section shows dental implant displaced in the nasal meatus inferior. (B) Communication between oral and nasal cavity (Arrow). Health sinus was observed and none sinus opacification was found.

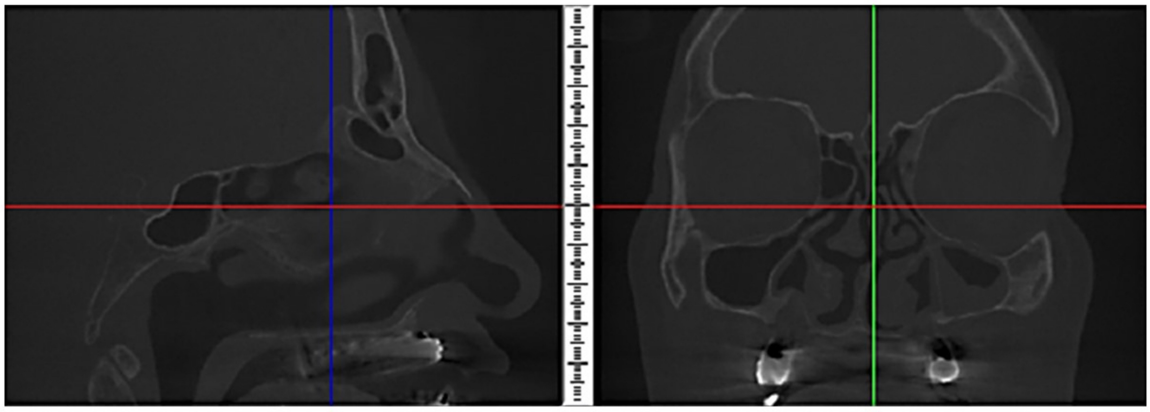

Fig. 2. A new CBCT was performed. Coronal section shows nasal meatus inferior free from the implant.

sinus cavity. The subject reported a history of full arch rehabilitation supported by dental implant associated to sinus augmentation procedure performed approximately 10 years previously. The patient reported having been rehabilitated with 6 implants and full prothesis in the maxilla ten years before. A Cone Beam Computed Tomography (CBCT) (Vatech Ipax 3D PCH-6500, Fort Lee, NJ, USA) scan was executed to evaluate any clinically relevant and radiographically evident pathologies such as mucosal thickening, odontogenic sinusitis, or allergic, mucus-retaining cysts, partial to complete sinus obliteration, oro-antral fistula, antroliths, mucoceles, mucopyoceles and position of migrated implant. The radiograph showed an atrophic maxilla and that the implant had migrated to the meatus nasal of the nasal cavity, not in the sinus (Fig. 1). A rigid fiberoptic nasolaryngoscope with color video camera was used to study the nasal cavity and the implant was located in the nasal meatus inferior. The mucosa appeared healthy, and no nasal obstruction, purulent nasal, epistaxis, drainage, and fever were reported by the patient. After discussing the options with the patient, she agreed to the removal of three mobile implants, and one implant migrated into the nasal cavity. The subject referred no previous medical history of foreign bodies. According to the evidence of a superficial location of the fixture and the clinical absence of an oro-nasal fistula, the surgery procedure was scheduled in an ambulatory setting and under local anesthesia. Prior to surgery, the patient's mouth was rinsed with a chlorhexidine 0.2% digluconate solution (Curadent Healthcare, Saronno, Italy) for 2 minutes. The local anesthesia was provided by the administration of Articaine® (Ubistesin 4% - Espe Dental AG Seefeld, Germany) with epinephrine 1:100.000. The procedure was executed by the removal of the mobile dental implants without flap and the implant site was filled with a bovine bone xenograft (Re-Bone, Ubgen, Padova, Italy). The local anesthetic solution (1% tetracaine hydrochloride) and oxymetazoline were administered at the level of the nasal mucosa to perform the removal of the dental implant

displaced at the level of the nasal cavity according to an endoscopy procedure performed by nasal bayonet forceps with curved hooks. During endoscopy, the implant was not visible, so a new CBCT was performed, and this showed that dental implant was no longer there (Fig. 2). Probably the implant was ingested in the previous days. Written informed consent was acquired from the patient for publication of the case report.

Discussion

In this case report we describe the clinical characteristics of a patient with an implant migrated into the nasal meatus inferior. The present clinical case represents a very rare event in implant surgery, while usually the dental implant migration into the maxillary sinus cavity or in other anatomical structures produces infection, local sinus symptoms, inflammation and pain. In literature it many cases have been reported describing implant displacement into the maxillary sinus (7,8) and few cases of implants migrated into the ethmoid sinus (9) as well as orbit and cranial fossae (10). Some studies report implants extending into the nose with inflammation of the nasal and sinus maxilla (11).

Raghoebar *et al.* (12), described a case of a rhinosinusitis associated with two dental implants extending into the nasal fossae.

The implant through mucociliary function of the maxillary sinus with a consequent dislocation of the displaced dental implant from the maxillary sinus to the osteomeatal complex then acted like a trigger, causing subsequently a series of sneezing and the final extraordinary transnasal discharge of the titanium implant. In this case report we describe a displaced implant, primary in the inferior nasal meatus without symptoms. In fact, in the case of extreme maxilla atrophy there is a millimeter of bone remaining between the oral cavity and nasal or sinus cavities. In case of placement implant with palatal angulation there is a probability of protrusion of dental implants in both nasal fossae. In the present case report, probably there was a protrusion of the dental implant in the nasal fossae, so after bone loss in the coronal portion, the implant, due to peri-implantitis and the force applied by the dentist to unscrew the prosthesis, the implant was pushed into the nasal cavity. The migration of dental implants into the nasal cavity is a very rare complication. Here, it was described the successful spontaneous resolution of a migrated implant by ingestion. The implant migrated into the posterior nasal region, towards the pharynx and then towards the digestive tract.

In conclusion, even though this condition requires no treatment, it could lead to the displacement of a dental implant. The effectiveness of the present investigation is able to provide a useful guidance for surgeons and dentists for the management of similar clinical events in operative practice.

Statement of Clinical Relevance

This paper demonstrates a rare cases of implant migration into the nasal meatus inferior.

Data Availability Statement

All data generated or analyzed during this study are included in this published article.

Consent for Publication

Written informed consent was obtained from the patient for publication of this case report and accompanying images.

Author Contributions

All authors were involved with the literature review and performance of the surgery. All authors read and approved the final manuscript.

Ethics Approval and Consent to Participate

The present clinical study was based in accordance to the ethical laws and the World Medical Association Declaration of Helsinki and the additional requirements of Italian legislation. Moreover, the University of Chieti-Pescara, Italy, classified the present study to be exempt from ethical review as it carries only negligible risk and involves the use of existing data that contains only non-identifiable data about human beings. Written informed consent was acquired from the patient for publication of the case report. The requirements of the Helsinki Declaration were observed, and the patient gave informed consent for all surgical procedures. Written informed consent was obtained from the patient for publication of this case report and accompanying images.

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Conflict of Interest

The authors declare no conflict of interest.

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