

# 琉球大学学術リポジトリ

## [症例報告]Displacement of dental implant into the maxilla : A case report

メタデータ	言語: 出版者: 琉球医学会 公開日: 2010-07-02 キーワード (Ja): キーワード (En): foreign body, maxilla, dental implant, maxillary sinus 作成者: Kano, Takeshi, Sunakawa, Hajime, Arasaki, Akira, Arakaki, Keiichi, Kuninaka, Rika, Takara, Kiyomi, Morita, Nanae メールアドレス: 所属:
URL	<a href="http://hdl.handle.net/20.500.12000/0002016143">http://hdl.handle.net/20.500.12000/0002016143</a>

## Displacement of dental implant into the maxilla : A case report

Takeshi Kano, Hajime Sunakawa, Akira Arasaki, Keiichi Arakaki  
Rika Kuninaka, Kiyomi Takara and Nanae Morita

*Department of Oral and Maxillofacial Surgery,  
School of Medicine, University of the Ryukyus*

### ABSTRACT

Oral surgeons sometimes encounter patients with foreign bodies in their jaws who undergo dental treatment. Occasionally it is difficult to extract them. This paper reports a rare case of a displaced dental implant into the maxillary sinus. An 83-year-old man was referred to our department for a displaced dental implant. Radiographs showed a displaced dental implant in the left maxilla. We removed the dental implant from the maxillary sinus under local anesthesia. The patient recovered uneventfully with no evidence of sinus infection. *Ryukyu Med. J., 21(2) 103~106, 2002*

Key words: foreign body, maxilla, dental implant, maxillary sinus

### INTRODUCTION

Although the application of dental implant has increased in oral surgery, yet many types of complications have been reported after dental implantation<sup>1,8)</sup>. Local infection of the peri-implant tissue is the most common complication, and in such cases there can be extensive resorption of the bone surrounding the implant<sup>4)</sup>. Dental implants placed in the maxilla sometimes fail, because the cortical bone is thin with low density<sup>9,10)</sup>. Furthermore, inadequate dental implant preparation, drilling or installation can easily lead to complications in the maxillary sinuses. Therefore, careful consideration is required for application to the maxilla than to the mandible. Displacement of dental implants into the maxillary sinus can cause serious complications<sup>1,6)</sup>, however there are only few reports of such cases<sup>1,3)</sup>.

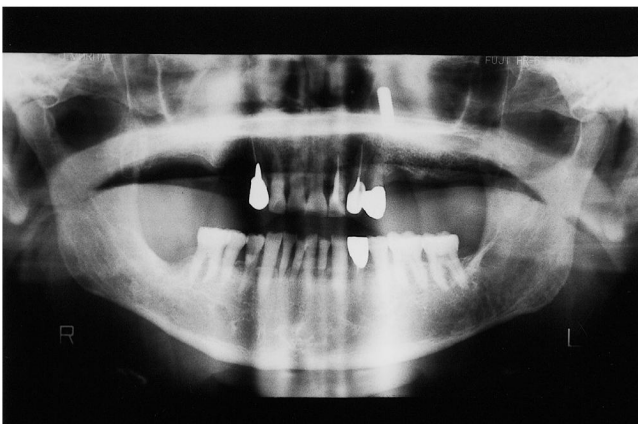


Fig. 1 Preoperative Panoramic radiograph showing dental implant displaced into the left maxillary sinus.

### CASE REPORT

An 83-year-old man was referred to our department for a displaced dental implant. Six years earlier, he had a titanium dental implant installed into the left maxillary alveolus by his dentist for the anchor to support a permanent dental prosthesis. Five years later, he visited another dental office complaining about his denture. A panoramic radiograph showed that the impacted implant was penetrating the floor of the maxillary sinus. He was referred to our department for extraction of the impacted dental implant.



Fig. 2 Preoperative Occipitontal radiograph (Water's position).

On examination of the oral cavity, the gingiva in the operative site showed no inflammatory changes. Radiographs showed the displaced implant in the left maxillary sinus, with no radiolucency of the maxillary bone around the implant (Fig. 1, 2). Tomography showed that the implant was attached to the medial wall of the maxillary sinus (Fig. 3).

The displaced implant was removed via a sublabial antrostomy under local anesthesia. When the maxillary sinus was opened, the displaced implant was found

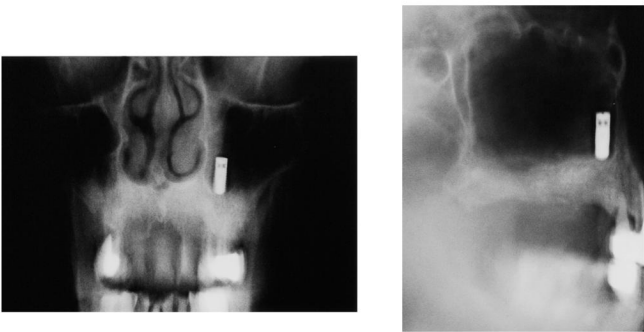


Fig. 3 Preoperative Tomography. (A) Coronal plane. (B) Sagittal plane.



Fig. 4 Intra-operative view of the maxilla.

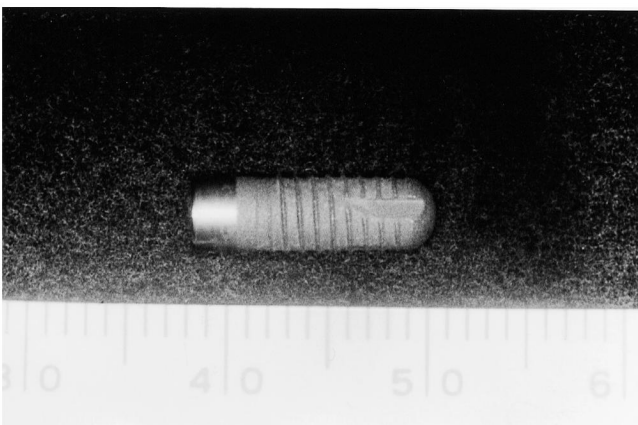


Fig. 5 Photograph of the removed dental implant.

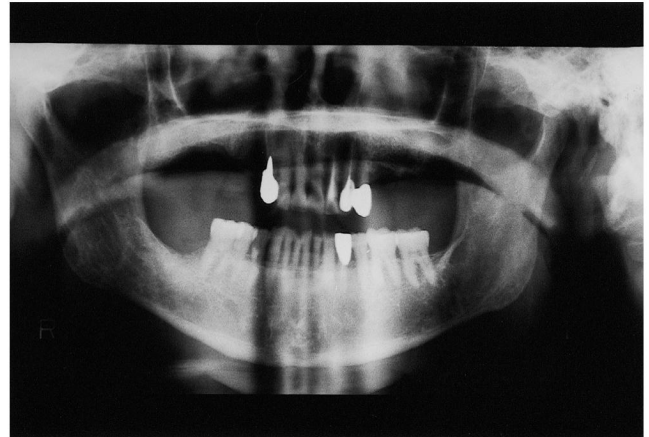


Fig. 6 Postoperative Panoramic radiograph. Follow-up radiograph 3 months after surgery showing no evidence of sinus infection.



Fig. 7 Postoperative Occipitomental radiograph (Water's position).

attached to the sinus membrane, and there were no inflammatory changes (Fig. 4, 5). The patient had an uneventful recovery. Postoperatively, there has been no evidence of sinus infection for 3 months. Radiographs showed no postoperative problems in the maxilla (Fig. 6, 7).

## DISCUSSION

Dental implant stability is the most important criterion when evaluating osseointegration. Osseointegration means a direct contact, on the light-microscopic level, between living bone tissue and the dental implant<sup>10</sup>. To make dental implant therapy successful, the dental implant must be stable in the jaw bone after the healing period. Hydroxyapatite-coated dental implants have been a subject of great interest since the mid 1980s. Various

clinical studies have shown that hydroxyapatite coatings lead to good clinical outcome over a time period of about five years<sup>4)</sup>. Recently, dental implant therapy for occlusal reconstruction has provided considerable benefits for edentulous patients, and it is more popular. Occasionally, complications have been found after dental implant operations. The placement of dental implants in the molar region of the maxilla is often difficult due both to the presence of the maxillary sinus and the thin cortical bone of very low density. In a 15-year follow-up study, Adell *et al.*<sup>12)</sup> observed that the highest rate of implant loss occurred in the posterior maxilla.

There are only a few reports of the displacement of a dental implant to the maxilla. Harada *et al.*<sup>1)</sup> reported the first case in Japan, the foreign body was a ceramic dental implant in the maxillary sinus. Ueda & Kaneda<sup>2)</sup> reported a case of maxillary sinusitis caused by a displaced connection screw, which was installed two months earlier, was found to have migrated into the maxillary sinus. Ishi *et al.*<sup>3)</sup> reported another case of migration of a dental implant into the maxillary sinus sixteen years after dental implant placement.

In general, the edentulous alveolar process of the maxilla undergoes severe resorption. Resorption of the alveolar process causes loss of bone volume, while progressive sinus pneumatization leads to excavation of the alveolar process. From a study of 47 anatomical specimens, Ulm *et al.*<sup>9)</sup> stated the mean alveolar ridge heights varied, ranging between 3.23 and 9.30 mm.

It has been reported that the type of prosthetic treatment and osteoporotic changes may cause a reduction in alveolar bone density in long-term edentulousness due to local mechanical and inflammatory factors<sup>9)</sup>. Besides, in the elderly edentulous patient, the bone may be too small to support osseointegrated dental implants. In such cases, dental implant therapy may be contraindicated.

The most important factor for preventing complications with postoperative dental implant is the peri-implant osseous and soft tissue conditions.<sup>4)</sup> Implants close to the maxillary sinus may also provide a route for the spreading of infection from the mouth following poor oral hygiene. When the maxillary dental implant is infected, sinusitis occurs easily due to local spread of inflammation.<sup>2)</sup> To avoid complications, great care should be taken when placing implants in the maxilla, particularly if the bone is chronically infected from previous dental sepsis. In addition to a check of the implant-bone suprastructures, thorough cleaning of the implants are necessary.

The operative technique involving drilling and installation of implants is also a very important factor for success in dental implant therapy in the maxilla. Added to this, the bone of the maxilla is softer than that of the mandible and the cortical bone is very thin, the operator should always confirm a tight fixation of the dental

implant.<sup>2)</sup> Surgical procedures have been developed to create sufficient bone volume for placement of implants in atrophic maxillae,<sup>13)</sup> namely total or segmental bone onlays, interpositional bone grafts, and grafting of the maxillary sinus with autogenous bone or bone substitutes. A combination of these procedures is also possible. Still, long-term results of this method are not yet known.

In this case, displacement of dental implant into the maxilla was attributed to: (1) inadequate distance between the premolar alveolar ridge and the maxillary sinus floor following implant insertion, (2) inadequate initial fixation, and (3) attachment of the denture to the upper end of the lower structure, which had been inserted incorrectly but could not be removed.

There is one further point that we must not ignore. It is necessary to establish a trusting relationship with the patient in order to obtain preoperative informed consent and to monitor the prosthesis.<sup>14)</sup>

## REFERENCES

- 1) Harada, T., Saitoh, M., Oka M., Matsumoto, K. and Yoshimura, Y. : A foreign body in maxillary sinus, Report of 4 cases. *Jpn. J. Oral Maxillofac. Surg.* 30 : 55-59, 1984.
- 2) Ueda, M. and Kaneda, T. : Maxillary sinusitis caused by dental implants, Report of two cases. *J. Oral Maxillofac. Surg.* 50 : 285-287, 1992.
- 3) Iida, S., Tanaka, N. and Kogo, M.: Migration of a dental implant into the maxillary sinus, A case report. *Int. J. Oral Maxillofac. Surg.*: 29 : 358-359, 2000.
- 4) Ishi, Y., Nakade, O., Arai, J., Yoshimura, H., Nagayama, M., Matsuzaki, K. and Kaku, T.: Case of a removal of the HA-coated blade implant, observation on it's surface by SEM and EPMA. *J. Jpn. Soc. Oral Implant.* 9 : 298-304, 1996.
- 5) Ikemoto, S., Shiratsuchi, Y., Kai, H. and Ohishi, M. : Clinical investigation of accidental insertion of foreign bodies in maxillary sinus during dental treatment. *J. Jpn. Stomatol. Soc.*, 48 : 216-219, 1999.
- 6) Yamada, T., Satoh, T., Kikuchi, F., Nomura, N. and Sonoyama, N.: Clinicostatistical observation of foreign bodies induced to dental implants. *J. Jpn. Oral Maxillofac. Surg.* 34 : 2031-2038, 1998.
- 7) Manson, M.E., Triplett, R.G. and Alfonso, W.F. : Life-threatening hemorrhage from placement of a dental implants. *J. Oral Maxillofac. Surg.* 48 : 201-204, 1990.
- 8) Manson, M.E., Triplett, R.G., Sickels, J.E. and Parel, S.M.: Mandibular fractures through endosseous cylinder implants. Report of cases and review. *J. Oral Maxillofac. Surg.* 48 : 311-317, 1990.
- 9) Ulm, C.W., Solar, P., Gsellmann, B., Matejka, M. and Watzek, G. : The edentulous maxillary alveolar process in the region of the maxillary sinus, a study of physical dimension. *Int. J. Oral Maxillofac. Surg.* 24 : 279-282, 1995.

- 10) Sawa, Y., Mizokoshi, S., Hara, Y., Maruyama, S. and Miyagishima, T.: Evaluation of alveolar bone height in edentulous posterior maxilla using panorama X-ray film, Possibility for implant treatment in edentulous posterior maxilla. *J. Jpn. Soc. Oral Implant.* 13 : 678-684, 2000.
- 11) Brånemark, P.I., Adell, R., Albrektsson, T., Lekholm, U., Linstöm, J. and Rockler, B.: An experimental and clinical study of osseointegrated implants penetrating the nasal cavity and maxillary sinus. *J. Oral Maxillofac. Surg.* 42 : 497- 505, 1984.
- 12) Adell, R., Lekholm, U., Rockler, B. and Brånemark, P.I. : A 15-year study of osseointegrated implants in the treatment of the edentulous jaw. *Int. J. Oral Maxillofac. Surg.* 10 : 387-416, 1981.
- 13) Boyne, P. and James, R.A. : Grafting of the maxillary sinus floor with autogenous marrow and bone. *J. Oral Maxillofac. Surg.* 38 : 113-116, 1980.
- 14) Uryu, R., Ihara, A., Goto, M. and Katsuki, T. : Clinical evaluation of removed causes of dental implant. *J. Jpn. Soc. Oral Implant* 11 : 99-104, 1998.