

## Dental Implant Migration into the Maxillary Sinus

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### ABOUT THE STUDY

The posterior maxilla surgery is associated with a significant level of difficulties due to the poor bone quality and quantity as well as the proximity to important anatomical structures, such as the maxillary sinus. With the displacement of the dental implant into the sinus, soft bone and/or excessive preparation of the implant site may cause primary instability and raise the risk of sinus perforation.

There are many scenarios regarding the migration of the dental implants into the posterior part of the maxilla, the implant may displace inside the sinus during the surgery due to insufficient primary stability of the implant during implantation or due to bone resorption around the implant in the months after surgery, the implant may shift inside the sinus during the surgery. Due to the stresses produced by the mastication process, this may cause implant migration toward the maxillary sinus. The first three weeks following surgery are typically the most crucial since the bone is remodelling during this period, which puts the stability of the implant at risk.

Implant migration into the sinus floor can occur if dental implants are placed in heavily pneumatized sinuses without first performing a sinus lifting surgery. After alveolar sinus lifting, the presence of untreated antral base perforation enables further implant displacement. Such displacement might occur elsewhere in the sinus as well as on the floor. The maxillary sinus may not even be the only component that is displaced in some situations; the paranasal sinuses may also be affected. The variety of displacement locations justifies the employment of various surgical techniques to recover these implants.

Over the years, many endoscopic and non-endoscopic sinus operations to remove misplaced implants into the maxillary sinus have been documented. To our knowledge, no study has yet looked into the effectiveness of various intraoral strategies. Four anatomical forms of displacement were covered in this case

series along with modified and non-modified caldwell-luc surgical approaches performed to retrieve these implants. The current study's objective was to assess the benefits and drawbacks of various surgical techniques utilised to remove dental implants that were migrating into the maxillary sinus.

Dental implant migration into the maxillary sinus is regarded as iatrogenic because it frequently results from improper surgical planning. Some of the causes of displacement during surgery were listed, including inexperienced surgeons, inadequate primary implant stability, insufficient bone regeneration following prior elevation of the maxillary sinus floor, and implant insertion without treatment of implant drilling perforation. Poor primary stability, in particular, leads to implant micromovement, which inhibits clot formation and revascularization and makes it more difficult for new bone to grow. All of these elements may result in inadequate implant fixation, osseointegration failure, and late implant displacement.

To avoid infection issues brought on by the implant's contact with the mucosa of the sinus interior, it is advised to remove the misplaced implants right away or as soon as possible. However, due to the implant's non-attachment status to the sinus membrane and quick displacement of the implant deep inside the sinus following sinus lifting with little perceptible membrane rupture, the implant is free to change locations. In order to allow for granulation tissue encapsulation, the authors advise leaving the implant in place for two weeks.

Depending on where the dental implant is located inside the maxillary sinus, the best surgical method to recover it will be determined. Either through the implant site or by making a window in the lower-lateral wall of the maxillary sinus, these two methods are the easiest to use. A bigger cohort with long-term follow-up study is advised to confirm the effectiveness of various intraoral techniques.

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**Received:** 01-Nov-2022, Manuscript No. DCR-22-19000; **Editor assigned:** 04-Nov-2022, Pre QC No. DCR-22-19000 (PQ); **Reviewed:** 18-Nov-2022, QC No. DCR-22-19000; **Revised:** 25-Nov-2022, Manuscript No. DCR-22-19000 (R); **Published:** 05-Dec-2022, DOI: 10.35248/2161-1122.22.12.608.

**Citation:** Schipper D (2022) Dental Implant Migration into the Maxillary Sinus. J Dentistry. 12:608.

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