

Champagne Cap Technique: a minimally invasive crestal sinus lift for severely atrophic maxilla.

Federico Valenti Obino¹
Luca Testarelli²
Dario Di Nardo²
Luca Signorini³
Massimo Galli²

¹ Private Practitioner in Rome, Italy

² Department of Oral and Maxillofacial Sciences, Sapienza University of Rome, Italy

³ UniCamillus University, Rome, Italy

Corresponding author: Federico Valenti Obino
e-mail: fedevalenti@virgilio.it

Abstract

Background: Implant rehabilitation in the posterior maxilla with severe atrophy remains a clinical and surgical challenge. Although widely used, the lateral window sinus lift is linked to longer healing times, increased invasiveness, and higher morbidity. This study aimed to introduce the *Champagne Cap Technique*, an innovative variation of the crestal maxillary sinus lift, which allows implant placement in ridges with less than 5 mm of residual bone height.

Case report: This case report details a complex implant placement in a 70-year-old woman with systemic hypertension, a smoking habit, moderate dental anxiety, and limited mouth opening. The patient was treated with a crestal approach, screw expansion, hydraulic grafting using calcium phosphosilicate putty, and primary implant stabilization via a modified X-shaped mattress suture. Five-year clinical and radiographic follow-up showed complete osseointegration, stable bone regeneration, and no complications.

Conclusions: The *Champagne Cap Technique* is a minimally invasive, effective, and predictable alternative for implant placement in patients who are contraindicated for lateral sinus lift procedures, especially those with compromised systemic health.

Keywords: Crestal sinus lift; Calcium phosphosilicate putty; Maxillary atrophy; Implantology; Minimally invasive surgery; Hydraulic sinus augmentation.

Introduction

A sinus lift is a common surgical procedure used to increase the amount of bone beneath the maxillary (upper jaw) sinus for dental implant placement. The sinuses in the upper jaw are air-filled spaces adjacent to the nose, located above the upper premolar and molar teeth, and below the eyes. Inside the sinuses, a thin membrane lines the bone. This lining is lifted during sinus lift procedures to create space for bone and dental implants. Sinus lifts are done either before or at the same time as placing the implants.

There are two main groups of procedures based on the amount of existing bone at the planned implant site: 1a) External approach without existing bone. Grafting material will be added from the cheek side of the sinus to raise the membrane. The dental implant is usually not placed until the bone has healed; another surgical procedure is needed. 1b) External approach with some existing bone. Grafting material will be added from the cheek side of the sinus to raise the membrane. A dental implant can be placed at the same time. 2) Internal approach with some existing bone. The sinus will be raised by



License

This work is licensed under a [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/).

Authors contributing to Oral and Implantology agree to publish their articles under the [Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License](https://creativecommons.org/licenses/by-nc-nd/4.0/),

which allows third parties to copy and redistribute the material providing appropriate credit and a link to the license but does not allow to use the material for commercial purposes and to use the material if it has been remixed, transformed or built upon.

How to Cite

Federico Valenti Obino, Luca Testarelli, Dario Di Nardo, Luca Signorini, Massimo Galli.

Champagne Cap Technique: a minimally invasive crestal sinus lift for severely atrophic maxilla.

Annali Di Stomatologia, 16(3), 342-347.

<https://doi.org/10.59987/ads/2025.3.342-347>

gently tapping through the implant preparation site in your mouth. Grafting material might be pushed through the implant preparation site, and your dental implant will be placed simultaneously.

In many cases, implant rehabilitation in the posterior maxilla with severe atrophy remains a clinical and surgical challenge. Although widely used, the lateral window sinus lift is associated with longer healing times, greater invasiveness, and higher morbidity. Summers (1994) introduced the transcresal osteotome approach for sinus elevation up to 5–6 mm of height gain (1). This transcresal approach using osteotomes marked a significant advance in minimally invasive implantology. However, multiple studies indicate that residual crestal bone heights below 5 mm are a threshold where the safety and predictability of transcresal techniques decline significantly. Wallace and Froum (2003) compared crestal and lateral sinus lift techniques, demonstrating similar success rates under favorable conditions (2). Testori et al. (2009) confirmed that residual bone height is a key prognostic factor in implant survival and stability (3). A Cochrane review by Esposito et al. (2014) highlighted the lower complication rates associated with minimally invasive techniques (4). Additionally, several studies on calcium phosphosilicate putty emphasize its osteoconductive properties and favorable handling characteristics, supporting its use in hydraulic sinus augmentation (12,13). To address this challenge, the Champagne Cap Technique was developed. This method combines a crestal entry point, controlled sinus expansion, hydraulic grafting with bioceramic putty, and mechanical implant stabilization using a modified X-shaped suture, as shown in Figure 1.

Case report

Patient Profile: A 70-year-old female patient with systemic hypertension, a long-term smoking habit, moderate dental anxiety, and restricted mouth opening.

Diagnosis: Panoramic radiograph and cone-beam computed tomography (CBCT) showed advanced posterior maxillary atrophy with residual bone height less than 5 mm in region 2.5–2.7.

Surgical Procedure:

- Local anesthesia was administered using 3% mepivacaine.
- A crestal incision and mucoperiosteal flap elevation were performed.
- Ridge expansion and Schneiderian membrane elevation were achieved using a screw expander (Sabatini-Bucci, Italy).
- The integrity of the sinus membrane was confirmed with the Valsalva maneuver.
- Hydraulic grafting was carried out with calcium phosphosilicate putty (NovaBone®).
- A wide-neck tissue-level implant was inserted.
- Primary mechanical stabilization was obtained by applying a modified X-shaped mattress suture directly over the implant head, with additional simple interrupted sutures to secure the flap.

Follow-Up Protocol:

- Immediate post-operative periapical radiograph.
- CBCT at six months to assess bone regeneration.
- Prosthetic loading after healing.
- Clinical and radiographic follow-up at five years post-surgery.

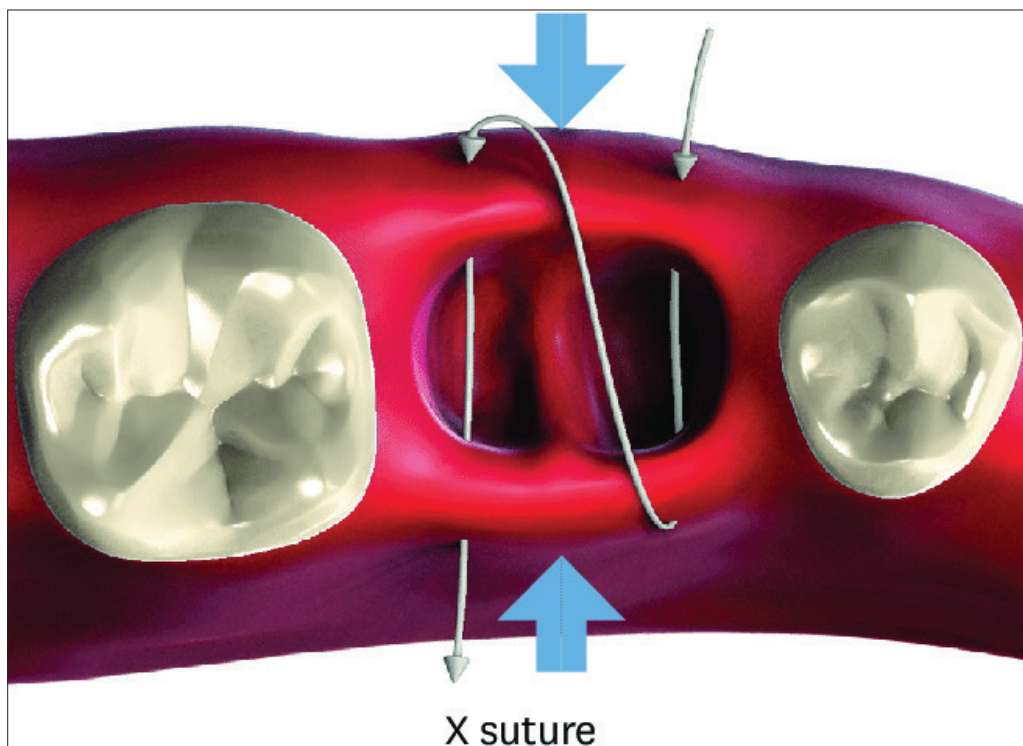


Figure 1. Clinical view showing the implant emerging from the atrophic ridge without vestibular or distal cortical bone. The implant is mechanically stabilized using an X-shaped mattress suture.

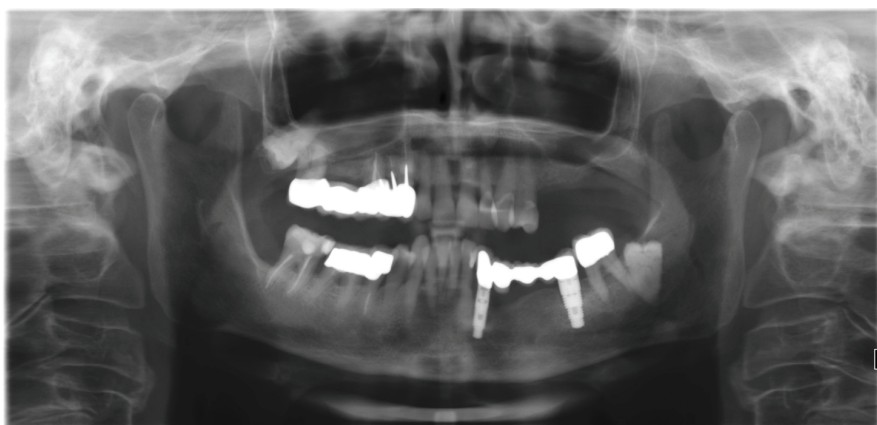


Figure 2. Initial panoramic radiograph showing ridge atrophy in the 2.5–2.7 region.

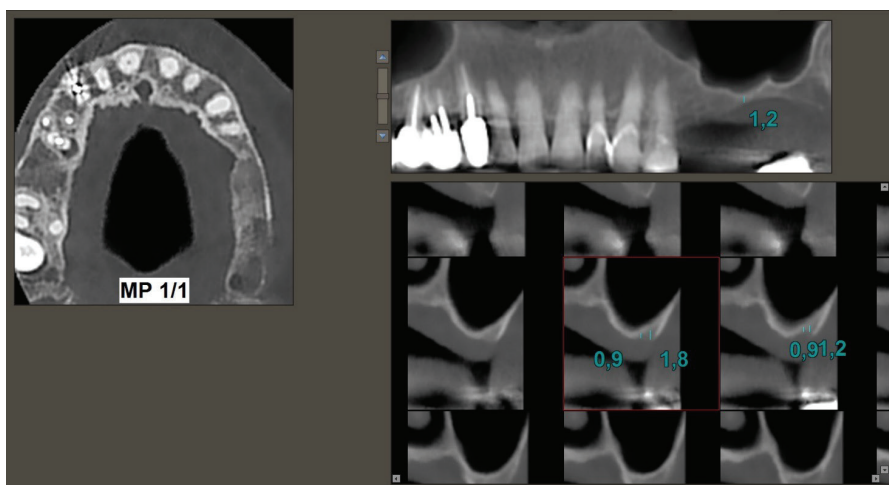


Figure 3. Pre-operative CBCT (cross-section) displaying residual alveolar ridge height below 5 mm in the posterior maxilla (2.5–2.7), with no evidence of sinus pathology



Figure 4 – Intraoperative phase: hydraulic insertion of calcium phosphosilicate putty using a syringe, following sinus membrane elevation via screw expander.



Figure 5 – Clinical image showing the X-shaped stabilizing suture placed over the implant head, maintaining position during healing.

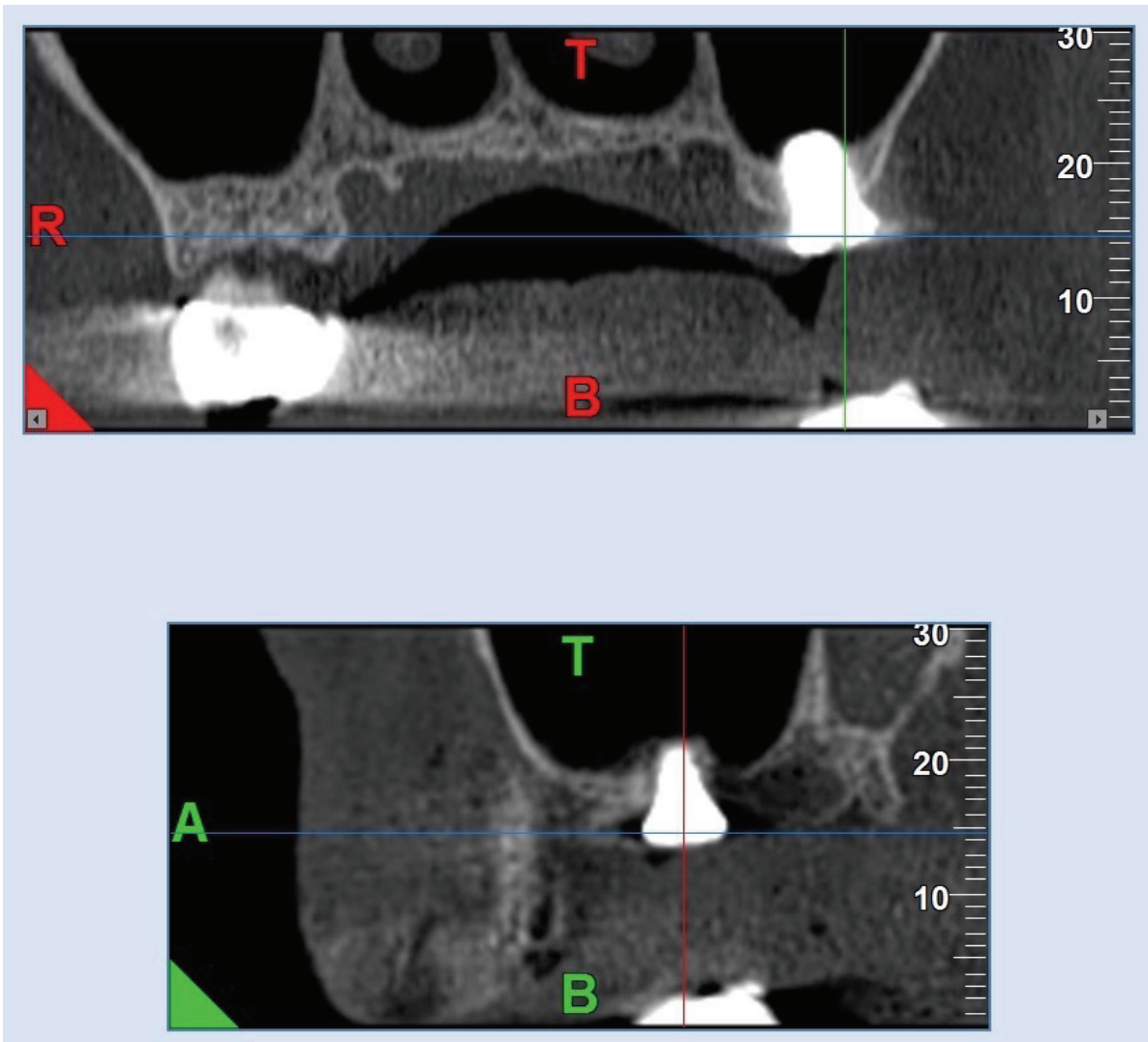


Figure 6 – Six-month post-operative CBCT shows new bone formation surrounding the implant apex and continuity of the sinus floor.

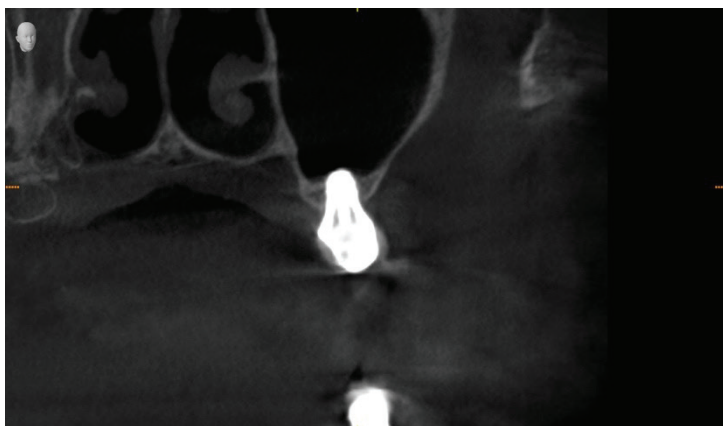


Figure 7. Five-year CBCT follow-up showing the implant apex in close contact with newly formed medullary bone beneath the elevated sinus floor. The image demonstrates stable bone regeneration, maintained sinus lift, and long-term implant integration without signs of pathology or graft resorption.

Results

The six-month CBCT revealed:

- New cortical bone formation in the augmented area.
- Continuity of the sinus floor.
- Adequate peri-implant bone volume for prosthetic rehabilitation.

A screw-retained metal-ceramic bridge was delivered without complications.

At the five-year follow-up:

- Complete osseointegration was observed.
- The regenerated bone maintained its volume and architecture.
- Medullary bone with visible vascular channels was identified between the implant apex and the native crest.

Discussion and Conclusions

The positive results in this case support the idea that Champagne Cap Technique could serve as a viable and predictable alternative to traditional sinus lift methods, especially in patients with residual crestal bone <5 mm, where osteotome-based approaches are unreliable (1–4,12,13).

One major challenge of transcresal sinus augmentation is maintaining sinus membrane elevation after surgery. Factors such as negative intranasal pressure and mucosal movement can cause the elevated membrane to collapse. This technique addresses these limitations by mechanically stabilizing the implant with a modified X-shaped suture, which keeps its position without the need for surrounding cortical bone.

The idea of stabilizing implants through suturing has rarely been explored in implantology, but it reflects fixation methods used in orthopedic and plastic surgery. Additionally, the long-term results—demonstrated by medullary bone growth and ongoing implant success—indicate both the osteoinductive ability of calcium phosphosilicate and the precise spatial control provided by hydraulic delivery (12,13).

This study presents several limitations:

- Single case report with limited external validity.
- Lack of a control group or comparative cohort.

- Absence of CBCT-based volumetric analysis.
- The innovative nature of the technique means peer-reviewed evidence is still scarce.

Nonetheless, the favorable clinical and radiographic results observed over five years support the rationale for further clinical investigation.

Therefore, we can conclude that the Champagne Cap Technique is a promising, minimally invasive approach for placing implants in severely atrophic posterior maxillae. By combining screw expansion, hydraulic grafting, and suture-based stabilization, it allows safe and effective sinus membrane elevation and implant placement in cases with challenging anatomy. While more prospective and comparative studies are needed to confirm its effectiveness, this method could provide a useful alternative for medically compromised patients or those who are contraindicated for lateral window sinus lift procedures.

References

1. Summers RB. A new concept in maxillary implant surgery: the osteotome technique. *Compend Contin Educ Dent.* 1994.
2. Wallace SS, Froum SJ. Effect of maxillary sinus augmentation on implant survival: a systematic review. *Ann Periodontol.* 2003. DOI: <https://doi.org/10.1902/annals.2003.8.1.328>
3. Testori T, Wallace SS, Del Fabbro M. *Maxillary Sinus Surgery and Alternative Therapies.* Quintessence; 2009.
4. Esposito M, et al. Sinus lift techniques for dental implant rehabilitation. *Cochrane Database Syst Rev.* 2014. DOI: <https://doi.org/10.1002/14651858.CD008397.pub2>
5. Pjetursson BE, et al. A systematic review of the success of sinus floor elevation and survival of implants. *Clin Oral Implants Res.* 2008. DOI: <https://doi.org/10.1111/j.1600-0501.2008.01568.x>
6. Sohn DS, et al. Comparison of two transcresal sinus elevation techniques: hydrodynamic vs conventional. *J Periodontal Implant Sci.* 2014. DOI: <https://doi.org/10.5051/jpis.2014.44.5.216>
7. Nedir R, et al. Osteotome sinus floor elevation without grafting: a 10-year prospective study. *Clin Oral Implants Res.* 2009. DOI: <https://doi.org/10.1111/j.1600-0501.2009.01600.x>
8. Thor A, Sennerby L. Sinus lift without bone graft using platelet-rich fibrin. *J Oral Maxillofac Surg.* 2008.
9. Choukroun J, et al. Platelet-rich fibrin as biologic carrier for sinus bone grafting: a retrospective clinical study. *Implant Dent.* 2009. DOI: <https://doi.org/10.1016/j.tri>

- pleo.2005.07.012
10. Tatum H. Maxillary and sinus implant reconstructions. *Dent Clin North Am.* 1986.
 11. Pjetursson BE, et al. Long-term success of sinus floor elevation using autogenous bone or bone substitutes: a systematic review. *Int J Oral Maxillofac Implants.* 2009.
 12. Yoon WJ, et al. Osteotome sinus floor elevation with calcium phosphosilicate putty: a retrospective study. *J Periodontol.* 2011. DOI: <https://doi.org/10.1902/jop.2010.100360>
 13. Stübinger S, et al. Hydraulic sinus lift technique in atrophic maxilla: a retrospective study of clinical outcomes. *Int J Oral Maxillofac Implants.* 2017. DOI: <https://doi.org/10.11607/jomi.5808>