

Double, closed sinus lift with the use of allogeneic bone granulate

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Bone tissue atrophy resulting from teeth extractions, individual anatomy features, hard tissue pathologies or iatrogenic effects constitutes a contraindication for implant procedures. The atrophy is often observed within the lateral section of the maxilla, where the sinus floor lies low.

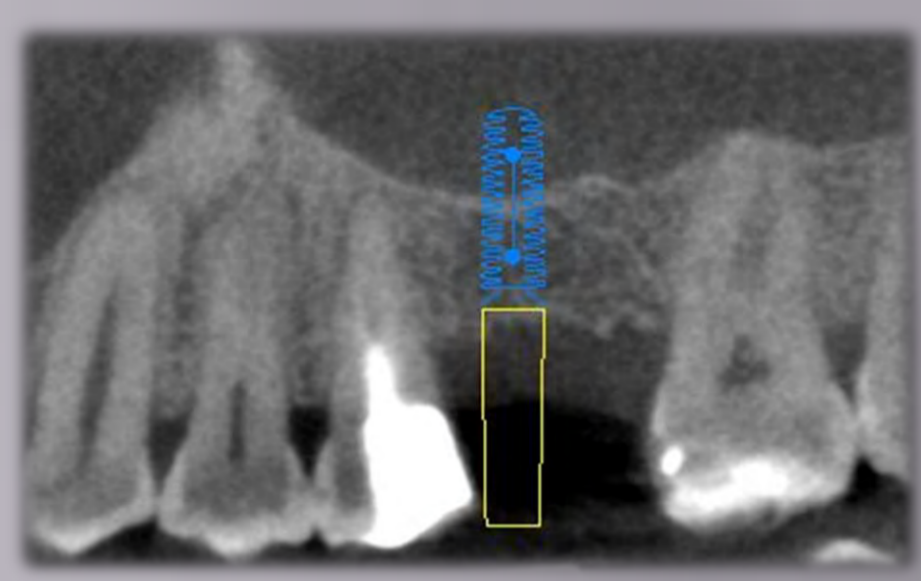
Study objective

Presenting a new, double, closed sinus lift method and evaluation of its efficacy in reconstruction of vertical atrophy within the alveolar ridge.

Material and methods

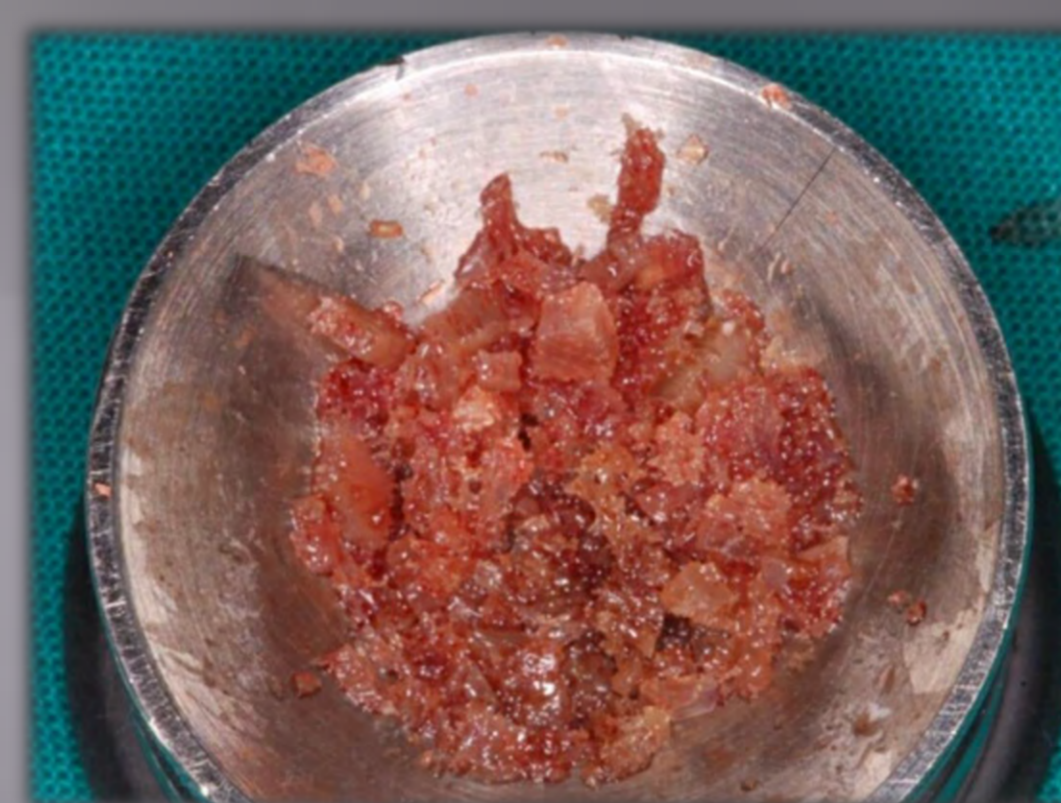
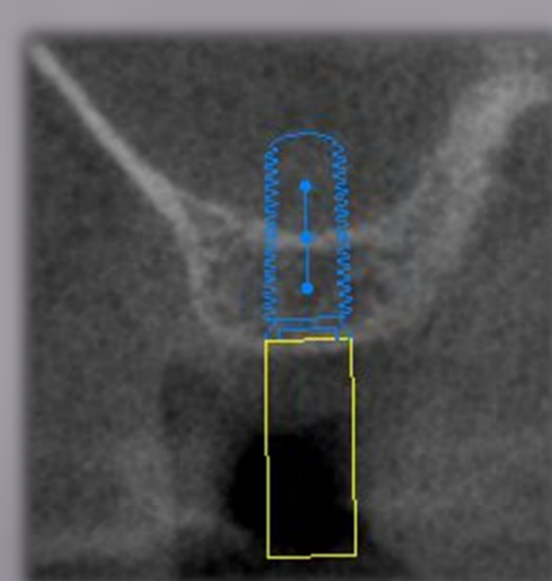
The procedure was performed in 36 patients. Local criteria included lack of inflammation within the sinus on the side of a tooth defect, the height of the alveolar ridge of 3 mm or more, and its width of 5 mm or more.

During treatment stage 1 the sinus lift was performed the first time. The indentation was filled with allogeneic granulate of cancellous bone obtained from a tissue bank. After 3 to 6 months stage 2 was performed consisting in another sinus lift with simultaneous implant embedment. The treatment was completed with prosthetic restoration after 6 months of osteointegration.



Implantation site - area of tooth 26 (left-side, maxillary first molar).

CT before a closed sinus-lift with implant simulation (length: 10mm, diameter: 8.5)



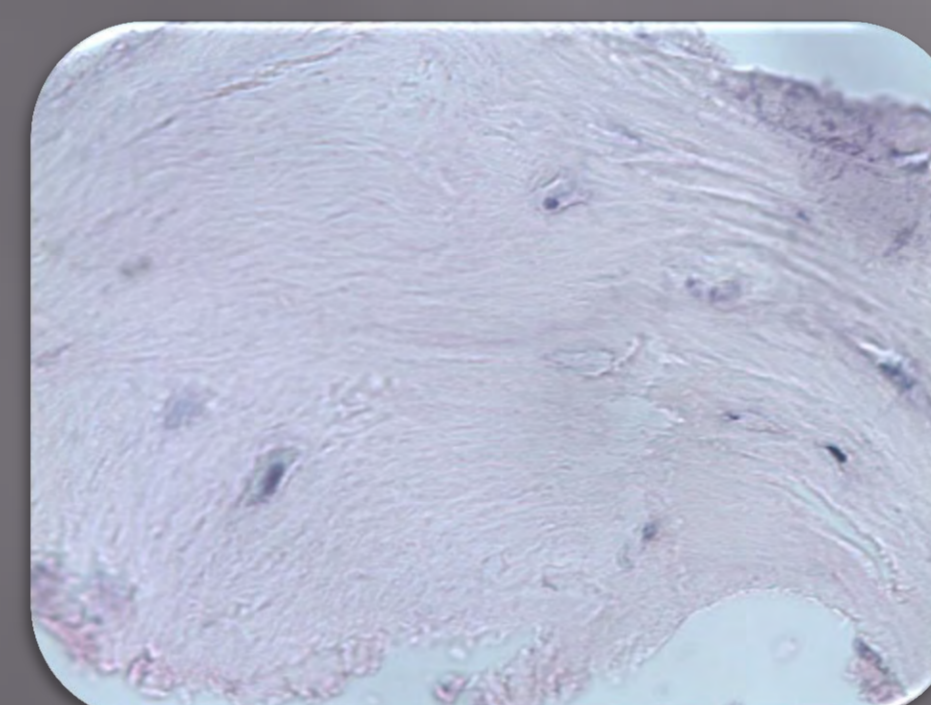
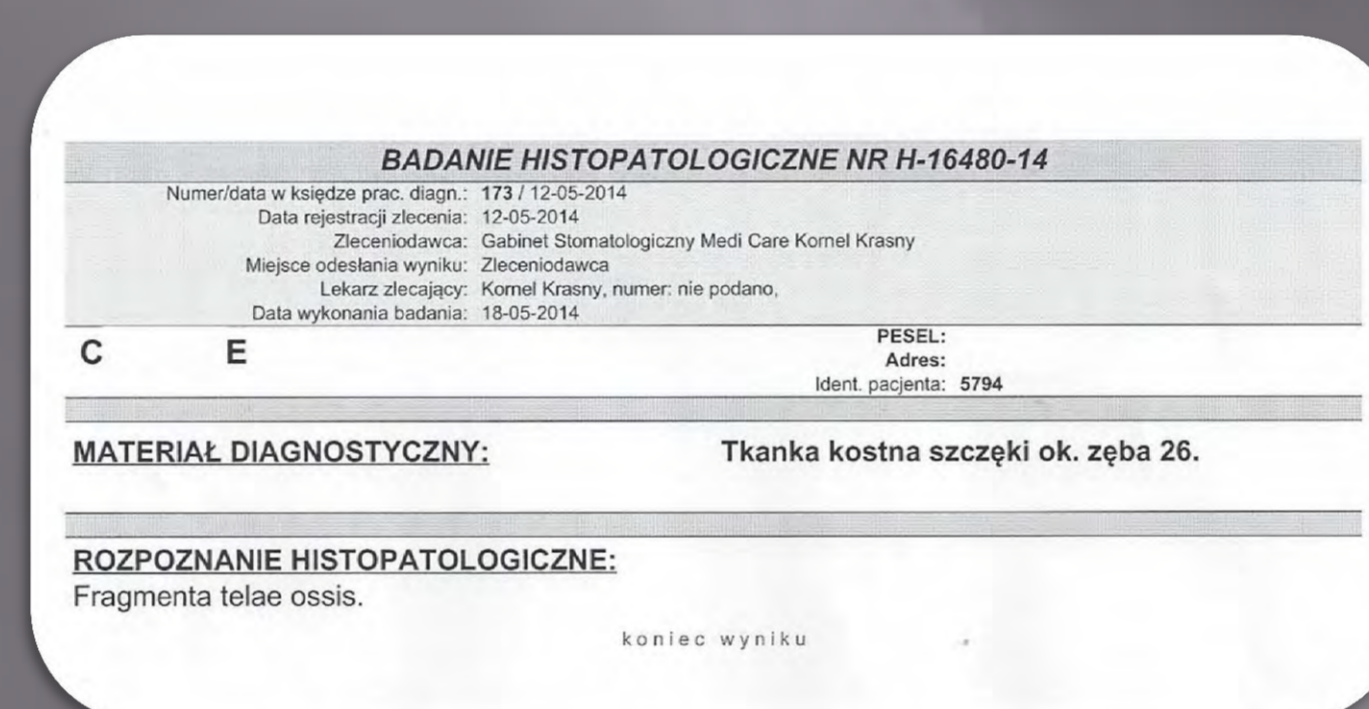
Allogeneic bone - corticocancellous bone granulate used for the procedure



CT at 6 months after the closed sinus-lift (stage 1) with implant simulation length: 10 mm; diameter: 8.5)



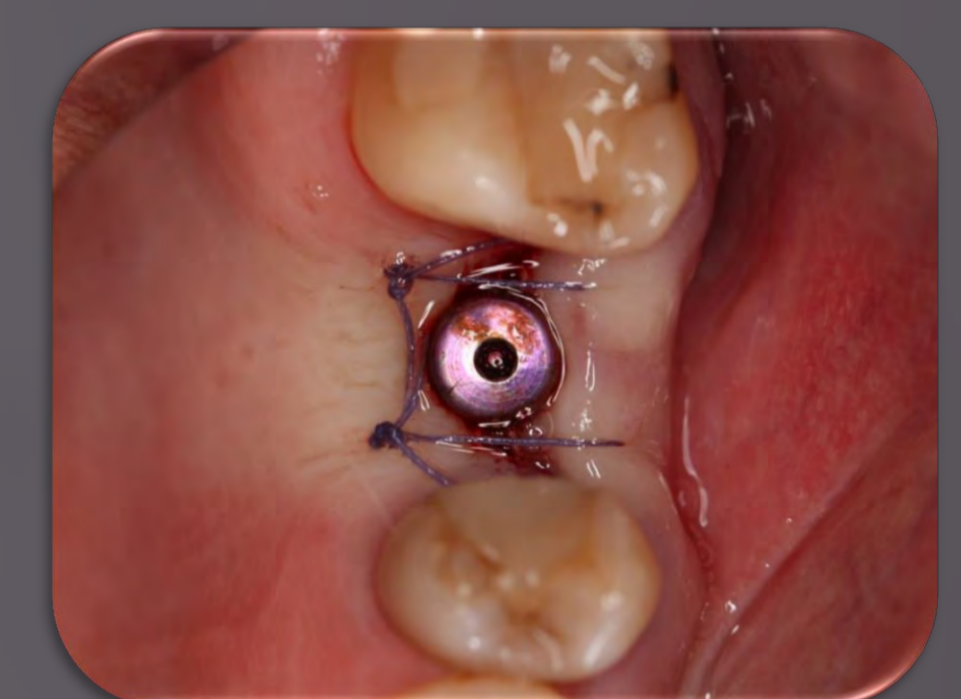
The ridge at 6 months after the first sinus-lift. The bone shows uniform structure and integration with the adjacent tissues; normal bleeding observed on the entire surface of the ridge crest



The result of the histopathological testing performed in the allogeneic graft confirmed the new bone formation: FRAGMENTA TELAE OSSIS



After the bone bed was formed, the firmness, continuity, and stability of the bone within the implant site were confirmed on probing. Primary stability of the implant was obtained. The grafted material was collected for histopathological testing



Implant uncovering procedure performed 6 months after implant embedment confirmed normal, secondary graft stability



Completion of the implant-prosthetic treatment at 7 months after implant embedment. Total treatment duration: 13 months

Results

Out of 36 subjects, who underwent the entire double sinus lift, 2 procedures were unsuccessful because no alveolar ridge augmentation was obtained after stage 1. In the other 34 cases stage 1 led to the average augmentation by 3.34 mm (2.4 mm - 4.9 mm), which provided the average alveolar ridge height of 7.2 mm. During stage 2 with the second sinus lift 34 implants were embedded and no cases of sinusitis were found. During follow-up no implant failures were noted. Histopathological testing of the bone graft showed new, living bone tissue.

Conclusions

The efficacy of the presented method was confirmed with the baseline alveolar ridge height of 3 mm. It combined the advantages of the open method - allowing alveolar ridge augmentation in case of major reduction of the vertical dimension and the closed method - with no need to open the maxillary sinus, and hence, less intra- and post-operative burden for the patient.

Literature

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3. Esposito M, Grusovin MG, Rees J, Karasoulos D, Felice P, Alissa R, Worthington H, Coulthard P. Effectiveness of sinus lift procedures for dental implant rehabilitation: a Cochrane systematic review. Eur J Oral Implantol 2010 Spring;3(1):7-26.