



## Diagnosing and Treating a Hollow Jaw

Recent concerns have occurred in implant complications relating to the “hollow jaw” highlighting the need to diagnose this condition prior to implant surgery.

While the mandible can actually be hollow, as in filled with air, the most common condition is a jaw filled with soft tissue devoid of mineralized tissue. When implants are placed into these areas, the implant can literally fall into the mandible due to lack of resistance. Soft tissue in jaw that lacks mineralized tissue has been termed “**hollow jaw**”.

A hollow jaw can often be diagnosed and treatment planned to avoid complications and provide predictable implant success. The most valuable aid in diagnosing this condition is a high quality digital periapical radiograph. A dental CT scan or non-digital periapical radiograph, lacks the image quality to make this diagnosis. When cancellous bone lacks mineralized trabeculae, there is a resulting compensation by the cortical bone increasing in thickness. The alveolar crest normally does not have cortical bone. When detecting cortical bone on the crest of alveolar bone, you know there is trouble below in the cancellous bone.

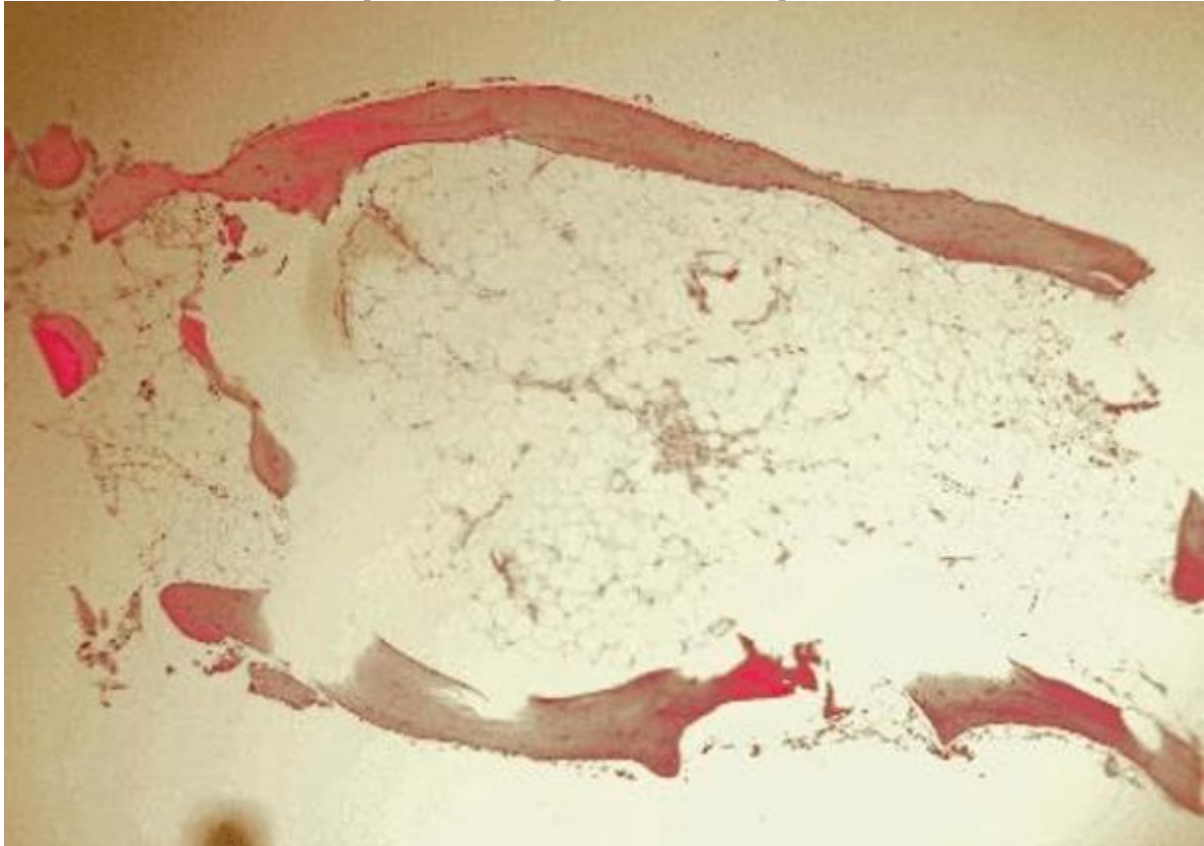
## CASE 1



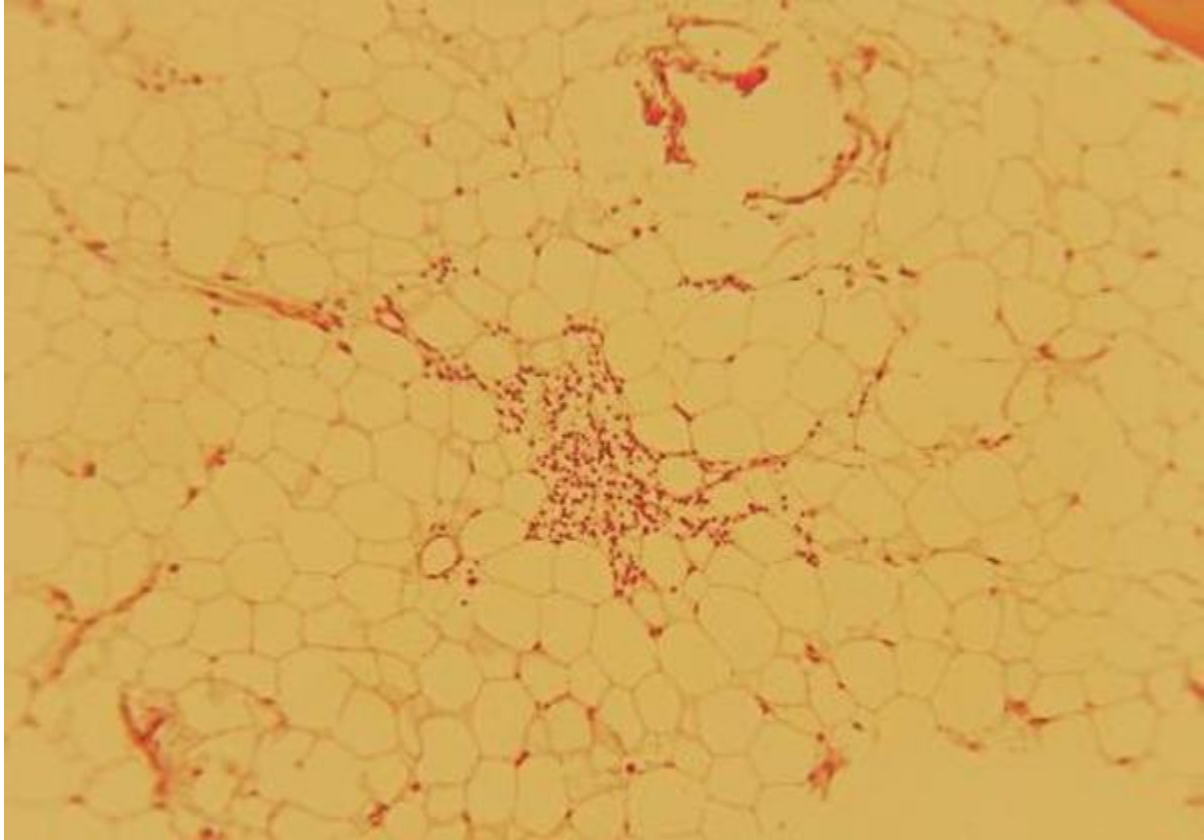
The white and black arrows show a thickened crestal cortical bone that is compensating for the poorly mineralized cancellous bone. The cancellous bone lacks radio density as outlined by the red arrows.

Once the diagnosis is made, the patient can be informed that there is a problem and can be informed of your approach to their care. The bone needs to be regenerated to provide for proper support and integration. Our approach is to prepare the proper size osteotomy and fill the osteotomy with Biodensification™ graft material. While screwing the implant into the osteotomy, BioDensification™ is pressed into the surrounding cancellous bone. This material has a putty consistency and will flow into the surrounding tissue without compromising any vital structures.

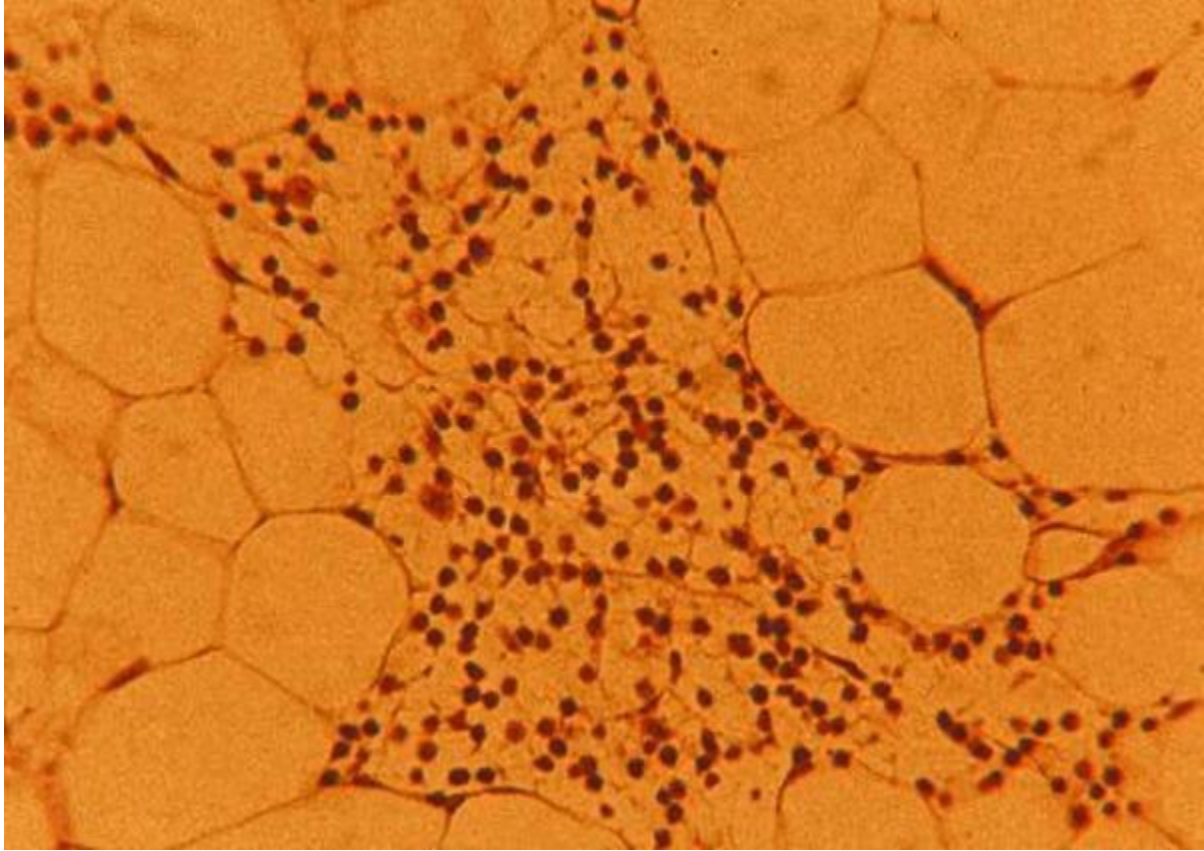
The material stimulates regenerative cells and those cells migrate throughout the area to regenerate the mandible producing normal cancellous bone but just as important the stimulation of osteoblasts produces integration to the implant.



Trephine sample



Fat cells with inflammatory cells



Since the collar of the implant will be the only portion of the implant in contact with bone, the collar of the implant needs to be the widest portion of the implant. Care must be taken to monitor the angle of the implant and driver when the implant is being placed since there is no bone to guide the implant. Make sure to gently remove the implant driver from the implant so it is not displaced.

The following radiograph was taken three months after grafting with BioDensification™ and implant placement. The radiograph shows successful regeneration of the cancellous bone with a good dense trabecular pattern in addition to a remodeling of the thickened crest as the anatomy returns to normal.

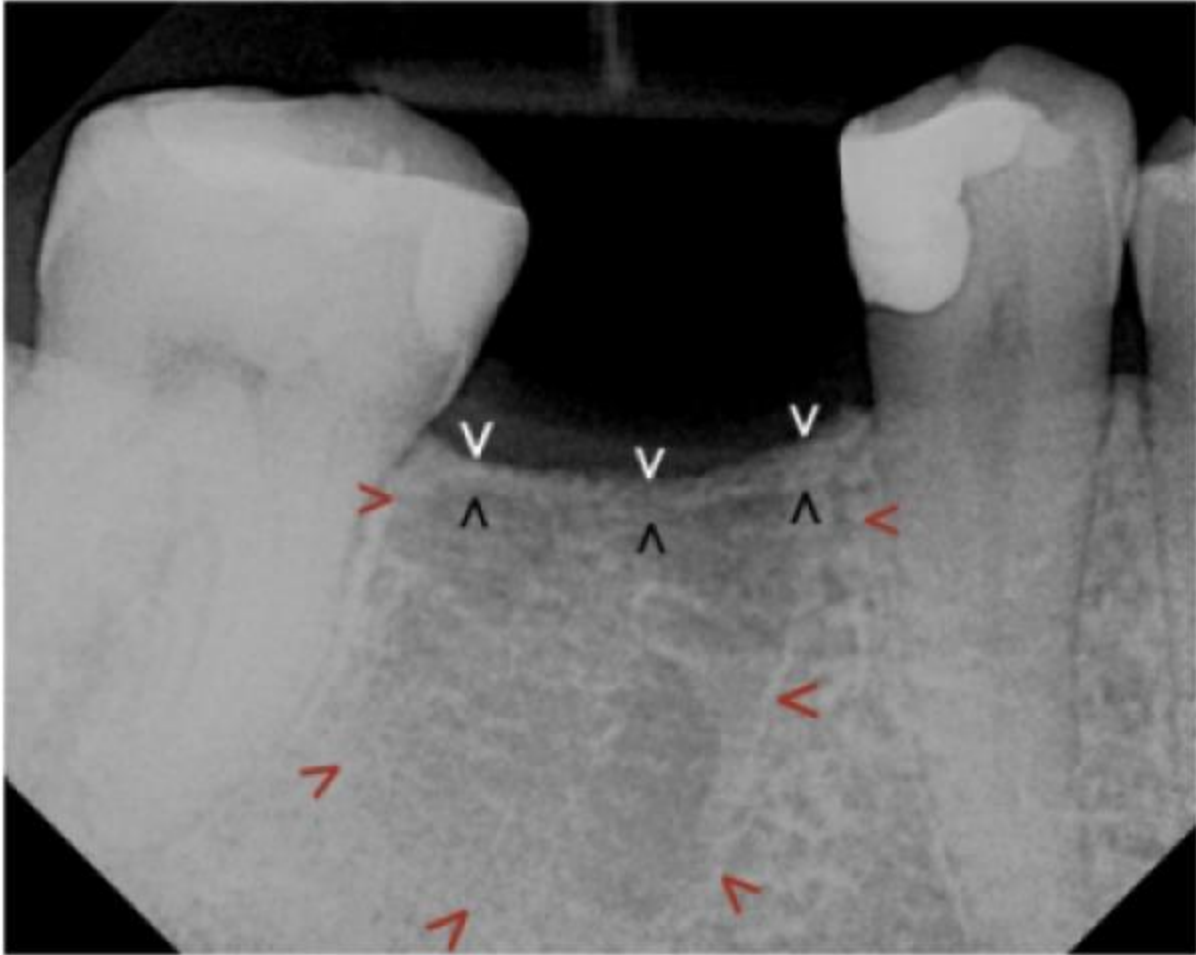




## **CASE 2**

With the ability of the graft material to stimulate osteogenesis and with the osteogenic cells having the ability to spread into surrounding bone, we now have the ability to treat poorly mineralized bone. This patient presented with poor mineralization in the area of a previous extraction.

A trephine biopsy was attempted. However, once the mineralized crest was penetrated, the tissue beneath the crest was crushed and a biopsy was not able to be harvested due to a lack of mineralization.

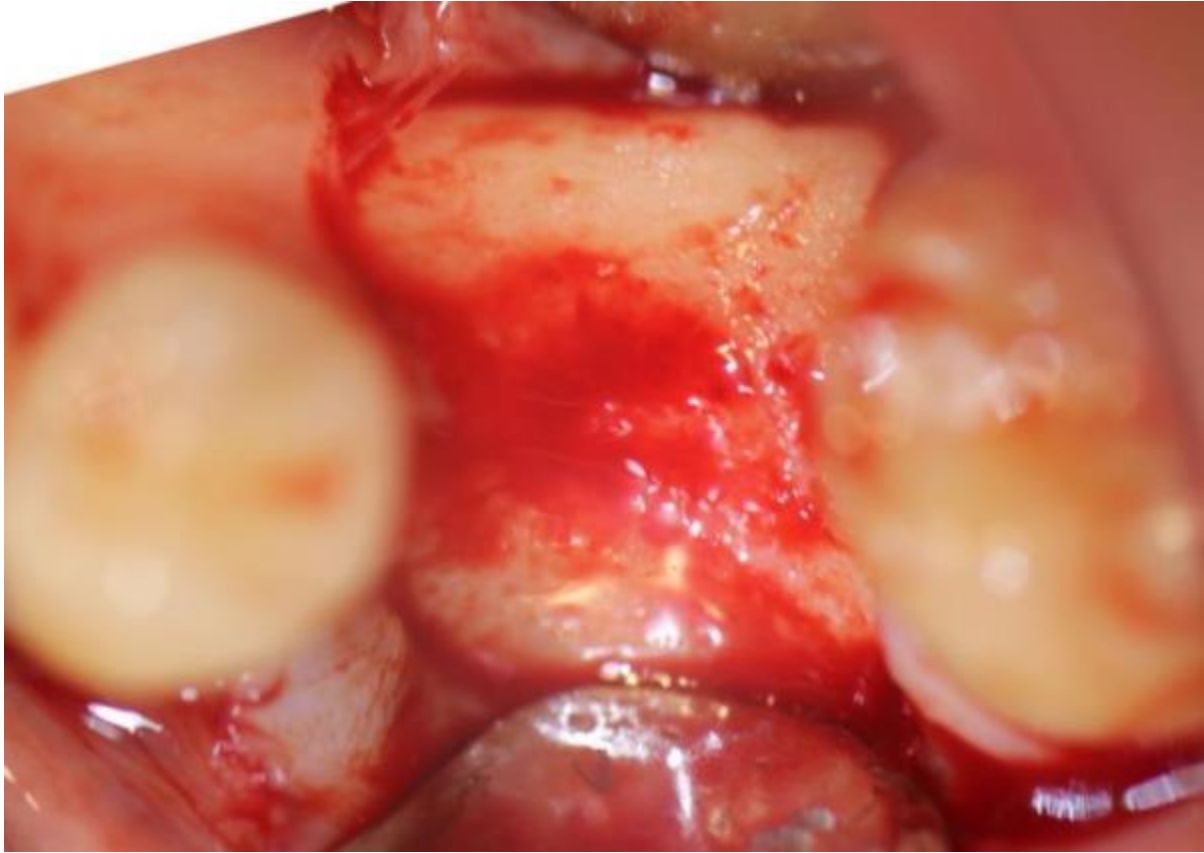


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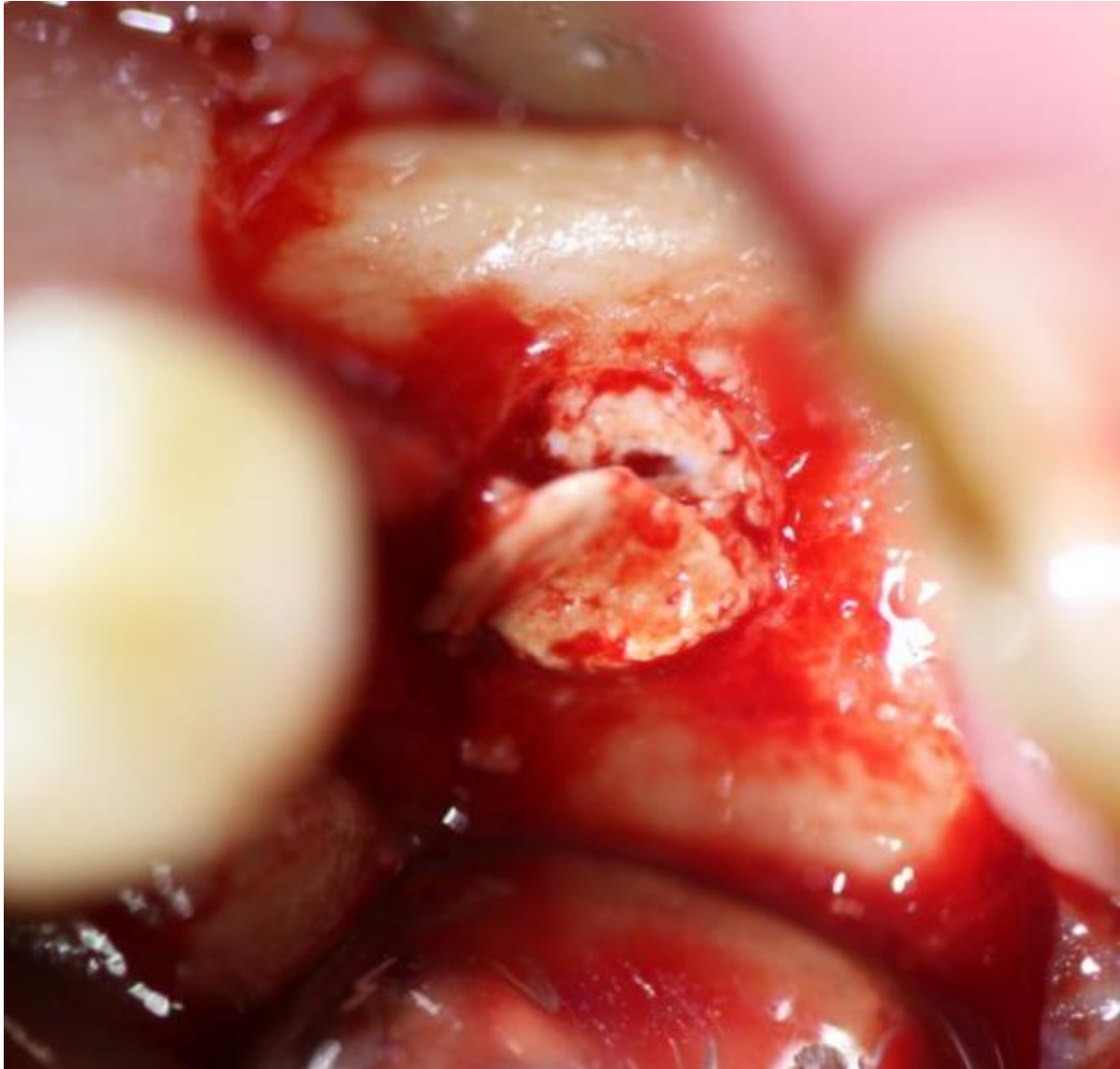


Pre op ridge shows loss of buccal ridge height and width.

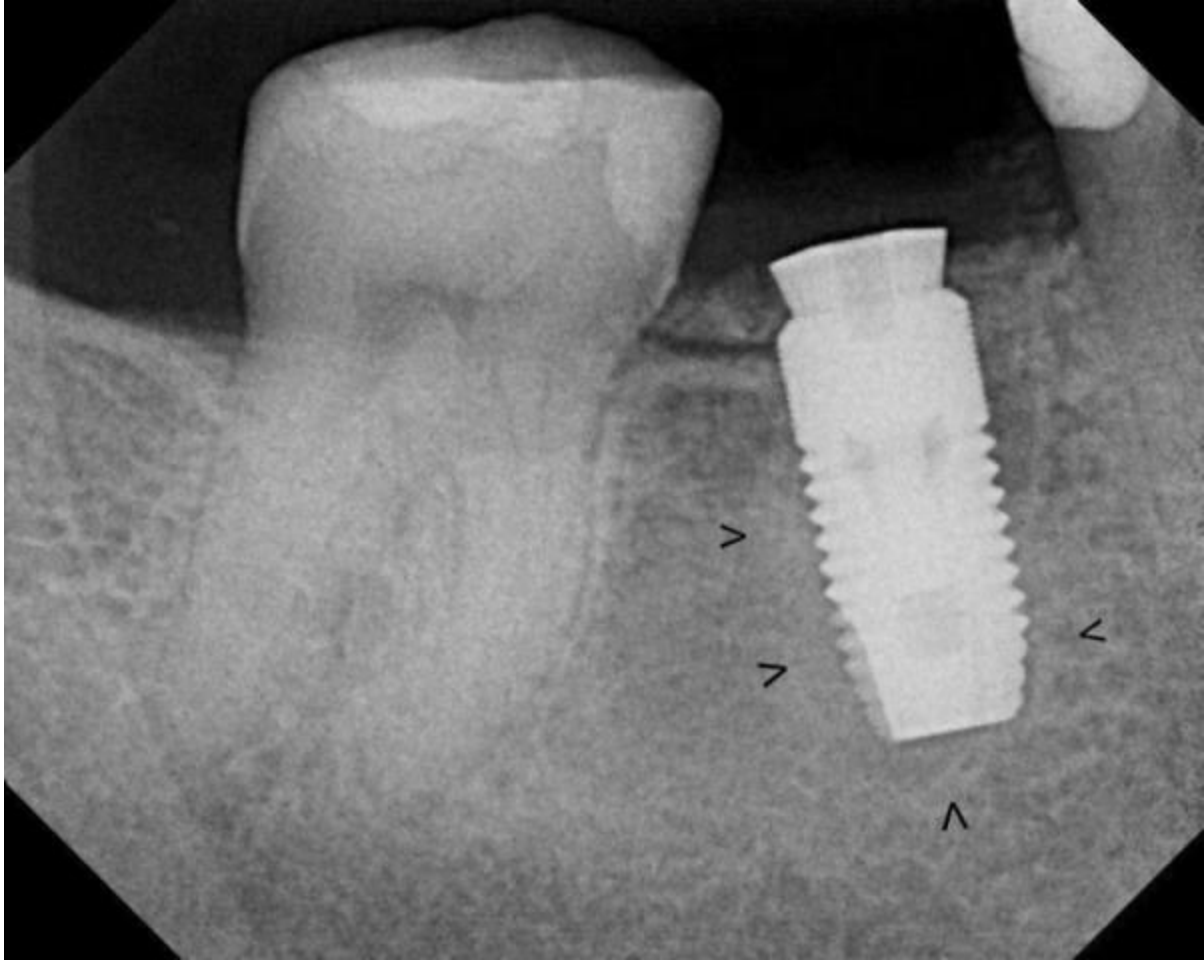




The ridge sloped significantly to the buccal.



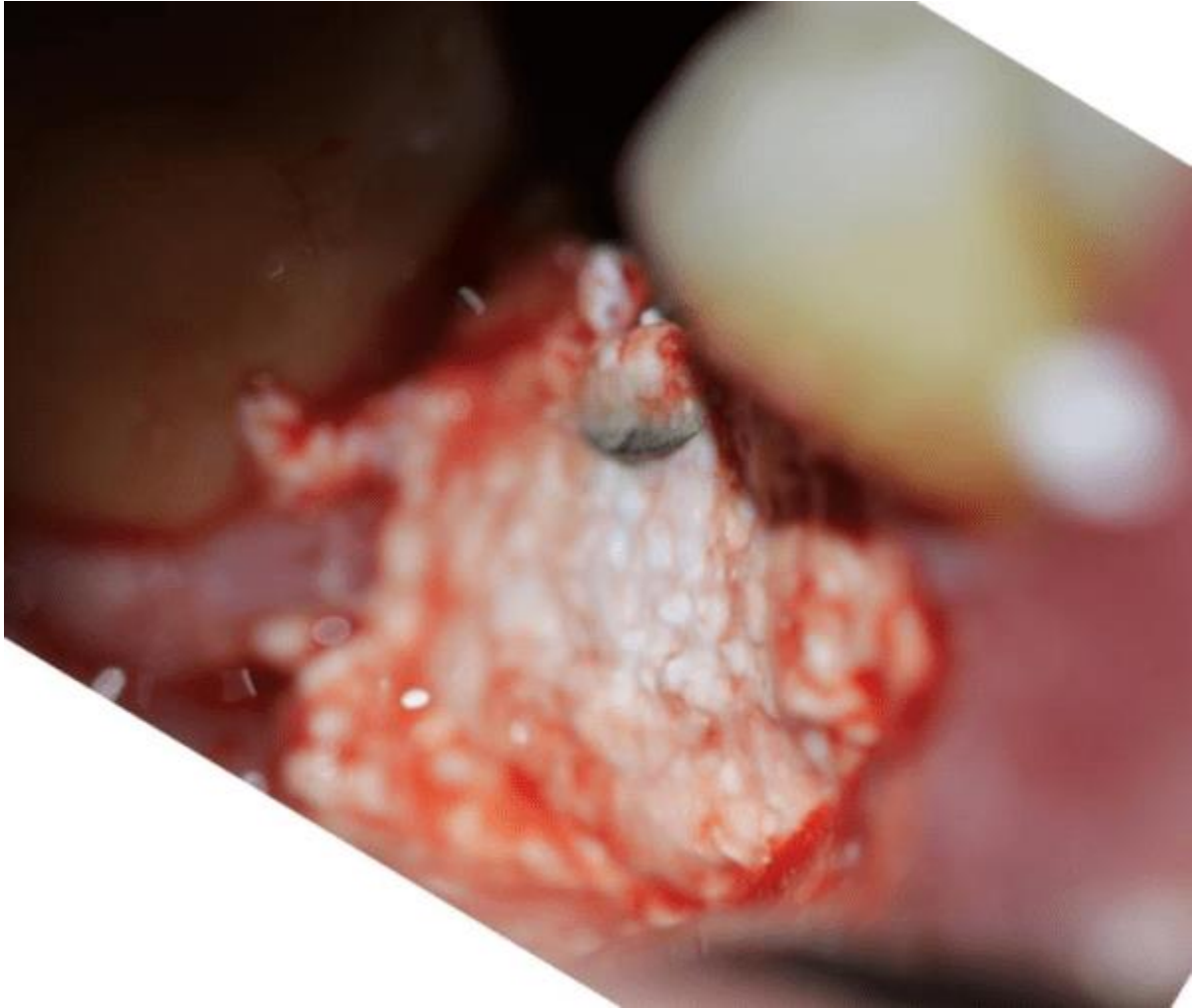
After piercing the crest, no resistance was found during the osteotomy. To improve the vitality of the bone and increase bone density, the osteotomy was filled with BioDensification™ shown here.



The implant was placed which dispersed BioDensification™ into the mandible as noted by the black arrows.



In an effort to correct the ridge slope and cover the threads the buccal ridge was prepared for grafting. The perforations need to be made to a depth that results in bleeding to gain access to regenerative cells.



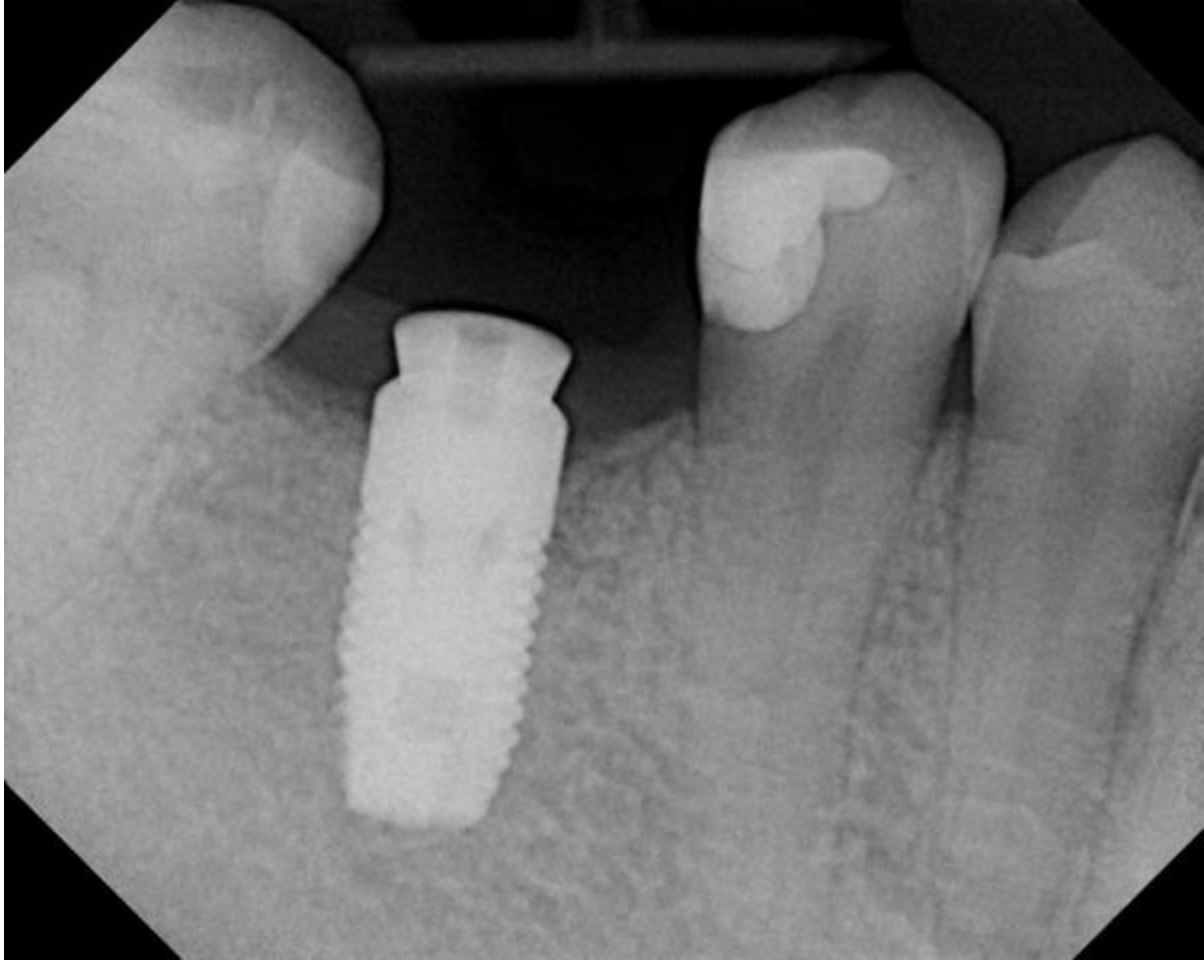
The buccal ridge was grafted with Socket Graft™ mixed with OsseoConduct™  $\beta$ TCP perio granules.





Healing abutment appointment three months after grafting.





At the healing abutment appointment, three months after implant placement and grafting with Socket Graft™, the bone is well mineralized and has a density comparable to the surrounding healthy bone. The bone around the implant shows fine trabeculation that will continue to mineralized and reorganize for the next three months.

*All images were taken with the same radiographic machine at the same settings and none of the images have been altered.*