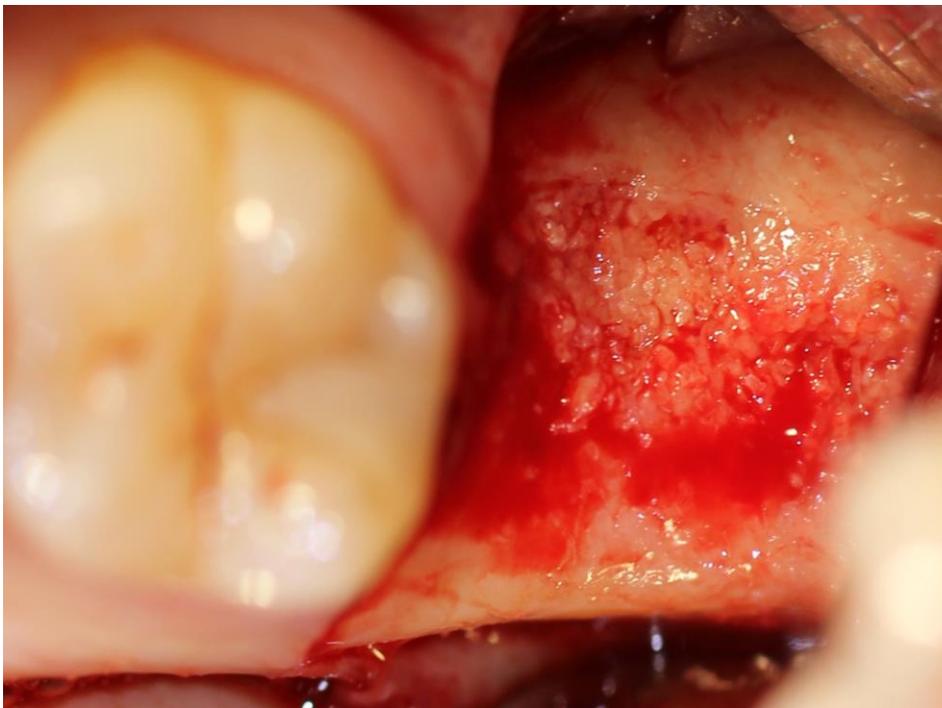


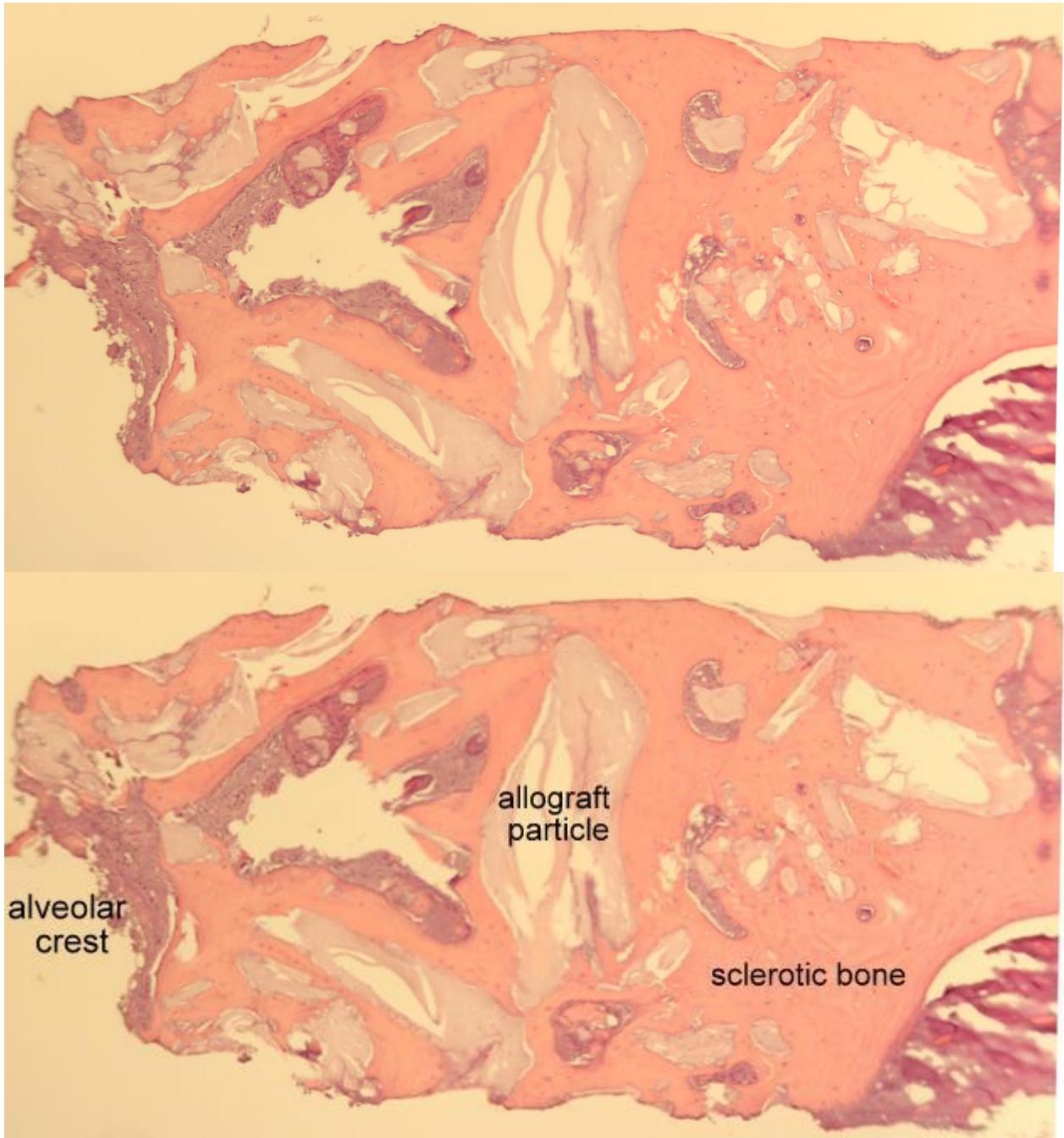
Understanding Allograft Histology



The second molar was extracted and grafted with mineralized freeze dried bone allograft approximately six months prior to this radiograph.



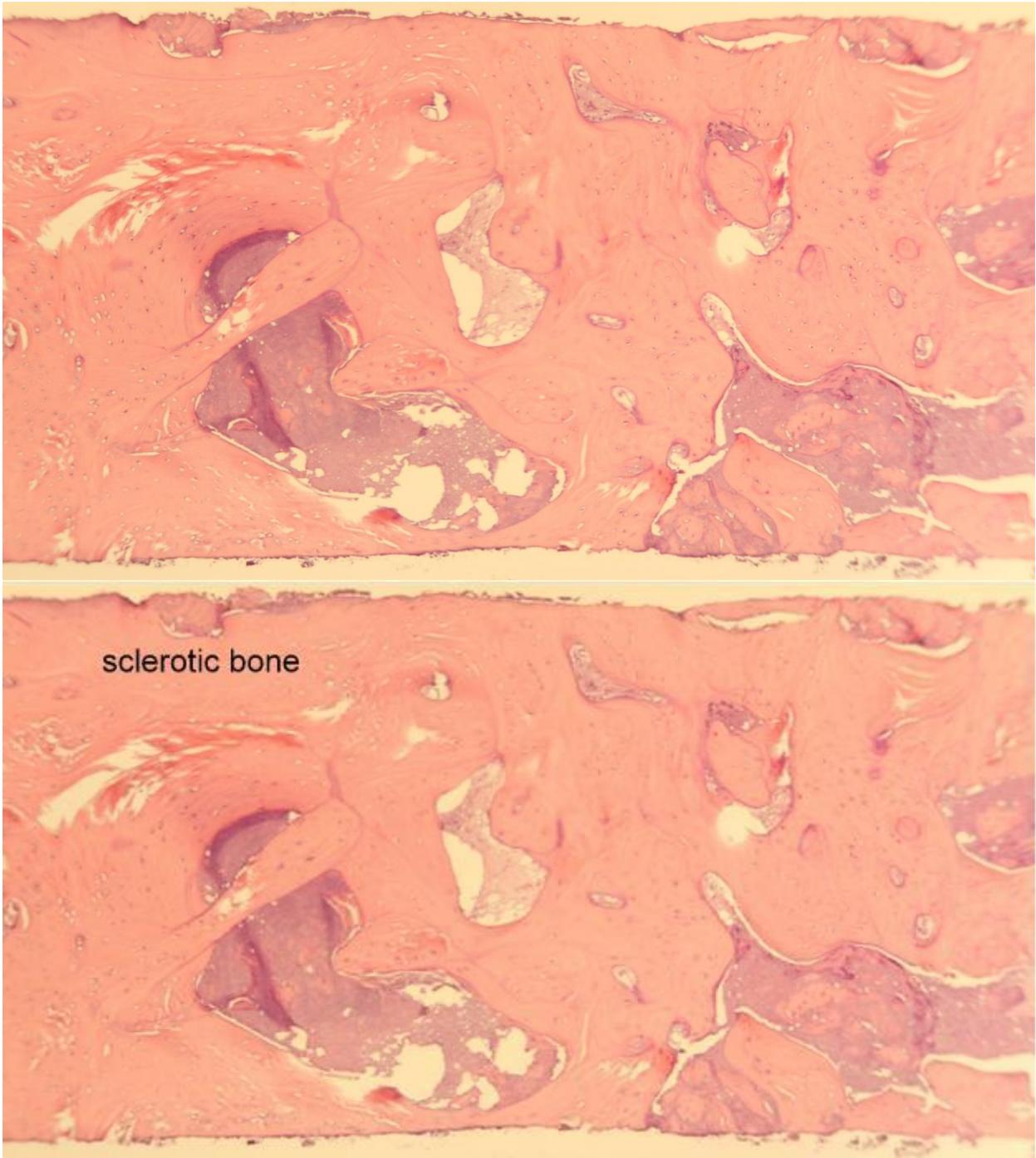
At implant placement, a pebbly surface texture was found.



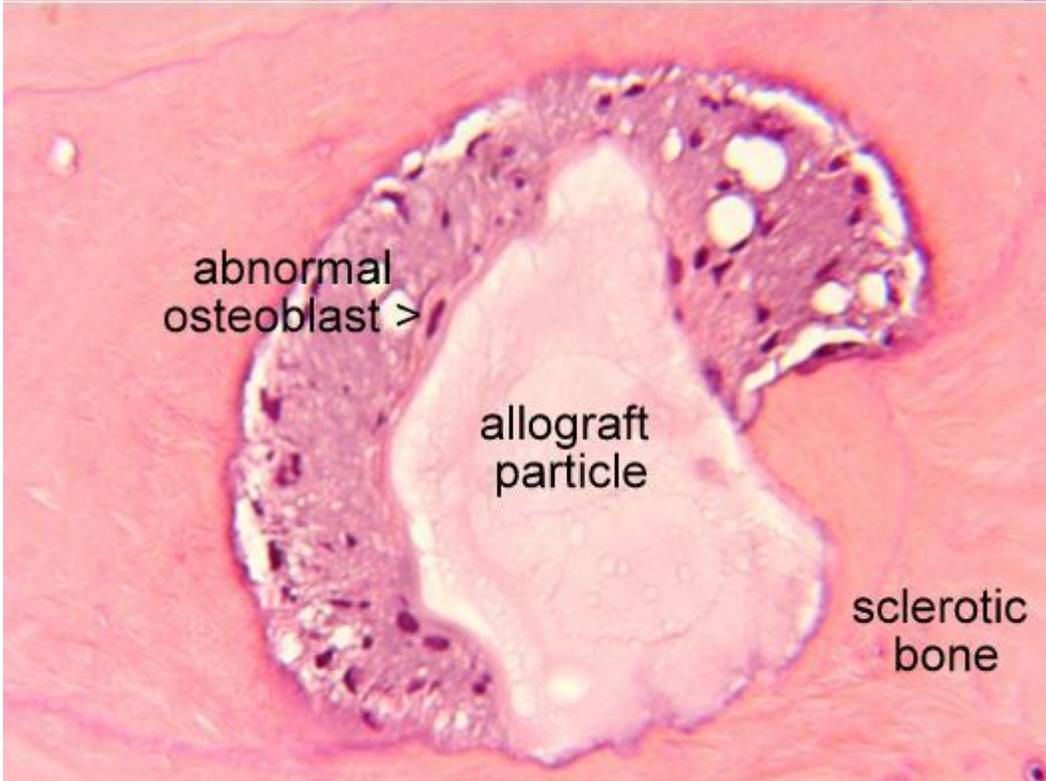
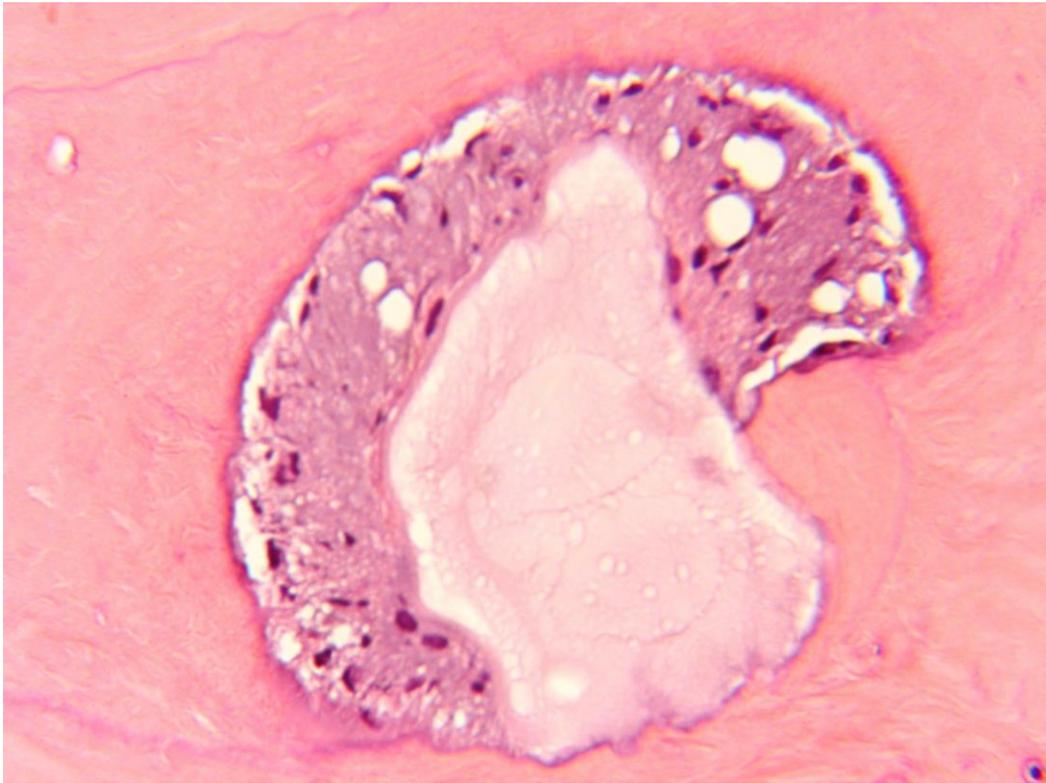
Histologically, the surface pebbles were comprised of granules of mineralised freeze dried bone allograft. The remaining bone shows allograft particulates trapped in sclerotic bone. In all cases of freeze dried allograft placement, inflammatory cells are present.

In this core sample, foreign body multinucleated giant cells are noted. Freeze dried allografts produce sclerotic bone which is pathologic. Sclerotic bone is found in other bony lesions such as arthritic joints. Sclerotic bone is formed as a result of inflammation in bone.

In the case, allografts produce an inflammatory response because the tissue is not tissue typed and no effort is made to match donor and host tissues. The result is the host trying to push out the allograft material and what the host cannot expell, it encased in mineralised tissue with virtually no vitality. Very rarely are osteoblasts or osteoclasts found in sites grafted with freeze dried allograft.



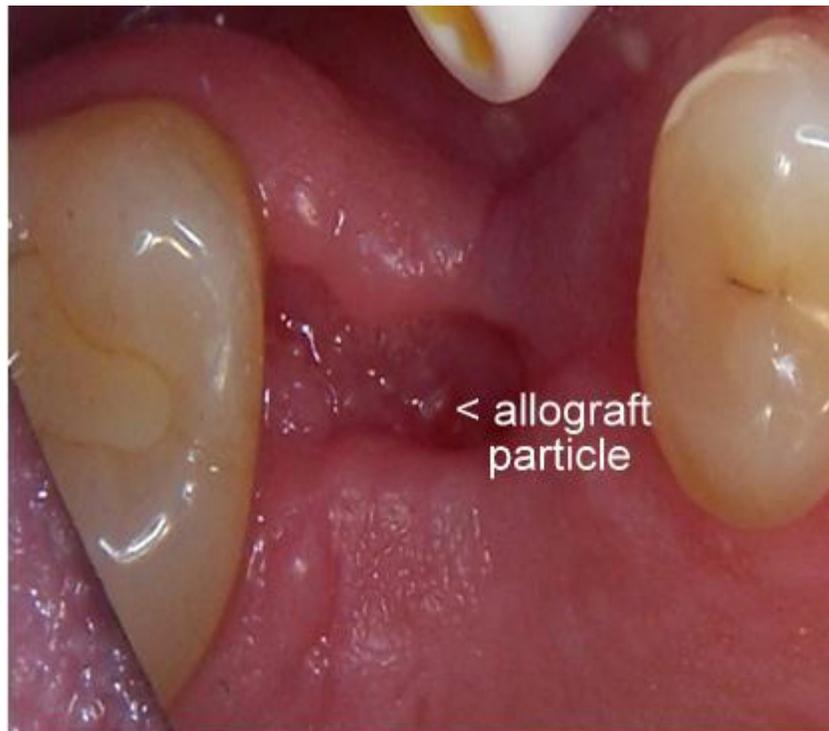
This photomicrograph is deeper in the above core sample where the allograft particles have been pushed out. Even when the graft particles have been expelled from an area of bone the resulting bone is pathologic sclerotic bone with virtually no osteoblasts or osteoclasts. The lack of osteoblasts and osteoclasts result in bone that cannot be remodeled and will remain fixed in time and unable to adapt to changes in load.



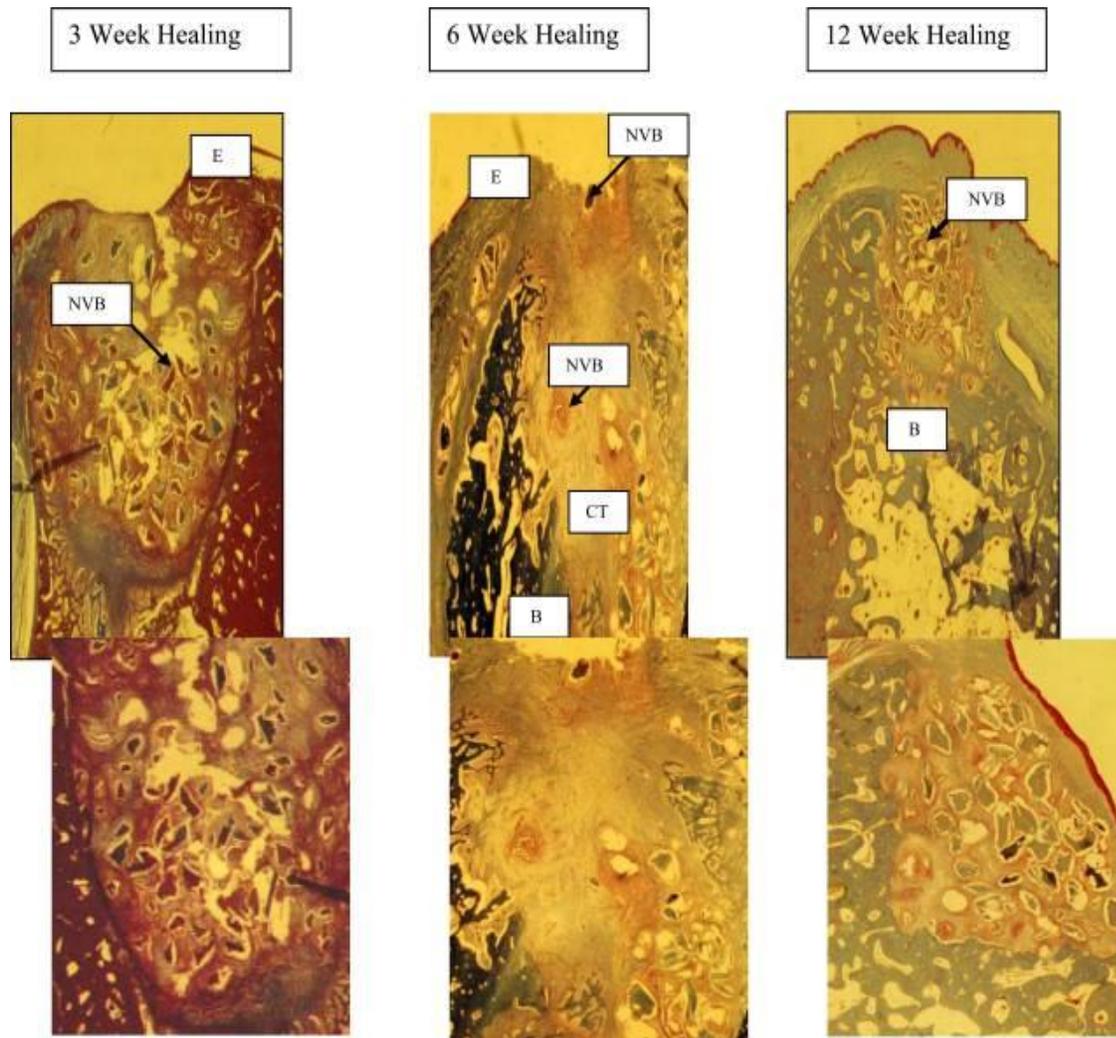
This is a high power from the same core sample. It shows an allograft particle covered with a few abnormal osteoblasts. The physiology and function of these osteoblasts are abnormal and they function similarly to the mineralization of arteries.



This is a photograph of an extraction socket grafted with freeze dried allograft after 4 weeks. The graft particles can be seen being exfoliated out of the extraction socket.



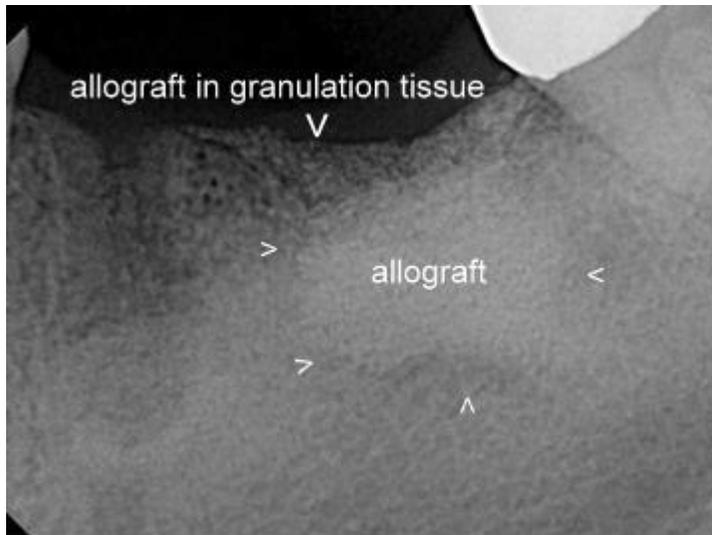
This is an extraction socket 8 weeks after grafting with allograft. Granules are still being exfoliated. Freeze dried bone allografts are nonresorbable. The mineralized component of allografts is either exfoliated or trapped in the sclerotic bone indefinitely.



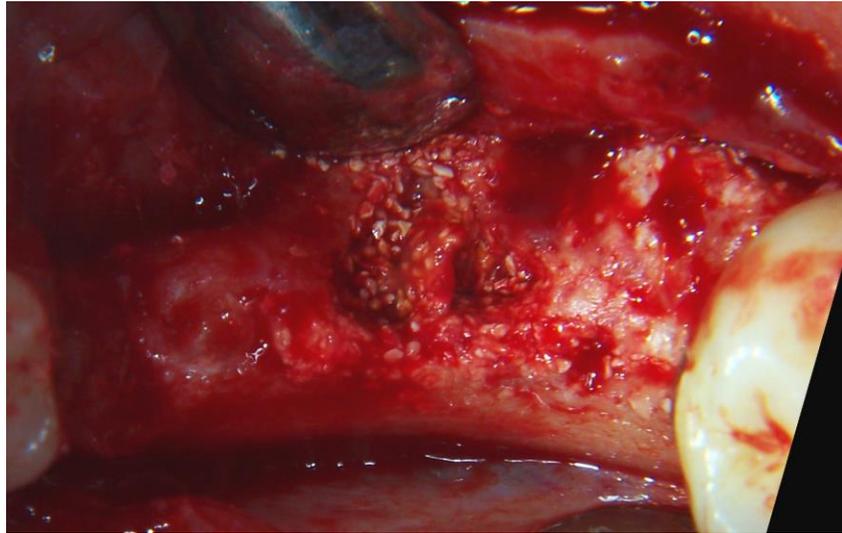
This is a series of photomicrographs from a study on animals using freeze dried bone allografts.

- NVB refers to non vital bone and is the residual allograft material.
- B is for new bone. At three weeks in this animal the majority of the allograft is still in the extraction socket.
- In the 6 week sample most of the allograft has been expelled and the socket is filled with a few graft particles and mostly soft connective tissue.
- The 12 week sample shows the remaining graft material clustered at the crest and the epithelium closed. This sample will retain the encapsulated allograft material in a similar fashion as the preceding human sample.

Freeze dried bone allografts are nonresorbable, are not osteoinductive and not osteogenic in humans. There is no indication that freeze dried bone allografts are even osteoconductive. It is our opinion, that Freeze dried bone allografts heal by way of antigenic ossification to a foreign object producing sclerotic bone.



This radiograph shows a molar site grafted with mineralized freeze-dried allograft after approximately 10 years and a bicuspid site 2 month after grafting with Socket Graft. Allografts and low temperature xenografts (Bio-Oss) contain foreign proteins and that are not biocompatible. The biocompatibility of a graft material can be seen radiographically. When a molar is extracted the interradicular bone is resorbed and the body bunches up the graft material into a round bolus surrounded by a radiolucent halo. A biocompatible graft material will fill the socket and bone will regenerate and for a time will leave the outline of the extraction socket retaining the interradicular bone.



The site grafted with allograft is poorly mineralized with the surface of the ridge covered with granules of allograft encased in granulation tissue after 10 years.

The bicuspid site grafted with Socket Graft presents with a mineralized surface.

When grafting with an allograft or xenograft there is no way to know how well the graft material will be tolerated by the host and the result will vary from good sclerotic bone formation in a well tolerated graft to granulation tissue in a poorly tolerated graft to an intense inflammatory response in complete graft rejection.