

### Summary

Bone void fillers are commonly used in orthopedic surgery to address a variety of indications. Graft substitute materials are available in a variety of formulations, each with inherent benefits. This study compares the resorption of a magnesium-based material with a calcium-based material. It was observed that:

- Resorption of Mg OSTEOCRETE was 83.3% greater at 12 weeks and 35.6% greater at 26 weeks than the calcium-based bone void filler
- Over 80% of the Mg OSTEOCRETE was resorbed at 26 weeks

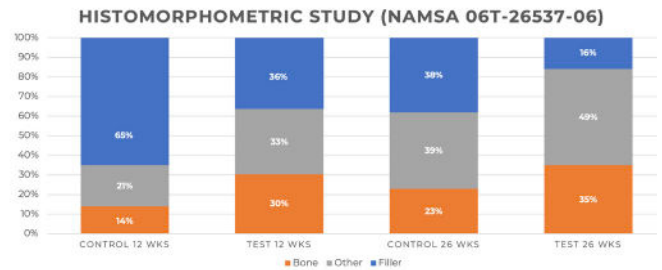
### Objectives

This study tested two bone void fillers (Test = magnesium based, Control = calcium based) in rabbit femurs at 12 and 26 weeks to determine the area (%) of drill holes filled with (1) residual bone void filler, (2) bone, or (3) absence or either ("other").

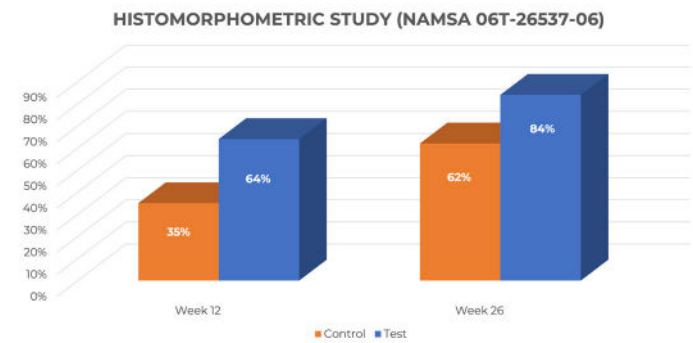
### Methods

Histological sections were provided by NAMSA (Northwood, OH) of the left and right distal femurs from 16 rabbits that were treated with Mg OSTEOCRETE; 8 at 12 weeks of healing and 8 at 26 weeks of healing.

Sections were taken through the longitudinal plane of a 4mm drill hole in each distal femur. The area of the drill hole was examined under 40X magnification and the depth of each hole was estimated by appearance of bone at the periphery of the drill hole. The percent of bone, filler, and "other" was determined by point counting with the use of a 10x10mm ocular grid, which represented 0.25x0.25mm at 40X magnification.



The mean distribution of filler, bone, and other tissue within the original drill hole at 12 and 26 weeks shows that over 80% of the Mg OSTEOCRETE was resorbed at 26 weeks compared to 60% resorption of the calcium-based control product at the same time point.



The mean resorption of filler, calculated as the area of the original drill hole minus the area of remaining filler, shows that Mg OSTEOCRETE resorption was 83.3% greater at 12 weeks and 35.6% greater at 26 weeks compared to the calcium-based control product.

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