

Sports Medicine

Evidence Matters

Research Bulletin

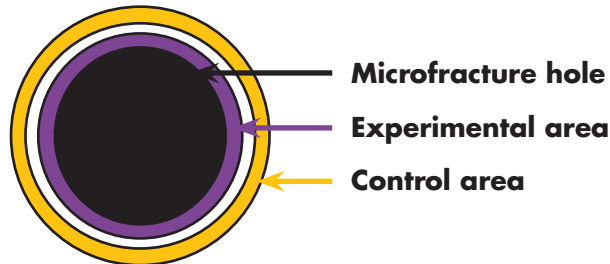
Study shows Stryker MicroFX OCD (OsteoChondral Drill) does not lead to necrosis around microfracture holes

Top-Level Summary:

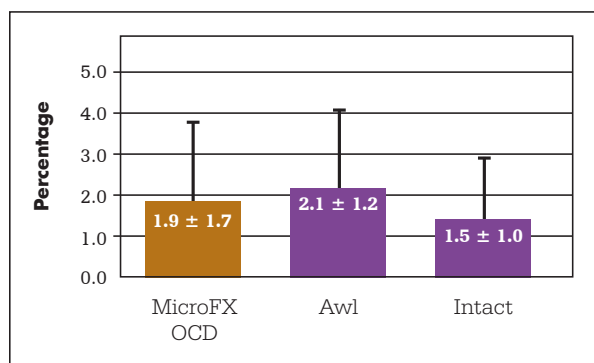
The percentage of dead cells (identified by empty lacunae) was compared in the bone around microfracture holes created with the Stryker MicroFX OCD and the Linvatec awl. **There were no significant differences in percentage of dead cells around holes created by the two instruments. Additionally, neither the OCD nor the awl resulted in an increase in percentage of dead cells as compared to normal bone.**¹

Methods:

Microfracture holes were created in the condyles of six goats using either a 45 degree MicroFX OCD or a 45 degree awl. After 3 days the knees were harvested and the percentage of osteocytes with empty lacunae (evidence of cell necrosis) was compared in an experimental cylindrical area from 0 to 0.5 mm from the microfracture hole and compared to a cylindrical area of "intact/normal" bone in a control cylindrical area from 1.0 to 1.5 mm from the microfracture hole.



Results:



No significant differences were observed between the percentage of osteocytes with empty lacunae in the bone around microfracture holes created by an awl or the OCD.

Further, no significant differences were observed between the percentage of osteocytes with empty lacunae in normal bone and in the bone around microfracture holes created with either the awl or the OCD.

Clinical Relevance:

Thermal necrosis in the bone is often a concern of drilling procedures as a rise in temperature to 50° C at the surgical site causes bone necrosis which has been shown to negatively impact healing.² This study demonstrated that **the design and use of the Stryker MicroFX OCD does not cause more bone cell necrosis than a standard awl.** It has been shown that normal bone modeling results in a baseline level of empty lacunae.³ This study showed that **neither the awl nor the MicroFX OCD caused an increase in cell death over what is seen in normal bone.**

References:

1. Technical Report #RD13-019
2. Karmani "The thermal properties of bone and the effects of surgical intervention" *Current Orthopaedics* 20:52-58, 2006
3. Hedgecock "Quantitative regional associations between remodeling, modeling, and osteocyte apoptosis and density in rabbit tibial midshafts" *Bone* 40:627-637, 2007

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