Sports Medicine
Evidence Matters

Research Bulletin

Stryker CrossBlade Arthroscopic Cutters Exhibit Lowest Rate of Particle Generation

Top-Level Summary:

The particle generation of four CrossBlade cutters was compared to four competitive arthroscopic cutters. This test was intended to measure the amount of particulate generated when operating the arthroscopic cutter under known conditions. **All four CrossBlade cutters were found to generate significantly less particulate than all competitive cutters tested.**[1]

Methods:

The particle generation from eight arthroscopic cutters was measured:

- Stryker CrossBlade Aggressive Max
- Stryker CrossBlade Smooth Bite
- Stryker CrossBlade Tomcat HC
- Stryker CrossBlade Dual Edge
- Arthrex Bone Cutter
- Linvatec Ultracut
- Dyonics Bone Cutter Platinum
- Dyonics Full Radius

Each arthroscopic cutter was operated under controlled conditions of speed, time, and loading. During the test, deionized water was flushed through the cutter removing any debris being generated. Next the water was pumped through a filter capturing particulate for evaluation. Using automated particle counting equipment (Clemex Technologies Inc.) the percent area per million (PAPM) of particles was measured. Significance was assumed at $p \leq 0.05$.

Results:

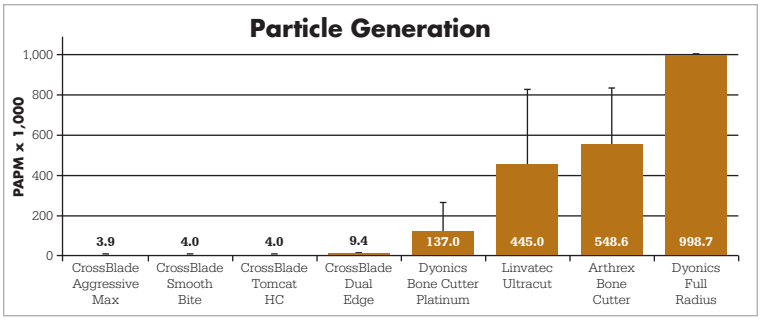

Figure 1
The CrossBlade Aggressive Max, Smooth Bite, Tomcat HC, and Dual Edge arthroscopic cutters all exhibited significantly less particle generation than all other blades evaluated. (Ave. + st.dev.)[1]

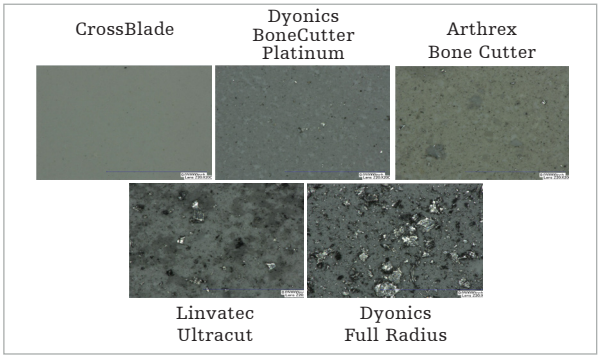

Figure 2
Images of particulate gathered on 0.8μm filter paper taken using 200X microscope.

Clinical Relevance:

While inherent to the design of metal arthroscopic cutters, metallic microparticles have been shown to elicit an inflammatory cellular response when found at high concentrations.[2] **The significant reduction in particle generation by the CrossBlade arthroscopic cutters may result in safer arthroscopic surgery.**

References:

1. Stryker DHD12753 and DHD13100
2. Pedowitz et al. "Arthroscopic surgical tools: A source of metal particles and possible joint damage" Arthrosocpy 29(9): 1559 –1565, 2013.

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