

# Sports Medicine

## Evidence Matters

### Research Bulletin

## Intra-Articular and Outflow Temperatures During RF Ablation

### Top-Level Summary:

The intra-articular temperature rise and the outflow temperature from the Stryker CrossFire II console with SERFAS 90-S Accelerator RF ablation probe was compared to two competitive RF energy systems for arthroscopic knee surgery. **The temperature rise for all systems tested was less than 1°C. The outflow saline temperature of the ArthroCare system was significantly higher than both the Stryker and Mitek systems.**<sup>1</sup>

### Methods:

Intra-articular temperature change from three RF energy generators and their respective probes was compared using the simulated knee joint shown:

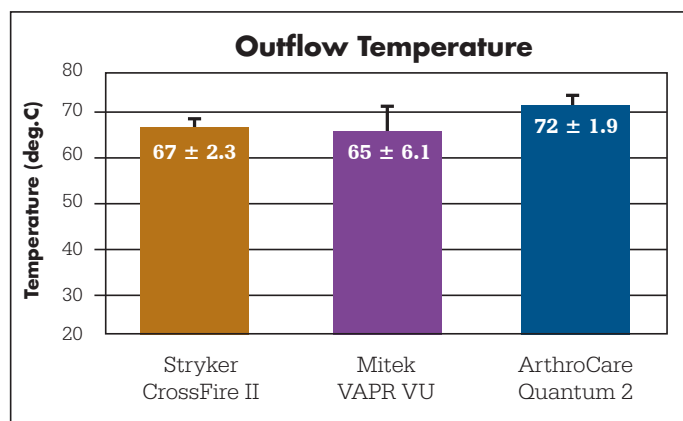
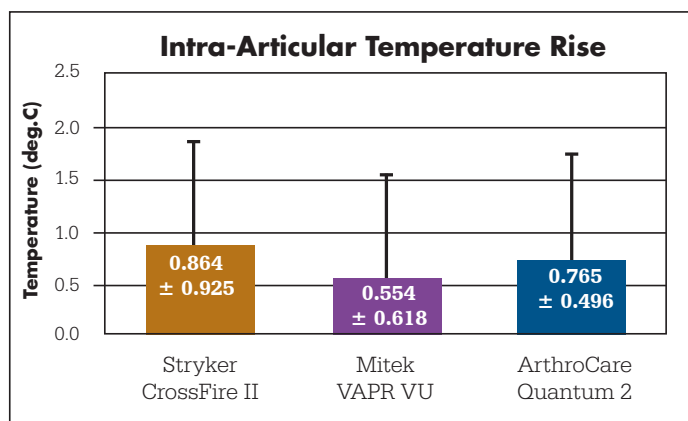
- Stryker CrossFire II console – SERFAS 90-S Accelerator RF ablation probe
- DePuy Mitek VAPR VUE console – Premier 90 RF ablation probe
- ArthroCare Quantum 2 console – Super Turbovac 90 RF ablation probe

Each generator was set to maximum power (400 watts) and the respective RF ablation probe was tested in a simulated knee joint. Tissue was ablated for 120 seconds during which temperature 10mm from the probe was continuously recorded. Additionally, outflow saline temperature was measured in the waste tube just proximal of the suction adaptor on the probe. Single factor Analyses of Variance were used to compare maximum intra-articular and outflow temperatures among the three systems tested. Statistical significance was assumed at  $p \leq 0.05$ .



### Results:

There were minimal temperature rises with no significant differences among the three systems.<sup>1</sup> Outflow saline temperature from the ArthroCare system was significantly higher than both the Stryker and the Mitek systems.<sup>1</sup>



### Clinical Relevance:

Temperature rise for all systems remained safely below the cell necrosis level of 50°C.<sup>2</sup> The higher outflow saline temperature from the ArthroCare system indicates that both the Stryker and Mitek Systems may maintain the plasma field with less excess heat generation.

**References:**

1. Stryker DHFD11973 March 24, 2014
2. Voss et al. "Effects of thermal energy on chondrocyte viability" Am J Vet Res 67:1708-1712, 2006.

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