Smith+Nephew

Performance testing comparing the time taken for the new DOUBLEFLO◊ Inflow/Outflow Pump and DualWave™ Pump to respond to sudden changes in intra-articular pressure

Overview

- This summary describes the findings of testing conducted by Smith+Nephew to compare the time taken for the DOUBLEFLO Pump and DualWave Pump (Arthrex Inc, Naples, FL) to respond to sudden changes in intra-articular pressure
- Pumps were attached to an artificial joint with a system to change and measure pressure
- Testing consisted of measuring the time taken for intra-articular pressure to return to normal values (a stable range within 11mmHg of pre-test values) following induced positive and negative pressure changes
  - Fifteen samples were used for each pump
  - Positive and negative pressure changes were induced at steady state joint pressures of 50, 75, and 100 mmHg for each sample
- Mean response time was calculated as the mean time taken for intra-articular pressure to return to normal values across all samples and pressure settings

Results

- In terms of mean response time, the DOUBLEFLO Pump responded significantly faster to changes in intra-articular pressure than the DualWave Pump (p<0.001; Figure):
  - 38% faster to respond to a decrease in pressure
  - 17% faster to respond to an increase in pressure
- The DOUBLEFLO Pump responded to both increases and decreases in intra-articular pressure significantly faster than the DualWave Pump at all tested pressure settings (50, 75 and 100mmHg; p<0.05)

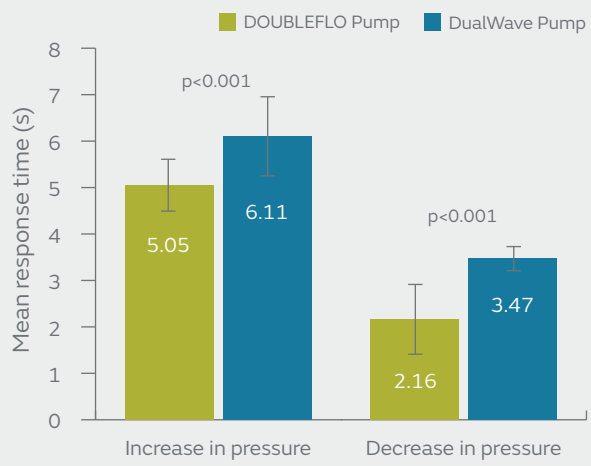

Figure. Mean (± standard deviation) response time for intra-articular pressures to return to normal after sudden induced pressure changes

Conclusions

In performance testing, the DOUBLEFLO Pump responded to both increases and decreases in intra-articular pressure significantly faster than the DualWave Pump.

Considerations

This study was conducted by the Smith+Nephew Research & Development team in a laboratory and used an artificial joint; further investigation may be necessary to determine the clinical applicability of these findings.

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