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**A RANDOMIZED, CONTROLLED TRIAL OF THE RECIPROCATING
SYRINGE IN ARTHROCENTESIS**

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Objective: To evaluate the outcomes of arthrocentesis with the new highly controllable, one-handed reciprocating procedure syringe compared to a conventional syringe.

Methods: 100 arthrocentesis procedures were randomized between the reciprocating syringe and the conventional syringe. Outcome measures included patient pain, procedure duration, operator satisfaction, synovial fluid volume, cell counts, and complications.

Results: 50 arthrocentesis procedures with the conventional syringe resulted in a mean procedure time of 3.39 ± 1.88 minutes, a mean VAPS (patient pain) score of 5.35 ± 3.15 , and a mean VASS (operator satisfaction) score of 4.88 ± 1.92 . 60% of subjects (30/50) experienced moderate to severe pain (VAPS score 5 or greater) during arthrocentesis. In contrast, the reciprocating syringe resulted in a mean 43% reduction in procedure duration ($p < 0.001$), 53% reduction in patient pain (VAPS score) ($p < 0.001$), and an 83% percent increase in operator satisfaction (VASS score) ($p < 0.001$). Only 10% (5/50) of subjects experienced moderate to severe pain with the reciprocating syringe. Synovial cell counts were similar between the two syringes ($p > 0.05$), but there was a trend toward greater volume (greater synovial fluid yield) and fewer red blood cells with the reciprocating syringe.

Conclusions: Arthrocentesis with a conventional syringe results in moderate to severe pain in 60% of subjects. The reciprocating syringe prevents significant pain, reduces procedure time, and improves physician performance of arthrocentesis. The reciprocating syringe is superior to the conventional syringe in arthrocentesis.