

INTRAARTICULAR HYALURONATE AND CORTICOSTEROID INJECTION THERAPY WITH THE RECIPROCATING PROCEDURE DEVICE

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Background: The present randomized, controlled trial evaluated the effectiveness and operator acceptability of the new one-handed reciprocating procedure device (RPD) for the intraarticular injection of pharmaceuticals, including hyaluronate and corticosteroid.

Methods: 156 intraarticular injection procedures with hyaluronate or corticosteroid were randomized to either the RPD or the traditional conventional syringe. Outcome measures included patient pain, procedure duration, operator satisfaction, complications, and immediate and delayed response to the injected medication.

Results: 84 injection procedures with the conventional syringe resulted in a mean procedure time of 1.82 ± 1.26 minutes, a mean VAPS (patient pain) score of 4.89 ± 3.46 , and a mean VASS (operator satisfaction) score of 5.13 ± 1.73 . In contrast, with the RPD procedure time was 1.26 ± 1.07 minutes (31% reduction) ($p < 0.001$), pain score 2.14 ± 2.24 (56% reduction) ($p < 0.001$), and an operator satisfaction of 9.08 ± 0.76 (86% percent increase) ($p < 0.001$). With the traditional syringe 56% of subjects (47/84) experienced moderate to severe pain (VAPS score 5 or greater) vs, only 10% (7/72) with the RPD. Analysis of injection therapy of individual joints according to size including the knee, intermediate joints, and small joints demonstrated superiority of the RPD over the traditional syringe in all measured domains.

Conclusions: Intraarticular injection of hyaluronate and corticosteroid with the RPD is more rapid, less painful, and rated as superior by the operating physician compared to the traditional syringe. The RPD is more effective than and superior to the conventional syringe for intraarticular injection of pharmaceuticals, including hyaluronate and corticosteroid.



Figure 1. The Reciprocating Procedure Device (RPD) for Needle Introduction and Injection of Hyaluronate. This photograph demonstrates the RPD being used in a one-handed fashion for injection of hyaluronate into the knee. The smaller plunger is pressed with the thumb until a flash of synovial fluid is seen in the hub of the needle, then the larger plunger is pressed to inject as shown. The free hand is used to feel the surface anatomy, operate an ultrasound transducer, steady the extremity, or precisely control the RPD (as shown).



Figure 2. One-handed Use of the Reciprocating Procedure Device (RPD) for Needle Introduction and Injection of Corticosteroid. This photograph demonstrates the RPD being used in a one-handed fashion for injection of corticosteroid into the knee. The smaller plunger is being depressed with the thumb for aspiration to obtain a flash of synovial fluid, then the larger plunger is depressed with the thumb for injection of corticosteroid. The free hand is used to steady the patient, feel the surface anatomy, or operate other devices.