KEY PROCEDURES

THE ISOMETRIC QUADRICEPS CONTRACTION METHOD FOR INTRA-ARTICULAR KNEE INJECTION

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Published outcomes of this procedure can be found at: *JBJS Open Access*. 2018 Dec 20;3(4):e0003

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Abstract

The intra-articular injection is the most important technique for treating not only rheumatoid arthritis but also osteoarthritis of the knee. However, 1 problem is that the drug is often inaccurately injected outside of the joint, especially when no effusion is present.

According to a previous systematic review by Maricar et al., the use of a superolateral patellar approach without ultrasonography had a higher success rate (87%) than both a medial midpatellar approach (64%) and an anterolateral joint-line approach (70%). For knees with little effusion, we devised a method of intra-articular injection in which the needle is inserted into the suprapatellar pouch while the patient maintains isometric contraction of the quadriceps. This method, which we call the isometric quadriceps contraction (IQC) method, is based on the concept that isometric contraction of the quadriceps induces contraction of the articularis genus muscle complex, thus expanding the volume of the suprapatellar pouch. The major steps of the procedure are (1) patient positioning and knee placement, (2) finding the puncture point, (3) isometric quadriceps contraction, and (4) needle approach to the suprapatellar pouch and injection. We also show the ultrasound evaluation of the suprapatellar pouch expansion under IQC and the accuracy of the IQC method compared with that of the non-activated quadriceps method. The results of this injection method indicate that the suprapatellar pouch is likely to expand during IQC, improving the probability of successful intra-articular injections. We believe that the IQC method is therapeutically effective and achieved a success rate of 93.3% despite the presence of little effusion and no use of ultrasonography.

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Disclosure: The authors indicated that no external funding was received for any aspect of this work. The **Disclosure of Potential Conflicts of Interest** forms are provided with the online version of the article (<http://links.lww.com/JBJSST/A250>).

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