Chapter 4

Distribution of contrast medium in the sacroiliac joint: a cadaver study.

Abstract

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Aim of investigation: Pain arising from the sacroiliac (SI) joint is usually confirmed by positive outcome of intra-synovial infiltration of local anesthetics \(^1,2\). However, according to recent knowledge about the nociceptive innervation of the SI joint, the peri-synovial structures, should also be involved in the diagnostic process. \(^3\) As the information about the distribution of the injected medications in the SI joint is lacking, the purpose of this study is to describe patterns of a contrast medium distribution following SI joint injections, using 3 different approaches.

Methods used: SI joints of seven human cadavers (age 55-83) positioned prone on a fluoroscopic table were approached caudally (most posterior approach), medially or cranially with 22 Gauge injection needles, under intermittent fluoroscopic guidance. After reaching a desired position, 2-3 ml of the contrast medium Visipaque® 320 was injected. Antero-posterior, lateral and two oblique radiographs were taken, and a post-arthrography CT scan was made.

Results: The contrast medium injected via the caudal approach reached the synovial part of the SI joint, but a leakage to the sciatic nerve and piriformis muscle was recorded in all cases. With the cranial approach, a small portion of the contrast medium was seen in the cranial part of the dorsal ligament, but a significant spread was seen in the multifidus muscle and to the ipsilateral foramina L4-5. We did not succeed in reaching the synovial part of the SI joint via the medial approach, whereby the contrast spread in the superficial part of the dorsal and interosseous SI joint ligament. In 3 of 7 specimens, the intra-vascular spreading of the contrast medium was noted. Considering our results, the question arises whether the effect of SI joint blocks may be due to a synovial infiltration, local infiltration of ligamentous or muscular tissues, lumbal nerves, or even to systemic effects.
**Conclusions:** The generally accepted, caudal approach to the SI joint reaches particularly the synovial part of the joint, whereas the cranial and medial approach reach the extra-synovial part. Physicians must be aware of side effects of accidental intra-vascular injection of medicines used for SI joint pain treatment for all approaches.

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**Reference List**


Figure 1. A-D cranial approach to SI joint, E-H caudal approach. A and B fluoroscopy view at the spreading of contrast medium; B, F coronal CT section, C, D, G, H transaxial CT section.