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| Appendix 2. Summary of the literature evaluating intermediate joint injections. | | | | | | |
| **Author/Year** | **Target** | **Study Design** | **Level of Evidence** | **Subject Type/Number** | **Accuracy Confirmation** | **Outcome** |
| Wasserman 2012[78](#_ENREF_78) | AC joint | Human LMGI accuracy | Level 2 | 30 live human subjects | Arthrogram | LMGI = 43.3% accurate |
| Kraus 2011[68](#_ENREF_68) | ST joint | Cadaveric LMGI accuracy | Level 2 | 68 cadaveric specimens | Dissection | LMGI = 67.6% and 91.2% accurate depending on approach |
| Lopes 2008[31](#_ENREF_31) | Elbow, wrist, TT joint | Prospective LMGI accuracy | Level 1 | Live human subjects (31 elbows, 37 wrists, 54 TT joints) | Arthrogram | LMGI elbow = 100% accurate, LGMI wrist = 97% accurate, LMGI TT joint = 77% accurate |
| Kirk 2008[67](#_ENREF_67) | ST joint | Cadaveric LMGI accuracy | Level 2 | 20 cadaveric specimens | Arthrogram | LMGI = 96% accurate |
| Smith 2011[74](#_ENREF_74) | STT joint | Cadaveric USGI vs. LMGI accuracy | Level 2 | 20 cadaveric specimens | Dissection | USGI = 100% accurate, LMGI = 80% accurate |
| Smith 2009[75](#_ENREF_75) | ST joint | Cadaveric USGI accuracy | Level 2 | 12 cadaveric specimens | Dissection | USGI = 100% accurate |
| Reach 2009[71](#_ENREF_71) | TT and ST joints | Cadaveric USGI accuracy | Level 2 | 10 cadaveric specimens | Dissection | USGI TT joint = 100% accurate,  USGI ST joint = 90% accurate |
| Peck 2010[70](#_ENREF_70) | AC joint | Cadaveric USGI vs. LMGI accuracy | Level 2 | 20 cadaveric specimens | Dissection | USGI = 100% accurate, LMGI = 40% accurate |
| Partington 1998[69](#_ENREF_69) | AC joint | Cadaveric LMGI accuracy | Level 2 | 12 cadaveric specimens | Dissection | LMGI = 33% accurate |
| Heidari 2010[65](#_ENREF_65) | TT joint | Cadaveric LMGI accuracy | Level 2 | 76 cadaveric specimens | Dissection | LMGI = 77.5% and 86.1% accurate depending on approach |
| Drakonaki 2011[64](#_ENREF_64) | Midfoot | Retrospective USGI efficacy | Level 4 | 59 live human subjects | None | 78.4% had pain relief at 3 month follow-up |
| Weinberg 2009[79](#_ENREF_79) | SC joint | Cadaveric LMGI accuracy | Level 2 | 38 cadaveric specimens | Dissection | LMGI = 74% to 82% accurate depending on injector experience |
| Jones 1993[26](#_ENREF_26) | AC joint, elbow, wrist, TT joint | Prospective LMGI accuracy and efficacy | Level 1 = accuracy, Level 3 = efficacy | 102 live human subjects | Arthrogram | Accuracy of LMGI of AC joint = 0%, elbow = 83%, wrist = 50%, TT = 50%; no difference in efficacy between accurate and inaccurate injections |
| Smith 2011[77](#_ENREF_77) | Distal RU joint | Cadaveric USGI accuracy | Level 2 | 10 cadaveric specimens | Dissection | USGI = 100%  accurate |
| Smith 2010[76](#_ENREF_76) | Proximal TF joint | Cadaveric USGI vs. LMGI accuracy | Level 2 | 12 cadaveric specimens | Dissection | USGI = 100% accurate, LMGI = 58% accurate |
| Sabeti-Aschraf 2010[73](#_ENREF_73) | AC joint | Prospective, randomized study comparing USGI vs. LMGI efficacy | Level 2 | 20 live human subjects | None | No difference between groups immediately post-injection or 1 or 3 weeks post-injection |
| Borbas 2012[63](#_ENREF_63) | AC joint | Cadaveric USGI vs. LMGI accuracy | Level 2 | 80 cadaveric specimens | Dissection | USGI = 90% accurate, LMGI = 70% accurate |
| Khosla 2009[66](#_ENREF_66) | ST joint, TT joint | Cadaveric USGI vs. LMGI accuracy | Level 2 | 14 cadaveric specimens | Arthrogram and dissection | USGI and LMGI of ST and TT joints = 100% accurate |
| Sabeti-Aschraf 2011[72](#_ENREF_72) | AC joint | Cadaveric USGI vs. LMGI accuracy | Level 2 | 60 cadaveric specimens | Not reported | USGI = 95% accurate, LMGI = 72% accurate |
| Choudur 2011[8](#_ENREF_8) | Wrist | Human USGI accuracy | Level 1 | 100 live human subjects | MRI arthrogram | USGI = 100% accurate |
| Balint 2002[52](#_ENREF_52) | Elbow, Wrist, TT joint | Comparison study between ability to aspirate joints with LMG vs. USG | Level 2 | 30 live human subjects (32 joints) | None | Ability to aspirate joints with USG = 100%, ability to aspirate joints with LMG = 29% |
| Wisniewski 2010[80](#_ENREF_80) | TT Joint | Cadaveric USGI vs. LMGI accuracy | Level 2 | 12 embalmed and 8 unembalmed cadaveric specimens | Dissection | USGI = 100% accurate, LMGI 85% accurate |
| Goncalves 2011[16](#_ENREF_16) | Elbow, Wrist, TT joint | Human USGI accuracy and efficacy | Level 4 | 31 live human subjects | None | USGI = 100% accurate by clinical evaluation, but not confirmed radiologically. All patients had improved clinically following the injection. |
| AC = acromioclavicular, LMGI = landmark-guided injection, US = Ultrasound, USGI = ultrasound-guided injection, vs = versus, LMG = landmark-guidance, USG = ultrasound-guidance, AC = acromioclavicular, TT = tibiotalar, ST = subtalar, TF = tibiofibular, RU = radioulnar, SC = sternoclavicular, STT = scaphotrapeziotrapezoidal | | | | | | |