

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	AC joint	Human LMGI accuracy	Level 2	30 live human subjects	Arthrogram	LMGI = 43.3% accurate
Kraus 2011 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	Elbow, wrist, TT joint	Prospective LMGI accuracy	Level 1	Live human subjects (31 elbows, 37 wrists, 54 TT joints)	Arthrogram	LMGI elbow = 100% accurate, LMGI wrist = 97% accurate, LMGI TT joint = 77% accurate
Kirk 2008 ⁶⁷	ST joint	Cadaveric LMGI accuracy	Level 2	20 cadaveric specimens	Arthrogram	LMGI = 96% accurate
Smith 2011 ⁷⁴	STT joint	Cadaveric USGI vs. LMGI accuracy	Level 2	20 cadaveric specimens	Dissection	USGI = 100% accurate, LMGI = 80% accurate
Smith 2009 ⁷⁵	ST joint	Cadaveric USGI accuracy	Level 2	12 cadaveric specimens	Dissection	USGI = 100% accurate
Reach 2009 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	AC joint	Cadaveric USGI vs. LMGI accuracy	Level 2	20 cadaveric specimens	Dissection	USGI = 100% accurate, LMGI = 40% accurate

Partington 1998 ⁶⁹	AC joint	Cadaveric LMGI accuracy	Level 2	12 cadaveric specimens	Dissection	LMGI = 33% accurate
Heidari 2010 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	Midfoot	Retrospective USGI efficacy	Level 4	59 live human subjects	None	78.4% had pain relief at 3 month follow- up
Weinberg 2009 ⁷⁹	SC joint	Cadaveric LMGI accuracy	Level 2	38 cadaveric specimens	Dissection	LMGI = 74% to 82% accurate depending on injector experience
Jones 1993 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	Distal RU joint	Cadaveric USGI accuracy	Level 2	10 cadaveric specimens	Dissection	USGI = 100% accurate
Smith 2010 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	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	AC joint	Cadaveric USGI vs. LMGI accuracy	Level 2	80 cadaveric specimens	Dissection	USGI = 90% accurate, LMGI = 70% accurate
Khosla 2009 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	AC joint	Cadaveric USGI vs. LMGI accuracy	Level 2	60 cadaveric specimens	Not reported	USGI = 95% accurate, LMGI = 72% accurate
Choudur 2011 ⁸	Wrist	Human USGI accuracy	Level 1	100 live human subjects	MRI arthrogram	USGI = 100% accurate
Balint 2002 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	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	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