

Supplementary table 6. Outcome details for studies comparing different imaging techniques or imaging vs. palpation guidance at multiple joints and periarticular structures (PICO1)

AUTHOR, DATE	DISEASE	SITE	OUTCOME CATEGORY	OUTCOME DETAIL	OUTCOME EXPLANATION (UNIT) ¹	TIME POINT	RESULTS ²	OVERALL ROB ³
ULTRASOUND vs. PALPATION GUIDANCE								
Sibbitt Jr et al., 2011	Inflammatory Arthritis	joints	Safety	Pain	Patient Pain VAS (cm)	BSL, needle introduction, during injection, 2w, 6m	Needle introduction, during injection, 2w, 6m: better for US	some concern
			Efficacy	Duration of therapeutic effects	Until VAS≥2 (months)	Up to 6m	Up to 6m: better for US	some concern
			Efficacy	Time to next intervention	Until reinjection/surgery (months)	Up to 12m	Up to 12m: better for US	some concern
			Cost/Time	Costs	Cost per year—physician's office (U.S. Dollars)	Up to 12m	Up to 12m: worse for US	some concern
			Cost/Time	Costs	Costs per year—hospital outpatient (U.S. dollars)	Up to 12m	no difference	some concern
Cunnington et al., 2010	Inflammatory Arthritis	joints	Accuracy	Accuracy	Intra-target verified by contrast medium in joint according to X-ray exam (%)	Post-procedure	postprocedure: better for US	some concern
			Safety	Pain	Patient Pain VAS (cm)	BSL, 2w, 6w	no difference	some concern
			Efficacy	Function	Function VAS (cm)	BSL, 2w, 6w	no difference	some concern
			Efficacy	Function	Stiffness VAS (cm)	BSL, 2w, 6w	no difference	some concern
			Efficacy	Function	modified HAQ	BSL, 2w, 6w	no difference	some concern
			Efficacy	QoL	Change in EuroQol 5 VAS score from BSL	BSL, 2w, 6w	2w: worse for US	some concern
			Efficacy	QoL	Change in EuroQol 5 index from BSL	BSL, 2w, 6w	6w: better for US	some concern
Sibbitt et al., 2009	Painful arthritic joints (RA, OA)	large and small joints	Safety	Pain	Patient Pain VAS (cm)	BSL, during procedure, 2w	during procedure, 2w: better for US	some concern
			Efficacy	Treatment response	≥ 50%reduction in VAS pain-score (%)	2w	2w: better for US	some concern
			Efficacy	Treatment failure	< 50%reduction in VAS pain-score (%)	2w	2w: better for US	some concern
Nordberg et al., 2018	Early RA	joints	Efficacy	Treatment response	Decrease of swollen joints from BSL (%)	BSL, 12m	no difference	some concern
Balint et al., 2002	Patients for joint/soft tissue aspiration	joints/soft tissue	Accuracy	Accuracy	Successful aspirations (%)	During procedure	During procedure: better for US ⁴	13/20
			Accuracy	Tissue/Fluid acquired	Mean amount of measurable fluid obtained (ml)	Post-procedure	no difference	13/20
ULTRASOUND vs. COMPUTED TOMOGRAPHY								

McKee et al., 2020	image-guided synovial biopsies ⁵	multiple joints	Accuracy	Tissue/Fluid acquired	Positive yield for synovial tissue/pathology (%) ⁶	post-procedure	no difference	serious
ULTRASOUND vs. PALPATION GUIDANCE vs. ARTHROSCOPY								
Humby et al., 2018	Inflammatory arthritis	Small/large joints	Accuracy	Tissue/Fluid acquired	proportion of gradable synovial tissue fragments per procedure (%)	Post-procedure	no difference	critical
			Accuracy	Tissue/Fluid acquired	total graded synovial tissue area (mm ²)	Post-procedure	no difference	critical
			Accuracy	Tissue/Fluid acquired	synovial tissue area per graded tissue fragment (%)	Post-procedure	no difference	critical
			Accuracy	Tissue/Fluid acquired	Histological synovitis semiquantitative score	Post-procedure	no difference	critical
			Accuracy	Tissue/Fluid acquired	Total weight of RNA (mcg)	Post-procedure	no difference	critical
			Accuracy	Tissue/Fluid acquired	RNA integrity semiquantitative score	Post-procedure	no difference	critical

The abbreviation BSL (baseline) refers to the time point before the intervention happened

BSL, baseline; EuroQoL, Euro-Quality of life; FU, follow up; HAQ, health assessment questionnaire; m, month(s); OA, osteoarthritis; QoL, quality of life; RA, rheumatoid arthritis; U.S. dollars, United States of America Dollars; US, ultrasound; VAS, visual analogue scale; w, week(s);

¹ The outcomes "Complications" are usually only presented in descriptive manner by the respective authors. Statistical tests were not performed by the authors, unless stated otherwise.

² No difference = at none of the give time points a difference was found between the groups. If differences were found, the time point for the differences is depicted.

³ For details on RoB see supplementary table 3

⁴ In the US group 31/32 and in the palpation guidance group 10/32 joints were successfully punctured with fluid aspiration. A statistical test was not performed.

⁵ Correct injection placement was found in 25/25 of the cases in the US group and in 2/25 cases in the palpation guidance group. A statistical comparison was not performed

⁶ A positive yield for the image-guided synovial biopsy was defined as evidence of synovial tissue, neoplasm, or inflammatory changes within the biopsy specimen

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