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Appendix 1 – search strategy

Database: MEDLINE(R) All including Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Daily and Versions(R) <1946-current>

Search Strategy:

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1 (distal* adj10 radi* adj10 fracture*).ti,ab,kw. (6026)

2 Colles' Fracture/ (849)

3 wrist fracture*.mp. (1112)

4 1 or 2 or 3 (7494)

5 volar lock* plat*.ti,ab,kw. (499)

6 Fracture Fixation, Internal/ (33613)

7 ((ORIF or ORIFs or open reduction internal fixation* or open reduction) and internal fixation*).ti,ab,kw. (7155)

8 fracture fixation/ (18109)

9 or/5-8 (53230)

10 ((conservativ* or nonsurgical* or non-surgical* or nonoperativ* or non-operativ* or traditional*) adj5 (management or treatment* or intervention*)).ti,ab,kw. (95068)

11 closed reduction*.ti,ab,kw. (5225)

12 Casts, Surgical/ (8582)

13 Splints/ (8610)

14 ((plaster* or cast*) adj5 (fixation or immobili#ation*)).ti,ab,kw. (2928)

15 10 or 11 or 12 or 13 or 14 (115830)

16 bone wires/ or (kirschner wire* or k-wire*).ti,ab,kw. (8689)

17 15 not 16 (114359)

18 (percutaneous adj5 pin*).ti,ab,kw. (954)

19 17 not 18 (113971)

20 Randomized controlled trial.pt. (493887)

21 Controlled clinical trial.pt. (93410)

22 Randomi?ed.ab. (550889)

23 Placebo.ab. (202711)

24 Randomly.ab. (321220)

25 Clinical trials as topic.sh. (189050)

26 Trial.ti. (207652)

27 20 or 21 or 22 or 23 or 24 or 25 or 26 (1284417)

28 exp animals/ not humans.sh. (4640699)

29 27 not 28 (1183234)

30 Meta analysis.mp. or review.pt. or search$.tw. (2896527)

31 29 not 30 (975053)

32 4 and 9 and 31 (274)

33 4 and 19 and 31 (173)

34 4 and 9 and 19 and 31 (78)

35 32 or 33 or 34 (369)

36 limit 35 to yr=2015-Current (129)

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Appendix 2 – Assessment of study quality

2.1 Explanatory notes for Cochrane Collaboration Risk of Bias

Arora, 2011 [38]		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Unclear risk	The method of randomisation used in this study wasn't described in the article.
Allocation concealment (selection bias)	Low risk	According to the study article, after consent was obtained from participants, they were randomised to one of the two treatment groups using sequentially numbered, sealed envelopes.
Blinding of participants and personnel (performance bias)	High risk	Given that one of the treatments involved surgery and that the other treatment didn't, blinding of participants and of investigators to the treatment groups wasn't possible.
Blinding of outcome assessment (detection bias)	High risk	Radiographic assessor was not a treating surgeon and was blinded to functional outcome but not to the treatment type.
Incomplete outcome data (attrition bias)	High risk	Low overall follow-up rate (73/90 = 81%)
Selective reporting (reporting bias)	Low risk	All outcomes were reported at determined timeframes.
Other bias	Low risk	None detected

Bartl, 2014 [39]		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Random, centre-stratified block assignment on a 1:1 basis was achieved by means of the online resource (www.randomizer.at).
Allocation concealment (selection bias)	Low risk	Random, centre-stratified block assignment on a 1:1 basis was achieved by means of the online resource.
Blinding of participants and personnel (performance bias)	High risk	Given that one of the treatments involved surgery and that the other treatment didn't, blinding of participants and of investigators to the treatment groups wasn't possible.
Blinding of outcome assessment (detection bias)	Unclear risk	Not described in the article
Incomplete outcome data (attrition bias)	High risk	Low overall follow-up (149/185 = 19%) and differential follow-up (68/94 = 72% for surgery and 81/91 = 89% for non-surgery).
Selective reporting (reporting bias)	Low risk	All outcomes were reported at determined timeframes.
Other bias	Low risk	None detected

Kapoor, 2000 [40]		
Bias	Authors'	Support for judgement

	judgement	
Random sequence generation (selection bias)	Unclear risk	Not described in the article
Allocation concealment (selection bias)	Unclear risk	Not described in the article
Blinding of participants and personnel (performance bias)	High risk	Given that one of the treatments involved surgery and that the other treatment didn't, blinding of participants and of investigators to the treatment groups wasn't possible.
Blinding of outcome assessment (detection bias)	Unclear risk	Not described in the article
Incomplete outcome data (attrition bias)	High risk	Categorical data is represented for functional outcomes for 66% (19/29) of the treatment group and 70% (23/33) of the comparator group. It's not described in the article how the authors dealt with missing data.
Selective reporting (reporting bias)	High risk	Some outcomes are described in the text of the results but there is no presentation of supporting data nor reproducible statistical analysis.
Other bias	Low risk	None detected

Martinez-Mendez, 2018 [41]		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Randomization was performed by the method of random number generation provided in opaque envelopes.
Allocation concealment (selection bias)	Low risk	Random number generation provided in opaque envelopes.
Blinding of participants and personnel (performance bias)	High risk	Given that one of the treatments involved surgery and that the other treatment didn't, blinding of participants and of investigators to the treatment groups wasn't possible.
Blinding of outcome assessment (detection bias)	Unclear risk	The article describes that the clinical and radiological assessments could not be blinded because of surgical wounds and hardware in the surgical patients. However, the radiological assessments were performed by an independent observer using digitised radiographs and software and the annual clinical assessments were performed by an independent observer not involved in the treatment.
Incomplete outcome data (attrition bias)	Low risk	The 24-month follow-up included 100% of randomised participants.
Selective reporting (reporting bias)	Unclear risk	The article describes that assessments were made at five timepoints but only the results from the final (24-month) timepoint were presented in the article.
Other bias	Low risk	None detected

Mulders, 2019 [24]		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Stratified block randomization was performed digitally.
Allocation concealment (selection bias)	Unclear risk	Allocation concealment was not specifically described in the report.
Blinding of participants and personnel (performance bias)	High risk	Given that one of the treatments involved surgery and that the other treatment didn't, blinding of participants and of investigators to the treatment groups wasn't possible.
Blinding of outcome assessment (detection bias)	Unclear risk	The article describes that the clinical and radiological assessments could not be blinded because of surgical wounds and hardware in the surgical patients. Participants completed the primary outcome either online or on paper at their clinic appointment. Clinical assessment was performed by an independent examiner.
Incomplete outcome data (attrition bias)	Low risk	At 12 months, data from 96% of the intervention group (46/48) and 91% of the control group (40/44) were included. Overall 86/92 = 93%
Selective reporting (reporting bias)	Low risk	All outcomes were reported at determined timeframes.
Other bias	Low risk	None detected

Saving, 2019 [42]		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	The article reports that randomization was performed in a 1:1 ratio without stratification.
Allocation concealment (selection bias)	Low risk	Allocation was concealed using concealed opaque envelopes
Blinding of participants and personnel (performance bias)	High risk	Given that one of the treatments involved surgery and that the other treatment didn't, blinding of participants and of investigators to the treatment groups wasn't possible.
Blinding of outcome assessment (detection bias)	High risk	The article reports that evaluation was performed at 3 and 12 months by unblinded observers.
Incomplete outcome data (attrition bias)	High risk	Low overall follow-up for primary outcome at 12 months (119/140 = 85%) and differential follow-up (56/68 = 82% for surgery and 63/72 = 88% for non-surgery).
Selective reporting (reporting bias)	Low risk	All outcomes were reported at determined timeframes.
Other bias	Low risk	None detected

Sharma, 2014 [43]		
Bias	Authors' judgement	Support for judgement

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Random sequence generation (selection bias)	High risk	Participants weren't randomised to treatment groups. They were allocated by alternate assignment.
Allocation concealment (selection bias)	High risk	Alternate allocation is predictable.
Blinding of participants and personnel (performance bias)	High risk	Given that one of the treatments involved surgery and that the other treatment didn't, blinding of participants and of investigators to the treatment groups wasn't possible.
Blinding of outcome assessment (detection bias)	Unclear risk	Not described in the article
Incomplete outcome data (attrition bias)	Low risk	The authors haven't described any missing data nor dropouts. The assumption is that the data analysis includes outcomes for all 64 participants.
Selective reporting (reporting bias)	Low risk	All outcomes were reported at determined timeframes.
Other bias	Lowrisk	None detected

Sirnio, 2019 [25]		
Bias	Authors' judgement	Support for judgement
Random sequence generation (selection bias)	Low risk	Block randomization was performed by the method of random number generation provided in opaque envelopes.
Allocation concealment (selection bias)	Low risk	Random number generation provided in opaque envelopes.
Blinding of participants and personnel (performance bias)	High risk	Given that one of the treatments involved surgery and that the other treatment didn't, blinding of participants and of investigators to the treatment groups wasn't possible.
Blinding of outcome assessment (detection bias)	Unclear risk	The article describes that the clinical assessments were conducted by a clinician who wasn’t involved in the patients care. However, the radiological assessments were performed by an investigator.
Incomplete outcome data (attrition bias)	Unclear risk	Low overall follow-up at 3/12 and at 24/12 (68/80 = 85%) and differential follow-up (33/38 = 87% for surgery and 35/42 = 83% for non-surgery). Researchers used multiple imputation to fill missing data in the primary outcome.
Selective reporting (reporting bias)	Low risk	Upon request, the authors provided standardises data for timeframes that were no presented in the published report.
Other bias	Low risk	None detected

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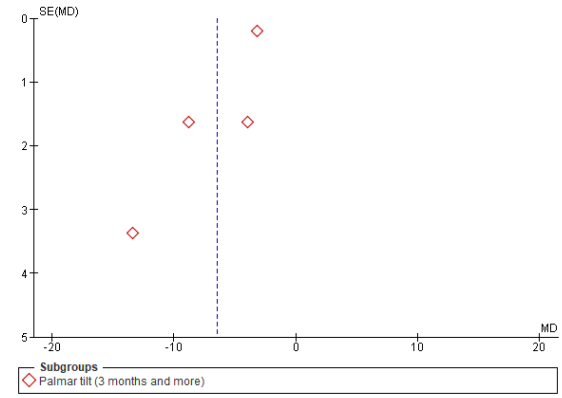
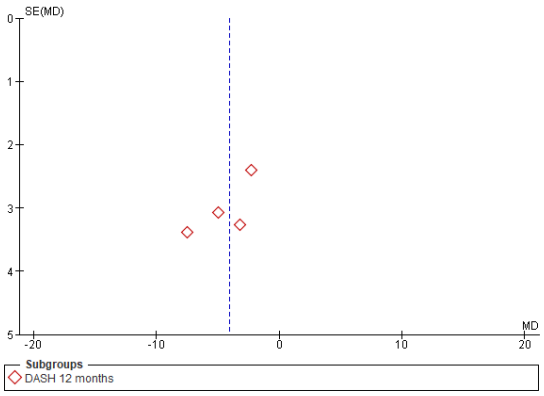
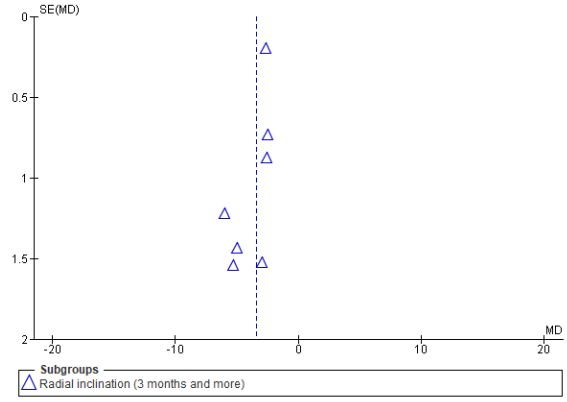
2.2 Funnel plots for outcomes included in summary of findings



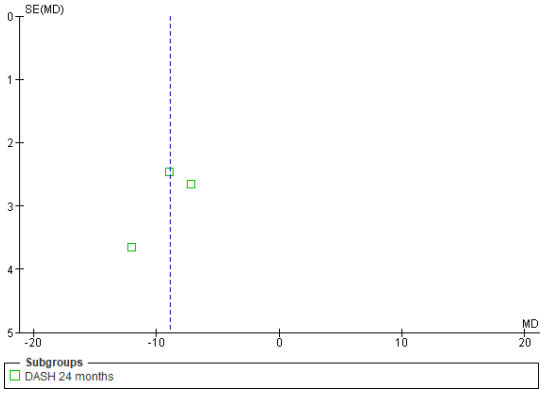
2.3.1 Palmar tilt



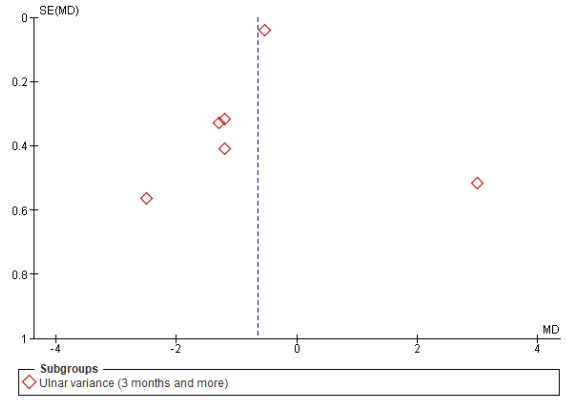
2.3.4 DASH scores at 12 months



2.3.2 Radial inclination



2.3.5 DASH scores at 24 months



2.3.3 Ulnar variance

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2.3 PEDro criteria and scores for included studies

Study	Eligibility criteria and source	Randon allocation	Concealed allocation	Groups similar at baseline	Participant blinding	Surgeon blinding	Assessor blinding	<15% dropouts	Intention to treat analysis	Between group difference reported	Point estimate and variability reported	Total (0 to 11)
Arora et al, 2011	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	7/10
Bartl et al, 2014	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	6/10
Kapoor et al, 2000	No	Yes	No	Yes	No	No	No	Yes	No	Yes	No	4/10
Martinez-Mendez et al, 2018	Yes	Yes	Yes	Yes	No	No	Yes	Yes	No	Yes	Yes	7/10
Mulders et al, 2019	Yes	Yes	No	Yes	No	No	Yes	Yes	Yes	Yes	Yes	7/10
Saving et al, 2019	Yes	Yes	Yes	Yes	No	No	No	No	Yes	Yes	Yes	6/10
Sharma et al, 2014	Yes	No	No	Yes	No	No	No	Yes	No	Yes	Yes	4/10
Sirnio et al, 2019	Yes	Yes	Yes	Yes	No	No	Yes	No	Yes	Yes	Yes	7/10

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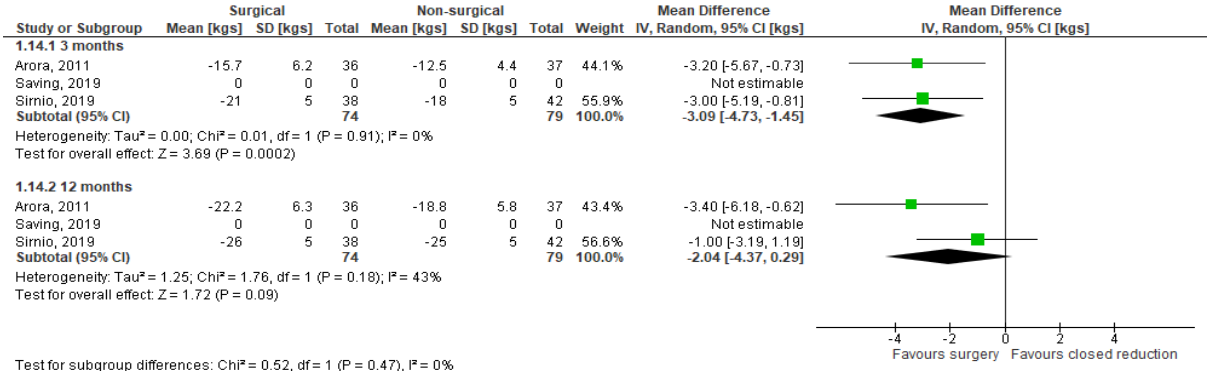
Appendix 3 – Forest plots for clinical outcomes

3.1 Forest plot for grip strength[1]



[1] All grip strength outcomes have been converted from positive values to negative values in order to accurately indicate the direction of favorability on this forest plot.

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3.2 Forest plots for ROM (absolute) outcomes. Continued over page

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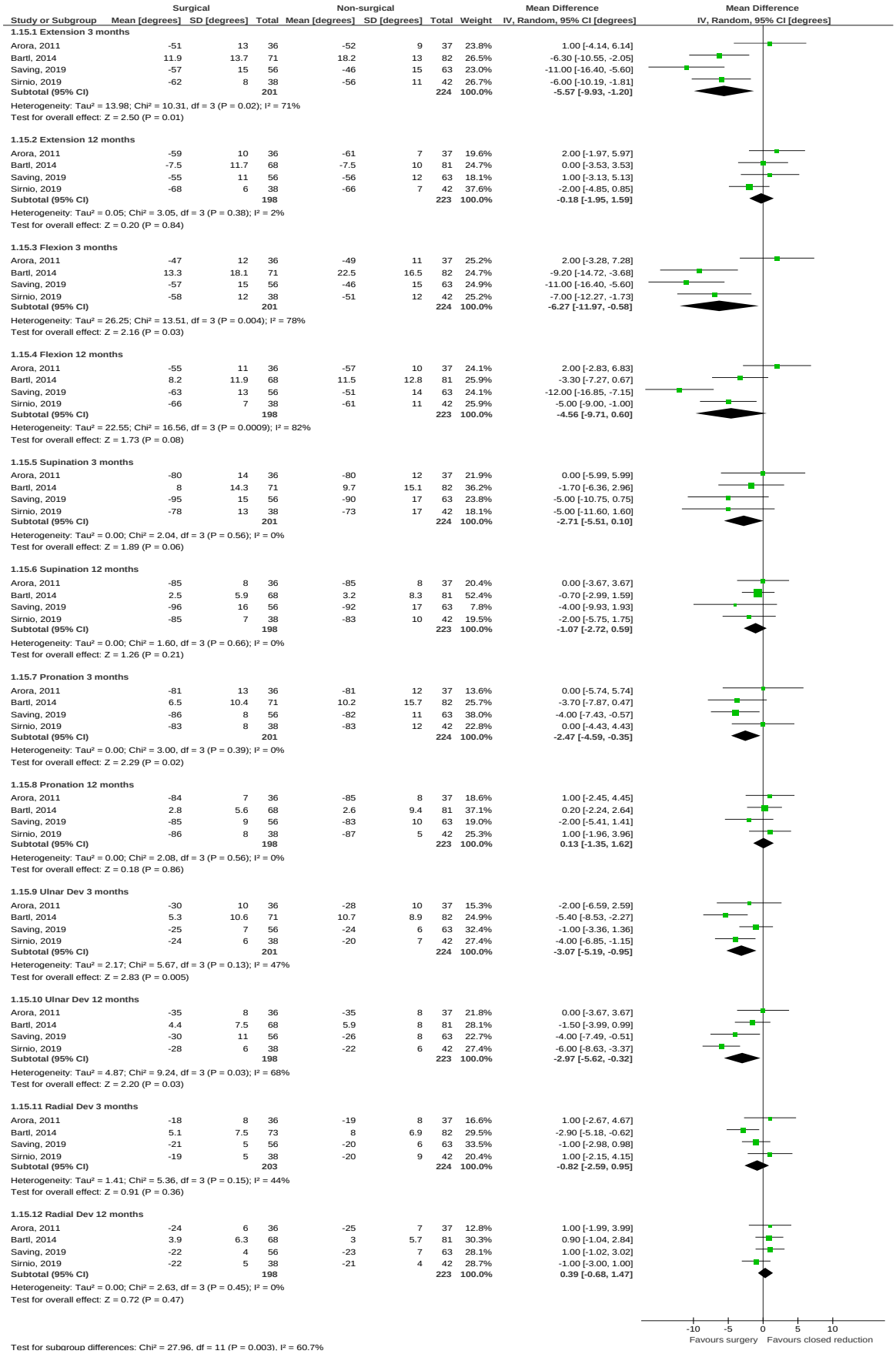

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3.3. Forest plot for complications

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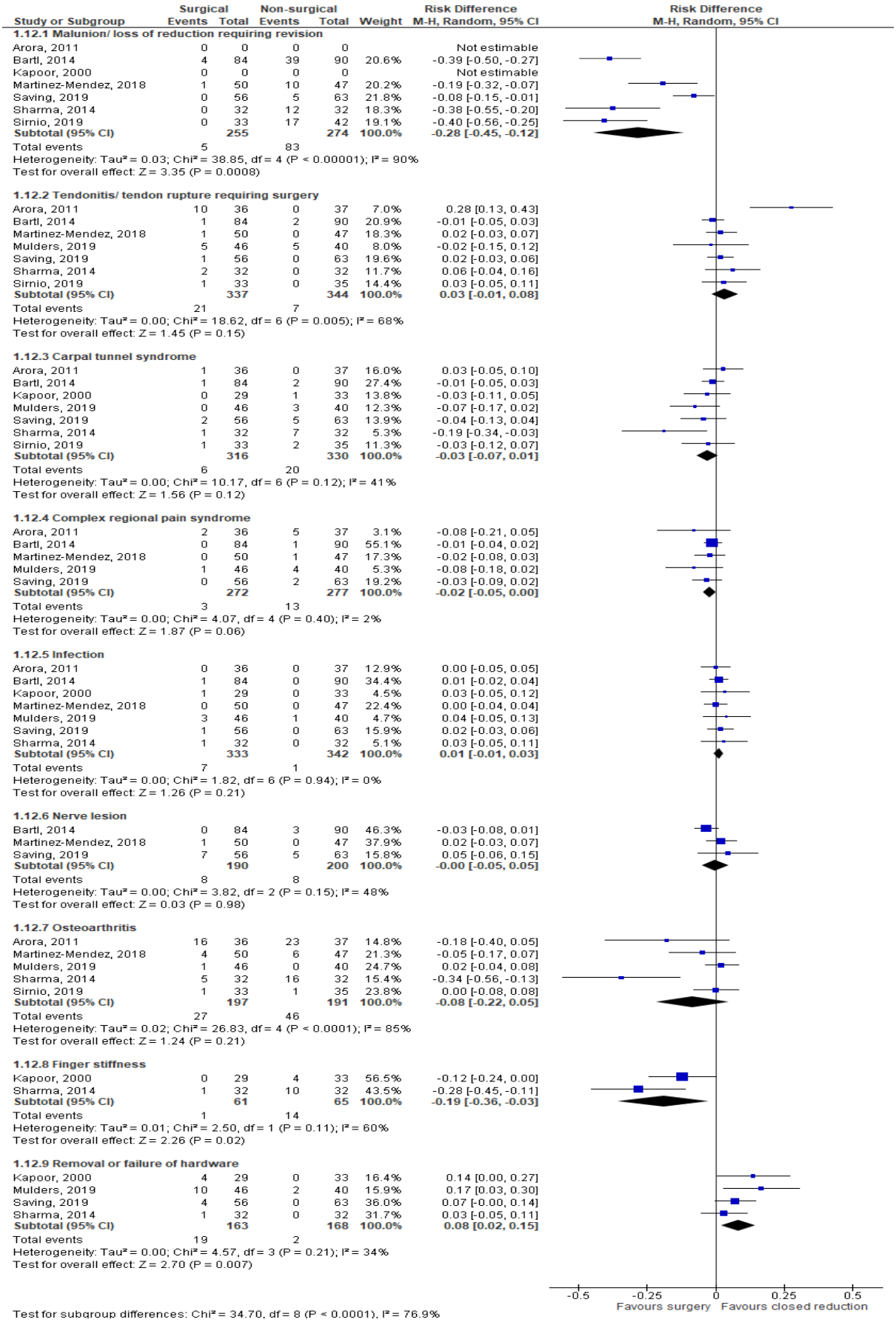

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Appendix 4 – sensitivity analysis

4.1 Sensitivity analysis restricted to participants aged 60 years and older

Outcome	All ages (MD [CI])	≥ 60 years (MD [CI])
DASH (24 months)	8.9 points (5.8 to 12.1)	8.9 points (95% CI: 4.4 to 13.5)
Palmar tilt (≥3 months)	6.5 degrees (95% CI 2.8 to 10.1)	8.1 degrees (95% CI 3.4 to 12.8)
Radial inclination (≥3 months)	3.4 degrees (2.5 to 4.3)	3.8 degrees (95% CI: 2.5 to 5.1)
Ulnar variance (≥3 months)	0.7 mms (0.2 to 1.5)	0.7 mms (95% CI: -0.8 to 2.1)