

Appendix Table 5. Results of included studies	Primary outcomes (if defined)	Secondary outcome	Harms	Comments
<b>First-time traumatic shoulder dislocation</b> <b>Early surgery</b> Kirilley, A. (I) 1999 (4), (R) 2005 (15), Canada	(II) Mean WOSI (%) at five years (79 months) [CI 95%]: Intervention: 86%; Control: 74.8% (-5.8% to 87%) No statistically significant differences between groups	(I) Redlocation rate at two years: Intervention: 9/19 (47%); Control: 9/19 (47%) Statistical difference between groups, P=0.03 Recurrence instability rate: Intervention: 5/19 (26%); Control: 16/19 (84%) Mean WOSI (%) at two years (23-87 months) [95% CI for between groups difference]: Intervention: 86.3; Control: 69.8 (11.6 to 111.2) Between groups difference, P=0.03, clinically relevant (MCGI = 10%) (II) Mean ASES (79 months) [95% CI for between groups difference]: Intervention: 94.7%; Control: 92.5% (1.8 to 2.6) Mean DASH (79 months) [95% CI for between groups difference]: Intervention: 95.8%; Control: 94.5% (1.4 to 3.3) No statistically significant differences between groups in any outcome (I) Redlocation rate: Intervention: 4/20 (13%); Control: 13/20 (65%) Statistical difference between groups, P=0.02 Crank test (positive): Intervention: 7/23 (74%); Control: 17/23 (74%) Statistical difference between groups, P=0.008 Rouse score (excellent): Intervention: 22/26 (73%); Control: 9/23 (39%) Statistical difference between groups, P=0.003	(I) Septic arthritis: Intervention: 1/19 (5%) (II) Not reported	One redlocation in the intervention group occurred according to the Kaplan - Meyer curve at three years, but it seems to be reported to have occurred at two years
Witzell, G. (I) 1999 (7), (R) 1999 (16), Sweden	Redlocation rate: Intervention: 3/42 (7%); Control: 12/42 (28%) Statistical difference between groups not reported Sublocation rate: Intervention: 0/42 (0%); Control: 4/42 (10%) Statistical difference between groups not reported	(I) Redlocation rate at two years: Intervention: 9/21 (43%) Control: 8/21 (38%) Statistical difference between groups, P=0.03 Apprehension and relocation test (positive): Intervention: 5/3%; Control: 7/26 (27%) Redlocation rate at two years: Intervention: 1/37 (3%); Control: 21/39 (54%) Redlocation rate at 10 years: Intervention: 3/36 (8%); Control: 24/39 (62%) Statistical difference between groups, P=0.003 Constant score: Intervention: 92.1; Control: 87.7 P not significant Redlocation rate at two years: Each number not reported No statistically significant differences between groups	(I) No intra or postoperative complications (II) Not reported	Patient materials and outcomes incoherently reported between reports
Jakobsen, B. 2007 (13), Denmark	Redlocation rate: Intervention: 3/42 (7%); Control: 12/42 (28%) Statistical difference between groups not reported Sublocation rate: Intervention: 0/42 (0%); Control: 4/42 (10%) Statistical difference between groups not reported	(I) Redlocation rate at two years: Intervention: 9/21 (43%) Control: 8/21 (38%) Statistical difference between groups, P=0.03 Apprehension and relocation test (positive): Intervention: 5/3%; Control: 7/26 (27%) Redlocation rate at two years: Intervention: 1/37 (3%); Control: 21/39 (54%) Redlocation rate at 10 years: Intervention: 3/36 (8%); Control: 24/39 (62%) Statistical difference between groups, P=0.003 Constant score: Intervention: 92.1; Control: 87.7 P not significant Redlocation rate at two years: Each number not reported No statistically significant differences between groups	Pain or stiffness of the index shoulder: Intervention: 4/37 (8%); Control: 4/39 (10%)	
Robinson, CM. 2006 (6), UK (Scotland)	Redlocation rate: Intervention: 3/42 (7%); Control: 12/42 (28%) Statistical difference between groups not reported Sublocation rate: Intervention: 0/42 (0%); Control: 4/42 (10%) Statistical difference between groups not reported	SF-36, DASH, WOSI and ROM: Exact numbers not reported No statistically significant differences between groups in SF-36 or ROM Statistical difference between groups in DASH and WOSI, P=0.05	Erythema and swelling: Intervention: 1/42 (2%); Control: 1/42 (2%) Adhesive capsulitis: Intervention: 2/42 (5%); Control: 1/42 (2%) Capsulotomy: Intervention: 3/42 (7%)	Number of patients in results in treatment groups do not match with reported in follow-up Statistical differences between groups in DASH and WOSI are not clinically relevant (differences below MCGI)
Arm position Ito, E. 2007 (43), Japan	Recurrence instability rate: Intervention: 22/85 (26%); Control: 31/74 (42%) Absolute RR 16.0%, Relative RR 38.2% Statistical difference between groups, P=0.033	Surgery because of recurrent instability: Intervention: 8/22 (36%); Control: 9/21 (43%) Statistical difference between groups not reported Compliance (full time): Intervention: 63/67 (72%); Control: 39/74 (53%) No statistically significant differences between groups	Temporary stiffness: Intervention: 6/65 (7%)	
Fineston, A. 2009 (41), Israel	Redlocation rate: Intervention: 22/85 (26%); Control: 31/74 (42%) Absolute RR 16.0%, Relative RR 38.2% Statistical difference between groups, P=0.033	Surgery because of recurrent instability: Intervention: 8/22 (36%); Control: 9/21 (43%) Statistical difference between groups not reported Mean time to redlocation (months): Intervention: 1.8 (4 to 43); Control: 12.4 (4 to 36) Operative treatment: Total: 6/20 (30%) redlocated shoulder Statistical difference between groups not reported	Surgery because of recurrent instability: 6/20 (30%) Auxiliary nerve neurectomy: 10/51 (20%) Auxiliary rash: 2/24 (8%)	
Livramento, S. 2011 (44), Norway	Redlocation rate: Intervention: 28/93 (30%); Control: 23/83 (28%) Recurrence instability rate: Intervention: 31/81 (38%); Control: 35/82 (42%) WOSI (raw, intervention, control) [95% CI for between groups difference]: Intervention: 13.8 (11 to 16.4); Control: 37.5 (35 to 39.9) No statistically significant differences between groups	Redlocation rate: Intervention: 28/93 (30%); Control: 23/83 (28%) Recurrence instability rate: Intervention: 31/81 (38%); Control: 35/82 (42%) WOSI (raw, intervention, control) [95% CI for between groups difference]: Intervention: 13.8 (11 to 16.4); Control: 37.5 (35 to 39.9) No statistically significant differences between groups	Hypertensive intervention: 1/91 (1%) Moderate pain: Intervention: 1/91 (1%) Cutaneous hypoaesthesia: Control: 3/93 (3%)	
Harder, K. 2014 (42), Iran	Recurrence instability rate: Intervention: 2/51 (4%); Control: 17/51 (33.3%) Absolute RR 29.4%, Relative RR: 88.2% Statistical difference between groups, P=0.001	Recurrence instability rate (compliant patients): Intervention: 1/41 (2.4%); Control: 16/48 (33.3%) Between groups difference, P = 0.001 Mean WOSI (raw) [SD] (33 months): Intervention: 187.2 (67.5); Control: 230.92 (78.8) Statistical difference between groups, P = 0.004 Mean WOSI (%), SD) Baseline -> One year follow-up: Intervention: 32.4% (15.40) -> 87% (14) Control: 32.60% (15.30) -> 84% (12.1) No statistically significant differences between groups Mean ASES (Baseline) -> One year follow-up: Intervention: 38.96 (21.18) -> 95 (15) Control: 46.33 (22.30) -> 89 (14.4) Questionable clinical significance and borderline statistical significance (P=0.05)	Transient shoulder rigidity: Intervention: 3/51 (5.9%)	Difference between groups in WOSI scores is not clinically relevant (MCGI = 210 points)
Whelan, D. 2014 (45), Canada	Redlocation rate: Intervention: 6/27 (22%); Control: 8/25 (32%) Sublocation rate: Intervention: 4/27 (15%); Control: 2/25 (8%) No statistically significant differences between groups	Return to sports: Intervention: 21/26 (80%); Intervention: 16/22 (73%); Control: 18/21 (86%) No statistically significant difference between groups Return to preinjury level in sports: Intervention: 14/24 (58%); Intervention: 12/22 (55%); Control: 13/21 (62%) No statistically significant difference between groups	Not reported	
Use of restriction band Ito, E. 2011 (5), Japan	Redlocation rate: Intervention: 10/31 (32%); Intervention: 10/30 (33%); Control: 8/29 (28%) No statistically significant differences between groups	Return to sports: Intervention: 21/26 (80%); Intervention: 16/22 (73%); Control: 18/21 (86%) No statistically significant difference between groups Return to preinjury level in sports: Intervention: 14/24 (58%); Intervention: 12/22 (55%); Control: 13/21 (62%) No statistically significant difference between groups	Not reported	
Chronic post-traumatic shoulder instability Open versus arthroscopic surgery Sperber, A. 2001 (46), Sweden	Recurrence instability rate: Intervention: 7/30 (23%); Control: 3/26 (12%) Statistical difference between groups, P=0.05	Constant score: Intervention: 100 (82-100); Control: 98 (67-100) Statistical difference between groups not reported Rowe score: Intervention: 100 (90-100); Control: 95 (75-100) Statistical difference between groups not reported Loss of external rotation (degrees): Intervention: 9; Control: 10 Statistical difference between groups, P=0.04 Positive apprehension test: Intervention: 0/23 (0%); Control: 3/23 (13%) Absolute Constant score (SD) (Improvement from baseline (SD)): Intervention: 89.5 (14.25) [21 (15.89)] points Control: 86.7 (16.07) [25 (18.23)] points Relative Constant score (SD) (Score compared to contralateral side): Intervention: 92.1% (15.1); Control: 94.3% (12.37) No statistically significant differences between groups in either outcome Mean Rowe score (SD): Intervention: 91 (15.06); Control: 86.5 (12.92) No statistically significant difference between groups Redlocation rate: 0/20 (0%) MCLA, good/excellent (%): Intervention: 93%; Control: 94.3% Rowe, good/excellent (%): Intervention: 100%; Control: 82.4% RDE: No clinical differences between treatment groups No statistically significant differences between groups in any outcome	Intervention: Long thoracic nerve injury: 1/30 (3%) patients Reoperation: 3/30 (10%) patients Control: Persistent pain: 1/26 (4%) patients Reoperation: 3/26 (12%) patients	Secondary outcomes are reported only in stable shoulders
Fabriziani, C. 2004 (2), Italy	Redlocation rate: Intervention: 10/31 (32%); Intervention: 10/30 (33%); Control: 8/29 (28%) No statistically significant differences between groups	Return to sports: Intervention: 21/26 (80%); Intervention: 16/22 (73%); Control: 18/21 (86%) No statistically significant difference between groups Return to preinjury level in sports: Intervention: 14/24 (58%); Intervention: 12/22 (55%); Control: 13/21 (62%) No statistically significant difference between groups	No intra or postoperative complications	
Netto, NA. 2013 (9), Brazil	Mean DASH (range, SD): Intervention: 2.65 (0 to 24, 47.3); Control: 4.22 (0 to 21, 45.8) Statistical difference between groups, P=0.031	Redlocation rate: 0/20 (0%) MCLA, good/excellent (%): Intervention: 93%; Control: 94.3% Rowe, good/excellent (%): Intervention: 100%; Control: 82.4% RDE: No clinical differences between treatment groups No statistically significant differences between groups in any outcome	Redlocations: Control: 2/25 (8%) Superficial wound infection: Intervention: 1/22 (5%)	UCLA and Rowe scores not reported in numbers
Mohdatt, N. 2014 (47), Canada	Mean WOSI (%) [CI 95%, SD] Baseline -> Two year follow-up: Intervention: 43.7% (17.9 to 69.5, 219.0) -> 85.3% (66.5 to 99.8, 320.4) Control: 40.6% (16.9 to 64.3, 218.4) -> 81.9% (77.4 to 86.4, 219.8) No statistically significant differences between groups	Mean ASES (CI 95%, SD) Baseline -> Two year follow-up: Intervention: 67.3 (63.5 to 71.0, 218.7) -> 91.8 (88.9 to 94.4, 212.7) Control: 64.0 (59.6 to 68.4, 217.6) -> 88.2 (84.6 to 91.8, 215.9) No statistically significant differences between groups at two year follow-up, but both groups improved from baseline, P=0.05 Redlocation rate: Intervention: 3/86 (8.8%); Control: 16/87 (18.4%) Sublocation rate: Intervention: 2/80 (2.5%); Control: 4/87 (4.6%) Statistically significant difference between groups, P=0.05	Intervention: Temporary nerve dysfunction (resolved completely): 3/79 (3.8%) Superficial wound infection: 2/79 (2.5%) Stitch abscess: 1/79 (1.3%) Allergic reaction to NSAIDs: 2/79 (2.5%) Control: Temporary nerve dysfunction (resolved uneventfully): 4/81 (1.2%)	
Absorbable versus nonabsorbable implant materials (anchors) Warne, WJ. 1999 (50), USA	Redlocation rate: Intervention: 10/31 (32%); Intervention: 10/30 (33%); Control: 8/29 (28%) No statistically significant differences between groups	Mean loss of external rotation, ER (degrees): Intervention: 3 (0-15) Control: 3 (0-10) Mean Rowe score baseline -> two year follow-up (SD): Intervention: 47 (13) -> 96 (12) Control: 47 (14) -> 93 (10) No statistically significant difference in postoperative scores between groups, P=0.55 Stability testing: Not reported Drill holes in radiographs (at two years): "Uniformly difficult to distinguish" Recurrence dislocation: Intervention: 1/18 (5%) patients - Control: 3/20 (5%) patients Sublocation: Control: 3/20 (5%) patients	Not reported	Outcomes were not defined preoperatively
Tan, C. 2006 (49), UK	Redlocation rate: Intervention: 10/31 (32%); Intervention: 10/30 (33%); Control: 8/29 (28%) No statistically significant differences between groups	Baseline -> Two year follow-up: Mean OSS (SD): Intervention: 18 (18) -> 18 (46) - Control: 36 (17) -> 20 (410) Statistical difference between groups, P=0.007 Mean VAS pain (SD): Intervention: 1.7 (11.8) -> 0.3 (10.7) - Control: 1.8 (41.3) -> 0.7 (11.6) Mean VAS instability (SD): Intervention: 4.0 (42.3) -> 0.8 (10.2) - Control: 4.7 (13.0) -> 1.1 (10.3) Mean SF-12 Mental (SD): Intervention: 45.0 (7.7) -> 50 (10) - Control: 43 (8.8) -> 54 (18) Mean SF-12 Mental (SD): Intervention: 55 (15) -> 53 (17) - Control: 53 (18) -> 55 (16) No statistically significant differences in improvement between groups in any outcome Median Rowe (range) [CI 95%]: Intervention: 100 (60 to 100) - Control: 100 (25 to 100) [-12.1 to 3.70] Median Constant score (range) [CI 95%]: Intervention: 98 (81 to 107) - Control: 98 (70 to 121) [-5.44 to 1.88] Recurrence instability: Intervention: 3/26 (5%); Control: 2/18 (6%) No statistically significant differences between groups in any outcome	Redlocation: Intervention: 4/63 (5%); Control: 3/61 (7%) Sublocation: Control: 4/61 (7%) Revision surgery: 6/124 (5%) Superficial wound infection: Intervention: 1/63 (2%) - Control: 1/61 (2%)	
Milano, G. 2010 (48), Italy	Median DASH (range) [CI 95%]: Intervention: 4.5 (0 to 27); Control: 7 (0 to 25) [-3.25 to 2.84] No statistically significant differences between groups	Median Rowe (range) [CI 95%]: Intervention: 100 (60 to 100) - Control: 100 (25 to 100) [-12.1 to 3.70] Median Constant score (range) [CI 95%]: Intervention: 98 (81 to 107) - Control: 98 (70 to 121) [-5.44 to 1.88] Recurrence instability: Intervention: 3/26 (5%); Control: 2/18 (6%) No statistically significant differences between groups in any outcome	Not reported	
Arthroscopic versus arthroscopic surgery				
Castagna, A. 2009 (51), Italy	Median ROM Baseline -> Two year follow-up: FF (Forward flexion, degrees): Intervention: 169 (18-185) -> 172.5 (155-180) Control: 177 (170-180) -> 163.3 (140-173) ER1 (External rotation, arm at side, degrees): Intervention: 61 (40-80) -> 63.7 (45-80) Control: 57.2 (45-80) -> 58.9 (40-80) ER2 (External rotation, arm 90 degrees abducted, degrees): Intervention: 69.8 (70-120) -> 60.4 (80-95) Control: 68.9 (80-95) -> 60.1 (70-95) IR1 (Internal rotation, arm 90 degrees abducted, degrees): Intervention: 50.6 (40-80) -> 61.8 (40-80) Control: 45.6 (60-70) -> 63.3 (45-75) Statistically significant difference between intervention and control groups regarding the change of forward flexion (P<0.001)	Mean Constant Baseline -> Two year follow-up: Intervention: 21.1 (55-80) -> 89 (127-177) Control: 75 (67-80) -> 89 (84-92) Statistical difference between groups in improvement, P=0.001 Mean UCLA Baseline -> Two year follow-up: Intervention: 24.1 (14-31) -> 43.1 (18) Control: 24.4 (20-26) -> 34.7 (22-35) No statistically significant difference between groups in increase, P=0.293 Mean ASES Baseline -> Two year follow-up: Intervention: 66.9 (83-105) -> 135 (110-120) Control: 97.8 (69-106) -> 118.6 (116-116) No statistically significant difference between groups in increase, P=0.089 Post-hoc: Recurrence instability: Intervention: 3/20 (5%) patients - Control: 0/20 (0%)	"No patients showed clinical signs of superficial or deep infection or intra and postoperative neuro-vascular complications."	
Absorbable versus nonabsorbable implant materials (tacks) (I) Magnusson, L. 2006 (55), Sweden (II) Eriksson, A. 2006 (56), Sweden	(I) Drill hole visibility: More visible in the intervention group (P<0.004) (II) Drill hole visibility: More visible in the intervention group (P<0.0003)	Baseline -> (I) Two year follow-up -> (II) Seven year follow-up Constant score (range): Intervention: 77 (25 to 80) -> 84 (35 to 97) -> 84.5 (29 to 90) Control: 62 (42-80) -> 87 (41 to 100) -> 88 (25 to 95) No statistical difference between groups Rowe score (range): Intervention: 55.5 (39 to 88) -> 90 (25 to 100) -> 89 (49 to 100) Control: 59 (40 to 93) -> 90 (30 to 100) -> 85.5 (27 to 98) No statistical difference between groups ROM: No statistical difference between groups Muscle strength: No statistical difference between groups Redlocation + sublocation: (I) Intervention: 3/20 (5%) patients - Control: 3/20 (5%) patients (II) Intervention: 1 + 1 patients - Control: 2 + 1 patients No statistical difference between groups	(I) Reflex sympathetic dystrophy: Control: 1/20 (5%) (II) Intervention: 3 patients had early (1 day to 4 weeks) unspecified symptoms as pain, grinding and low grade fever (absided in 4 hours), 1 patient developed severe restriction in ROM, 1 patient developed moderate degenerative arthritic changes	Failure rate reported for 36 patients, which does not match with the number of patients at the end of the follow-up
Absorbable versus nonabsorbable suture materials Monteiro, GC. 2008 (57), Brazil	Redlocation rate: Intervention: 10/31 (32%); Intervention: 10/30 (33%); Control: 8/29 (28%) No statistically significant differences between groups	Mean Rowe (range): Intervention: 83.81 (35 to 100) Control: 79.58 (35 to 100) Mean ASES (range): Intervention: 84.09 (40 to 98) Control: 79.25 (40 to 98) Mean deficit in ER (degrees, range): 5 (3 to 12) Failure (not defined): Intervention: 2/21 (10%) patients Control: 3/24 (12.5%) patients No statistical differences between groups	Not reported	Results given for followed patients only "Failure" is not further defined Functional examinations are not further defined
Rehabilitation Kim, S-H. 2003 (58), Korea	Redlocation rate: 0/62 (0%) Sublocation rate: 0/62 (0%) No statistically significant differences between groups	Baseline -> Two year follow-up: Mean UCLA (range, SD): Intervention: 13.7 (14 to 23, 42.3) -> 32.7 (27 to 35, 42.3) Control: 18.5 (13 to 22, 42.4) -> 32.1 (27 to 35, 42.3) Mean ASES (range, SD): Intervention: 49.9 (40 to 66, 45.7) -> 88.1 (70 to 98, 49.9) Control: 49.3 (36 to 67, 48.8) -> 88.0 (70 to 98, 47.7) Mean Rowe (range, SD): Intervention: 23.8 (10 to 40, 47.9) -> 91.9 (55 to 100, 49.9) Control: 22.7 (10 to 40, 48.7) -> 90.5 (55 to 100, 49.7) No statistically significant differences between groups in any outcome	Not reported	
Anatomic versus nonanatomic surgical techniques Salomonsson, B. 2009 (52), Sweden	Redlocation rate: Intervention: 10/31 (32%); Intervention: 10/30 (33%); Control: 8/29 (28%) No statistically significant differences between groups	Mean Rowe at two years: Intervention: 90; Control: 90 Mean WOSI (%) (range) at 10 years: Intervention: 83% (78 to 88); Control: 80% (75 to 86) No statistically significant difference between groups Recurrence instability rate at 10 years: Intervention: 0/33 (0%); Control: 10/30 (33%) Redlocation rate at 10 years: Intervention: 11/32 (34%); Control: 8/30 (27%) No statistically significant difference between groups Revision surgery at 10 years: Intervention: 4/22 (18%); Control: 4/30 (13%)	Not reported	

Abbreviations  
 ASES - American Shoulder and Elbow Surgeons Standardized Shoulder Assessment Score  
 AOSW - Athletic Shoulder Outcome Scoring System  
 CI - Confidence Interval  
 DASH - Disabilities of Arm, Shoulder and Hand  
 OSS - Oxford Shoulder Instability Score  
 ROM - Range of Motion  
 SANE - Single Assessment Numeric Evaluation Score  
 SD - Standard Deviation  
 SF - The Short Form Health Survey  
 UCLA - University of California, Los Angeles Shoulder Score  
 WOSI - Western Ontario Shoulder Instability Index