

Supplement to the Management of Distal Radius Fractures Evidence-Based Clinical Practice Guideline

e-Appendix 1

- PICO Questions/Inclusion Criteria
- Search Strategy
- Excluded Literature
- AAOS Approval Bodies
- Review Organizations
- Endorsements

This supplementary material has been provided by the authors to give readers additional information about their work

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PICO Questions and Inclusion Criteria

PICO Questions

1. For patients who have been treated with a surgical intervention for distal radius fracture, does arthroscopic assistance result in significant different outcomes compared to those who receive no arthroscopic assistance?
2. For adult patients who are treated for distal radius fracture, does a home exercise program lead to different outcomes from supervised physical therapy or occupational therapy by a physical therapy or occupational therapy?
3. Is there a difference in using opioids only compared to other pain management strategies (with or without opioid pain management) in the treatment of pain for operatively treated distal radius fracture?
4. For patients diagnosed with distal radius fracture who were treated based on radiographic findings, does operative intervention lead to different outcomes than non-operative intervention?
5. For adult patients with a distal radius fracture treated operatively or non-operatively, does the timing of wrist radiographs during and after treatment lead to different outcomes than limited ongoing radiographic evaluation?
6. For patients treated operatively for distal radius fracture, do different operative methods lead to different outcomes?

Standard Inclusion Criteria

- Article must be a full article report of a clinical study (studies using registry data can be included in a guideline if it is published in a peer-reviewed journal and meets all other inclusion criteria/quality standards).
- Retrospective non-comparative case series, medical records review, meeting abstracts, historical articles, editorials, letters, and commentaries are *excluded*.
- Confounded studies (i.e. studies that give patients the treatment of interest AND another treatment without appropriate sub-analysis or statistical adjustment) are *excluded*.
- Case series studies that have non-consecutive enrollment of patients are *excluded*.
- Controlled trials in which patients were not stochastically assigned to groups AND in which there was either a difference in patient characteristics or outcomes at baseline AND where the authors did not statistically adjust for these differences when analyzing the results are *excluded*.
- All studies of “Very Low” quality of evidence (e.g. Level V) are *excluded*.
- Study must appear in a peer-reviewed publication
- For any included study that uses “paper-and-pencil” outcome measures (e.g. Composite measures, SF-36, etc.), only those outcome measures that have been validated will be included
- For any given follow-up time point in any included study, there must be $\geq 50\%$ patient follow-up (if the follow-up is $>50\%$ but $<80\%$, the study quality will be downgraded by one Level)
- Study must be of humans
- Study must be published in English
- Study results must be quantitatively presented
- Study must not be an in vitro study
- Study must not be a biomechanical study
- Study must not have been performed on cadavers

Customized Inclusion Criteria

- Study must be of a “**patient with distal radius fracture**”
- Study must be published in or after the year **2000**
- Study should have **20 or more patients** per group
- Consider all follow-up times

Literature Search Strategy

Literature Search Methods

The medical librarian conducted a comprehensive search of MEDLINE, Embase, and the Cochrane Central Register of Controlled Trials based on key terms and concepts from the workgroup-defined PICO questions. Bibliographies of relevant systematic reviews were hand searched for additional references. All databases were last searched on February 19, 2020 with a limit for English language.

For PRISMA diagram

Records identified through database searching: 10,704

Records after duplicates removed: 7,123

Additional records identified through other sources: N/A

Records screened: 7,123

Appendix: Literature Search Strategies by Database

Database: MEDLINE [Ovid MEDLINE® and Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Daily and Versions® 1946 to present]

Interface: Ovid (<http://ovidsp.ovid.com/autologin>)

Date Searched: February 19, 2020

LINE	SEARCH SYNTAX
1	((animals not humans) or cadaver).sh. or cadaver*.ti.
2	((comment or editorial or letter or historical article) not "clinical trial") or address or news or "newspaper article" or "case reports").pt. or "case report".ti.
3	((Adolescent OR Child OR Infant) NOT Adult).sh.
4	1 or 2 or 3
5	(("Radius Fractures" or "Colles' Fracture").sh. or RADIUS/in or RADIUS/su) and (("wrist joint" or "wrist" or "wrist injuries").sh. or wrist.ti,ab. or distal.ti,ab. or "lower end".ti,ab. or radioulnar.ti,ab. or radiocarpal.ti,ab.)
6	((("distal" or "lower end" or "wrist") AND (radius or radial)) OR radioulnar or radiocarpal).ti,ab. and (fracture*.ti,ab or "Fractures, Bone".sh.)
7	("Colles' fracture" or "Colles' fractures" or "Smith's fracture" or "Smith's fractures" or "Barton's fracture" or "Barton's fractures" or "chauffeur fracture" or "chauffeur fractures" or "chauffeur's fracture" or "chauffeur's fractures").ti,ab.
8	((5 or 6 or 7) not 4) and English.lg.
9	exp "Radius Fractures"/su OR "Fracture Fixation"/ OR exp "Orthopedic Fixation Devices"/ OR (operative or operatively or surgical or surgery or surgically or repair or reconstruction or fixation or fixator or fixators or plate or plates or plating).ti,ab.
10	8 and 9
11	exp "Physical Therapy Modalities"/ or exp "Range of Motion, Articular"/ or exp "Rehabilitation"/ or rehabilitation.fs. or ("physical therapy" or physiotherap* or exercise* or "motion" or mobilization or mobilisation or mobility or strengthening or "grip strength" or "palmar pinch" or "flexion" or "extension" or "supination" or "pronation" or "rehabilitation" or "rehabilitative" or "flexibility").ti,ab.
12	exp "Radiography"/ OR (radiograph* OR radiolog* OR "x-ray" OR "x-rays" OR "imaging"):ti,ab
13	8 and (11 or 12)
14	13 or 10

Database: Embase

Interface: Elsevier (<https://embase.com>)

Date Searched: February 19, 2020

LINE SEARCH QUERY

1	'distal radius fracture'/exp OR (((('distal':ti,ab OR 'lower end':ti,ab OR 'wrist':ti,ab) AND (radius:ti,ab OR radial:ti,ab) OR radioulnar:ti,ab OR radiocarpal:ti,ab) AND fracture*:ti,ab)
2	'colle s fracture':ti,ab OR 'colle s fractures':ti,ab OR 'smith s fracture':ti,ab OR 'smith s fractures':ti,ab OR 'barton s fracture':ti,ab OR 'barton s fractures':ti,ab OR 'chauffeur fracture':ti,ab OR 'chauffeur fractures':ti,ab OR 'chauffeur s fracture':ti,ab OR 'chauffeur s fractures':ti,ab
3	'colles fracture':ti,ab OR 'colles fractures':ti,ab OR 'smiths fracture':ti,ab OR 'smiths fractures':ti,ab OR 'bartons fracture':ti,ab OR 'bartons fractures':ti,ab OR 'chauffeur fracture':ti,ab OR 'chauffeur fractures':ti,ab OR 'chauffeurs fracture':ti,ab OR 'chauffeurs fractures':ti,ab
4	#2 OR #3
5	#1 OR #4
6	'distal radius fracture'/exp/dm_su OR 'fracture fixation'/exp OR 'orthopedic fixation device'/exp OR operative:ti,ab OR operatively:ti,ab OR surgical:ti,ab OR surgery:ti,ab OR surgically:ti,ab OR repair:ti,ab OR reconstruction:ti,ab OR fixation:ti,ab OR fixator:ti,ab OR fixators:ti,ab OR plate:ti,ab OR plates:ti,ab OR plating:ti,ab
7	'radiography'/exp OR radiograph*:ti,ab OR radiolog*:ti,ab OR 'x-ray':ti,ab OR 'x-rays':ti,ab OR 'imaging':ti,ab
8	'physiotherapy'/exp OR 'range of motion'/exp OR 'rehabilitation'/exp OR 'physical therapy':ti,ab OR physiotherap*:ti,ab OR exercise*:ti,ab OR 'motion':ti,ab OR mobilization:ti,ab OR mobilisation:ti,ab OR mobility:ti,ab OR strengthening:ti,ab OR 'grip strength':ti,ab OR 'palmar pinch':ti,ab OR 'flexion':ti,ab OR 'extension':ti,ab OR 'supination':ti,ab OR 'pronation':ti,ab OR 'rehabilitation':ti,ab OR 'rehabilitative':ti,ab OR 'flexibility':ti,ab
9	#5 AND #6
10	#9 OR (#5 AND (#7 OR #8))
11	'abstract report'/de OR 'book'/de OR 'editorial'/de OR 'note'/de OR 'letter'/it OR 'case study'/de OR 'case report'/de OR 'conference abstract'/it OR 'chapter'/it OR 'conference paper'/it OR 'conference review'/it
12	#10 NOT #11 AND [english]/lim

Database: Cochrane Central Register of Controlled Trials (CENTRAL)

Interface: Wiley (<https://www.cochranelibrary.com/central>)

Date Searched: February 19, 2020

LINE SEARCH QUERY

1	((("distal" or "lower end" or "wrist") AND (radius or radial)) OR radioulnar or radiocarpal):ti,ab and (fracture*:ti,ab)
2	[mh "Radius Fractures"] and ("distal" or "lower end" or "wrist" or radiocarpal or radioulnar):ti,ab
3	#1 or #2
4	#3 not "conference abstract":pt

Excluded Articles

Authors	Year	Article Title	Reason for Exclusion
Abbaszadegan, H.; Adolphson, P.; Dalen, N.; Jonsson, U.; Sjoberg, H. E.; Kalen, S.	1991	Bone mineral loss after Colles' fracture. Plaster cast and external fixation equivalent	Does not address question of interest
Abbaszadegan, H.; Jonsson, U.	1990	External fixation of plaster cast for severely displaced Colles' fractures? Prospective 1-year study of 46 patients	Repeat article
Abbaszadegan, H.; von Sivers, K.; Jonsson, U.	1988	Late displacement of Colles' fractures	Not relevant to PICOs
Abe, Y.; Tsubone, T.; Tominaga, Y.	2008	Plate presetting arthroscopic reduction technique for the distal radius fractures	Review article
Abramo, A.; Kopylov, P.; Tagil, M.	2008	Evaluation of a treatment protocol in distal radius fractures: a prospective study in 581 patients using DASH as outcome	Very low quality
Achten, J.; Sones, W.; Dias, J.; Hedley, H.; Cook, J. A.; Dritsaki, M.; Png, M. E.; Gray, A.; Lamb, S. E.; Costa, M. L.	2019	Surgical fixation with K-wires versus plaster casting in the treatment of dorsally displaced distal radius fractures: protocol for Distal Radius Acute Fracture Fixation Trial 2 (DRAFFT 2)	Study protocol
Actrn,	2016	Does a hand strength exercise program improve grip strength in elderly patients with wrist fractures?	Not relevant to PICOs
af Ekenstam, F.; Jakobsson, O. P.; Wadin, K.	1989	Repair of the triangular ligament in Colles' fracture. No effect in a prospective randomized study	Not relevant to PICOs
Aggarwal, N. D.; Mittal, R. L.; Aggarwal, J. R.	1976	Management of Galeazzi's fracture dislocation. (A follow up study of 20 patients)	<10 patients per group
Ahsan, Z. S.; Yao, J.	2012	The importance of pronator quadratus repair in the treatment of distal radius fractures with volar plating	Very low quality
Alimohammadi, H.; Shojaee, M.; Samiei, M.; Abyari, S.; Vafae, A.; Mirkheshti, A.	2013	Nerve Stimulator Guided Axillary Block in Painless Reduction of Distal Radius Fractures; a Randomized Clinical Trial	Not relevant to PICOs
Allain, J.; le Guilloux, P.; Le Mouel, S.; Goutallier, D.	1999	Trans-styloid fixation of fractures of the distal radius. A prospective randomized comparison between 6- and 1-week postoperative immobilization in 60 fractures	Not relevant to PICOs
Alluri, R.; Longacre, M.; Pannell, W.; Stevanovic, M.; Ghiassi, A.	2015	Volar, Intramedullary, and Percutaneous Fixation of Distal Radius Fractures	Very low quality
Almedghio, S.; Arshad, M. S.; Almari, F.; Chakrabarti, I.	2018	Effects of Ulnar Styloid Fractures on Unstable Distal Radius Fracture Outcomes: A Systematic Review of Comparative Studies	Systematic review/meta-analysis
Al-Mouazzen, L.; Chou, D. T.; Kyriakopoulos, G.; Hambidge, J.	2014	Polyaxial versus uniaxial volar locking plate for distal radial fractures	Very low quality
Almquist, E. E.	1973	Compression plate fixation for Barton's or Smith's type II fractures	Case series
Alter, T. H.; Ilyas, A. M.	2018	Complications Associated with Volar Locking Plate Fixation of Distal Radial Fractures	Review article
Alter, T. H.; Liss, F. E.; Ilyas, A. M.	2017	A Prospective Randomized Study Comparing Bupivacaine Hydrochloride Versus Bupivacaine Liposome for Pain Management After Distal Radius Fracture Repair Surgery	Not relevant to PICOs

Authors	Year	Article Title	Reason for Exclusion
Altissimi, M.; Antenucci, R.; Fiacca, C.; Mancini, G. B.	1986	Long-term results of conservative treatment of fractures of the distal radius	Not relevant to PICOs
Amorosa, L. F.; Vitale, M. A.; Brown, S.; Kaufmann, R. A.	2011	A functional outcomes survey of elderly patients who sustained distal radius fractures	Very low quality
Anderson, J. T.; Lucas, G. L.; Buhr, B. R.	2004	Complications of treating distal radius fractures with external fixation: a community experience	Retro cs
Anderson, M. S.; Ghamsary, M.; Guillen, P. T.; Wongworawat, M. D.	2017	Outcomes After Distal Radius Fracture Treatment With Percutaneous Wire Versus Plate Fixation: Meta-Analysis of Randomized Controlled Trials	Systematic review/Meta-analysis
Andrade-Silva, F. B.; Rocha, J. P.; Carvalho, A.; Kojima, K. E.; Silva, J. S.	2019	Influence of postoperative immobilization on pain control of patients with distal radius fracture treated with volar locked plating: A prospective, randomized clinical trial	Not relevant to PICOs
Annamalai, G.; Raby, N.	2003	Scaphoid and pronator fat stripes are unreliable soft tissue signs in the detection radiographically occult fractures	Not relevant to PICOs
Anzarut, A.; Johnson, J. A.; Rowe, B. H.; Lambert, R. G.; Blitz, S.; Majumdar, S. R.	2004	Radiologic and patient-reported functional outcomes in an elderly cohort with conservatively treated distal radius fractures	No comparison group
Arora, R.; Gabl, M.; Gschwenter, M.; Deml, C.; Krappinger, D.; Lutz, M.	2009	A comparative study of clinical and radiologic outcomes of unstable colles type distal radius fractures in patients older than 70 years: nonoperative treatment versus volar locking plating	Very low quality
Asadollahi, S.; Keith, P. P.	2013	Flexor tendon injuries following plate fixation of distal radius fractures: a systematic review of the literature	Systematic review/meta-analysis
Ashe, M.; Khan, K.; Guy, P.; Kruse, K.; Hughes, K.; O'Brien, P.; Janssen, P.; McKay, H.	2004	Wristwatch-distal radial fracture as a marker for osteoporosis investigation: a controlled trial of patient education and a physician alerting system	Not relevant to PICOs
Atroshi, I.; Brogren, E.; Larsson, G. U.; Kloow, J.; Hofer, M.; Berggren, A. M.	2006	Wrist-bridging versus non-bridging external fixation for displaced distal radius fractures: a randomized assessor-blind clinical trial of 38 patients followed for 1 year	Not relevant to PICOs
Auge, W. K., 2nd; Velazquez, P. A.	2000	The application of indirect reduction techniques in the distal radius: the role of adjuvant arthroscopy	No comparison group
Azzi, A. J.; Aldekhayel, S.; Boehm, K. S.; Zadeh, T.	2017	Tendon Rupture and Tenosynovitis following Internal Fixation of Distal Radius Fractures: A Systematic Review	Systematic review/Meta-analysis
Bae, J. Y.; Yoon, J. O.; Choi, S. W.; Kim, J. K.	2017	Comparison of outcomes between partially healed and acute metaphyseally malaligned distal radial fracture treated by palmar locking plate fixation	Not relevant to PICOs
Bajammal, S. S.; Zlowodzki, M.; Lelwica, A.; Tornetta, P., 3rd; Einhorn, T. A.; Buckley, R.; Leighton, R.; Russell, T. A.; Larsson, S.; Bhandari, M.	2008	The use of calcium phosphate bone cement in fracture treatment. A meta-analysis of randomized trials	Not specific to DRF. Systematic review/meta-analysis
Barai, A.; Lambie, B.; Cosgrave, C.; Baxter, J.	2018	Management of distal radius fractures in the emergency department: A long-term functional outcome measure study with the Disabilities of Arm, Shoulder and Hand (DASH) scores	Very low quality

Authors	Year	Article Title	Reason for Exclusion
Batra, S.; Gupta, A.	2002	The effect of fracture-related factors on the functional outcome at 1 year in distal radius fractures	Very low quality
Bayon-Calatayud, M.; Benavente-Valdepenas, A. M.; Del Prado Vazquez-Munoz, M.	2016	Mirror therapy for distal radial fractures: A pilot randomized controlled study	Not relevant to PICOs
Beck, J. D.; Harness, N. G.; Spencer, H. T.	2014	Volar plate fixation failure for volar shearing distal radius fractures with small lunate facet fragments	Not best available evidence
Belloti, J. C.; Okamura, A.; Scheeren, J.; Faloppa, F.; Ynoe de Moraes, V.	2019	A systematic review of the quality of distal radius systematic reviews: Methodology and reporting assessment	Systematic review/meta-analysis
Bhattacharyya, A. N.; Srivastava, K. K.	1972	Smith's fracture	Case series
Bhattacharyya, R.; Morgan, B. S.; Mukherjee, P.; Royston, S.	2014	Distal radial fractures: the significance of the number of instability markers in management and outcome	Retrospective case series
Bialocerkowski, A.	2001	A home program is as effective as in-rooms treatment in the management of distal radius fracture	Commentary
Bini, A.; Surace, M. F.; Pilato, G.	2008	Complex articular fractures of the distal radius: the role of closed reduction and external fixation	No comparison grp.
Blakeney, W.; Webber, L.	2009	Emergency department management of Colles-type fractures: A prospective cohort study	Not relevant to PICOs
Boersma, E.; Van De Meent, H.; Frolke, J. P.	2018	Prevention of Complex Regional Pain Syndrome type 1 after conservative treatment of a distal radius fracture with a home exercise program: A proof-of-concept study	Case series
Bohl, D. D.; Lese, A. B.; Patterson, J. T.; Grauer, J. N.; Dodds, S. D.	2015	Predicting radiographic changes at the first visit following operative repair of distal radius fractures	Not relevant to PICOs
Boretto, J. G.; Pacher, N.; Giunta, D.; Gallucci, G. L.; Alfie, V.; De Carli, P.	2014	Comparative clinical study of locking screws versus smooth locking pegs in volar plating of distal radius fractures	Not relevant to PICOs
Boretto, J. G.; Zaidenberg, E. E.; Gallucci, G. L.; Sarne, A.; De Carli, P.	2018	Comparative Study of Internal Fixation of the Ulna and Distal Ulna Resection in Patients Older Than 70 Years With Distal Radius and Distal Metaphyseal Ulna Fractures	Not specific to DRF treatment
Bossi, E.; Azzoni, R.; Riva, R.; Ronzani, C.; Sinigaglia, G.	1984	External fixation in the treatment of fractures of the distal forearm	Case series
Boyer, M. I.	2007	Distal radius fractures: what's in and what's out	Educational/background article
Brehmer, J. L.; Husband, J. B.	2014	Accelerated rehabilitation compared with a standard protocol after distal radial fractures treated with volar open reduction and internal fixation: a prospective, randomized, controlled study	Not relevant to PICOs
Brogren, E.; Wagner, P.; Petranek, M.; Atroshi, I.	2013	Distal radius malunion increases risk of persistent disability 2 years after fracture: A prospective cohort study hand	Duplicate to AAOS IS 74
Brogren, E.; Wagner, P.; Petranek, M.; Atroshi, I.	2013	Distal radius malunion increases risk of persistent disability 2 years after fracture: a prospective cohort study	Not relevant to PICOs
Bruder, A. M.; Shields, N.; Dodd, K. J.; Hau, R.; Taylor, N. F.	2016	A progressive exercise and structured advice program does not improve activity more than structured advice alone following a distal radial fracture: a multi-centre, randomised trial	does not address question of interest
Bruder, A.; Taylor, N. F.; Dodd, K. J.; Shields, N.	2011	Exercise reduces impairment and improves activity in people after some upper limb fractures: a systematic review	Systematic review/meta-analysis

Authors	Year	Article Title	Reason for Exclusion
Campbell, D. A.	2000	Open reduction and internal fixation of intra articular and unstable fractures of the distal radius using the AO distal radius plate	No comparison group
Camus, E. J.; Van Overstraeten, L.	2018	Treatment of the distal radius fractures with percutaneous pinning: evolution to the HK2 system	Retrospective case series
Cantlon, M. B.; Marcano, A. I.; Lee, J.; Egol, K. A.	2016	Does malunion in multiple planes predict worse functional outcomes in distal radial fractures?	Not relevant to PICOs
Carley, S.	1998	Towards evidence based emergency medicine: best BETs from the Manchester Royal Infirmary. Haematoma block versus intravenous regional anaesthesia in Colles' fractures	Systematic review/meta-analysis
Cassidy, C.; Jupiter, J. B.; Cohen, M.; Delli-Santi, M.; Fennell, C.; Leinberry, C.; Husband, J.; Ladd, A.; Seitz, W. R.; Constanz, B.	2003	Norian SRS cement compared with conventional fixation in distal radial fractures. A randomized study	Not relevant to PICOs
Casteleyn, P. P.; Handelberg, F.; Haentjens, P.	1992	Biodegradable rods versus Kirschner wire fixation of wrist fractures. A randomised trial	Not relevant to PICOs
Casteleyn, P. P.; Handelberg, F.; Haentjens, P.	1992	Biodegradable rods versus Kirschner wire fixation of wrist fractures	Repeat article
Challis, M. J.; Jull, G. J.; Stanton, W. R.; Welsh, M. K.	2007	Cyclic pneumatic soft-tissue compression enhances recovery following fracture of the distal radius: a randomised controlled trial	Not relevant to PICOs
Chaudhry, S.; DelSole, E. M.; Egol, K. A.	2012	Post-splinting radiographs of minimally displaced fractures: good medicine or medicolegal protection?	Not relevant to PICOs
Cheing, G. L.; Wan, J. W.; Kai Lo, S.	2005	Ice and pulsed electromagnetic field to reduce pain and swelling after distal radius fractures	Not relevant to PICOs
Chen, A. C.; Chan, Y. S.; Yuan, L. J.; Ye, W. L.; Lee, M. S.; Chao, E. K.	2002	Arthroscopically assisted osteosynthesis of complex intra-articular fractures of the distal radius	No comparison group
Chen, C.; Cai, L.; Zhang, C.; Wang, J.; Guo, X.; Zhou, Y.	2018	Treatment of Die-Punch Fractures with 3D Printing Technology	Not relevant to PICOs
Chen, C.; Cai, L.; Zheng, W.; Wang, J.; Guo, X.; Chen, H.	2019	The efficacy of using 3D printing models in the treatment of fractures: a randomised clinical trial	Not relevant to PICOs
Chi, Ctr Ipr	2017	The feasibility of using 3D printing to treat complex fractures: distal radius fractures as an example	Not relevant - results stratified by radiographic frequency?
Chinnock, B.; Khaletskiy, A.; Kuo, K.; Hende, G. W.	2011	Ultrasound-guided reduction of distal radius fractures	Not relevant to PICOs
Chong, A. K.; Tan, D. M.; Ooi, B. S.; Mahadevan, M.; Lim, A. Y.; Lim, B. H.	2007	Comparison of forearm and conventional Bier's blocks for manipulation and reduction of distal radius fractures	Does not address question of interest
Chou, Y. C.; Chen, A. C.; Chen, C. Y.; Hsu, Y. H.; Wu, C. C.	2011	Dorsal and volar 2.4-mm titanium locking plate fixation for AO type C3 dorsally comminuted distal radius fractures	Very low quality
Christersson, A.; Sanden, B.; Larsson, S.	2015	Prospective randomized feasibility trial to assess the use of rhPDGF-BB in treatment of distal radius fractures	Not relevant to PICOs
Chuang, P. Y.; Yang, T. Y.; Shen, S. H.; Tsai, Y. H.; Huang, K. C.	2015	The Effects of Dorsal Cortical Comminution on Radiographic Results following Percutaneous Pinning for Extra-Articular Colles' Fracture	Not relevant to PICOs
Chung, K. C.; Kotsis, S. V.; Kim, H. M.	2007	Predictors of functional outcomes after surgical treatment of distal radius fractures	No comparison group

Authors	Year	Article Title	Reason for Exclusion
Chung, M. S.; Roh, Y. H.; Baek, G. H.; Lee, Y. H.; Rhee, S. H.; Gong, H. S.	2010	Evaluation of early postoperative pain and the effectiveness of perifracture site injections following volar plating for distal radius fractures	Not relevant to PICOs
Cobb, A. G.; Houghton, G. R.	1985	Local anaesthetic infiltration versus Bier's block for Colles' fractures	Not relevant to PICOs
Constantine, K. J.; Clawson, M. C.; Stern, P. J.	2002	Volar neutralization plate fixation of dorsally displaced distal radius fractures	No comparison group
Cooney, W. P.	1983	External fixation of distal radial fractures	Very low quality
Cooney, W. P., 3rd; Dobyns, J. H.; Linscheid, R. L.	1980	Complications of Colles' fractures	Very low quality
Costa, M. L.; Achten, J.; Parsons, N. R.; Rangan, A.; Edlin, R. P.; Brown, J.; Lamb, S. E.	2011	UK DRAFFT - a randomised controlled trial of percutaneous fixation with kirschner wires versus volar locking-plate fixation in the treatment of adult patients with a dorsally displaced fracture of the distal radius	Study protocol
Costa, M. L.; Achten, J.; Plant, C.; Parsons, N. R.; Rangan, A.; Tubeuf, S.; Yu, G.; Lamb, S. E.	2015	UK DRAFFT: a randomised controlled trial of percutaneous fixation with Kirschner wires versus volar locking-plate fixation in the treatment of adult patients with a dorsally displaced fracture of the distal radius	Excluded - Same as AAOS ID 3734
Costa, M. L.; Jameson, S. S.; Reed, M. R.	2016	Do large pragmatic randomised trials change clinical practice?: assessing the impact of the Distal Radius Acute Fracture Fixation Trial (DRAFFT)	Does not address question of interest
Couzens, G. B.; Peters, S. E.; Cutbush, K.; Hope, B.; Taylor, F.; James, C. D.; Rankin, C. R.; Ross, M.	2014	Stainless steel versus titanium volar multi-axial locking plates for fixation of distal radius fractures: a randomised clinical trial	Study protocol
Cowie, J.; Anakwe, R.; McQueen, M.	2015	Factors associated with one-year outcome after distal radial fracture treatment	Not relevant to PICOs
Crockett, K.; Farthing, J. P.; Basran, J.; Dal Bello-Haas, V.; Johnston, G.; Haver, C. R. A.; Arnold, C. M.	2019	Changes in fall risk and functional status in women aged 50 years and older after distal radius fracture: A prospective 1-year follow-up study	Does not address question of interest (comparing age groups)
Cui, Z.; Pan, J.; Yu, B.; Zhang, K.; Xiong, X.	2011	Internal versus external fixation for unstable distal radius fractures: an up-to-date meta-analysis	Systematic review/meta-analysis
Cui, Z.; Yu, B.; Hu, Y.; Lin, Q.; Wang, B.	2012	Dynamic versus static external fixation for unstable distal radius fractures: an up-to-date meta-analysis	Systematic review/meta-analysis
Dabash, S.; Potter, E.; Pimentel, E.; Shunia, J.; Abdelgawad, A.; Thabet, A. M.; Pirela-Cruz, M.	2018	Radial Plate Fixation of Distal Radius Fracture	No comparison group
Daddamani, R. M.; Sunil Kumar, P. D.	2014	A study of unstable distal radius fractures treated by percutaneous techniques	Case series
D'Agostino, P.; Barbier, O.	2013	An investigation of the effect of AlloMatrix bone graft in distal radial fracture: a prospective randomised controlled clinical trial	Not relevant to PICOs
Dai, M. H.; Wu, C. C.; Liu, H. T.; Wang, I. C.; Yu, C. M.; Wang, K. C.; Chen, C. H.; Jung, C. H.	2006	Treatment of volar Barton's fractures: comparison between two common surgical techniques	Very low quality
Dailey, S. K.; Miller, A. R.; Kakazu, R.; Wyrick, J. D.; Stern, P. J.	2018	The Effectiveness of Mini-C-Arm Fluoroscopy for the Closed Reduction of Distal Radius Fractures in Adults: A Randomized Controlled Trial	Results stratified by radiographic frequency?

Authors	Year	Article Title	Reason for Exclusion
Daneshvar, P.; Chan, R.; MacDermid, J.; Grewal, R.	2014	The effects of ulnar styloid fractures on patients sustaining distal radius fractures	Not relevant to PICOs
Davis, T. R.; Buchanan, J. M.	1987	A controlled prospective study of early mobilization of minimally displaced fractures of the distal radial metaphysis	Not relevant to PICOs
de Franca Bisneto, E. N.; de Paula, E. J.; de Resende, M. R.; Junior, R. M.; Zumiotti, A. V.	2010	Distal Radial Fractures in Patients over 60 Years Old: Orthogonal Plates Versus Volar Plate	<10 patients per grp.
de Oliveira, J. C.	1973	Barton's fractures	Very low quality
Dee, W.; Klein, W.; Rieger, H.	2000	Reduction techniques in distal radius fractures	Background article
Dennison, D. G.	2010	Distal radius fractures and titanium volar plates: should we take the plates out?	Review article
Dennison, D. G.; Blanchard, C. L.; Elhassan, B.; Moran, S. L.; Shin, A. Y.	2018	Early Versus Late Motion Following Volar Plating of Distal Radius Fractures	Not relevant to PICOs
Deore, V. T.; Talwalker, S.; Murali, R.	2017	Wrist arthroscopy	Background article
Diaz-Garcia, R. J.; Oda, T.; Shauver, M. J.; Chung, K. C.	2011	A systematic review of outcomes and complications of treating unstable distal radius fractures in the elderly	Systematic review/meta-analysis
Dienst, M.; Wozasek, G. E.; Seligson, D.	1997	Dynamic external fixation for distal radius fractures	Case series
Dilek, B.; Ayhan, C.; Yagci, G.; Yakut, Y.	2018	Effectiveness of the graded motor imagery to improve hand function in patients with distal radius fracture: A randomized controlled trial	Not relevant to PICOs
Dittel, K. K.	1991	The treatment of distal radial flexion fractures	No comparison group
Doi, K.; Hattori, Y.; Otsuka, K.; Abe, Y.; Yamamoto, H.	1999	Intra-articular fractures of the distal aspect of the radius: arthroscopically assisted reduction compared with open reduction and internal fixation	Confounding within treatment groups
Dolatabadi, A. A.; Memary, E.; Shojaee, M.; Kamalifard, H.	2018	Dexmedetomidine-fentanyl versus midazolam-fentanyl in pain management of distal radius fractures reduction; a randomized clinical trial	Not relevant to PICOs
Drager, J.; Carli, A.; Matache, B. A.; Berry, G. K.; Reindl, R.; Harvey, E. J.	2014	Circumferential Casting of Distal Radius Fractures	Does not address question of interest
Drks,	2016	The need for preoperative closed reduction of unstable, dorsally displaced distal radius fractures in view of pain perception and postoperative results	No comparison group
Drks,	2017	Necessity for standardized radiograph following osteosynthesis for distal radius- and ankle fractures: a prospective randomized controlled trial	Not specific to DRF, also wrong PDF
Droll, K. P.; Perna, P.; Potter, J.; Harniman, E.; Schemitsch, E. H.; McKee, M. D.	2007	Outcomes following plate fixation of fractures of both bones of the forearm in adults	Not relevant to PICOs
Duprat, A.; Diaz, J. J. H.; Vernet, P.; Gouzou, S.; Facca, S.; Igeta, Y.; Liverneaux, P.	2018	Volar Locking Plate Fixation of Distal Radius Fractures: Splint versus Immediate Mobilization	Not relevant to PICOs
Dwyer, C. L.; Crosby, N. E.; Cooney, T.; Seeds, W.; Lubahn, J. D.	2017	Treating Unstable Distal Radius Fractures With a Nonspanning External Fixation Device: Comparison With Volar Locking Plates in Historical Control Group	Very low quality

Authors	Year	Article Title	Reason for Exclusion
Eastley, N.; Aujla, R.; Khan, Z.	2012	Radiographs late in the follow up of uncomplicated distal radius fractures: are they worth it? Clinical outcome and financial implications	Does not address question of interest - not comparing frequency within same period of time
Edwards, C. C., 2nd; Haraszi, C. J.; McGillivray, G. R.; Gutow, A. P.	2001	Intra-articular distal radius fractures: arthroscopic assessment of radiographically assisted reduction	No comparison group
Eglseder, W. A., Jr.; Elliott, M. J.	2002	Nonunions of the distal radius	Very low quality
Egol, K. A.; Karia, R.; Zingman, A.; Lee, S.; Paksima, N.	2014	Hand stiffness following distal radius fractures: who gets it and is it a functional problem?	Very low quality
Egol, K. A.; Paksima, N.; Puopolo, S.; Klugman, J.; Hiebert, R.; Koval, K. J.	2006	Treatment of external fixation pins about the wrist: a prospective, randomized trial	Not relevant to PICOs
Egol, K. A.; Walsh, M.; Romo-Cardoso, S.; Dorsky, S.; Paksima, N.	2010	Distal radial fractures in the elderly: operative compared with nonoperative treatment	Very low quality
Ekrol, I.; Duckworth, A. D.; Ralston, S. H.; Court-Brown, C. M.; McQueen, M. M.	2014	The influence of vitamin C on the outcome of distal radial fractures: a double-blind, randomized controlled trial	Not relevant to PICOs
Erhart, S.; Toth, S.; Kaiser, P.; Kastenberger, T.; Deml, C.; Arora, R.	2018	Comparison of volarly and dorsally displaced distal radius fracture treated by volar locking plate fixation	Not relevant to PICOs
Esmailian, M.; Haj Zargarbashi, E.; Masoumi, B.; Karami, M.	2013	Accuracy of Ultrasonography in Confirmation of Adequate Reduction of Distal Radius Fractures	Does not address question of interest
Esposito, J.; Schemitsch, E. H.; Saccone, M.; Sternheim, A.; Kuzyk, P. R.	2013	External fixation versus open reduction with plate fixation for distal radius fractures: a meta-analysis of randomised controlled trials	Systematic review/meta-analysis
Euctr, D. K.	2010	NSAIDs INFLUENCE ON HEAL OF COLLES FRACTURE - NSAID's study	Not relevant to PICOs
Evans, S.; David, M.; Quraishi, M. K.; Hanif, U. K.; Sadique, H.; Machani, B.	2014	The use of plain radiographs in the classification of distal radius fractures	Not relevant to PICOs
Fan, J.; Jiang, B.; Wang, B.; Chen, K.; Yuang, F.; Mei, J.; Yu, G. R.	2016	Analysis of soft-tissue complications of volar plate fixation for managing distal radius fractures and clinical effect while preserving pronator quadratus	Not relevant to PICOs
Fan, J.; Yuan, F.; Li, S. Z.; Tang, Q.; Xian, C. J.	2017	Is the preoperative closed reduction irreplaceable for distal radius fracture surgical treatment? -a retrospective clinical study	Not relevant to PICOs
Farner, S.; Malkani, A.; Lau, E.; Day, J.; Ochoa, J.; Ong, K.	2014	Outcomes and cost of care for patients with distal radius fractures	Does not address question of interest
Fathi, M.; Moezzi, M.; Abbasi, S.; Farsi, D.; Zare, M. A.; Hafezimoghadam, P.	2015	Ultrasound-guided hematoma block in distal radial fracture reduction: a randomised clinical trial	Not relevant to PICOs
Fellmann, J.; Kunz, C.; Sennwald, G.	1997	Clinical and radiological results 12 years after conservative treatment of distal radius fractures: A long term follow-up study	Not relevant to PICOs
Fernandez, D. L.; Geissler, W. B.	1991	Treatment of displaced articular fractures of the radius	Very low quality
Figl, M.; Weninger, P.; Liska, M.; Hofbauer, M.; Leixnering, M.	2009	Volar fixed-angle plate osteosynthesis of unstable distal radius fractures: 12 months results	Case series
Filipova, V.; Lonzaric, D.; Jesensek Papez, B.	2015	Efficacy of combined physical and occupational therapy in patients with conservatively treated distal radius fracture: randomized controlled trial	Not relevant to PICOs

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Flannery, O.; Naughton, M.; Walsh, A.; Awan, N.	2010	Comparative outcome of distal radial fractures treated by percutaneous k-wire fixation and internal fixation	<10 patients per group
Foster, D. E.; Kopta, J. A.	1986	Update on external fixators in the treatment of wrist fractures	Very low quality
Freeland, A. E.; Geissler, W. B.	2000	The arthroscopic management of intra-articular distal radius fractures	Review article
Friberg, S.; Lundstrom, B.	1976	Radiographic measurements on the radio-carpal joint in distal radial fractures	Does not address question of interest
Fu, Q.; Zhu, L.; Yang, P.; Chen, A.	2018	Volar Locking Plate versus External Fixation for Distal Radius Fractures: A Meta-analysis of Randomized Controlled Trials	Systematic review/meta-analysis
Fujihara, N.; Fujihara, Y.; Huetteman, H.; Tatebe, M.; Tanaka, H.; Hirata, H.	2018	The threat of longitudinal cracking after distal radius fracture treatment with volar locking plate	Very low quality
Fujii, K.; Henmi, T.; Kanematsu, Y.; Mishiro, T.; Sakai, T.; Terai, T.	2002	Fractures of the distal end of radius in elderly patients: a comparative study of anatomical and functional results	Very low quality
Funk, L.	1997	A prospective trial to compare three anaesthetic techniques used for the reduction of fractures of the distal radius	Not relevant to PICOs
Gadegone, W.; Salphale, Y. S.; Lokhande, V.	2012	Screw elastic intramedullary nail for the management of adult forearm fractures	Very low quality
Gajdos, R.; Bozik, M.; Stranak, P.	2015	Is an implant removal after dorsal plating of distal radius fracture always needed?	No comparison group
Galos, D. K.; Taormina, D. P.; Crespo, A.; Ding, D. Y.; Sapienza, A.; Jain, S.; Tejwani, N. C.	2016	Does Brachial Plexus Blockade Result in Improved Pain Scores After Distal Radius Fracture Fixation? A Randomized Trial	Not relevant to PICOs
Ganesh, D.; Service, B.; Zirgibel, B.; Koval, K.	2016	The Detection of Prominent Hardware in Volar Locked Plating of Distal Radius Fractures: Intraoperative Fluoroscopy Versus Computed Tomography	Does not address question of interest
Gangopadhyay, S.; Packer, G.	2003	A comparative study between longitudinal and "T" incisions for dorsal plating of the distal radius	Very low quality
Ganta, A.; Ding, D.; Fisher, N.; Lavery, J.; Jain, S.; Tejwani, N. C.	2018	Continuous Infraclavicular Brachial Block Versus Single-Shot Nerve Block for Distal Radius Surgery: A Prospective Randomized Control Trial	Not relevant to PICOs
Geller, L.; Bernstein, M.; Carli, A.; Berry, G.; Reindl, R.; Harvey, E.	2009	Efficacy of different fixation devices in maintaining an initial reduction for surgically managed distal radius fractures	Very low quality
Gereli, A.; Nalbantoglu, U.; Kocaoglu, B.; Turkmen, M.	2010	Comparison of palmar locking plate and K-wire augmented external fixation for intra-articular and comminuted distal radius fractures	Very low quality
Gibbs, J.; Maclean, A.; Ricketts, D.	2006	K-wiring distal radial fractures, an alternative technique	Review/technical article
Glueck, D. A.; Charoglu, C. P.; Lawton, J. N.	2009	Factors associated with infection following open distal radius fractures	Very low quality
Gogna, P.; Selhi, H. S.; Singla, R.; Devgan, A.; Magu, N. K.; Mahindra, P.; Yamin, M.	2013	Dorsally comminuted fractures of the distal end of the radius: osteosynthesis with volar fixed angle locking plates	Very low quality
Goldhahn, J.; Beaton, D.; Ladd, A.; Macdermid, J.; Hoang-Kim, A.; Distal Radius Working Group of the International Society for Fracture, Repair; International Osteoporosis, Foundation	2014	Recommendation for measuring clinical outcome in distal radius fractures: a core set of domains for standardized reporting in clinical practice and research	Systematic review/meta-analysis

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Goldwyn, E.; Pensy, R.; O'Toole, R. V.; Nascone, J. W.; Sciadini, M. F.; LeBrun, C.; Manson, T.; Hoolachan, J.; Castillo, R. C.; Eglseeder, W. A.	2012	Do traction radiographs of distal radial fractures influence fracture characterization and treatment?	Not relevant to PICOs
Gologan, R. E.; Koeck, M.; Suda, A. J.; Obertacke, U.	2019	> 10-year outcome of dislocated radial fractures with concomitant intracarpal lesions as proven by MRI and CT	Not relevant to PICOs
Gologan, R.; Ginter, V. M.; Haeffner, A.; Obertacke, U.; Schreiner, U.	2016	1-Year outcome of concomitant intracarpal lesions in patients with dislocated distal radial fractures: a systematic assessment of 78 distal radial fractures	Not relevant to PICOs
Goto, A.; Murase, T.; Oka, K.; Yoshikawa, H.	2011	Use of the volar fixed angle plate for comminuted distal radius fractures and augmentation with a hydroxyapatite bone graft substitute	Very low quality
Goudie, S.; Dixon, D.; McMillan, G.; Ring, D.; McQueen, M.	2018	Is Use of a Psychological Workbook Associated With Improved Disabilities of the Arm, Shoulder and Hand Scores in Patients With Distal Radius Fracture?	Not relevant to PICOs
Gouk, C. J. C.; Bindra, R. R.; Tarrant, D. J.; Thomas, M. J. E.	2018	Volar locking plate fixation versus external fixation of distal radius fractures: a meta-analysis	Systematic review/Meta-analysis
Goyal, T.; Sankineani, S. R.; Tripathy, S. K.	2013	Local distal radius bone graft versus iliac crest bone graft for scaphoid nonunion: a comparative study	Not specific to DRF
Gradl, G.; Jupiter, J. B.; Gierer, P.; Mittlmeier, T.	2005	Fractures of the distal radius treated with a nonbridging external fixation technique using multiplanar k-wires	Very low quality
Grewal, R.; MacDermid, J. C.	2007	The risk of adverse outcomes in extra-articular distal radius fractures is increased with malalignment in patients of all ages but mitigated in older patients	Does not address question of interest (results stratified by frequency groups?)
Grewal, R.; MacDermid, J. C.; King, G. J.; Faber, K. J.	2011	Open reduction internal fixation versus percutaneous pinning with external fixation of distal radius fractures: a prospective, randomized clinical trial	Confounding within treatment groups
Gruber, G.; Zacherl, M.; Giessauf, C.; Glehr, M.; Fuerst, F.; Liebmann, W.; Gruber, K.; Bernhardt, G. A.	2010	Quality of life after volar plate fixation of articular fractures of the distal part of the radius	No comparison group
Gschwentner, M.; Arora, R.; Wambacher, M.; Gabl, M.; Lutz, M.	2008	Distal forearm fracture in the adult: is ORIF of the radius and closed reduction of the ulna a treatment option in distal forearm fracture?	Not relevant to PICOs
Gunay, C.; Oken, O. F.; Yavuz, O. Y.; Gunay, S. H.; Atalar, H.	2015	Which modality is the best choice in distal radius fractures treated with two different Kirschner wire fixation and immobilization techniques?	Not relevant to PICOs
Gutierrez-Monclus, R.; Gutierrez-Espinoza, H.; Zavala-Gonzalez, J.; Olguin-Huerta, C.; Rubio-Oyarzun, D.; Araya-Quintanilla, F.	2018	Correlation Between Radiological Parameters and Functional Outcomes in Patients Older Than 60 Years of Age With Distal Radius Fracture	Not relevant to PICOs
Ha, A. S.; Lee, A. Y.; Hippe, D. S.; Chou, S. H.; Chew, F. S.	2015	Digital Tomosynthesis to Evaluate Fracture Healing: Prospective Comparison With Radiography and CT	Not relevant to PICOs
Haberle, S.; Sandmann, G. H.; Deiler, S.; Kraus, T. M.; Fensky, F.; Torsiglieri, T.; Rondak, I. C.; Biberthaler, P.; Stockle, U.; Siebenlist, S.	2015	Pronator quadratus repair after volar plating of distal radius fractures or not? Results of a prospective randomized trial	Not relevant to PICOs

Authors	Year	Article Title	Reason for Exclusion
Hakestad, K. A.; Torstveit, M. K.; Nordsletten, L.; Risberg, M. A.	2015	Effect of exercises with weight vests and a patient education programme for women with osteopenia and a healed wrist fracture: a randomized, controlled trial of the OsteoACTIVE programme	Not relevant to PICOs
Hamada, Y.; Gotani, H.; Hibino, N.; Tanaka, Y.; Satoh, R.; Sasaki, K.; Kanchanathepsak, T.	2017	Surgical Strategy and Techniques for Low-Profile Dorsal Plating in Treating Dorsally Displaced Unstable Distal Radius Fractures	No comparison tx grp.
Hammerle, D.; Osterhoff, G.; Allemann, F.; Werner, C. M. L.	2018	Comparison of intraoperative 2D vs. 3D imaging in open reduction and fixation of distal radius fractures	Does not address question of interest
Handoll, H. H.; Elliott, J.	2015	Rehabilitation for distal radial fractures in adults	Systematic review/Meta-analysis
Handoll, H. H.; Huntley, J. S.; Madhok, R.	2008	Different methods of external fixation for treating distal radial fractures in adults	Systematic review/Meta-analysis
Handoll, H. H.; Huntley, J. S.; Madhok, R.	2007	External fixation versus conservative treatment for distal radial fractures in adults	Systematic review/Meta-analysis
Handoll, H. H.; Madhok, R.	2003	From evidence to best practice in the management of fractures of the distal radius in adults: working towards a research agenda	Systematic review/meta-analysis
Handoll, H. H.; Madhok, R.	2003	Conservative interventions for treating distal radial fractures in adults	Systematic review/Meta-analysis
Handoll, H. H.; Madhok, R.	2003	Closed reduction methods for treating distal radial fractures in adults	Systematic review/Meta-analysis
Handoll, H. H.; Madhok, R.	2003	Surgical interventions for treating distal radial fractures in adults	Systematic review/Meta-analysis
Handoll, H. H.; Madhok, R.	2009	WITHDRAWN: Surgical interventions for treating distal radial fractures in adults	Systematic review/Meta-analysis
Handoll, H. H.; Vaghela, M. V.; Madhok, R.	2007	Percutaneous pinning for treating distal radial fractures in adults	Systematic review/Meta-analysis
Handoll, H. H.; Watts, A. C.	2008	Bone grafts and bone substitutes for treating distal radial fractures in adults	Systematic review/Meta-analysis
Hanel, D. P.; Kreder, H. J.; Agel, J.; Trumble, T. E.	2002	A randomized controlled trial of indirect reduction and percutaneous fixation versus open reduction and internal fixation for displaced intra-articular distal radius fractures	Tx groups not specific
Haren, K.; Wiberg, M.	2006	A prospective randomized controlled trial of Manual Lymph Drainage (MLD) for the reduction of hand oedema after distal radius fracture	Not relevant to PICOs
Hargreaves, D. G.; Drew, S. J.; Eckersley, R.	2004	Kirschner wire pin tract infection rates: a randomized controlled trial between percutaneous and buried wires	Not relevant to PICOs
Harley, B. J.; Scharfenberger, A.; Beaupre, L. A.; Jomha, N.; Weber, D. W.	2004	Augmented external fixation versus percutaneous pinning and casting for unstable fractures of the distal radius - A prospective randomized trial	Duplicate
Harris, I. A.; Naylor, J. M.; Lawson, A.; Buchbinder, R.; Ivers, R.; Balogh, Z.; Smith, P.; Mittal, R.; Xuan, W.; Howard, K.; Vafa, A.; Yates, P.; Rieger, B.; Smith, G.; Elkinson, I.; Kim, W.; Chehade, M.; Sungaran, J.; Latendresse, K.; Wong, J.; Viswanathan, S.; Richardson, M.; Shrestha, K.; Drobetz, H.; Tran, P.; Loveridge, J.; Page, R.; Hau, R.; Bingham, R.; Mulford, J.; Incoll, I.	2017	A combined randomised and observational study of surgery for fractures in the distal radius in the elderly (CROSSFIRE)-a study protocol	Study protocol

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Hattori, Y.; Doi, K.; Estrella, E. P.; Chen, G.	2007	Arthroscopically assisted reduction with volar plating or external fixation for displaced intra-articular fractures of the distal radius in the elderly patients	Retrospective case series
Hegeman, J. H.; Oskam, J.; Vierhout, P. A.; Ten Duis, H. J.	2005	External fixation for unstable intra-articular distal radial fractures in women older than 55 years. Acceptable functional end results in the majority of the patients despite significant secondary displacement	<20 patients
Henry, M.; Stutz, C.	2007	A prospective plan to minimise median nerve related complications associated with operatively treated distal radius fractures	Not relevant to PICOs
Hertel, R.; Ballmer, F.	1994	Complications of external fixation of the wrist	Background article
Hevonkorpi, T. P.; Launonen, A. P.; Raittio, L.; Luukkala, T.; Kukkonen, J.; Reito, A.; Sumrein, B. O.; Laitinen, M. K.; Mattila, V. M.; Nitep group	2018	Nordic Innovative Trial to Evaluate Osteoporotic Fractures (NITEP-group): non-operative treatment versus surgery with volar locking plate in the treatment of distal radius fracture in patients aged 65 and over - a study protocol for a prospective, randomized controlled trial	Study protocol
Hill, J. R.; Navo, P. D.; Bouz, G.; Azad, A.; Pannell, W.; Alluri, R. K.; Ghiassi, A.	2018	Immobilization following Distal Radius Fractures: A Randomized Clinical Trial	Not relevant to PICOs
Hinds, R. M.; Montero-Lopez, N.; Brock, K.; Adler, R.; Sapienza, A.; Capo, J. T.; Paksima, N.	2018	Assessment of Pronator Quadratus Repair Integrity Using Dynamic Ultrasonography Following Volar Plate Fixation for Distal Radius Fractures	Incorrect patient population (<10 patients/group)
Hoang-Kim, A.; Scott, J.; Micera, G.; Orsini, R.; Moroni, A.	2009	Functional assessment in patients with osteoporotic wrist fractures treated with external fixation: a review of randomized trials	Systematic review/meta-analysis
Hohendorff, B.; Knappwerth, C.; Franke, J.; Muller, L. P.; Ries, C.	2018	Pronator quadratus repair with a part of the brachioradialis muscle insertion in volar plate fixation of distal radius fractures: a prospective randomised trial	Not relevant to PICOs
Horne, G.	1991	A prospective randomized trial of external fixation and plaster cast immobilization in the treatment of distal radius fractures	Repeat article
Hove, L. M.; Krukhaug, Y.; Revheim, K.; Helland, P.; Finsen, V.	2010	Dynamic compared with static external fixation of unstable fractures of the distal part of the radius: a prospective, randomized multicenter study	Not relevant to PICOs
Hove, L. M.; Solheim, E.; Skjeie, R.; Sorensen, F. K.	1994	Prediction of secondary displacement in Colles' fracture	Not relevant to PICOs
Hsu, L. H.; Chiang, C. Y.; Yang, K. C.; Wu, C. C.	2013	Radiological assessments of injected calcium sulfate bone cements in the treatment of distal radial fracture	Does not address question of interest
Huang, Y. C.; Chen, C. Y.; Lin, K. C.; Yang, S. W.; Tarng, Y. W.; Chang, W. N.	2019	Comparison of Wide-Awake Local Anesthesia No Tourniquet With General Anesthesia With Tourniquet for Volar Plating of Distal Radius Fracture	Not relevant to PICOs
Huch, K.; Hunerbein, M.; Meeder, P. J.	1996	External fixation of intra-articular fracture of the distal radius in young and old adults	Not relevant to PICOs
Huffaker, S.; Earp, B. E.; Blazar, P. E.	2015	The value of post-operative radiographs in clinical management of AO type A distal radius fractures	Does not address question of interest
Hung, L. P.; Leung, Y. F.; Ip, W. Y.; Lee, Y. L.	2015	Is locking plate fixation a better option than casting for distal radius fracture in elderly people?	Very low quality

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Hutchinson, D. T.; Bachus, K. N.; Higgenbotham, T.	2000	External fixation of the distal radius: To predrill or not to predrill	Not relevant to PICOs
Ichihara, S.; Diaz, J. J.; Peterson, B.; Facca, S.; Bodin, F.; Liverneaux, P.	2015	Distal Radius Isoelastic Resurfacing Prosthesis: A Preliminary Report	Very low quality
Iitsuka, T.; Iwatsuki, K.; Ota, H.; Hirata, H.	2016	The Optimal Rehabilitation Period for Patients with Distal Radius Fractures According to the MCID in DASH Scores; A Preliminary Study	Not relevant to PICOs
Imai, R.; Osumi, M.; Morioka, S.	2016	Influence of illusory kinesthesia by vibratory tendon stimulation on acute pain after surgery for distal radius fractures: a quasi-randomized controlled study	Not relevant to PICOs
Irct138711211666N,	2009	The Effect of Ultra-Low Dose of Naloxone Added to Lidocaine-Fentanyl Mixture on Axillary Brachial Plexus Blockade	Not specific to DRF
Irct201110307751N,	2012	Comparison of midazolam/fentanyl and thiopental/ fentanyl for fracture and dislocation reduction of upper arm	Not relevant to PICOs
Irct2015081723655N,	2015	Investigating The Effect of	Not relevant to PICOs
Jafari, D.; Shariatzadeh, H.; Najd Mazhar, F.; Ghahremani, M. H.	2013	Ulnar variance in scaphoid nonunion	Not relevant to PICOs
Jakubietz, M. G.; Gruenert, J. G.; Jakubietz, R. G.	2011	The use of beta-tricalcium phosphate bone graft substitute in dorsally plated, comminuted distal radius fractures	Not relevant to PICOs
Jaremko, J. L.; Lambert, R. G.; Rowe, B. H.; Johnson, J. A.; Majumdar, S. R.	2007	Do radiographic indices of distal radius fracture reduction predict outcomes in older adults receiving conservative treatment?	Not relevant to PICOs
Javed, S.; Shahid, R.; Thimmiah, R.; El-deen, M.	2015	Volar locking plate osteosynthesis for distal radial fractures	Very low quality
Jenkins, N. H.	1989	The unstable Colles' fracture	Does not address question of interest
Jensen, J.; Rasmussen, B. S.; Duus, L. A.; Torfing, T.; Precht, H.; Tromborg, H.; Graumann, O.	2019	Distal radius fractures and radiographic assessment: a systematic review of measurement accuracy	Systematic review/meta-analysis
Jiang, J. J.; Phillips, C. S.; Levitz, S. P.; Benson, L. S.	2014	Risk factors for complications following open reduction internal fixation of distal radius fractures	Not relevant to PICOs
Johnson, S. P.; Chung, K. C.; Zhong, L.; Sears, E. D.; Waljee, J. F.	2016	Use of Postoperative Radiographs following Operative Fixation of Distal Radius Fractures	Does not address question of interest
Johnson, S. P.; Chung, K. C.; Zhong, L.; Shauver, M. J.; Engelsbe, M. J.; Brummett, C.; Waljee, J. F.	2016	Risk of Prolonged Opioid Use Among Opioid-Na ⁺ ve Patients Following Common Hand Surgery Procedures	Does not address question of interest
Jones, N. C.; Pugh, S. C.	1996	The addition of tenoxicam to prilocaine for intravenous regional anaesthesia	Not relevant to PICOs
Jongs, R. A.; Harvey, L. A.; Gwinn, T.; Lucas, B. R.	2012	Dynamic splints do not reduce contracture following distal radial fracture: a randomised controlled trial	Both groups receive home exercise program; no supervised therapy group
Jupiter, J. B.; Ring, D.; Weitzel, P. P.	2002	Surgical treatment of redisplaced fractures of the distal radius in patients older than 60 years	Case series

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Karantana, A.; Downing, N. D.; Forward, D. P.; Hatton, M.; Taylor, A. M.; Scammell, B. E.; Moran, C. G.; Davis, T. R.	2013	Surgical treatment of distal radial fractures with a volar locking plate versus conventional percutaneous methods: a randomized controlled trial	Repeat article
Karnezis, I. A.; Panagiotopoulos, E.; Tyllianakis, M.; Megas, P.; Lambiris, E.	2005	Correlation between radiological parameters and patient-rated wrist dysfunction following fractures of the distal radius	No comparison group
Kasapinova, K.; Kamiloski, V.	2009	Pain and disability during six months in patients with a distal radius fracture	Not relevant to PICOs
Kasapinova, K.; Kamiloski, V.	2015	Influence of associated lesions of the intrinsic ligaments on distal radius fractures outcome	Not relevant to PICOs
Kaukonen, J. P.; Karaharju, E. O.; Porras, M.; Luthje, P.; Jakobsson, A.	1988	Functional recovery after fractures of the distal forearm. Analysis of radiographic and other factors affecting the outcome	Case series
Kay, S.; McMahan, M.; Stiller, K.	2008	An advice and exercise program has some benefits over natural recovery after distal radius fracture: a randomised trial	Not relevant to PICOs
Keast-Butler, O.; Schemitsch, E. H.	2008	Biology versus mechanics in the treatment of distal radial fractures	Systematic review/meta-analysis
Kelly, A. J.; Warwick, D.; Crichlow, T. P.; Bannister, G. C.	1997	Is manipulation of moderately displaced Colles' fracture worthwhile? A prospective randomized trial	Not relevant to PICOs
Kendall, J. M.; Allen, P.; Younge, P.; Meek, S. M.; McCabe, S.	1997	Haematoma block or Bier's block for Colles' fracture reduction in the accident and emergency department - Which is best?	Not relevant to PICOs
Kendall, J. M.; Allen, P.; Younge, P.; Meek, S. M.; McCabe, S. E.	1997	Haematoma block or Bier's block for Colles' fracture reduction in the accident and emergency department--which is best?	Not relevant to PICOs
Kennedy, S. A.	2016	CORR Insights®: Does Brachial Plexus Blockade Result in Improved Pain Scores After Distal Radius Fracture Fixation? A Randomized Trial	Background article
Khan, M. S.; Noordin, S.; Hashmi, P. M.	2016	Intra-articular distal radius fractures: Postoperative roentgenographic and functional outcomes	Not relevant to PICOs
Kim, J. K.; Koh, Y. D.; Kook, S. H.	2011	Effect of calcium phosphate bone cement augmentation on volar plate fixation of unstable distal radial fractures in the elderly	Not relevant to PICOs
Kim, J. K.; Yi, J. W.; Jeon, S. H.	2013	The effect of acute distal radioulnar joint laxity on outcome after volar plate fixation of distal radius fractures	Not relevant to PICOs
Kleinlugtenbelt, Y. V.; Groen, S. R.; Ham, S. J.; Kloen, P.; Haverlag, R.; Simons, M. P.; Scholtes, V. A. B.; Bhandari, M.; Goslings, J. C.; Poolman, R. W.	2017	Classification systems for distal radius fractures	No comparison group
Knudsen, R.; Bahadirov, Z.; Damborg, F.	2014	High rate of complications following volar plating of distal radius fractures	Very low quality
Kodama, N.; Takemura, Y.; Ueba, H.; Imai, S.; Matsusue, Y.	2014	Acceptable parameters for alignment of distal radius fracture with conservative treatment in elderly patients	Not relevant to PICOs
Koehler, L. R.; Kusnezov, N. A.; Orr, J. D.; Pallis, M.; Dunn, J. C.	2019	Orthopaedic and Plastic Surgery Training Differences Manifested in the Analysis of Distal Radius Fracture Fixation	Not relevant to PICOs
Kopec, G.; Kwiatkowski, K.; Piekarczyk, P.; Chwedczuk, B.; Golos, J.	2018	Comparative Assessment of Outcomes of Surgical Treatment of Smith and Colles Distal Radius Fractures	Not relevant to PICOs

Authors	Year	Article Title	Reason for Exclusion
Kopylov, P.; Adalberth, K.; Jonsson, K.; Aspenberg, P.	2002	Norian SRS versus functional treatment in redisplaced distal radial fractures: a randomized study in 20 patients	<10 patients per group
Koshkin, A. B.; Sergeev, S. V.; Matveev, V. S.; Grishanin, O. B.	2008	Distal forearm fractures: the analytical approach for treatment	Very low quality
Koval, K. J.; Harrast, J. J.; Anglen, J. O.; Weinstein, J. N.	2008	Fractures of the distal part of the radius. The evolution of practice over time. Where's the evidence?	Very low quality
Kreder, H. J.; Hanel, D. P.; Agel, J.; McKee, M.; Schemitsch, E. H.; Trumble, T. E.; Stephen, D.	2005	Indirect reduction and percutaneous fixation versus open reduction and internal fixation for displaced intra-articular fractures of the distal radius: a randomised, controlled trial	Confounding within treatment groups
Krishnan, J.; Wigg, A. E.; Walker, R. W.; Slavotinek, J.	2003	Intra-articular fractures of the distal radius: a prospective randomised controlled trial comparing static bridging and dynamic non-bridging external fixation	Same fixation technique in both groups
Kristiansen, T. K.; Ryaby, J. P.; McCabe, J.; Frey, J. J.; Roe, L. R.	1997	Accelerated healing of distal radial fractures with the use of specific, low-intensity ultrasound. A multicenter, prospective, randomized, double-blind, placebo-controlled study	Not relevant to PICOs
Krukhaug, Y.; Ugland, S.; Lie, S. A.; Hove, L. M.	2009	External fixation of fractures of the distal radius: a randomized comparison of the Hoffman compact II non-bridging fixator and the Dynawrist fixator in 75 patients followed for 1 year	Not relevant to PICOs
Krukhaug, Y.; Ugland, S.; Lie, S. A.; Hove, L. M.	2009	External fixation of fractures of the distal radius: A randomized comparison of the Hoffman compact II non-bridging fixator the Dynawrist fixator in 75 patients followed for 1 year	Repeat article
Kulej, M.; Dragan, S.; Dragan, S. L.; Krawczyk, A.; Plochowski, J.; Orzechowski, W.; Stiasny, J.	2007	Efficacy of closed reduction and maintenance of surgical outcome in plaster cast immobilization in different types of distal radius fractures	Not relevant to PICOs
Kulshrestha, V.; Roy, T.; Audige, L.	2011	Dynamic vs static external fixation of distal radial fractures: A randomized study	Not relevant to PICOs
Kumar, D.; Breakwell, L.; Deshmukh, S. C.; Singh, B. K.	2001	Tangential views of the articular surface of the distal radius-aid to open reduction and internal fixation of fractures	Not relevant to PICOs
Kumar, S.; Penematsa, S. R.; Sadri, M.; Deshmukh, S. C.	2008	How many clinic visits does it take to treat distal radial fractures?	Not relevant to PICOs
Kumar, S.; Penematsa, S.; Sadri, M.; Deshmukh, S. C.	2008	Can radiological results be surrogate markers of functional outcome in distal radial extra-articular fractures?	Not relevant to PICOs
Kumbaraci, M.; Kucuk, L.; Karapinar, L.; Kurt, C.; Coskunol, E.	2014	Retrospective comparison of external fixation versus volar locking plate in the treatment of unstable intra-articular distal radius fractures	Very low quality
Kurup, H. V.; Mandalia, V.; Singh, B.; Shaju, K. A.; Mehta, R. L.; Beaumont, A. R.	2005	Variables affecting stability of distal radial fractures fixed with K wires: A radiological study	No comparison tx. group
Kvernmo, H. D.; Krukhaug, Y.	2013	Treatment of distal radius fractures	Systematic review/meta-analysis
Kwok, I. H.; Leung, F.; Yuen, G.	2011	Assessing results after distal radius fracture treatment: a comparison of objective and subjective tools	Very low quality
Landgren, M.; Abramo, A.; Geijer, M.; Kopylov, P.; TÅngil, M.	2017	Similar 1-year subjective outcome after a distal radius fracture during the 10-year-period 2003-2012: A longitudinal register-based study involving 3,666 patients	Very low quality

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Landgren, M.; Jerrhag, D.; TÅnggil, M.; Kopylov, P.; Geijer, M.; Abramo, A.	2011	External or internal fixation in the treatment of non-reducible distal radial fractures? A 5-year follow-up of a randomized study involving 50 patients	Not original study
Lang, H.; Neubauer, J.; Fritz, B.; Spira, E. M.; Strube, J.; Langer, M.; Kotter, E.	2016	A retrospective, semi-quantitative image quality analysis of cone beam computed tomography (CBCT) and MSCT in the diagnosis of distal radius fractures	Not relevant to PICOs
Lang, T.; Hager, H.; Funovits, V.; Barker, R.; Steinlechner, B.; Hoerauf, K.; Kober, A.	2007	Prehospital analgesia with acupuncture at the Baihui and Hegu points in patients with radial fractures: a prospective, randomized, double-blind trial	Not relevant to PICOs
Lans, J.; Alvarez, J.; Kachooei, A. R.; Ozkan, S.; Jupiter, J. B.	2019	Dorsal Lunate Facet Fracture Reduction Using a Bone Reduction Forceps	Not relevant to PICOs
Lee, C. H.; Lee, T. Y.; Her, J. S.; Liao, W. L.; Hsieh, C. L.	2015	Single-Blinded, Randomized Preliminary Study Evaluating the Effect of Transcutaneous Electrical Nerve Stimulation on Postoperative Pain in Patients with Colles' Fracture	Not relevant to PICOs
Lee, D. J.; Elfar, J. C.	2014	External fixation versus open reduction with locked volar plating for geriatric distal radius fractures	Review article
Lee, J. K.; Lee, S. H.; Sim, Y. S.; Kim, T. H.; Baek, E.; Han, S. H.	2018	Juxta-articular Plate Fixation in Distal Radius Intra-articular Fractures with Accompanying Volar Free Fragments beyond the Watershed Line	No comparison group
Lee, S. K.; Kim, K. J.; Cha, Y. H.; Choy, W. S.	2016	Conservative Treatment Is Sufficient for Acute Distal Radioulnar Joint Instability With Distal Radius Fracture	Not relevant to PICOs
Lenoble, E.; Dumontier, C.; Goutallier, D.; Apoil, A.	1995	Fracture of the distal radius. A prospective comparison between trans-styloid and Kapandji fixations	Not relevant to PICOs
Leone, J.; Bhandari, M.; Adili, A.; McKenzie, S.; Moro, J. K.; Dunlop, R. B.	2004	Predictors of early and late instability following conservative treatment of extra-articular distal radius fractures	Does not address question of interest
Leung, F.; Ozkan, M.; Chow, S. P.	2000	Conservative treatment of intra-articular fractures of the distal radius--factors affecting functional outcome	Not relevant to PICOs
Leung, F.; Tu, Y. K.; Chew, W. Y.; Chow, S. P.	2008	Comparison of external and percutaneous pin fixation with plate fixation for intra-articular distal radial fractures. A randomized study	Tx groups not specific
Li, Z.; Zhang, Z.; Yu, S.; Bai, Y.; Lin, H.; Zeng, J.; Ye, X.; Xu, D.	2015	Treatment of the distal fracture in radioulna based on the volar wrist dual channel approach and postoperative X-ray diagnosis	Not relevant to PICOs
Liao, Q.; Skipper, N. C.; Brown, M. J.; Jenkins, P. J.	2018	Percutaneous pinning versus volar locking plate fixation for dorsally displaced distal radius fractures- reoperation rates over an eight year period	Very low quality
Lichtman, D. M.; Bindra, R. R.; Boyer, M. I.; Putnam, M. D.; Ring, D.; Slutsky, D. J.; Taras, J. S.; Watters, W. C., 3rd; Goldberg, M. J.; Keith, M.; Turkelson, C. M.; Wies, J. L.; Haralson, R. H., 3rd; Boyer, K. M.; Hitchcock, K.; Raymond, L.	2010	Treatment of distal radius fractures	Systematic review/meta-analysis
Liu, J.; Wu, Z.; Li, S.; Li, Z.; Wang, J.; Yang, C.; Yu, L.; Chen, D.	2014	Should distal radioulnar joint be fixed following volar plate fixation of distal radius fracture with unstable distal radioulnar joint?	Not relevant to PICOs

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Loisel, F.; Kielwasser, H.; Faivre, G.; Rondot, T.; Rochet, S.; Adam, A.; Sergent, P.; Leclerc, G.; Obert, L.; Lepage, D.	2018	Treatment of distal radius fractures with locking plates: an update	Systematic review/meta-analysis
London, N. J.; Osman, F. A.; Ramagopal, K.; Journeaux, S. F.	1996	Hyaluronidase (Hyalase): a useful addition in haematoma block?	Not relevant to PICOs
Low, C. K.; Liao, K. H.; Chew, W. Y.	2001	Results of distal radial fractures treated by intra-focal pin fixation	Very low quality
Low, O. W.; Cheah, A. E.	2016	Concurrent Minimally Invasive Carpal Tunnel Release Techniques in Distal Radius Open Reduction Internal Fixation	Does not address question of interest
Lozano-Calderon, S. A.; Doornberg, J.; Ring, D.	2006	Fractures of the dorsal articular margin of the distal part of the radius with dorsal radiocarpal subluxation	Very low quality
Lozano-Calderon, S. A.; Souer, S.; Mudgal, C.; Jupiter, J. B.; Ring, D.	2008	Wrist mobilization following volar plate fixation of fractures of the distal part of the radius	Not relevant to PICOs
Lubbers, L. M.; Lawyer Jr, R. B.; Coleman, C. R.	1984	Principles in the application of the Hoffmann® apparatus for complex injuries of the upper extremity	Incorrect patient population
Ludvigsen, T. C.; Johansen, S.; Svenningsen, S.; SÅ;termo, R.	1997	External fixation versus percutaneous pinning for unstable Colles' fracture	Duplicate
Lutsky, K. F.; Beredjiklian, P. K.; Hioe, S.; Bilello, J.; Kim, N.; Matzon, J. L.	2015	Incidence of Hardware Removal Following Volar Plate Fixation of Distal Radius Fracture	Not relevant to PICOs
Lutsky, K.; Boyer, M. I.; Steffen, J. A.; Goldfarb, C. A.	2008	Arthroscopic assessment of intra-articular distal radius fractures after open reduction and internal fixation from a volar approach	No comparison group
Lutsky, K.; Hoffler, C. E.; Kim, N.; Matzon, J. L.	2015	Routine use of locking shaft screws is not necessary in volar plate fixation of distal radius fractures	Very low quality
Lyngcoln, A.; Taylor, N.; Pizzari, T.; Baskus, K.	2005	The relationship between adherence to hand therapy and short-term outcome after distal radius fracture	<20 patients
Ma, C.; Deng, Q.; Pu, H.; Cheng, X.; Kan, Y.; Yang, J.; Yusufu, A.; Cao, L.	2016	External fixation is more suitable for intra-articular fractures of the distal radius in elderly patients	Confounding amongst treatment groups
Ma, T.; Zheng, X.; He, X. B.; Guo, K. J.	2017	The role of brachioradialis release during AO type C distal radius fracture fixation	Not relevant to PICOs
MacDermid, J. C.; Richards, R. S.; Roth, J. H.	2001	Distal radius fracture: a prospective outcome study of 275 patients	Not relevant to PICOs
Madsen, M. L.; Waever, D.; Borris, L. C.; Nagel, L. L.; Henriksen, M.; Thorninger, R.; Rolwing, J. D.	2018	Volar plating of distal radius fractures does not restore the anatomy	Very low quality
Magnus, C. R.; Arnold, C. M.; Johnston, G.; Dal-Bello Haas, V.; Basran, J.; Krentz, J. R.; Farthing, J. P.	2013	Cross-education for improving strength and mobility after distal radius fractures: a randomized controlled trial	Not relevant to PICOs
Mahapatra, S.; Rengarajan, N.	2017	Use of recycled external fixators in management of compound injuries	<10 patients per group
Maire, N.; Lebailly, F.; Zemirline, A.; Hariri, A.; Facca, S.; Liverneaux, P.	2013	Prospective continuous study comparing intrafocal cross-pinning HK2® with a locking plate in distal radius fracture fixation	Repeat article
Marcheix, P. S.; Delclaux, S.; Ehlinger, M.; Scheibling, B.; Dalmay, F.; Hardy, J.; Lebaron, M.; Bonneville, P.	2016	Pre- and postoperative complications of adult forearm fractures treated with plate fixation	Very low quality

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Margaliot, Z.; Haase, S. C.; Kotsis, S. V.; Kim, H. M.; Chung, K. C.	2005	A meta-analysis of outcomes of external fixation versus plate osteosynthesis for unstable distal radius fractures	Systematic review/meta-analysis
Martinez-Mendez, D.; Lizaur-Utrilla, A.; de Juan-Herrero, J.	2018	Prospective study of comminuted articular distal radius fractures stabilized by volar plating in the elderly	No comparison group
McQueen, M. M.	1998	Redisplaced unstable fractures of the distal radius. A randomised, prospective study of bridging versus non-bridging external fixation	Not relevant to PICOs
McQueen, M. M.	1998	Redisplaced unstable fractures of the distal radius	Not relevant to PICOs
McQueen, M. M.; Hajducka, C.; Court-Brown, C. M.	1996	Redisplaced unstable fractures of the distal radius: a prospective randomised comparison of four methods of treatment	Not best available evidence
McQueen, M. M.; Simpson, D.; Court-Brown, C. M.	1999	Use of the Hoffman 2 compact external fixator in the treatment of redisplaced unstable distal radial fractures	No comparison group
Medlock, G.; Smith, M.; Johnstone, A. J.	2018	Combined Volar and Dorsal Approach for Fixation of Comminuted Intra-Articular Distal Radial Fractures	No comparison group
Mehmood, A.; Ishaq, M.; Muhammad, E.	2018	A randomized study of dynamic vs static external fixation of distal radial fractures	Not relevant to PICOs
Mehrzad, R.; Kim, D. C.	2016	Complication Rate Comparing Variable Angle Distal Locking Plate to Fixed Angle Plate Fixation of Distal Radius Fractures	Retrospective case series
Mellstrand Navarro, C.; Brolund, A.; Ekholm, C.; Heintz, E.; Hoxha Ekstrom, E.; Josefsson, P. O.; Leander, L.; Nordstrom, P.; Ziden, L.; Stenstrom, K.	2019	Treatment of radius or ulna fractures in the elderly: A systematic review covering effectiveness, safety, economic aspects and current practice	Systematic review/meta-analysis
Meuli, H. C.	1972	Reconstructive surgery of the wrist joint	Background article
Mikic Dj, Z.	1975	Galeazzi fracture dislocations	Very low quality
Mikic, Z. D.	1995	Treatment of acute injuries of the triangular fibrocartilage complex associated with distal radioulnar joint instability	Very low quality
Minniti, D.; Bellinvia, C.; Tripepi, G.	2007	The elbow block in the outpatient treatment of distal fractures of the radius	No comparison group
Mirhamidi, S. M.; Bayat, F. M.	2013	A prospective comparison between Kapandji and percutaneous extra-focal fixation in extra articular distal radius fractures	Not relevant to PICOs
Mirhamidi, S. M.; Bayat, F. M.	2013	A prospective comparison between Kapandji and percutaneous extra-focal fixation in extra articular distal radius fractures	Not relevant to PICOs
Mirza, A.; Jupiter, J. B.; Reinhart, M. K.; Meyer, P.	2009	Fractures of the distal radius treated with cross-pin fixation and a nonbridging external fixator, the CPX system: a preliminary report	Very low quality
Missakian, M. L.; Cooney, W. P.; Amadio, P. C.; Glidewell, H. L.	1992	Open reduction and internal fixation for distal radius fractures	Very low quality
Modi, C. S.; Ho, K.; Smith, C. D.; Boer, R.; Turner, S. M.	2010	Dynamic and static external fixation for distal radius fractures--a systematic review	Systematic review/meta-analysis
Mohan, K.; Gupta, A. K.; Sharma, J.; Singh, A. K.; Jain, A. K.	1988	Internal fixation in 50 cases of Galeazzi fracture	Very low quality
Moore, T. M.; Klein, J. P.; Patzakis, M. J.; Harvey, J. P., Jr.	1985	Results of compression-plating of closed Galeazzi fractures	Very low quality

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Moroni, A.; Faldini, C.; Marchetti, S.; Manca, M.; Consoli, V.; Giannini, S.	2001	Improvement of the bone-pin interface strength in osteoporotic bone with use of hydroxyapatite-coated tapered external-fixation pins. A prospective, randomized clinical study of wrist fractures	Not relevant to PICOs
Mostafa, M. F.	2013	Treatment of distal radial fractures with antegrade intra-medullary Kirschner wires	Not relevant to PICOs
Mrkonjic, A.; Lindau, T.; Geijer, M.; Tagil, M.	2015	Arthroscopically diagnosed scapholunate ligament injuries associated with distal radial fractures: a 13- to 15-year follow-up	Not relevant to PICOs
Mulders, M. A. M.; Detering, R.; Rikli, D. A.; Rosenwasser, M. P.; Goslings, J. C.; Schep, N. W. L.	2018	Association Between Radiological and Patient-Reported Outcome in Adults With a Displaced Distal Radius Fracture: A Systematic Review and Meta-Analysis	Systematic review/meta-analysis
Mulders, M. A. M.; Fuhri Snethlage, L. J.; de Muinck Keizer, R. O.; Goslings, J. C.; Schep, N. W. L.	2018	Functional outcomes of distal radius fractures with and without ulnar styloid fractures: a meta-analysis	Systematic review/Meta-analysis
Mulders, M. A. M.; Selles, C. A.; Colaris, J. W.; Peters, R. W.; van Heijl, M.; Cleffken, B. I.; Schep, N. W. L.	2018	Operative Treatment of Intra-Articular Distal Radius Fractures With versus Without Arthroscopy: study protocol for a randomised controlled trial	Study protocol
Mulders, M. A. M.; van Eerten, P. V.; Goslings, J. C.; Schep, N. W. L.	2017	Non-operative treatment of displaced distal radius fractures leads to acceptable functional outcomes, however at the expense of 40% subsequent surgeries	Not relevant to PICOs
Mulders, M. A. M.; Walenkamp, M. M. J.; Bos, Fjme; Schep, N. W. L.; Goslings, J. C.	2017	Repair of the pronator quadratus after volar plate fixation in distal radius fractures: a systematic review	Systematic review/Meta-analysis
Mulders, M. A. M.; Walenkamp, M. M. J.; Goslings, J. C.; Schep, N. W. L.	2016	Internal plate fixation versus plaster in displaced complete articular distal radius fractures, a randomised controlled trial	Study protocol
Murakami, K.; Abe, Y.; Takahashi, K.	2007	Surgical treatment of unstable distal radius fractures with volar locking plates	<10 patients per group
Nagy, L.; Buchler, U.	1997	Long-term results of radioscapulohumeral fusion following fractures of the distal radius	Very low quality
Namazi, H.; Mehbudi, A.	2016	Investigating the effect of intra-articular PRP injection on pain and function improvement in patients with distal radius fracture	Treatment not relevant to PICO
Nandyala, S. V.; Giladi, A. M.; Parker, A. M.; Rozental, T. D.	2018	Comparison of Direct Perioperative Costs in Treatment of Unstable Distal Radial Fractures: Open Reduction and Internal Fixation Versus Closed Reduction and Percutaneous Pinning	Not relevant to PICOs
Naran, S.; Zaulan, Y.; Shakir, S.; Gilula, L. A.; Werner, F. W.; Wollstein, R.	2014	Radiographic assessment of ligamentous injuries in distal radius fractures after open reduction and internal fixation	Not relevant to PICOs
Nashibi, M.; Mottaghi, K.; Faraji, M.; Delavari, A.; Taghipour, H.; Amiri, M.	2017	Comparison of analgesic and sedative effects of Ketamine-Propofol (Ketofol) and Fentanyl-Midazolam (Fentazolam) combinations in outpatient orthopedic procedures	Not relevant to PICOs
Nasser, J. S.; Huetteman, H. E.; Shauver, M. J.; Chung, K. C.	2018	Older Patient Preferences for Internal Fixation after a Distal Radius Fracture: A Qualitative Study from the Wrist and Radius Injury Surgical Trial	Not relevant to PICOs
Navarro, C. M.; Pettersson, H. J.; Enocson, A.	2015	Complications after distal radius fracture surgery: results from a Swedish nationwide registry study	Very low quality

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Nct,	2015	BFR DISTRAD: blood Flow Restricted Training During Rehabilitation Following Distal Radius Fracture Repair	<10 patients per group
Nct,	2014	Short-Arm Casting Effective in Type A2 Fractures in the Distal Radius	Not relevant to PICOs
Nct,	2015	Regional or General Anesthesia for Distal Radius Fracture Surgery in a Day Surgery Setting	Not relevant to PICOs
Nct,	2017	Dynamic External Fixation in Treatment Distal Radius Fractures - Elderly Patients	Not relevant to PICOs
Nct,	2015	Repair vs Non-repair of the Pronator Quadratus Muscle in Distal Radius Fractures. RCT	Same fixation technique in both groups (volar locking plate)
Neidenbach, P.; Audige, L.; Wilhelmi-Mock, M.; Hanson, B.; De Boer, P.	2010	The efficacy of closed reduction in displaced distal radius fractures	Not relevant to PICOs
Nemeth, N.; Bindra, R. R.	2014	Fixation of distal ulna fractures associated with distal radius fractures using intrafocal pin plate	Very low quality
Neral, M.; Solari, M.; Purnell, C.; Wollstein, R.	2013	The use of bone cement in difficult distal radius fractures	Very low quality
Nesbitt, K. S.; Failla, J. M.; Les, C.	2004	Assessment of instability factors in adult distal radius fractures	Not relevant to PICOs
Nesioonpour, S.; Akhondzadeh, R.; Mokmeli, S.; Moosavi, S.; Mackie, M.; Naderan, M.	2014	Does low-level laser therapy enhance the efficacy of intravenous regional anesthesia?	Not relevant to PICOs
Nienstedt, F.	1999	The operative treatment of intraarticular Smith fractures	Very low quality
Noordeen, M. H.; Lavy, C. B.; Woodward, R. T.	1992	Remanipulation or external fixation after slipped Colles' fractures? An anatomical study	Very low quality
Odumala, O.; Ayekoloye, C.; Packer, G.	2001	Prophylactic carpal tunnel decompression during buttress plating of the distal radius--is it justified?	Not relevant to PICOs
Oehme, F.; Link, B. C.; Frima, H.; Schepers, T.; Rhemrev, S. J.; Babst, R.; Beeres, F. J. P.	2018	Is there a need for standardized postoperative radiographs after operative treatment of wrist or ankle fractures?	Retrospective case series
Oehme, F.; Ruhle, A.; Muhlhauser, J.; Fourie, L.; Link, B. C.; Babst, R.; Beeres, F. J.	2017	Are Routine Radiographs Needed the Day After Open Reduction and Internal Fixation Surgery for Distal Radius and Ankle Fractures: Study Protocol for a Prospective, Open Label, Randomized Controlled Trial	Study protocol
O'Flanagan, S. J.; Ip, F. K.; Roberts, C. J.; Chow, S. P.	1995	Carpal malalignment following intra-articular fractures of the distal radius in a working population	Case series
Ogunleye, A. A.; Mullner, D. F.; Skochdopole, A.; Armstrong, M.; Herrera, F. A.	2019	Remote Injuries and Outcomes After Distal Radius Fracture Management	Very low quality
O'Neil, J. T.; Wang, M. L.; Kim, N.; Maltenfort, M.; Ilyas, A. M.	2017	Prospective Evaluation of Opioid Consumption After Distal Radius Fracture Repair Surgery	Not relevant to PICOs
Ono, H.; Furuta, K.; Fujitani, R.; Katayama, T.; Akahane, M.	2010	Distal radius fracture arthroscopic intraarticular displacement measurement after open reduction and internal fixation from a volar approach	Not relevant to PICOs
Orbay, J. L.	2000	The treatment of unstable distal radius fractures with volar fixation	No comparison group
Orbay, J. L.; Rubio, F.; Vernon, L. L.	2016	Prevent Collapse and Salvage Failures of the Volar Rim of the Distal Radius	Very low quality
Orbay, J. L.; Touhami, A.; Orbay, C.	2005	Fixed angle fixation of distal radius fractures through a minimally invasive approach	Background article

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Osada, D.; Kamei, S.; Masuzaki, K.; Takai, M.; Kameda, M.; Tamai, K.	2008	Prospective study of distal radius fractures treated with a volar locking plate system	No comparison grp.
Osti, M.; Mittler, C.; Zinnecker, R.; Westreicher, C.; Allhoff, C.; Benedetto, K. P.	2012	Locking versus nonlocking palmar plate fixation of distal radius fractures	Very low quality
Othman, A. Y.	2009	Fixation of dorsally displaced distal radius fractures with volar plate	No comparison grp.
Ozkan, S.; Fischerauer, S. F.; Kootstra, T. J. M.; Claessen, Fmap; Ring, D.	2018	Ulnar Neck Fractures Associated with Distal Radius Fractures	Not relevant to PICOs
Pace, A.; Cresswell, T.	2010	Use of articular wrist views to assess intra-articular screw penetration in surgical fixation of distal radius fractures	No comparison group
Paksima, N.; Khurana, S.; Soojian, M.; Patel, V.; Egol, K.	2017	Fracture of the Distal Ulna Metaphysis in the Setting of Distal Radius Fractures	<10 patients per group
Paksima, N.; Panchal, A.; Posner, M. A.; Green, S. M.; Mehiman, C. T.; Hiebert, R.	2004	A meta-analysis of the literature on distal radius fractures: review of 615 articles	Systematic review/meta-analysis
Panthi, S.; Khatri, K.; Kharel, K.; Byanjankar, S.; Sharma, J. R.; Shrestha, R.; Vaishya, R.; Agarwal, A. K.; Vijay, V.	2017	Radiological and Functional Outcome of Displaced Colles' Fracture Managed with Closed Reduction and Percutaneous Pinning: A Prospective Study	No comparison group
Pasila, M.; Sundholm, A.	1980	Mobilization of stiff hands after 104 Colles' fractures: a comparison between the value of the Movelat and its base cream	Not relevant to PICOs
Passeri, M.; Biondi, M.; Costi, D.; Bufalino, L.; Castiglione, G. N.; Di Peppe, C.; Abate, G.	1992	Effect of ipriflavone on bone mass in elderly osteoporotic women	Not relevant to PICOs
Peng, F.; Liu, Y. X.; Wan, Z. Y.	2018	Percutaneous pinning versus volar locking plate internal fixation for unstable distal radius fractures: a meta-analysis	Systematic review/Meta-analysis
Pennig, D.; Gausepohl, T.; Mader, K.	2000	Corrective osteotomies in malunited distal radius fractures: external fixation as one stage and hemicallotasis procedures	<10 patients per group
Pensy, R. A.; Newell, M. Z.; Eglseeder, W. A.	2009	AO types C3.1 and C3.2 distal radius fractures: functional outcomes	<10 patients per group
Perlus, R.; Doyon, J.; Henry, P.	2019	The use of dorsal distraction plating for severely comminuted distal radius fractures: A review and comparison to volar plate fixation	Systematic review/meta-analysis
Perugia, D.; Guzzini, M.; Mazza, D.; Iorio, C.; Civitenga, C.; Ferretti, A.	2017	Comparison between Carbon-PEEK volar locking plates and titanium volar locking plates in the treatment of distal radius fractures	Not relevant to PICOs
Pidgeon, T. S.; Casey, P.; Baumgartner, R. E.; Ferlauto, H.; Ruch, D. S.	2019	Complications of Volar Locked Plating of Distal Radius Fractures: A Prospective Investigation of Modern Techniques	No comparison group
Pieske, O.; Geleng, P.; Zaspel, J.; Piltz, S.	2008	Titanium alloy pins versus stainless steel pins in external fixation at the wrist: a randomized prospective study	Not relevant to PICOs
Pieske, O.; Kaltenhauser, F.; Pichlmaier, L.; Schramm, N.; Trentzsch, H.; Löffler, T.; Greiner, A.; Piltz, S.	2010	Clinical benefit of hydroxyapatite-coated pins compared with stainless steel pins in external fixation at the wrist: a randomised prospective study	Not relevant to PICOs
Piuzzi, N. S.; Zaidenberg, E. E.; Duarte, M. P.; Boretto, J. G.; Donndorff, A.; Gallucci, G.; De Carli, P.	2017	Volar Plate Fixation in Patients Older Than 70 Years with AO Type C Distal Radial Fractures: Clinical and Radiologic Outcomes	Retrospective case series
Plate, J. F.; Mannava, S.; Barnwell, J. C.; Smith, B. P.; Wiesler, E. R.; Koman, L. A. A.	2012	Randomized Comparison of Volar Plates and Intramedullary Nails for Distal Radius Fractures	Repeat article

Authors	Year	Article Title	Reason for Exclusion
Porter, M.; Stockley, I.	1987	Fractures of the distal radius. Intermediate and end results in relation to radiologic parameters	Not relevant to PICOs
Pradhan, R. L.; Lakhey, S.; Pandey, B. K.; Manandhar, R. R.; Rijal, K. P.; Sharma, S.	2009	External and internal fixation for comminuted intra-articular fractures of distal radius	Very low quality
Primiano, G. A.	1986	Functional cast immobilization of thumb metacarpophalangeal joint injuries	Not relevant to PICOs
Prommersberger, K. J.; Fernandez, D. L.; Ring, D.; Jupiter, J. B.; Lanz, U. B.	2002	Open reduction and internal fixation of un-united fractures of the distal radius: does the size of the distal fragment affect the result?	Not relevant to PICOs
Puchalski, P.; Mazur, A.; Zyluk, A.	2017	Percutaneous fixation of distal radial fractures with and without plaster splint immobilization	Poster presentation
Putnam, M. D.; Fischer, M. D.	1997	Treatment of unstable distal radius fractures: methods and comparison of external distraction and ORIF versus external distraction-ORIF neutralization	Very low quality
Pyrgos, N. M.; Argyropoulos, E. I.; Pyrgos, V. N.	1976	The use of intravenous regional anaesthesia for the reduction of Colles' fractures	Not relevant to PICOs
Quadlbauer, S.; Pezzei, C.; Jurkowitsch, J.; Kolmayr, B.; Keuchel, T.; Simon, D.; Hausner, T.; Leixnering, M.	2017	Early Rehabilitation of Distal Radius Fractures Stabilized by Volar Locking Plate: A Prospective Randomized Pilot Study	Not relevant to PICOs
Radwan, M.	2009	Displaced distal radius fractures presented late: a randomized, prospective comparative study of two methods of treatment	Tx groups not specific
Rahamimov, N.; Levy, R.; Levanon, Y.; Engel, J.	1997	The effect of malunion of distal radial fractures on hand function	Not relevant to PICOs
Rajan, G. P.; Fornaro, J.; Trentz, O.; Zellweger, R.	2006	Cancellous allograft versus autologous bone grafting for repair of comminuted distal radius fractures: a prospective, randomized trial	Not relevant to PICOs
Ranjeet, N.; Estrella, E. P.	2012	Distal radius fractures: does a radiologically acceptable reduction really change the result?	Not relevant to PICOs
Raudasoja, L.; Vastamaki, H.; Raatikainen, T.	2018	The importance of radiological results in distal radius fracture operations: Functional outcome after long-term (6.5 years) follow-up	No comparison group
Rein, S.; Schikore, H.; Schneiders, W.; Amlang, M.; Zwipp, H.	2007	Results of dorsal or volar plate fixation of AO type C3 distal radius fractures: a retrospective study	Very low quality
Richards, R. S.; Bennett, J. D.; Roth, J. H.; Milne, K., Jr.	1997	Arthroscopic diagnosis of intra-articular soft tissue injuries associated with distal radial fractures	Not relevant to PICOs
Ridley, T. J.; Freking, W.; Erickson, L. O.; Ward, C. M.	2017	Incidence of Treatment for Infection of Buried Versus Exposed Kirschner Wires in Phalangeal, Metacarpal, and Distal Radial Fractures	Not specific to DRF
Riggs Jr, S. A.; Cooney, Iii W. P.	1983	External fixation of complex hand and wrist fractures	No comparison group
Ring, D.; Prommersberger, K.; Jupiter, J. B.	2005	Combined dorsal and volar plate fixation of complex fractures of the distal part of the radius	Background article
Rizzo, M.; Katt, B. A.; Carothers, J. T.	2008	Comparison of locked volar plating versus pinning and external fixation in the treatment of unstable intraarticular distal radius fractures	Very low quality
Rosenthal, A. H.; Chung, K. C.	2002	Intrafocal pinning of distal radius fractures: a simplified approach	No comparison group

Authors	Year	Article Title	Reason for Exclusion
Rossillon, D.; Boute, B.; Hubert, M.; Evrard, H.	1987	Study on the external fixator in the treatment of the fractures of the inferior end of the two bones of the adult's forearm. Report of fifty-five cases	No comparison group
Rozental, T. D.; Beredjiklian, P. K.; Bozentka, D. J.	2003	Functional outcome and complications following two types of dorsal plating for unstable fractures of the distal part of the radius	<10 patients per grp.
Ruch, D. S.; Ginn, T. A.	2003	Open reduction and internal fixation of the distal radius	Review article
Ruch, D. S.; Lumsden, B. C.; Papadonikolakis, A.	2005	Distal radius fractures: a comparison of tension band wiring versus ulnar outrigger external fixation for the management of distal radioulnar instability	Very low quality
Ruch, D. S.; Papadonikolakis, A.	2006	Volar versus dorsal plating in the management of intra-articular distal radius fractures	Very low quality
Rundgren, J.; Enocson, A.; Mellstrand Navarro, C.; Bergstrom, G.	2018	Responsiveness of EQ-5D in Patients With a Distal Radius Fracture	Not relevant to PICOs
Saddiki, R.; Ohl, X.; Hemery, X.; Vitry, F.; Dehoux, E.; Harisboure, A.	2012	Dorsally displaced distal radius fractures: comparative study of Py's and Kapandji's techniques	Not relevant to PICOs
Saka, G.; Saglam, N.; Kurtulmus, T.; Avci, C. C.; Akpinar, F.; Kovaci, H.; Celik, A.	2014	New interlocking intramedullary radius and ulna nails for treating forearm diaphyseal fractures in adults: a retrospective study	Not specific to DRF
Sanchez-Sotelo, J.; Munuera, L.; Madero, R.	2000	Treatment of fractures of the distal radius with a remodellable bone cement: a prospective, randomised study using Norian SRS	Duplicate
Sandelin, H.; Waris, E.; Hirvensalo, E.; Vasenius, J.; Huhtala, H.; Raatikainen, T.; Helkamaa, T.	2018	Patient injury claims involving fractures of the distal radius	Not relevant to PICOs
Sando, I. C.; Malay, S.; Chung, K. C.	2013	Analysis of publication bias in the literature for distal radius fracture	Systematic review/meta-analysis
Satake, H.; Hanaka, N.; Honma, R.; Watanabe, T.; Inoue, S.; Kanauchi, Y.; Kato, Y.; Nakajima, T.; Sato, D.; Eto, J.; Maruyama, M.; Naganuma, Y.; Sasaki, J.; Toyono, S.; Harada, M.; Ishigaki, D.; Takahara, M.; Takagi, M.	2016	Complications of Distal Radius Fractures Treated by Volar Locking Plate Fixation	Case series
Savage, T.; Kelly, B.	2013	Interpretation of radiographs performed for investigation of upper limb injury	Background article
Sawada, K.; Morishige, K.; Nishio, Y.; Hayakawa, J.; Mabuchi, S.; Isobe, A.; Ogata, S.; Sakata, M.; Ohmichi, M.; Kimura, T.	2009	Peripheral quantitative computed tomography is useful to monitor response to alendronate therapy in postmenopausal women	Not relevant to PICOs
Schadel-Hopfner, M.; Windolf, J.; Antes, G.; Sauerland, S.; Diener, M. K.	2008	Evidence-based hand surgery: the role of Cochrane reviews	Systematic review/meta-analysis
Schemitsch, E. H.; Jones, D.; Henley, M. B.; Tencer, A. F.	1995	A comparison of malreduction after plate and intramedullary nail fixation of forearm fractures	Incorrect patient population
Schick, C. W.; Koehler, D. M.; Martin, C. T.; Gao, Y.; Pugely, A. J.; Shah, A.; Adams, B. D.	2014	Risk factors for 30-day postoperative complications and mortality following open reduction internal fixation of distal radius fractures	Not relevant to PICOs
Schmalholz, A.	1990	External skeletal fixation versus cement fixation in the treatment of redislocated Colles' fracture	Very low quality
Schmelzer-Schmied, N.; Wieloch, P.; Martini, A. K.; Daecke, W.	2009	Comparison of external fixation, locking and non-locking palmar plating for unstable distal radius fractures in the elderly	Very low quality

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Schnetzke, M.; Fuchs, J.; Vetter, S. Y.; Swartman, B.; Keil, H.; Grutzner, P. A.; Franke, J.	2018	Intraoperative three-dimensional imaging in the treatment of distal radius fractures	Not relevant to PICOs
Schott, N.; Korbus, H.	2014	Preventing functional loss during immobilization after osteoporotic wrist fractures in elderly patients: a randomized clinical trial	Study protocol
Schuind, F.; Donkerwolcke, M.; Burny, F.	1984	External fixation of wrist fractures	No comparison group
Schuind, F.; Donkerwolcke, M.; Rasquin, C.; Burny, F.	1989	External fixation of fractures of the distal radius: a study of 225 cases	No comparison group
Shah, M. A.; Lopez, J. K.; Escalante, A. S.; Green, D. P.	2002	Dynamic splinting of forearm rotational contracture after distal radius fracture	Retrospective case series
Shah, S. H. U.; Iqbal, M.; Muhammad, E.	2015	Comparison of external fixation vs volar plating for comminuted fracture of the distal end radius	Very low quality
Shakir, S.; Naran, S.; Neral, M.; Wollstein, R.	2016	Titanium versus Stainless-Steel Plating in the Surgical Treatment of Distal Radius Fractures: A Randomized Trial	Not relevant to PICOs
Shauver, M. J.; Chang, K. W.; Chung, K. C.	2014	Contribution of functional parameters to patient-rated outcomes after surgical treatment of distal radius fractures	Not relevant to PICOs
Shih, J. T.; Lee, H. M.; Hou, Y. T.; Tan, C. M.	2001	Arthroscopically-assisted reduction of intra-articular fractures and soft tissue management of distal radius	No comparison group
Shiota, E.	1999	Intra-focal fixation for treating distal radius fracture: results of 104 cases	Very low quality
Shoji, K. E.; Earp, B. E.; Rozental, T. D.	2018	The Effect of Bisphosphonates on the Clinical and Radiographic Outcomes of Distal Radius Fractures in Women	Does not address question of interest
Singh, G. K.; Manglik, R. K.; Lakhtakia, P. K.; Singh, A.	1992	Analgesia for the reduction of Colles fracture. A comparison of hematoma block and intravenous sedation	Not relevant to PICOs
Snoddy, M. C.; An, T. J.; Hooe, B. S.; Kay, H. F.; Lee, D. H.; Pappas, N. D.	2015	Incidence and reasons for hardware removal following operative fixation of distal radius fractures	Very low quality
Snow, M.; Kelly, M.; Jeyam, M.; Fahmy, N.	2007	Function Versus Position: A Randomized Controlled Trial of Interfocal Kirschner Wiring of Unstable Distal Radial Fractures	Not relevant to PICOs
Solgaard, S.	1989	External fixation or a cast for Colles' fracture	Very low quality
Sonntag, J.; Hern, J.; Woythal, L.; Branner, U.; Lange, K. H. W.; Brorson, S.	2019	The Pronator Quadratus Muscle After Volar Plating: Ultrasound Evaluation of Anatomical Changes Correlated to Patient-Reported Clinical Outcome	Not relevant to PICOs
Soong, M.; Earp, B. E.; Bishop, G.; Leung, A.; Blazar, P.	2011	Volar locking plate implant prominence and flexor tendon rupture	Does not fit any PICO;
Souer, J. S.; Ring, D.; Matschke, S.; Audige, L.; Maren-Hubert, M.; Jupiter, J.	2010	Comparison of functional outcome after volar plate fixation with 2.4-mm titanium versus 3.5-mm stainless-steel plate for extra-articular fracture of distal radius	Very low quality
Stern, P. J.; Drury, W. J.	1983	Complications of plate fixation of forearm fractures	Retrospective case series
Stinton, S. B.; Graham, P. L.; Moloney, N. A.; Maclachlan, L. R.; Edgar, D. W.; Pappas, E.	2017	Longitudinal recovery following distal radial fractures managed with volar plate fixation	Systematic review/Meta-analysis

Authors	Year	Article Title	Reason for Exclusion
Stirling, E.; Jeffery, J.; Johnson, N.; Dias, J.	2016	Are radiographic measurements of the displacement of a distal radial fracture reliable and reproducible?	Not relevant to PICOs
Stoffelen, D. V.; Broos, P. L.	1998	Kapandji pinning or closed reduction for extra-articular distal radius fractures	Repeat
Stohr, K. K.; Fageur, M.; Bremner-Smith, A.; Garagnani, L.	2010	Reduction with a temporary intrafocal K-wire during internal fixation of distal radius fractures	Background article
Strohm, P. C.; Muller, C. A.; Boll, T.; Pfister, U.	2004	Two procedures for Kirschner wire osteosynthesis of distal radial fractures. A randomized trial	Not relevant to PICOs
Stuby, F. M.; Dobeles, S.; Schaffer, S. D.; Mueller, S.; Ateschrang, A.; Baumann, M.; Zieker, D.	2015	Early functional postoperative therapy of distal radius fracture with a dynamic orthosis: results of a prospective randomized cross-over comparative study	Not relevant to PICOs
Sung, J. K.; Levin, R.; Siegel, J.; Einhorn, T. A.; Creevy, W. R.; Tornetta, P., 3rd	2008	Reuse of external fixation components: a randomized trial	Not specific to DRF
Synn, A. J.; Makhni, E. C.; Makhni, M. C.; Rozental, T. D.; Day, C. S.	2009	Distal radius fractures in older patients: is anatomic reduction necessary?	Very low quality
Szekeres, M.; MacDermid, J. C.; Birmingham, T.; Grewal, R.; Lalone, E.	2017	The Effect of Therapeutic Whirlpool and Hot Packs on Hand Volume During Rehabilitation After Distal Radius Fracture: A Blinded Randomized Controlled Trial	Not relevant to PICOs
Szekeres, M.; MacDermid, J. C.; Grewal, R.; Birmingham, T.	2018	The short-term effects of hot packs vs therapeutic whirlpool on active wrist range of motion for patients with distal radius fracture: A randomized controlled trial	Not relevant to PICOs
Szyluk, K.; Jasinski, A.; Koczy, B.; Widuchowski, W.; Widuchowski, J.	2007	Results of operative treatment of unstable distal radius fractures using percutaneous K wire fixation	Case series
Tabrizi, A.; Mirza Tolouei, F.; Hassani, E.; Taleb, H.; Elmi, A.	2017	Hematoma Block Versus General Anesthesia in Distal Radius Fractures in Patients Over 60 Years in Trauma Emergency	Does not address question of interest (intervention not exclusive to opioid-only)
Tahririan, M. A.; Javdan, M.; Nouraei, M. H.; Dehghani, M.	2013	Evaluation of instability factors in distal radius fractures	Not relevant to PICOs
Tan, V.; Bratchenko, W.; Nourbakhsh, A.; Capo, J.	2012	Comparative analysis of intramedullary nail fixation versus casting for treatment of distal radius fractures	Very low quality
Tanaka, H.; Hatta, T.; Sasajima, K.; Itoi, E.; Aizawa, T.	2016	Comparative study of treatment for distal radius fractures with two different palmar locking plates	Not relevant to PICOs
Tang, Z.; Liu, J.; Yang, H.	2017	Comparison of outcome of VLCP versus PKEF in the treatment of AO type C2-3 distal radial fractures	Very low quality
Teunis, T.; Bot, A. G.; Thornton, E. R.; Ring, D.	2015	Catastrophic Thinking Is Associated With Finger Stiffness After Distal Radius Fracture Surgery	Not relevant to PICOs
Teunis, T.; Mulder, F.; Nota, S. P.; Milne, L. W.; Dyer, G. S.; Ring, D.	2015	No Difference in Adverse Events Between Surgically Treated Reduced and Unreduced Distal Radius Fractures	Not relevant to PICOs
Thiart, M.; Ikram, A.; Lamberts, R. P.	2016	How well can step-off and gap distances be reduced when treating intra-articular distal radius fractures with fragment specific fixation when using fluoroscopy	Not relevant to PICOs

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Thomas, A. P.; Brooks, S.	1986	The use of an oral prostaglandin inhibitor following splintage in fractures of the distal radius--a prospective trial	Not relevant to PICOs
Thorninger, R.; Madsen, M. L.; Waeber, D.; Borris, L. C.; Rolwing, J. H. D.	2017	Complications of volar locking plating of distal radius fractures in 576 patients with 3.2 years follow-up	Very low quality
Toomey, R.; Grief-Schwartz, R.; Piper, M. C.	1986	Clinical evaluation of the effects of whirlpool on patients with Colles' fractures	Not relevant to PICOs
Tosti, R.; Ilyas, A. M.	2013	Prospective evaluation of pronator quadratus repair following volar plate fixation of distal radius fractures	Not relevant to PICOs
Trumble, T. E.; Schmitt, S. R.; Vedder, N. B.	1994	Factors affecting functional outcome of displaced intra-articular distal radius fractures	Very low quality
Trumble, T. E.; Wagner, W.; Hanel, D. P.; Vedder, N. B.; Gilbert, M.	1998	Intrafocal (Kapandji) pinning of distal radius fractures with and without external fixation	Very low quality
Tyllianakis, M. E.; Panagopoulos, A.; Giannikas, D.; Megas, P.; Lambiris, E.	2006	Graft-supplemented, augmented external fixation in the treatment of intra-articular distal radial fractures	Not relevant to PICOs
Uchikura, C.; Hirano, J.; Kudo, F.; Satomi, K.; Ohno, T.	2004	Comparative study of nonbridging and bridging external fixators for unstable distal radius fractures	Very low quality
van der Vliet, Q. M. J.; Sweet, A. A. R.; Bhashyam, A. R.; Ferree, S.; van Heijl, M.; Houwert, R. M.; Leenen, L. P. H.; Hietbrink, F.	2019	Polytrauma and High-energy Injury Mechanisms Are Associated with Worse Patient-reported Outcomes After Distal Radius Fractures	Not relevant to PICOs
van Manen, C. J.; Dekker, M. L.; van Eerten, P. V.; Rhemrev, S. J.; van Olden, G. D.; van der Elst, M.	2008	Bio-resorbable versus metal implants in wrist fractures: a randomised trial	Not relevant to PICOs
Van Manen, C. J.; Van Olden, G. D. J.; Van Eerten, P. V.; Rhemrev, S. J.; Van der Elst, M.	2008	Bio-resorbable versus metal implants for distal radius fractures: a randomized trial	Duplicate
Vannabouathong, C.; Hussain, N.; Guerra-Farfan, E.; Bhandari, M.	2018	Interventions for Distal Radius Fractures: A Network Meta-analysis of Randomized Trials	Systematic review/meta-analysis
Varghese, V. D.; Smitham, P.; Howell, S.; Edwards, S.; Rickman, M.	2018	POWIFF- Prospective study of wrist internal fixation of fracture: A protocol for a single centre, superiority, randomised controlled trial to study the efficacy of the VRP (2.0) distal radius plate (Austofix) versus the VA-LCP (Depuy-Synthes) for distal radius fractures	Study protocol
Varitimidis, S. E.; Basdekis, G. K.; Dailiana, Z. H.; Hantes, M. E.; Bargiotas, K.; Malizos, K.	2008	Treatment of intra-articular fractures of the distal radius	Repeat article
Venkatesh, R. B.; Maranna, G. K.; Narayanappa, R. K. B.	2016	A comparative study between closed reduction and cast application versus percutaneous K-wire fixation for extraarticular fracture distal end of radius	Repeat article
Vitale, M. A.; Brogan, D. M.; Shin, A. Y.; Berger, R. A.	2016	Intra-articular Fractures of the Sigmoid Notch of the Distal Radius: Analysis of Progression to Distal Radial Ulnar Joint Arthritis and Impact on Upper Extremity Function in Surgically Treated Fractures	Very low quality
Walenkamp, M. M.; Goslings, J. C.; Beumer, A.; Haverlag, R.; Leenhouts, P. A.; Verleisdonk, E. J.; Liem, R. S.; Sintenie, J. B.; Bronkhorst, M. W.; Winkelhagen, J.; Schep, N. W.	2014	Surgery versus conservative treatment in patients with type A distal radius fractures, a randomized controlled trial	Study protocol

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Waljee, J. F.; Zhong, L.; Shauver, M.; Chung, K. C.	2014	Variation in the Use of Therapy following Distal Radius Fractures in the United States	Not relevant to PICOs
Wang, D.; Shan, L.; Zhou, J. L.	2018	Locking plate versus external fixation for type C distal radius fractures: A meta-analysis of randomized controlled trials	Systematic review/Meta-analysis
Wang, J. H.; Sun, T.	2017	Comparison of effects of seven treatment methods for distal radius fracture on minimizing complex regional pain syndrome	Systematic review/Meta-analysis
Wang, J.; Lu, Y.; Cui, Y.; Wei, X.; Sun, J.	2018	Is volar locking plate superior to external fixation for distal radius fractures? A comprehensive meta-analysis	Systematic review/meta-analysis
Wang, J.; Yang, Y.; Ma, J.; Xing, D.; Zhu, S.; Ma, B.; Chen, Y.; Ma, X.	2013	Open reduction and internal fixation versus external fixation for unstable distal radial fractures: a meta-analysis	Systematic review/meta-analysis
Wardrope, J.; Flowers, M.; Wilson, D. H.	1985	Comparison of local anaesthetic techniques in the reduction of Colles' fracture	Not relevant to PICOs
Watson, N.; Haines, T.; Tran, P.; Keating, J. L.	2018	A Comparison of the Effect of One, Three, or Six Weeks of Immobilization on Function and Pain After Open Reduction and Internal Fixation of Distal Radial Fractures in Adults: A Randomized Controlled Trial	Not relevant to PICOs
Watt, C. F.; Taylor, N. F.; Baskus, K.	2000	Do Colles' fracture patients benefit from routine referral to physiotherapy following cast removal?	<10 patients per group
Wei, D. H.; Poolman, R. W.; Bhandari, M.; Wolfe, V. M.; Rosenwasser, M. P.	2012	External fixation versus internal fixation for unstable distal radius fractures: a systematic review and meta-analysis of comparative clinical trials	Systematic review/meta-analysis
Wei, D. H.; Raizman, N. M.; Bottino, C. J.; Jobin, C. M.; Strauch, R. J.; Rosenwasser, M. P.	2009	Unstable distal radial fractures treated with external fixation, a radial column plate, or a volar plate. A prospective randomized trial	Confounding within treatment groups
Wei, J.; Yang, T. B.; Luo, W.; Qin, J. B.; Kong, F. J.	2013	Complications following dorsal versus volar plate fixation of distal radius fracture: a meta-analysis	Systematic review/meta-analysis
Weiland, A. J.	1999	External fixation, not ORIF, as the treatment of choice for fractures of the distal radius	Review/opinion article
Weiss, A. P.; Hastings, H., 2nd	1995	Wrist arthrodesis for traumatic conditions: a study of plate and local bone graft application	No comparison group
Werber, K. D.; Raeder, F.; Brauer, R. B.; Weiss, S.	2003	External fixation of distal radial fractures: four compared with five pins: a randomized prospective study	Not relevant to PICOs
Westphal, T.; Piatek, S.; Schubert, S.; Winckler, S.	2005	Outcome after surgery of distal radius fractures: no differences between external fixation and ORIF	Very low quality
White, B. D.; Nydick, J. A.; Karsky, D.; Williams, B. D.; Hess, A. V.; Stone, J. D.	2012	Incidence and clinical outcomes of tendon rupture following distal radius fracture	<10 patients per grp.
Widman, J.; Isacson, J.	2002	Primary bone grafting does not improve the results in severely displaced distal radius fractures	Not relevant to PICOs
Willcox, N.; Kurta, I.; Menez, D.	2005	Treatment of distal radial fractures with grafting and K-wiring	<10 patients per grp.
Wright, T. W.; Horodyski, M.; Smith, D. W.	2005	Functional outcome of unstable distal radius fractures: ORIF with a volar fixed-angle tine plate versus external fixation	Very low quality
Xie, X.; Xie, X.; Qin, H.; Shen, L.; Zhang, C.	2013	Comparison of internal and external fixation of distal radius fractures	Systematic review/meta-analysis

Authors	Year	Article Title	Reason for Exclusion
Xu, G. G.; Chan, S. P.; Puhaindran, M. E.; Chew, W. Y.	2009	Prospective randomised study of intra-articular fractures of the distal radius: comparison between external fixation and plate fixation	Confounding within treatment groups
Yang, Y.; Yin, Q.; Li, D.; Rui, Y.; Wu, Y.; Ding, Y.; Jiang, Y.	2018	A new classification and its value evaluation for intermediate column fractures of the distal radius	Very low quality
Youliden, D. J.; Sundaraj, K.; Smithers, C.	2018	Volar locking plating versus percutaneous Kirschner wires for distal radius fractures in an adult population: a meta-analysis	Systematic review/meta-analysis
Young, B. T.; Rayan, G. M.	2000	Outcome following nonoperative treatment of displaced distal radius fractures in low-demand patients older than 60 years	No comparison group
Yuan, Z. Z.; Yang, Z.; Liu, Q.; Liu, Y. M.	2018	Complications following open reduction and internal fixation versus external fixation in treating unstable distal radius fractures: Grading the evidence through a meta-analysis	Systematic review/Meta-analysis
Zamzuri, Z.; Yusof, M.; Hyzan, M. Y.	2004	External fixation versus internal fixation for closed unstable intra-articular fracture of the distal radius. Early results from a prospective study	Very low quality
Zarattini, G.; Galli, S.; Marchese, M.; Mascio, L. D.; Pazzaglia, U. E.	2012	The surgical treatment of isolated mason type 2 fractures of the radial head in adults: comparison between radial head resection and open reduction and internal fixation	Not specific to DRF
Zenke, Y.; Sakai, A.; Oshige, T.; Moritani, S.; Nakamura, T.	2012	Treatment with or without internal fixation for ulnar styloid base fractures accompanied by distal radius fractures fixed with volar locking plate	Not relevant to PICOs
Zhang, B.; Chang, H.; Yu, K.; Bai, J.; Tian, D.; Zhang, G.; Shao, X.; Zhang, Y.	2017	Intramedullary nail versus volar locking plate fixation for the treatment of extra-articular or simple intra-articular distal radius fractures: systematic review and meta-analysis	Not a relevant SR; Systematic review/Meta-analysis
Zhang, Q. L.; Zhu, X. D.; Li, G. D.; Tang, H.; Li, M.; Wu, D. J.	2009	Treatment of type C3 distal radius fracture resulted from high-energy injuries by volar plate in combination with external fixator	No comparison group
Zhang, S. X.; Gu, F. R.; Peng, Y. L.; Zhu, G. M.; Fu, J.; Lu, J. Y.; Wang, J. T.; Liu, Z. M.	2005	External fixation and bone grafting for collapsed and comminuted distal radius fracture	No comparison grp.
Zhang, X.; Huang, X.; Shao, X.; Zhu, H.; Sun, J.; Wang, X.	2017	A comparison of minimally invasive approach vs conventional approach for volar plating of distal radial fractures	Not relevant to PICOs
Zimmermann, R.; Gabl, M.; Lutz, M.; Angermann, P.; Gschwentner, M.; Pechlaner, S.	2003	Injectable calcium phosphate bone cement Norian SRS for the treatment of intra-articular compression fractures of the distal radius in osteoporotic women	Not relevant to PICOs
Zollinger, P. E.; Kreis, R. W.; van der Meulen, H. G.; van der Elst, M.; Breederveld, R. S.; Tuinebreijer, W. E.	2010	No Higher Risk of CRPS After External Fixation of Distal Radial Fractures - Subgroup Analysis Under Randomised Vitamin C Prophylaxis	Very low quality

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The committee on Evidence Based Quality and Value (EBQV) consists of twenty-three AAOS members who implement evidence-based quality initiatives such as clinical practice guidelines (CPGs), systematic literature reviews (SRs) and appropriate use criteria (AUCs). They also oversee the dissemination of related educational materials and promote the utilization of orthopaedic value products by the Academy's leadership and its members.

Council on Research and Quality

The Council on Research and Quality promotes ethically and scientifically sound clinical and translational research to sustain patient care in musculoskeletal disorders. The Council also serves as the primary resource for educating its members, the public, and public policy makers regarding evidenced-based medical practice, orthopaedic devices and biologics, regulatory pathways and standards development, patient safety, and other related important research and quality areas. The Council is comprised of the chairs of the committees on Devices, Biologics, and Technology, Patient Safety, Research Development, U.S. and chair and section leaders of the Evidence Based Quality and Value committee. Also, on the Council are the second vice-president, three members at large, and representatives of the Diversity Advisory Board, Women's Health Issues Advisory Board, Board of Specialty Societies (BOS), Board of Councilors (BOC), Communications Cabinet, Orthopaedic Research Society (ORS), Orthopedic Research and Education Foundation (OREF).

Board of Directors

The 17-member Board of Directors manage the affairs of the AAOS, set policy, and oversee the Strategic Plan

Review Organizations

Review of the clinical practice guideline is completed by interested external organizations. The AAOS solicits reviewers for each clinical practice guideline. They consist of experts in the topic area and represent professional societies other than AAOS. Review organizations are nominated by the clinical practice guideline development group at the introductory meeting. Review responses are available on www.aaos.org/quality.

Participation in the AAOS systematic literature review peer review process does not constitute an endorsement, nor does it imply that the reviewer supports this document.

Endorsements

Kaitlyn S. Sevarino, MBA, CAE
Director
Department of Clinical Quality and Value

Dear Ms. Sevarino,

The American Association for Hand Surgery Executive Committee has voted to endorse the AAOS Clinical Practice Guideline for the Management of Distal Radius Fractures. This endorsement implies permission for the AAOS to officially list our organization as an endorser of this clinical practice guideline and reprint our logo in the introductory section of the clinical practice guideline review document.

Sincerely,

Sarah Boardman
Executive Director, AAHS
500 Cummings Center, Ste 4400
Beverly, MA 01915 USA
Direct: 978 299 4514
sboardman@prri.com

Krause, Barbara

From: Rachel Pigott <rachel.m.pigott@gmail.com>
Sent: Wednesday, January 13, 2021 3:56 PM
To: Krause, Barbara
Cc: Gene Terry
Subject: ASHT Endorsement of AAOS/ASSH Management of Distal Radius Fractures Evidence-Based Clinical Practice Guideline

Follow Up Flag: Follow up
Flag Status: Flagged

Caution - External

Good Afternoon Ms. Krause -

I am the current president of the American Society of Hand Therapists (ASHT). I am contacting you related to the email I have copied below. Please let this communication serve to confirm ASHT's endorsement of the AAOS/ASSH Management of Distal Radius Fractures evidence-Based Clinical Practice Guidelines. Thank you for reaching out to us in this important matter.

Best Regards

Rachel