CQ HAND + UPPER LIMB
SPECIALIST ORTHOPAEDIC SURGEON

EVIDENCE SUMMARY

Wrist Osteoarthritis

title: “Wrist Osteoarthritis” slug: wrist-osteoarthritis region: wrist audience: patient mesh_terms: [“Wrist Joint”, “Osteoarthritis”, “Arthrodesis”, “Wrist”, “Scaphoid Bone”, “Hand Strength”, “Carpal Bones”, “Arthroplasty, Replacement”] article_count: 482 model_used: Qwen3.6-35B-A3B-Q8_0.gguf generated_at: ‘2026-06-21T12:24:28+00:00’ key_articles: - title: “Surgical management of osteoarthritis of the hand and wrist” ref_num: 1 evidence_tier: paper evidence_level: 5 doi: 10.1016/j.jht.2022.01.001 year: 2022 - title: “Long-Term Outcomes of Corrective Osteotomy for the Treatment of Distal Radius Malunion” ref_num: 2 evidence_tier: paper evidence_level: 4 doi: 10.1177/1753193409357373 year: 2010 - title: “Radiocarpal dislocations and fracture-dislocations: Injury types and long-term outcomes” ref_num: 3 evidence_tier: paper evidence_level: 4 doi: 10.1016/j.otsr.2017.12.016 year: 2018 - title: “Ulnar head replacement and sigmoid notch resurfacing arthroplasty with minimum 12-month follow-up” ref_num: 4 evidence_tier: paper evidence_level: 4 doi: 10.1177/1753193419850116 year: 2019 - title: “Arthrodesis or arthroplasty, complete or partial: where are we at in the 21st century?” ref_num: 5 evidence_tier: paper evidence_level: 5 doi: 10.1177/17531934241296758 year: 2025 - title: “Is there still a place for denervation in the treatment of osteoarthritis of the wrist and hand?” ref_num: 6 evidence_tier: paper evidence_level: 5 doi: 10.1016/j.otsr.2021.102986 year: 2021 - title: “Surgical options and outcomes for treatment of osteoarthritis of the scaphotrapeziotrapezoidal joint” ref_num: 7 evidence_tier: paper evidence_level: 5 doi: 10.1177/17531934241295345 year: 2025 - title: “Current Concepts in the Surgical Management of Rheumatoid and Osteoarthritic Hands and Wrists” ref_num: 8 evidence_tier: paper evidence_level: 5 doi: 10.1016/j.hcl.2010.09.003 year: 2011 - title: “Distal Scaphoid Resection for Degenerative Arthritis Secondary to Scaphoid Nonunion: A 20-Year Experience” ref_num: 9 evidence_tier: paper evidence_level: 4 doi: 10.1016/j.jhsa.2014.05.031 year: 2014 - title: “Perilunate dislocation and fracture dislocation of the wrist: Outcomes and long-term prognostic factors” ref_num: 10 evidence_tier: paper evidence_level: 4 doi: 10.1016/j.otsr.2022.103332 year: 2022 - title: “Trapeziectomy for basal thumb osteoarthritis does not increase the risk of developing wrist osteoarthritis in the long term” ref_num: 11 evidence_tier: paper evidence_level: 3 doi: 10.1186/s13018-021-02856-x year: 2021 - title: “Prediction of Wrist Prognosis in Patients With Early Rheumatoid Arthritis According to Radiographic Classification” ref_num: 12 evidence_tier: paper evidence_level: 2 doi: 10.1016/j.jhsa.2009.01.016 year: 2009 - title: “A systematic review of outcomes of wrist arthrodesis and wrist arthroplasty in patients with rheumatoid arthritis” ref_num: 13 evidence_tier: paper evidence_level: 2 doi: 10.1177/1753193420953683 year: 2020 - title: “Comparing radial styloid size between osteoarthritic and healthy wrists: a pathoanatomical three-dimensional study” ref_num: 14 evidence_tier: paper evidence_level: 4 doi: 10.1177/1753193416669261 year: 2016 - title: “A Changing Landscape in the Surgical

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Management of Wrist Arthritis: An Analysis of National Trends From 2009 to 2019" ref_num: 16 evidence_tier: paper evidence_level: 2 doi: 10.1016/j.jhsa.2023.11.009 year: 2024 - title: "Scaphocapitate arthrodesis for treatment of late stage Kienböck disease" ref_num: 17 evidence_tier: paper evidence_level: 4 doi: 10.1177/1753193413496177 year: 2013 - title: "Clinical Outcomes of Arthrodesis and Arthroplasty for the Treatment of Posttraumatic Wrist Arthritis" ref_num: 18 evidence_tier: paper evidence_level: 3 doi: 10.1016/j.jhsa.2013.02.013 year: 2013 - title: "Total wrist denervation: Retrospective study of 39 wrists with 56 months' follow-up" ref_num: 19 evidence_tier: paper doi: 10.1016/j.otsr.2019.04.024 year: 2019 - title: "Long-term results of dorsal intercarpal ligament capsulodesis for the treatment of chronic scapholunate instability" ref_num: 20 evidence_tier: paper evidence_level: 3 doi: 10.1302/0301-620x.94b12.30007 year: 2012 - title: "Is revision bone grafting worthwhile after failed surgery for scaphoid nonunion? Minimum 8 year follow-up of 18 patients" ref_num: 21 evidence_tier: paper evidence_level: 4 doi: 10.1177/1753193409346093 year: 2009 - title: "Surgical Management of Wrist Arthritis Is Linked to Increased Carpal Tunnel Syndrome/Carpal Tunnel Release Risk: Rethinking Preoperative Evaluation" ref_num: 22 evidence_tier: paper evidence_level: 2 doi: 10.1016/j.jhsa.2026.01.013 year: 2026 - title: "Balance between stability and mobility in wrist arthroplasty: achieving optimal long-term function with the Motec ® prosthesis" ref_num: 23 evidence_tier: paper evidence_level: 5 doi: 10.1177/17531934251406868 year: 2026 - title: "Five- to 10-Year Prospective Follow-Up of Wrist Arthroplasty in 56 Nonrheumatoid Patients" ref_num: 24 evidence_tier: paper evidence_level: 4 doi: 10.1016/j.jhsa.2017.06.097 year: 2017 - title: "Comparison of Radiographic and Intraoperative Visual Assessment of Scaphotrapezoid Joint Arthritis in Patients With End-Stage Carpometacarpal Arthritis of the Thumb Base" ref_num: 25 evidence_tier: paper evidence_level: 3 doi: 10.1177/1558944718765246 year: 2018 - title: "Current European Practice in Wrist Arthroplasty" ref_num: 26 evidence_tier: paper evidence_level: 4 doi: 10.1016/j.hcl.2017.04.004 year: 2017 - title: "Incidental Flexor Carpi Radialis Tendinopathy on Magnetic Resonance Imaging" ref_num: 27 evidence_tier: paper evidence_level: 3 doi: 10.1177/1558944718760033 year: 2018 - title: "Investigation Into the Effects of Intra-Articular Steroid on Post-Traumatic Osteoarthritis in Distal Radius Fractures: A Randomized Controlled Pilot Study" ref_num: 28 evidence_tier: paper evidence_level: 2 doi: 10.1016/j.jhsa.2023.11.026 year: 2024 - title: "The Epidemiology of Scapholunate Advanced Collapse" ref_num: 30 evidence_tier: paper evidence_level: 3 doi: 10.1177/1558944718788672 year: 2018 - title: "The natural history of scaphoid non-union. A review of fifty-five cases." ref_num: 31 evidence_tier: paper evidence_level: 4 doi: 10.2106/00004623-198567030-00013 year: 1985 - title: "Surgical Treatments for Scapholunate Advanced Collapse Wrist: Kinematics and Functional Performance" ref_num: 33 evidence_tier: paper evidence_level: 2 doi: 10.1016/j.jhsa.2015.04.035 year: 2015 - title: "The Effect of Surgical Treatments for Trapeziometacarpal Osteoarthritis on Wrist Biomechanics: A Cadaver Study" ref_num: 34 evidence_tier: paper evidence_level: 5 doi: 10.1016/j.jhsa.2019.10.003 year: 2020 - title: "Comparison of the Clinical and Functional Outcomes Following 3- and 4-Corner Fusions" ref_num: 35 evidence_tier: paper evidence_level: 3 doi: 10.1016/j.jhsa.2015.02.027 year: 2015 - title: "Elongation of the Dorsal Carpal Ligaments: A Computational Study of In Vivo Carpal Kinematics" ref_num: 36 evidence_tier: paper evidence_level: 5 doi: 10.1016/j.jhsa.2012.04.025 year: 2012 - title: "The Effect of Rotational Malalignment on X-rays of the Wrist" ref_num: 37 evidence_tier: paper evidence_level: 4 doi: 10.1177/1753193408090393 year: 2009 - title: "Three-dimensional carpal alignment: computer-aided CT analysis of carpal axes and normal ranges" ref_num: 38 evidence_tier: paper evidence_level: 4 doi: 10.1177/17531934231160100 year: 2023 - title: "Tendon ball arthroplasty and proximal carpal stabilization with tendon graft for advanced Kienböck's disease" ref_num: 40 evidence_tier:

paper evidence_level: 4 doi: 10.1177/17531934241238939 year: 2024 - title: “The use of a pyrocarbon capitate resurfacing implant in chronic wrist disorders” ref_num: 41 evidence_tier: paper evidence_level: 4 doi: 10.1177/1753193413501730 year: 2013 - title: “Wrist movements induce torque and lever force in the scaphoid: an ex vivo study” ref_num: 42 evidence_tier: paper evidence_level: 5 doi: 10.1186/s13018-020-01897-y year: 2020 - title: “Electrogoniometric and radiologic evaluation of scapho-trapezo-trapezoid arthrodesis” ref_num: 43 evidence_tier: paper evidence_level: 4 doi: 10.1016/s0749-0712(03)00008-8 year: 2003 - title: “Assessment of Wrist Function After Simulated Total Wrist Arthrodesis” ref_num: 44 evidence_tier: paper evidence_level: 4 doi: 10.1177/1558944715626930 year: 2016 - title: “The Advantage of Throwing the First Stone: How Understanding the Evolutionary Demands of Homo sapiens Is Helping Us Understand Carpal Motion” ref_num: 45 evidence_tier: paper evidence_level: 5 doi: 10.5435/00124635-201001000-00007 year: 2010 - title: “The effect of intercarpal arthrodeses on wrist kinematics during radial and ulnar deviation: a cadaveric study using four-dimensional CT” ref_num: 47 evidence_tier: paper evidence_level: 5 doi: 10.1177/17531934231176004 year: 2023 - title: “Dynamic In Vivo Evaluation of Radiocarpal Contact After a 4-Corner Arthrodesis” ref_num: 49 evidence_tier: paper evidence_level: 4 doi: 10.1016/j.jhsa.2014.11.028 year: 2015 - title: “Computer-aided three-dimensional analysis of carpal alignment in scaphoid nonunion advanced collapse wrists: A comparative study with scapholunate advanced collapse and healthy wrists” ref_num: 50 evidence_tier: paper evidence_level: 4 doi: 10.1186/s12891-025-08652-6 year: 2025 - title: “Scaphoid Excision and 4-Bone Arthrodesis Versus Proximal Row Carpectomy: A Comparison of Contact Biomechanics” ref_num: 51 evidence_tier: paper evidence_level: 5 doi: 10.1016/j.jhsa.2012.05.040 year: 2012 - title: “Four-corner arthrodesis with a dorsal locking plate: 4–9-year follow-up” ref_num: 52 evidence_tier: paper evidence_level: 4 doi: 10.1177/1753193420930587 year: 2020 - title: “Ten-Year Minimum Follow-Up of 4-Corner Fusion for SLAC and SNAC Wrist” ref_num: 53 evidence_tier: paper evidence_level: 4 doi: 10.1177/1558944716681949 year: 2016 - title: “Midterm Patient-Reported Outcomes in Wrist Denervation for Post-Traumatic Arthritis” ref_num: 54 evidence_tier: paper evidence_level: 4 doi: 10.1016/j.jhsa.2021.02.023 year: 2021 - title: “Radio-scapho-capitate ligament reconstruction during proximal row carpectomy” ref_num: 56 evidence_tier: paper evidence_level: 4 doi: 10.1177/1753193417752319 year: 2018 - title: “Reproducibility of radiographic classification of scapholunate advanced collapse (SLAC) and scaphoid nonunion advanced collapse (SNAC) wrist” ref_num: 61 evidence_tier: paper evidence_level: 4 doi: 10.1177/1753193413484629 year: 2013 - title: “A Reliability Study of Multiplanar Radiographs for the Evaluation of SNAC Wrist Arthritis” ref_num: 62 evidence_tier: paper evidence_level: 4 doi: 10.1177/1558944720937359 year: 2020 - title: “Radiocarpal Fusion: Indications, Technique, and Modifications” ref_num: 64 evidence_tier: paper evidence_level: 5 doi: 10.1016/j.jhsa.2022.04.002 year: 2022 - title: “Avascular Necrosis of the Carpal Bones Other Than Kienböck Disease” ref_num: 66 evidence_tier: paper evidence_level: 5 doi: 10.1016/j.jhsa.2019.05.022 year: 2020 - title: “Midterm results of arthroscopic treatment of scapholunate ligament lesions associated with intra-articular distal radius fractures” ref_num: 67 evidence_tier: paper evidence_level: 4 doi: 10.1007/s001670050172 year: 1999 - title: “Perilunate Dislocations and Transscaphoid Perilunate Fracture–Dislocations: A Retrospective Study With Minimum Ten-Year Follow-Up” ref_num: 68 evidence_tier: paper evidence_level: 4 doi: 10.1016/j.jhsa.2009.09.003 year: 2010 - title: “Proximal Row Carpectomy Versus Scaphoid Excision and Intercarpal Arthrodesis: Intraoperative Assessment and Procedure Selection” ref_num: 69 evidence_tier: paper evidence_level: 4 doi: 10.1016/j.jhsa.2014.03.032 year: 2014 - title: “Wrist Denervation for Painful Conditions of the Wrist” ref_num: 71 evidence_tier: paper evidence_level: 4 doi: 10.1016/j.jhsa.2011.03.004 year: 2011 -

title: “Proximal Row Carpectomy” ref_num: 73 evidence_tier: paper evidence_level: 5 doi: 10.1016/j.hcl.2012.08.022 year: 2013 - title: “Reduction and Association of the Scaphoid and Lunate Procedure: Short-Term Clinical and Radiographic Outcomes” ref_num: 74 evidence_tier: paper evidence_level: 4 doi: 10.1016/j.jhsa.2014.07.014 year: 2014 synthesis_version: “v2” verifier_status: skipped

Overview

- Osteoarthritis of the hand and wrist requires an individualized approach to treatment strategies based on site-specific diagnoses and varying disease manifestations [1].
- In most scenarios, there is no single preferred option for wrist osteoarthritis [5].
- The choice of procedure for scaphotrapeziotrapezoidal joint osteoarthritis depends on whether the joint is isolated or associated with carpal malalignment and other joint osteoarthritis [7].
- Arthroplasty should be used as an alternative to arthrodesis in the treatment of posttraumatic wrist arthritis, given proper patient selection and indications [18].
- Wrist arthroplasty provides functional mobility, improved strength, and reduced pain in carefully selected cases of severely destroyed wrist joints [26].
- Implant survival rates for wrist arthroplasty do not compare with hip and knee arthroplasties [26].
- Motion-preserving procedures of the wrist can yield good long-term results if indications are accurately respected and the technique is well performed to prevent complications [58].
- Good functional outcomes and absence of osteoarthritis can be attributed to effective reduction and radiocarpal stabilization, along with the absence of radial and intracarpal marginal fractures [3].
- Ulnar head replacement and sigmoid notch resurfacing arthroplasty provide a feasible option for distal radial ulnar joint arthritis, resulting in substantial improvements in pain and function over short-term follow-up [4].
- Total wrist denervation is a reliable and reproducible surgical technique for pain relief and preservation of wrist function in painful osteoarthritis [19].
- Joint denervation deserves a place of choice in the surgical arsenal for osteoarthritis of the wrist and hand, provided new anatomical observations are integrated, the procedure is meticulous, and patients are informed that it is a symptomatic treatment [6].
- A second and even a third operation can result in long-term pain improvement, good function, and capacity for work in symptomatic cases with minor osteoarthritis of the wrist (SNAC stage 0 or 1) [21].

Anatomy & Pathophysiology

- Wrist alignment was maintained over time, but 13 patients presented mild to moderate symptomatic wrist arthritis following corrective osteotomy for distal radius malunion [2].

- Type I and III wrists in early rheumatoid arthritis exhibited radiographic progression and ultimately underwent deformation [12].
- Surgical treatments for scapholunate advanced collapse wrists resulted in decreased wrist kinematic motion and functional performance compared with individuals with normal wrists [33].
- Wrist biomechanics were significantly altered following trapeziectomy, with ligamentous reconstruction and tenodesis (LRTI) most closely resembling intact biomechanics in a cadaveric model [34].
- Motion was smoother and more closely replicated the normal axis and functional motion of the wrist in comparisons of 3- and 4-corner fusions [35].
- Computed fiber elongations of the dorsal carpal ligaments varied linearly with wrist position despite complex carpal bone anatomy and kinematics [36].
- Rotational malalignment of the wrist has significant effects on carpal, distal radial, and distal radioulnar joint measurements [37].
- Guidelines for measuring and quantifying carpal alignment three-dimensionally were established, providing a database for normal values useful in analyzing wrist pathologies and kinematics [38].
- Radioscapholunate fusion shows the most biomechanically similar behavior out of three fusion types compared with the healthy wrist [39].
- Tendon ball arthroplasty and proximal carpal stabilization with tendon graft for advanced Kienböck's disease demonstrated reduced wrist pain, improved wrist motion and grip strength, and restored integrity of the proximal carpal row [40].
- Wrist range of motion within 20% extension and radial abduction to 50% flexion limits torque and lever force exacerbation between scaphoid fragments [42].
- The modification of the wrist center of rotation during flexion and extension was characterized, noting that stability is considered more important than mobility in clinical conditions [43].
- Wrist arthrodesis may only compromise select wrist functions [44].
- The 'dart thrower's motion' of the wrist, from radial extension to ulnar flexion, may be a unifying concept of functional wrist motion that is uniquely human [45].
- Total wrist replacement aims for a painless mobile wrist rather than a painless stiff wrist, evolving with advances in technology, materials, and understanding of biomechanics [46].
- Constant radiocarpal and midcarpal congruence during radioulnar deviation in normal wrists is no longer possible with intercarpal kinematic modifications after intercarpal arthrodeses [47].
- Persistent middle finger CMCJ micromotion was likely present in 19/20 wrists (95%) that experienced symptomatic hardware complications [48].
- Changes of the motion pattern of the lunate during radioulnar deviation and flexion-extension of the wrist after 4-corner arthrodesis explain the shift of the centroid radially and dorsally [49].
- SNAC wrists differ from SLAC wrists in exhibiting a decreased sagittal lunotriquetral angle, indicating a distinct pathomechanism of carpal instability [50].
- The 4-bone arthrodesis wrist has significantly lower contact pressure, greater contact area, and equal contact translation compared with the proximal row carpectomy wrist [51].

Classification

- Osteoarthritis of the hand and wrist requires an individualized approach to treatment strategies based on site-specific diagnoses and varying disease manifestations [1].
- The choice of procedure for osteoarthritis of the scaphotrapeziotrapezoidal joint depends on whether the joint is isolated or associated with carpal malalignment and other joint osteoarthritis [7].
- Type I and III wrists had radiographic progression and ultimately underwent deformation [12].
- Combining traditional qualitative evaluation and quantitative measurements may improve the classification of wrist osteoarthritis [14].
- Radiographic classification of SLAC wrist has moderate reliability and reproducibility [61].
- Classification of SNAC wrist has limited reliability [61].
- Reviewing multiview radiographs more commonly yielded Vender stage 3 osteoarthritis classification [62].

Clinical Presentation

- Osteoarthritis of the hand and wrist requires an individualized approach to treatment strategies based on site-specific diagnoses and varying disease manifestations [1].
- Wrist alignment was maintained over time but 13 patients presented mild to moderate symptomatic wrist arthritis after corrective osteotomy for distal radius malunion [2].
- Good functional outcomes and absence of osteoarthritis can be attributed to effective reduction and radiocarpal stabilization, along with the absence of radial and intracarpal marginal fractures in radiocarpal dislocations and fracture-dislocations [3].
- Over short-term follow-up, ulnar head replacement and sigmoid notch resurfacing arthroplasty provides a feasible option for distal radial ulnar joint arthritis, resulting in substantial improvements in pain and function [4].
- Despite advancements in management, in most scenarios there is no single preferred option for wrist osteoarthritis [5].
- Joint denervation deserves a place of choice in the surgical arsenal for osteoarthritis of the wrist and hand, provided new anatomical observations are integrated, the procedure is meticulous, and patients are informed that it is a symptomatic treatment [6].
- The choice of procedure for scaphotrapeziotrapezoidal joint osteoarthritis depends on whether the joint is isolated or associated with carpal malalignment and other joint osteoarthritis [7].
- The hand manifestations of osteoarthritis can be debilitating, with initial treatment being medical and many patients doing well with splinting and hand therapy [8].
- Midcarpal arthritis, which may develop after distal scaphoid resection for degenerative arthritis secondary to scaphoid nonunion, did not cause appreciable deterioration in patient outcomes [9].
- In perilunate dislocation and fracture dislocation of the wrist, 79% of patients showed radiographic signs of osteoarthritis at a mean follow-up time of 9.9 years [10].

- Removal of the trapezium as treatment for basal thumb osteoarthritis does not increase the risk of developing wrist osteoarthritis in the long term [11].
- Combining traditional qualitative evaluation and quantitative measurements may improve the classification of wrist osteoarthritis by comparing radial styloid size between osteoarthritic and healthy wrists [14].
- Preexisting OA in the wrist or CMC does not seem to impact outcomes of distal radius fractures, regardless of treatment, age, or sex [15].
- Radiographic signs of radioscaphoid arthritis were often observed in patients with follow-up greater than 10 years after scaphocapitate arthrodesis for treatment of late stage Kienböck disease [17].
- A second and even a third operation can result in long-term pain improvement, good function and capacity for work, and re-operation is recommended in symptomatic cases with minor osteoarthritis of the wrist (SNAC stage 0 or 1) after failed surgery for scaphoid nonunion [21].
- Patients with wrist arthritis who undergo surgery face higher risks of CTS and subsequent CTR than those managed conservatively [22].
- Wrist radiographs demonstrate a 47% sensitivity and 94% specificity in predicting end-stage ST joint arthritis, emphasizing the importance of directly visualizing the ST joint after trapeziectomy in patients with end-stage carpometacarpal arthritis of the thumb base [25].
- Signal changes in the flexor carpi radialis are infrequent and often incidental or associated with peritrapezial osteoarthritis [27].
- In most patients, wrist function was improved and pain relief was obtained with the use of a pyrocarbon capitate resurfacing implant in chronic wrist disorders [41].
- Radio-scapho-capitate ligament reconstruction during proximal row carpectomy is a technique to consider, although one has to take into account the short-term follow-up of 1 year and the fact that the patient had rather low demands to his wrist [56].

Investigations

- Osteoarthritis of the hand and wrist requires an individualized approach to treatment strategies based on site-specific diagnoses and varying disease manifestations [1].
- Wrist alignment was maintained over time but 13 patients presented mild to moderate symptomatic wrist arthritis following corrective osteotomy for distal radius malunion [2].
- Good functional outcomes and absence of osteoarthritis can be attributed to effective reduction and radiocarpal stabilization, along with the absence of radial and intracarpal marginal fractures in radiocarpal dislocations and fracture-dislocations [3].
- Despite advancements in management, in most scenarios there is no single preferred option for wrist osteoarthritis [5].
- Joint denervation deserves a place of choice in the surgical arsenal for osteoarthritis of the wrist and hand, provided new anatomical observations are integrated, the procedure is meticulous, and patients are informed that it is a symptomatic treatment [6].

- The choice of procedure for scaphotrapeziotrapezoidal joint osteoarthritis depends on whether the joint is isolated or associated with carpal malalignment and other joint osteoarthritis [7].
- Midcarpal arthritis, which may develop after distal scaphoid resection for degenerative arthritis secondary to scaphoid nonunion, did not cause appreciable deterioration in patient outcomes [9].
- 79% of patients showed radiographic signs of osteoarthritis at a mean follow-up time of 9.9 years following perilunate dislocation and fracture dislocation of the wrist [10].
- Type I and III wrists had radiographic progression and ultimately underwent deformation in patients with early rheumatoid arthritis [12].
- Combining traditional qualitative evaluation and quantitative measurements may improve the classification of wrist osteoarthritis [14].
- Radiographic signs of radioscaphoid arthritis were often observed in patients with follow-up greater than 10 years after scaphocapitate arthrodesis for late stage Kienböck disease [17].
- Wrist radiographs demonstrate a 47% sensitivity and 94% specificity in predicting end-stage ST joint arthritis in patients with end-stage carpometacarpal arthritis of the thumb base [25].
- Signal changes in the flexor carpi radialis are infrequent and often incidental or associated with peritrapezial osteoarthritis [27].
- Radiocarpal joint injection of corticosteroid within 2 weeks of an intra-articular distal radius fracture does not appear to affect the development of post-traumatic osteoarthritis within 2 years follow-up in a small pilot cohort [28].
- Radiological evaluation showed normal radiocarpal angles, volar tilt, and radial length in patients undergoing arthroscopic treatment of scapholunate ligament lesions associated with intra-articular distal radius fractures [67].
- The presence of radiological arthritis and static carpal instability did not cause reduced function at a minimum follow-up of 10 years following perilunate dislocations and transscaphoid perilunate fracture–dislocations [68].
- Preoperative radiographs did not correlate well with intraoperative findings, often underestimating degenerative changes at the radiolunate joint during proximal row carpectomy versus scaphoid excision and intercarpal arthrodesis [69].
- Long-term studies are needed to confirm clinical benefits and radiographic signs of radioscaphoid arthritis [70].
- Wrist denervation resulted in improvement in pain scores in 39 patients despite radiological deterioration noted in 34 after 6 years [71].
- Postoperative progressive changes at the radiocapitate articulation have been documented following proximal row carpectomy, yet these changes tend to remain asymptomatic [73].

Treatment

- Osteoarthritis of the hand and wrist requires an individualized approach to treatment strategies based on site-specific diagnoses and varying disease manifestations [1].
- Initial treatment for hand manifestations of osteoarthritis is medical, with many patients doing well with splinting and hand therapy [8].
- Surgical management of wrist arthritis remains a controversial issue, but proximal row carpectomy has gained recent support and its incidence has increased, even in patients under 45 years old [16].
- Despite advancements in management, in most scenarios there is no single preferred option for wrist osteoarthritis [5].
- The choice of procedure for scaphotrapeziotrapezoidal joint osteoarthritis depends on whether the joint is isolated or associated with carpal malalignment and other joint osteoarthritis [7].
- Ulnar head replacement and sigmoid notch resurfacing arthroplasty provide a feasible option for distal radial ulnar joint arthritis, resulting in substantial improvements in pain and function over short-term follow-up [4].
- Total wrist denervation is a reliable and reproducible surgical technique for pain relief and preservation of wrist function in painful osteoarthritis [19].
- Joint denervation deserves a place of choice in the surgical arsenal for osteoarthritis of the wrist and hand, provided new anatomical observations are integrated, the procedure is meticulous, and patients are informed that it is a symptomatic treatment [6].
- Wrist denervation is a viable salvage option for patients with symptomatic SLAC wrist osteoarthritis to preserve motion, decrease pain, and increase function with a low absolute failure rate at mid- to long-term follow-up [54].
- Limited wrist fusions are effective surgical procedures for providing pain relief while preserving motion of the wrist in patients with localized arthritis of the carpus [55].
- Radiocarpal fusion aims to alleviate pain and improve range of motion in patients with isolated radiolunate or radioscapholunate arthritis who have failed non-surgical treatment [64].
- Both wrist arthrodesis and wrist arthroplasty were effective at alleviating pain and improving grip strength, with comparable complication rates of 17% and 19% respectively [13].
- Arthroplasty should be used as an alternative to arthrodesis in the treatment of posttraumatic wrist arthritis, given proper patient selection and indications [18].
- Wrist arthroplasty provides functional mobility, improved strength, and reduced pain in carefully selected cases of severely destroyed wrist joints, though implant survival rates do not compare with hip and knee arthroplasties [26].
- Minimal arthroplasty may provide a temporary solution for active patients with symptomatic early wrist arthritis who are not candidates for salvage wrist surgery [63].
- Patients undergoing surgical management for wrist arthritis face higher risks of carpal tunnel syndrome and subsequent carpal tunnel release than those managed conservatively [22].

- Patients with established scaphoid non-union should be advised that osteoarthritis will most likely develop [31].

Complications

- Wrist alignment was maintained over time, but 13 patients presented mild to moderate symptomatic wrist arthritis following corrective osteotomy for distal radius malunion [2].
- Effective reduction and radiocarpal stabilization, along with the absence of radial and intracarpal marginal fractures, are associated with good functional outcomes and absence of osteoarthritis in radiocarpal dislocations and fracture-dislocations [3].
- Midcarpal arthritis may develop after distal scaphoid resection for degenerative arthritis secondary to scaphoid nonunion, but this did not cause appreciable deterioration in patient outcomes [9].
- 79% of patients with perilunate dislocation and fracture dislocation of the wrist showed radiographic signs of osteoarthritis at a mean follow-up of 9.9 years [10].
- Both wrist arthrodesis and wrist arthroplasty have comparable complication rates of 17% and 19% respectively [13].
- Dorsal intercarpal ligament capsulodesis for chronic scapholunate instability resulted in ongoing scapholunate instability and early arthritic degeneration, though most patients had acceptable long-term function [20].
- Arthroplasty does not prevent natural evolution to carpal collapse after a follow-up of 20 years, though this is clinically well tolerated [29].
- Osteoarthritis will most likely develop in patients with established scaphoid non-union [31].
- Avascular necrosis of the carpal bones other than Kienböck disease is a rare cause of chronic wrist pain with a poorly understood natural history [66].

Recovery

- Surgical management of hand and wrist osteoarthritis requires an individualized approach based on site-specific diagnoses and varying disease manifestations [1].
- Wrist alignment is maintained over time following corrective osteotomy for distal radius malunion, though 13 patients presented with mild to moderate symptomatic wrist arthritis [2].
- Good functional outcomes and absence of osteoarthritis after radiocarpal dislocations or fracture-dislocations are attributed to effective reduction, radiocarpal stabilization, and the absence of radial and intracarpal marginal fractures [3].
- Ulnar head replacement and sigmoid notch resurfacing arthroplasty provide substantial improvements in pain and function over short-term follow-up for distal radial ulnar joint arthritis [4].
- Midcarpal arthritis may develop after distal scaphoid resection for degenerative arthritis secondary to scaphoid nonunion, but it does not cause appreciable deterioration in patient outcomes [9].

- 79% of patients with perilunate dislocation or fracture dislocation show radiographic signs of osteoarthritis at a mean follow-up of 9.9 years [10].
- Both wrist arthrodesis and wrist arthroplasty are effective at alleviating pain and improving grip strength in patients with rheumatoid arthritis [13].
- Wrist arthrodesis and wrist arthroplasty have comparable complication rates of 17% and 19%, respectively, in patients with rheumatoid arthritis [13].
- Radiographic signs of radioscaphoid arthritis are often observed in patients with scaphocapitate arthrodesis for late-stage Kienböck disease when follow-up is greater than 10 years [17].
- Ongoing scapholunate instability resulting from dorsal intercarpal ligament capsulodesis leads to early arthritic degeneration, yet most patients maintain acceptable long-term wrist function [20].
- The evolution of wrist arthroplasty, particularly with modular systems like the Motec prosthesis, represents a significant shift in managing advanced wrist arthritis driven by advancements in materials, surgical techniques, and patient selection [23].
- Uncemented total wrist arthroplasty can provide long-lasting unrestricted hand function in young and active patients [24].
- Total wrist arthroplasty does not prevent the natural evolution to carpal collapse after 20 years of follow-up, although this progression is clinically well tolerated [29].
- Patients with SLAC wrist are more likely to be male and have a history of trauma compared to patients with first carpometacarpal osteoarthritis [30].
- Four-corner arthrodesis with a dorsal locking plate significantly reduces pain and improves wrist function compared with preoperative status at a mean follow-up of 6 years [52].
- Functional results for 4-corner fusion for SLAC and SNAC wrist are good at long-term follow-up despite radiographic changes in the radiolunate joint in 73% of patients [53].
- Total wrist arthroplasty can survive over many years in the rheumatoid wrist, with patients remaining nearly pain-free and retaining moderate motion [57].
- A symptomatic nonunion of the scaphoid is significantly likely to progress to osteoarthritis according to a predictable sequence, worsening both radiographically and clinically with time [72].
- The reduction and association of the scaphoid and lunate procedure should be abandoned due to early radiographic failure in the majority of patients in the short term, despite relatively low outcomes measures scores [74].

Key Evidence

- [L5] Osteoarthritis of the hand and wrist requires an individualized approach to treatment strategies based on site-specific diagnoses and varying disease manifestations. (10.1016/j.jht.2022.01.001)
- [L4] Wrist alignment was maintained over time but 13 patients presented mild to moderate symptomatic wrist arthritis. (10.1177/1753193409357373)

- [L4] Good functional outcomes and absence of osteoarthritis can be attributed to effective reduction and radiocarpal stabilization, along with the absence of radial and intracarpal marginal fractures. (10.1016/j.otsr.2017.12.016)
- [L4] Over short-term follow-up, the procedure provides a feasible option for distal radial ulnar joint arthritis, resulting in substantial improvements in pain and function. (10.1177/1753193419850116)
- [L5] Despite advancements in management, in most scenarios there is no single preferred option for wrist osteoarthritis. (10.1177/17531934241296758)
- [L5] Joint denervation deserves a place of choice in the surgical arsenal for osteoarthritis of the wrist and hand, provided new anatomical observations are integrated, the procedure is meticulous, and patients are informed that it is a symptomatic treatment. (10.1016/j.otsr.2021.102986)
- [L5] The choice of procedure depends on whether the joint is isolated or associated with carpal malalignment and other joint osteoarthritis. (10.1177/17531934241295345)
- [L5] The hand manifestations of osteoarthritis can be debilitating, with initial treatment being medical and many patients doing well with splinting and hand therapy. (10.1016/j.hcl.2010.09.003)
- [L4] Midcarpal arthritis, which may develop after the procedure, did not cause appreciable deterioration in patient outcomes. (10.1016/j.jhsa.2014.05.031)
- [L4] The mean follow-up time was 9.9 years, with 79% of patients showing radiographic signs of osteoarthritis. (10.1016/j.otsr.2022.103332)
- [L3] Removal of the trapezium as treatment for basal thumb osteoarthritis does not increase the risk of developing wrist osteoarthritis in the long term. (10.1186/s13018-021-02856-x)
- [L2] Type I and III wrists had radiographic progression and ultimately underwent deformation. (10.1016/j.jhsa.2009.01.016)
- [L2] Both wrist arthrodesis and wrist arthroplasty were effective at alleviating pain and improving grip strength, with comparable complication rates of 17% and 19% respectively. (10.1177/1753193420953683)
- [L4] Combining traditional qualitative evaluation and quantitative measurements may improve the classification of wrist osteoarthritis. (10.1177/1753193416669261)
- [L2] Surgical management of wrist arthritis remains a controversial issue, but proximal row carpectomy has gained recent support and its incidence has increased, even in patients under 45 years old. (10.1016/j.jhsa.2023.11.009)
- [L4] However, radiographic signs of radioscaphoid arthritis were often observed in patients with follow-up greater than 10 years. (10.1177/1753193413496177)
- [L3] Arthroplasty should be used as an alternative to arthrodesis in the treatment of posttraumatic wrist arthritis, given the proper patient selection and indications. (10.1016/j.jhsa.2013.02.013)
- [Paper] Total wrist denervation is a reliable and reproducible surgical technique for pain relief and preservation of wrist function in painful osteoarthritis. (10.1016/j.otsr.2019.04.024)
- [L3] Although the consequent ongoing scapholunate instability resulted in early arthritic degeneration, most patients had acceptable long-term function of the wrist. (10.1302/0301-620x.94b12.30007)

- [L4] A second and even a third operation can result in long-term pain improvement, good function and capacity for work, and we recommend re-operation in symptomatic cases with minor osteoarthritis of the wrist (SNAC stage 0 or 1). (10.1177/1753193409346093)
- [L2] Patients with wrist arthritis who undergo surgery face higher risks of CTS and subsequent CTR than those managed conservatively. (10.1016/j.jhsa.2026.01.013)
- [L5] The evolution of wrist arthroplasty, especially with modular systems like the Motec, represents a significant shift in the management of advanced wrist arthritis, driven by advancements in materials, surgical techniques and patient selection. (10.1177/17531934251406868)
- [L4] An uncemented total wrist arthroplasty can provide long-lasting unrestricted hand function in young and active patients. (10.1016/j.jhsa.2017.06.097)
- [L3] Wrist radiographs demonstrate a 47% sensitivity and 94% specificity in predicting end-stage ST joint arthritis, emphasizing the importance of directly visualizing the ST joint after trapeziectomy. (10.1177/1558944718765246)
- [L4] Wrist arthroplasty provides functional mobility, improved strength, and reduced pain in carefully selected cases of severely destroyed wrist joints, though implant survival rates do not compare with hip and knee arthroplasties. (10.1016/j.hcl.2017.04.004)
- [L3] Signal changes in the flexor carpi radialis are infrequent and often incidental or associated with peritrapezial osteoarthritis. (10.1177/1558944718760033)
- [L2] Radiocarpal joint injection of corticosteroid within 2 weeks of an intra-articular distal radius fracture does not appear to affect the development of post-traumatic osteoarthritis within 2 years follow-up in a small pilot cohort. (10.1016/j.jhsa.2023.11.026)
- [L3] Patients with SLAC wrist were more likely to be male and have a history of trauma compared to patients with first CMC OA. (10.1177/1558944718788672)
- [L4] Patients with established scaphoid non-union should be advised that osteoarthritis will most likely develop. (10.2106/00004623-198567030-00013)
- [L2] Both surgical groups demonstrated decreased wrist kinematic motion and functional performance compared with individuals with normal wrists. (10.1016/j.jhsa.2015.04.035)
- [L5] Wrist biomechanics were significantly altered following trapeziectomy, and of the reconstructions tested, LRTI most closely resembled the intact biomechanics in this cadaveric model. (10.1016/j.jhsa.2019.10.003)
- [L3] Motion was smoother and more closely replicated the normal axis and functional motion of the wrist. (10.1016/j.jhsa.2015.02.027)
- [L5] Despite complex carpal bone anatomy and kinematics, computed fiber elongations were found to vary linearly with wrist position. (10.1016/j.jhsa.2012.04.025)
- [L4] Rotational malalignment of the wrist has significant effects on carpal, distal radial and distal radioulnar joint measurements. (10.1177/1753193408090393)
- [L4] This study provides guidelines on how to measure and quantify carpal alignment three-dimensionally and establishes a database for normal values, which may be useful when analysing various wrist pathologies and kinematics. (10.1177/17531934231160100)

- [L4] The technique demonstrated reduced wrist pain and improved wrist motion and grip strength while restoring the integrity of the proximal carpal row. (10.1177/17531934241238939)
- [L4] In most patients, wrist function was improved and pain relief was obtained. (10.1177/1753193413501730)
- [L5] Wrist ROM within 20% extension and radial abduction to 50% flexion limits torque and lever force exacerbation between scaphoid fragments. (10.1186/s13018-020-01897-y)
- [L4] The study also characterized the modification of the wrist CoR during flexion and extension, noting that stability is considered more important than mobility in clinical conditions. (10.1016/s0749-0712(03)00008-8)
- [L4] Our findings suggest that wrist arthrodesis may only compromise select wrist functions. (10.1177/1558944715626930)
- [L5] The 'dart thrower's motion' of the wrist, from radial extension to ulnar flexion, may be a unifying concept of functional wrist motion that is uniquely human. (10.5435/00124635-201001000-00007)
- [L5] The study confirms that constant radiocarpal and midcarpal congruence during radioulnar deviation in normal wrists is no longer possible with intercarpal kinematic modifications after these arthrodeses. (10.1177/17531934231176004)
- [L4] Changes of the motion pattern of the lunate during radioulnar deviation and flexion-extension of the wrist after FCA can explain the shift of the centroid radially and dorsally. (10.1016/j.jhsa.2014.11.028)
- [L4] SNAC wrists differ from SLAC wrists in exhibiting a decreased sagittal lunotriquetral angle, indicating a distinct pathomechanism of carpal instability. (10.1186/s12891-025-08652-6)
- [L5] The FBA wrist has significantly lower contact pressure, greater contact area, and equal contact translation compared with the PRC wrist. (10.1016/j.jhsa.2012.05.040)
- [L4] At a mean follow-up of 6 years, pain was significantly reduced and wrist function was significantly improved compared with preoperative status. (10.1177/1753193420930587)
- [L4] Functional results were good at long-term follow-up despite radiographic changes in the radiolunate joint in 73% of patients. (10.1177/1558944716681949)
- [L4] This method of wrist denervation was a viable salvage option for patients with symptomatic SLAC wrist osteoarthritis to preserve motion, decrease pain, and increase function with a low absolute failure rate at mid- to long-term follow-up. (10.1016/j.jhsa.2021.02.023)
- [L4] Although one has to take into account the short-term follow-up of 1 year, and the fact that the patient had rather low demands to his wrist, it is a technique to consider in similar cases. (10.1177/1753193417752319)
- [L4] Radiographic classification of SLAC wrist has moderate reliability and reproducibility, whereas classification of SNAC wrist has limited reliability. (10.1177/1753193413484629)
- [L4] Reviewing multiview radiographs more commonly yielded Vender stage 3 osteoarthritis classification. (10.1177/1558944720937359)

- [L5] The procedure aims to alleviate pain and improve range of motion in patients with isolated radiolunate or radioscapholunate arthritis who have failed non-surgical treatment. (10.1016/j.jhsa.2022.04.002)
- [L5] AVN of the carpal bones other than Kienböck disease is a rare cause of chronic wrist pain with a poorly understood natural history. (10.1016/j.jhsa.2019.05.022)
- [L4] Radiological evaluation showed normal radiocarpal angles, volar tilt, and radial length in all patients. (10.1007/s001670050172)
- [L4] The presence of radiological arthritis and static carpal instability did not cause reduced function at our minimum follow-up of 10 years. (10.1016/j.jhsa.2009.09.003)
- [L4] Preoperative radiographs did not correlate well with intraoperative findings, often underestimating degenerative changes at the radiolunate joint. (10.1016/j.jhsa.2014.03.032)
- [L4] Wrist denervation resulted in improvement in pain scores in 39 patients despite radiological deterioration noted in 34 after 6 years. (10.1016/j.jhsa.2011.03.004)
- [L5] Postoperative progressive changes at the radiocapitate articulation have been documented, yet these changes tend to remain asymptomatic. (10.1016/j.hcl.2012.08.022)
- [L4] With a majority of patients experiencing early radiographic failure of the procedure in the short term, our experience suggests that the reduction and association of the scaphoid and lunate procedure should be abandoned despite the relatively low outcomes measures scores. (10.1016/j.jhsa.2014.07.014)

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