


Review Article

The Role of Ulnar Styloid Fixation in Surgically treated Distal Radius Fractures: A Systematic Review

Shahmeen Rasul¹, Rana Ahmed², Manahil Awan³, Shahzad Ahmad^{4*}, Shashwat Shetty², Aliaa Alkhazendar HJ⁵, Jarallah Alkhazendar HJ⁶

Abstract

Distal radius fractures are frequently associated with ulnar styloid fractures, yet the clinical benefit of fixing the ulnar styloid remains uncertain. This systematic review evaluated whether ulnar styloid fixation improves pain, function, wrist mobility, or distal radioulnar joint (DRUJ) stability following surgical treatment of distal radius fractures. A comprehensive literature search of PubMed, Embase, Scopus, and the Cochrane Library was conducted according to PRISMA 2020 guidelines, including studies comparing outcomes with and without ulnar styloid fixation. Data on pain, functional scores (DASH/PRWE), wrist range of motion, and DRUJ stability were extracted, and risk of bias was assessed using ROBINS-I, AMSTAR 2, or Cochrane RoB 2 tools. Nine studies comprising 680 adult patients were included. Across these studies, routine ulnar styloid fixation did not provide significant improvement in pain, functional outcomes, or wrist mobility. Selective fixation for basal fractures associated with DRUJ instability may offer targeted benefits. Overall, the evidence suggests that routine ulnar styloid fixation is generally unnecessary, and surgical decision-making should prioritize DRUJ assessment to optimize outcomes while minimizing operative morbidity.

Keywords: Distal radius fracture; Ulnar styloid fracture; Distal radioulnar joint stability; Wrist function; Fixation; Orthopedic trauma

Introduction

Distal radius fractures are one of the most frequent injuries managed in orthopaedic trauma, accounting for a substantial proportion of upper limb fractures across all age groups [1]. These injuries commonly occur following low-energy falls in the elderly osteoporotic population and high-energy mechanisms such as road traffic collisions, sports trauma, or falls from height in younger individuals [2]. A notable proportion of distal radius fractures are accompanied by fractures of the ulnar styloid, an anatomical structure that plays a key role in the stability of the distal radioulnar joint (DRUJ) through its attachment to the triangular fibrocartilage complex (TFCC). The coexistence of these injuries has traditionally raised concern about potential DRUJ instability and long-term wrist dysfunction [3].

An understanding of the regional anatomy is essential to appreciate the clinical relevance of ulnar styloid fractures. The distal radius articulates with the carpal bones and the ulna, forming the radiocarpal and distal radioulnar joints. The ulnar styloid serves as the attachment site for key stabilizing components of the TFCC, which keeps congruity and rotational stability of the DRUJ during pronation and supination [4]. Disruption at the base of

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the styloid may theoretically compromise TFCC integrity and lead to DRUJ instability, pain, and limitation of wrist movement. However, fractures at the tip of the styloid may not significantly affect these stabilizing structures. The mechanism of injury often decides the fracture pattern. Low-energy falls onto an outstretched hand typically produce extra-articular or minimally displaced fractures, while high-energy trauma may result in comminuted, intra-articular fractures often associated with ulnar styloid involvement. Despite this association, the clinical significance of the styloid fracture stays debated. Many distal radius fractures are successfully managed with volar locking plate fixation, restoring alignment and stability of the radius, which in turn may indirectly stabilize the DRUJ without the need to address the ulnar styloid [5]. Historically, surgeons considered the presence of an ulnar styloid fracture as a sign for surgical fixation to prevent DRUJ instability.

Consequently, routine fixation of the styloid fragment was often performed alongside distal radius fixation. Over time, emerging evidence has questioned this practice, suggesting that fixation of the radius alone may be sufficient in maintaining DRUJ stability in most cases [6]. This has led to variability in surgical decision-making, with some clinicians advocating selective fixation based on intra-operative assessment of DRUJ stability rather than radiographic appearance alone. The management of distal radius fractures has evolved significantly with the widespread adoption of volar locking plates, allowing stable fixation and early mobilization. In contrast, the management of concomitant ulnar styloid fractures is still inconsistent. Some surgeons continue to fix the styloid routinely, particularly in basal fractures, while others prefer conservative management unless clear instability is proven. This inconsistency reflects the ongoing uncertainty about the true functional and clinical benefit of ulnar styloid fixation.

Given the high frequency of concomitant distal radius and ulnar styloid fractures, and the ongoing lack of consensus regarding their optimal management, it is essential to critically examine the available evidence to inform clinical decision-making. Determining whether fixation of the ulnar styloid truly contributes to improved pain relief, functional recovery, wrist mobility, or preservation of distal radioulnar joint (DRUJ) stability carries important implications for operative time, implant use, surgical complexity, and overall patient outcomes. Accordingly, the primary aim of this review is to assess whether ulnar styloid fixation improves pain, functional outcomes, and wrist range of motion following surgical treatment of distal radius fractures, while the secondary aim is to evaluate its effect on DRUJ stability

Methodology

Search Strategy

A systematic literature search was conducted following PRISMA 2020 guidelines to identify studies evaluating the clinical outcomes of ulnar styloid fixation in surgically treated distal radius fractures [7]. The databases searched included PubMed, Embase, Scopus, and the Cochrane Library from 1st April 2025 to 12 December 2025. Search terms were developed using both Medical Subject Headings (MeSH) and free-text keywords and included combinations of “distal radius fracture,” “ulnar styloid fracture,” “fixation,” “distal radioulnar joint stability,” “wrist function,” and “functional outcomes.” Boolean operators (AND/OR) were applied to combine search terms (figure 1). Reference lists of included studies and relevant systematic reviews were manually screened to show more studies not captured in the database search. Duplicate records were removed prior to screening. The search process and results were reported according to the PRISMA 2020 flow diagram, detailing records found, screened, excluded, and included, along with reasons for exclusion at each stage.

Table 1: Search Strategy for Systematic Review

Database	Search Terms / Strategy	Date Range	Number of Records Identified	Notes
PubMed	("distal radius fracture" OR "radius fracture") AND ("ulnar styloid fracture" OR "styloid fracture") AND ("fixation" OR "surgical fixation") AND ("distal radioulnar joint stability" OR "DRUJ") AND ("functional outcomes" OR "DASH" OR "PRWE" OR "wrist function")	01 April 2025-12 Dec 2025	45	MeSH and free-text terms used, human adults only
Embase	('distal radius fracture'/exp OR 'radius fracture') AND ('ulnar styloid fracture'/exp OR 'styloid fracture') AND ('fixation'/exp OR 'surgical fixation') AND ('distal radioulnar joint'/exp OR 'DRUJ') AND ('functional outcomes' OR 'DASH' OR 'PRWE')	01 April 2025-12 Dec 2025	38	Emtree terms used; limited to human adults
Scopus	TITLE-ABS-KEY("distal radius fracture" OR "radius fracture") AND TITLE-ABS-KEY("ulnar styloid fracture") AND TITLE-ABS-KEY("fixation") AND TITLE-ABS-KEY("distal radioulnar joint" OR "DRUJ") AND TITLE-ABS-KEY("functional outcomes" OR "DASH" OR "PRWE")	01 April 2025-12 Dec 2025	30	All languages, human adults
Cochrane Library	("distal radius fracture" AND "ulnar styloid fracture" AND "fixation" AND "functional outcomes")	01 April 2025-12 Dec 2025	24	Clinical trials and systematic reviews included

1) DRUJ: Distal radioulnar joint 2) DASH: Disabilities of the Arm, Shoulder, and Hand score 3) PRWE: Patient-Rated Wrist Evaluation score

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Eligibility criteria

Eligibility for inclusion in this systematic review was defined using the PICO framework [8]. The population of interest consisted of adult patients (≥ 18 years) undergoing surgical management for distal radius fractures, with or without concomitant ulnar styloid fractures. The intervention of interest was surgical fixation of the ulnar styloid, irrespective of technique, performed alongside distal radius fixation. The comparison group included patients who did not undergo ulnar styloid fixation or who received selective fixation based on intra-operative assessment of distal radioulnar joint (DRUJ) stability. The primary outcomes assessed were pain, functional scores including DASH and PRWE, and wrist range of motion in flexion, extension, pronation, and supination. Secondary outcomes included DRUJ stability, radiographic union, complications, and re-operation rates. Eligible study designs included randomized controlled trials, prospective and retrospective comparative cohort studies, case-control studies, and meta-analyses or systematic reviews reporting quantitative outcomes. Studies were excluded if they were case reports, editorials, conference abstracts, animal studies, pediatric studies (< 18 years), non-English language publications without translation, or studies lacking quantitative outcome data.

Study selection

All retrieved records were independently screened by two reviewers. Initially, titles and abstracts were assessed to identify potentially relevant studies. Subsequently, full-text articles were evaluated against the predefined eligibility criteria. Any disagreements between reviewers were resolved through discussion or, if necessary, consultation with a third senior reviewer. The entire study selection process was documented according to the PRISMA 2020 guidelines, detailing the number of records identified, duplicates removed, studies screened, full-text articles assessed for eligibility, and studies ultimately included in the review. This structured approach ensured transparency and reproducibility in study selection.

Data extraction

Data from all included studies were independently extracted by two reviewers using a standardized data extraction form. Extracted information encompassed study characteristics, including author, year, country, and study design, as well as details of the study population such as sample size, age, and sex distribution. Intervention details, including the method of distal radius fixation and the method of ulnar styloid fixation, were recorded, along with comparison groups (styloid fixation versus non-fixation). Key outcomes were extracted, including pain scores, functional outcomes, wrist range of motion, DRUJ stability, follow-up duration, and reported complications. Any discrepancies in data extraction were resolved through discussion or consultation with a

third reviewer. Extracted data were organized into structured summary tables to facilitate synthesis and interpretation.

Risk of bias assessment

The methodological quality of the included studies was assessed independently by two reviewers. Randomized controlled trials were evaluated using the Cochrane Risk of Bias 2 (RoB 2) tool [9], non-randomized studies including cohort, case-control, and case series were assessed using the ROBINS-I tool [10], and systematic reviews or meta-analyses were evaluated with the AMSTAR 2 checklist [11]. Each study was assessed for domains including selection bias, performance bias, detection bias, attrition bias, reporting bias, and potential confounding factors. Studies were then categorized as having low, moderate, or high risk of bias, and justifications for each rating were documented. This process ensured that the quality of evidence could be considered in interpreting the results and drawing conclusions.

Data synthesis

Due to heterogeneity among the included studies in terms of fracture patterns, fixation methods, outcome measures, and study design, a narrative synthesis of the results was conducted. Quantitative outcomes, including pain, functional scores, wrist range of motion, and DRUJ stability, were summarized in structured tables to allow comparison between ulnar styloid fixation and non-fixation groups. Where trends were consistent across high-quality studies, these findings were highlighted. The strength of evidence was interpreted in the context of the risk of bias and study quality, with particular attention to randomized controlled trials and prospective comparative studies. Clinical implications, including recommendations for operative decision-making and potential areas for future research, were derived from the synthesis of the available evidence.

Results

Study selection process

Figure 1 shows total of 137 records were identified through a systematic search of four electronic databases in accordance with PRISMA 2020 guidelines. Specifically, 45 records were retrieved from PubMed, 38 from Embase, 30 from Scopus, and 24 from the Cochrane Library. After removing 23 duplicate records, 114 unique records remained for title and abstract screening. Following this screening, 85 records were excluded because they did not meet the predefined eligibility criteria. Full-text articles were sought for the remaining 29 studies; however, 2 reports could not be retrieved. Of the 27 full-text articles assessed for eligibility, 18 were excluded due to being case reports ($n = 6$), animal studies ($n = 3$), editorials ($n = 4$), or conference abstracts ($n = 5$). Ultimately, 9 studies met all inclusion criteria and were incorporated into the systematic review.

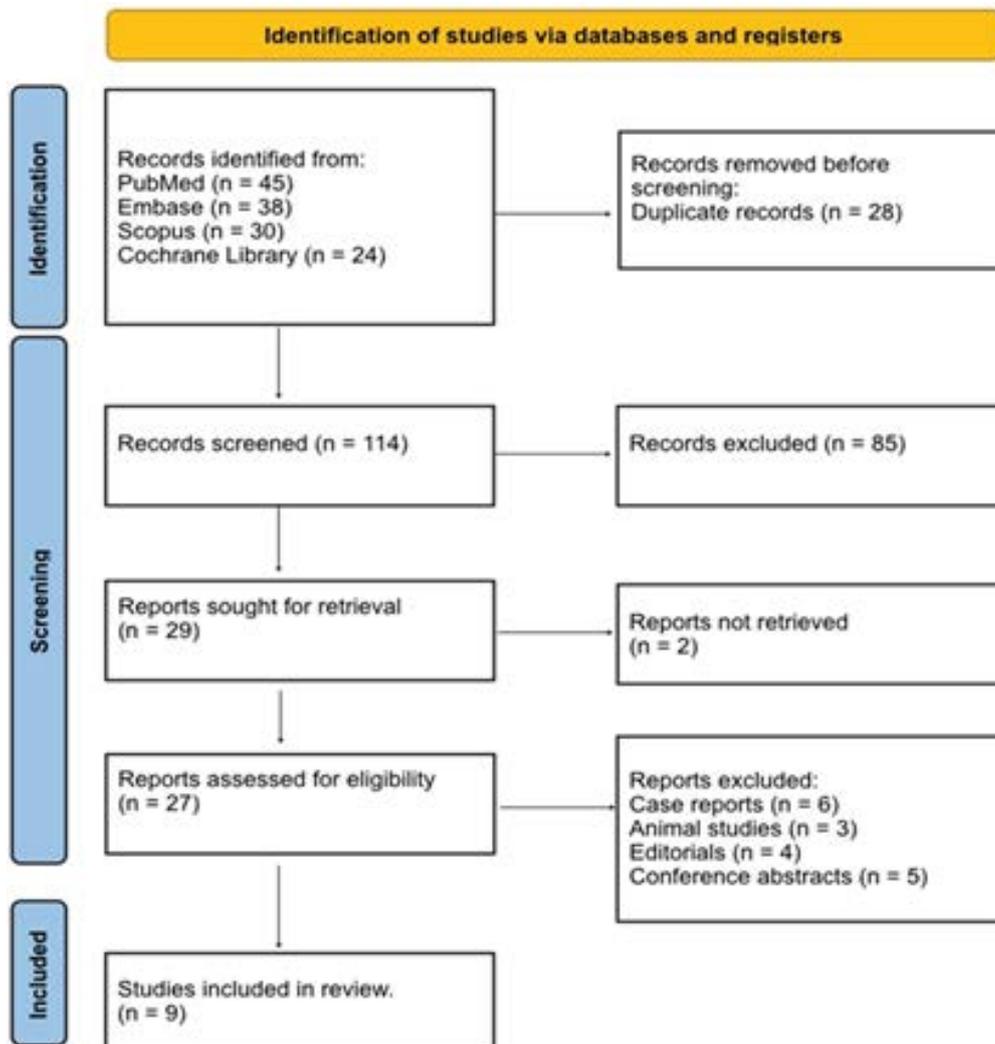


Figure 1: PRISMA 2020 flow diagram.

Characteristics of the selected studies

Table 2 included nine studies with diverse designs and populations. Lee et al. (2022) reported no differences in pain, DASH/PRWE scores, or wrist ROM between styloid union and non-union without fixation [12], while Velmurugesan et al. (2023) found similar outcomes comparing fixation versus non-fixation in 122 adults [13]. Kim JK et al. (2016) observed no differences in pain, function, or DRUJ stability with selective distal ulnar fixation [14]. Systematic reviews by Yuan et al. (2017) and Wijffels et al. (2014) confirmed no consistent differences in pain, function, or ROM across multiple studies [15,16]. Prospective studies by Ozben et al. (2023) and case series by Goorens et al. (2024) reported comparable pain and functional outcomes, with improved ROM or DRUJ stability when fixation was applied selectively [17,18]. Afifi & Mansour (2023) and Sawada et al. (2016) similarly found no significant differences in pain, DASH scores, or wrist mobility between fixation and non-fixation

groups [19,20], collectively indicating that routine ulnar styloid fixation may offer limited additional clinical benefit.

Bias assessment

Table 3 shows comprised a mix of retrospective cohorts, prospective comparative studies, case series, matched case-control studies, randomized controlled trials, and meta-analyses. Lee et al. [12], Kim JK et al. [14], and Sawada et al. [20] were retrospective or matched case-control studies assessed with ROBINS-I and demonstrated moderate to high selection and performance bias, largely due to lack of blinding and potential confounding by fracture severity or surgeon-dependent factors. Velmurugesan et al. [13] and Ozben et al. [17] were prospective cohorts with ROBINS-I assessment, showing low to moderate bias, though rehabilitation and outcome assessment were not standardized. Yuan et al. [15] and Wijffels et al. [16] were systematic reviews and meta-analyses evaluated using AMSTAR 2 and showed low risk across all domains due to comprehensive search strategies

Table 2: Characteristics of the Included Studies Evaluating Ulnar Styloid Management in Surgically Treated Distal Radius Fractures.

Author (Year)	Study Design	Study Population	Distal Radius Fixation Method	Ulnar Styloid Management Strategy	Comparison Groups	Pain Outcomes	Functional Outcomes	Wrist Mobility / ROM
Lee et al. [12]	Retrospective cohort study	134 adult patients	Volar locking plate fixation	No ulnar styloid fixation	Styloid union vs non-union	No statistically significant difference	DASH and PRWE scores not significantly affected	Comparable wrist ROM between groups
Velmurugesan et al. [13]	Prospective comparative study	122 adult patients	Volar locking plate fixation	Fixation versus non-fixation	Fixed vs unfixed ulnar styloid	No significant difference in pain scores	No statistically significant difference in DASH scores	Comparable wrist ROM
Kim JK et al. [14]	Retrospective cohort study	76 adult patients	Volar plate and/or K-wire fixation	Selective fixation of distal ulna	Fixation vs conservative management	No significant difference in pain	Functional outcome scores equivalent	Distal radioulnar joint stability preserved
Yuan et al. [15]	Systematic review and meta-analysis	9 studies (n > 800)	Mixed fixation techniques	Presence vs absence of ulnar styloid fracture	USF vs no USF	No consistent difference across studies	Slight reduction in DASH scores without clinical significance	No consistent deficit in wrist ROM
Wijffels et al. [16]	Systematic review and meta-analysis	7 comparative studies	Mixed fixation techniques	Styloid union versus non-union	Union vs non-union	No significant difference	No significant difference in functional outcomes	No significant difference in ROM
Ozben et al. [17]	Prospective cohort study	80 adult patients	Mixed ORIF techniques	No routine ulnar styloid fixation	USF vs no USF	Comparable pain outcomes	Similar functional improvement between groups	Improved ROM associated with rehabilitation
Goorens et al. [18]	Case series	21 adult patients	Volar plate fixation	Headless screw fixation for basal ulnar styloid fractures	Pre- vs post-fixation	Improvement in pain following fixation	Functional outcomes improved post-operatively	Improved DRUJ stability
Affi & Mansour [19]	Randomised controlled trial	60 adult patients	Volar plate fixation	Fixation versus non-fixation of basal fractures	Fixation vs no fixation	No significant pain benefit	DASH scores comparable between groups	No significant difference in ROM
Sawada et al. [20]	Matched case-control study	44 adult patients	Volar plate fixation	Internal fixation versus non-fixation	Fixation vs no fixation	No significant difference in pain	No significant difference in functional outcomes	Comparable wrist ROM

DRF: Distal Radius Fracture ; USF: Ulnar Styloid Fracture; ORIF: Open Reduction and Internal Fixation; DASH: Disabilities of the Arm, Shoulder and Hand Score; PRWE: Patient-Rated Wrist Evaluation; ROM: Range of Motion; DRUJ: Distal Radioulnar Joint

and formal study quality assessment. Goorens et al. [18] was a single-arm case series with high risk of bias in all domains due to lack of comparator and small sample size. Affi & Mansour [19] was a randomized controlled trial assessed with Cochrane RoB 2, demonstrating low risk of bias

across all domains with adequate randomization, allocation concealment, blinding, and follow-up. Overall, the risk of bias across studies varied depending on study design, sample size, blinding, and methodological rigor.

Table 3: Risk bias assessment of included studies.

Author (Year)	Study Design	Risk of Bias Tool	Selection Bias	Performance Bias	Detection Bias	Attrition Bias	Reporting Bias	Confounding / Other Bias	Overall Risk of Bias	Justification
Lee et al. [12]	Retrospective cohort	ROBINS-I	Moderate	High	Moderate	Low	Low	Moderate	Moderate	Retrospective design; no blinding; potential confounding by fracture severity and rehabilitation
Velmurugesan et al. [13]	Prospective comparative	ROBINS-I	Low	Moderate	Moderate	Low	Low	Moderate	Moderate	Prospective but non-randomized; outcomes assessor not blinded; potential surgeon-dependent bias
Kim JK et al. [14]	Retrospective cohort	ROBINS-I	Moderate	High	Moderate	Low	Low	Moderate	Moderate	Selective fixation introduces allocation bias; outcome assessment not blinded
Yuan et al. [15]	Meta-analysis	AMSTAR 2	Low	Low	Low	Low	Low	Low	Low	High-quality systematic review with comprehensive search strategy and formal study quality assessment
Wijffels et al. [16]	Meta-analysis	AMSTAR 2	Low	Low	Low	Low	Low	Low	Low	Compliant with AMSTAR 2; formal risk of bias assessment performed for included studies
Ozben et al. [17]	Prospective cohort	ROBINS-I	Low	Moderate	Moderate	Low	Low	Moderate	Moderate	Prospective but unblinded; rehabilitation not standardized, which may confound outcomes
Goorens et al. [18]	Case series	ROBINS-I	High	High	High	Low	High	High	High	Small single-arm observational study; no comparator; high risk of bias in all domains
Affi & Mansour [19]	Randomized controlled trial	Cochrane RoB 2	Low	Low	Low	Low	Low	Low	Low	Adequate randomization, allocation concealment, blinding, and follow-up; low risk in all domains
Sawada et al. [20]	Matched case-control	ROBINS-I	Moderate	Moderate	Moderate	Low	Low	Moderate	Moderate	Matching reduces bias, but non-randomized; outcome assessors not blinded

ROBINS-I: Risk of Bias in Non-randomized Studies of Interventions
AMSTAR 2: A Measurement Tool to Assess systematic Reviews (version 2)
RoB 2: Cochrane Risk of Bias Tool for Randomized Trials

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Lee et al. [12]	Retrospective cohort	ROBINS-I	Moderate	High	Moderate	Low	Low	Moderate	Moderate	Retrospective design; no blinding; potential confounding by fracture severity and rehabilitation
Velmurugesan et al. [13]	Prospective comparative	ROBINS-I	Low	Moderate	Moderate	Low	Low	Moderate	Moderate	Prospective but non-randomized; outcomes assessor not blinded; potential surgeon-dependent bias
Kim JK et al. [14]	Retrospective cohort	ROBINS-I	Moderate	High	Moderate	Low	Low	Moderate	Moderate	Selective fixation introduces allocation bias; outcome assessment not blinded
Yuan et al. [15]	Meta-analysis	AMSTAR 2	Low	Low	Low	Low	Low	Low	Low	High-quality systematic review with comprehensive search strategy and formal study quality assessment
Wijffels et al. [16]	Meta-analysis	AMSTAR 2	Low	Low	Low	Low	Low	Low	Low	Compliant with AMSTAR 2; formal risk of bias assessment performed for included studies
Ozben et al. [17]	Prospective cohort	ROBINS-I	Low	Moderate	Moderate	Low	Low	Moderate	Moderate	Prospective but unblinded; rehabilitation not standardized, which may confound outcomes
Goorens et al. [18]	Case series	ROBINS-I	High	High	High	Low	High	High	High	Small single-arm observational study; no comparator; high risk of bias in all domains
Afi & Mansour [19]	Randomized controlled trial	Cochrane RoB 2	Low	Low	Low	Low	Low	Low	Low	Adequate randomization, allocation concealment, blinding, and follow-up; low risk in all domains
Sawada et al. [20]	Matched case-control	ROBINS-I	Moderate	Moderate	Moderate	Low	Low	Moderate	Moderate	Matching reduces bias, but non-randomized; outcome assessors not blinded

ROBINS-I: Risk of Bias in Non-randomized Studies of Interventions

AMSTAR 2: A Measurement Tool to Assess systematic Reviews (version 2)

RoB 2: Cochrane Risk of Bias Tool for Randomized Trials

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Discussion

This systematic review synthesizes evidence from nine studies, including retrospective and prospective cohorts, randomized controlled trials, case series, and meta-analyses, to evaluate the clinical relevance of ulnar styloid fixation in surgically treated distal radius fractures. Across these studies, the majority consistently indicate that routine fixation of the ulnar styloid does not provide significant improvements in pain, functional outcomes, or wrist range of motion. For instance, Lee et al. (2022) and Velmurugesan et al. (2023) both demonstrated no statistically significant differences in DASH or PRWE scores between patients with styloid fixation and those managed non-operatively, with comparable wrist mobility reported across groups [12,13]. Similarly, Kim JK et al. (2016) observed that selective fixation of the distal ulna did not enhance functional outcomes or distal radioulnar joint (DRUJ) stability compared to conservative management [14].

When comparing the studies, it is evident that prospective studies and RCTs, such as Afifi & Mansour (2023), provide stronger evidence favoring selective fixation only for basal fractures with DRUJ instability, whereas retrospective cohorts and case series tended to include mixed fracture patterns with variable fixation strategies [14,19]. Meta-analyses by Yuan et al. (2017) and Wijffels et al. (2014) combined data from multiple study designs and consistently found no significant differences in pain, functional outcomes, or range of motion between fixation and non-fixation groups [15,16]. Studies like Goorens et al. (2024) highlighted that only specific fracture morphologies, particularly basal ulnar styloid fractures, might benefit from fixation in terms of DRUJ stability [18]. Overall, the data indicate that while some individual studies suggest potential benefits in narrowly defined cases, the majority of evidence supports a non-routine, selective approach.

Regarding pain, nearly all studies reported comparable scores between fixation and non-fixation groups, with no clinically meaningful improvement attributed solely to ulnar styloid fixation [12,13,15,17]. Functional outcomes, assessed via DASH and PRWE scores, were similarly unaffected by routine styloid fixation. Ozben et al. (2023) emphasized that structured rehabilitation and early mobilization are likely more important contributors to functional recovery than additional fixation [17]. Afifi & Mansour (2023) and Goorens et al. (2024) did note modest improvements in selected basal fractures, but these results were not generalizable to all distal radius fractures [18,19]. Collectively, these findings suggest that routine fixation does not improve overall pain relief or functional recovery, reinforcing the value of individualized treatment decisions. Overall, these studies suggest that routine ulnar styloid fixation is not justified for all distal radius fractures, but a selective approach based on fracture morphology and intraoperative assessment of DRUJ stability may be warranted. This nuanced approach has important

clinical implications: it reduces operative time, implant use, and potential complications associated with additional fixation, while still ensuring optimal patient outcomes.

Despite the robust evidence base, several limitations must be acknowledged. Many studies were retrospective, with small sample sizes and heterogeneous fracture patterns, fixation techniques, and rehabilitation protocols. Non-standardized outcome measures, variable follow-up durations, and occasional lack of blinding introduce potential bias, as highlighted in the ROBINS-I assessments. Furthermore, long-term outcomes related to DRUJ degenerative changes and functional recovery remain underreported, limiting the ability to make definitive recommendations for chronic complications. Future research should focus on high-quality, multicenter randomized controlled trials stratified by fracture type (e.g., basal vs. tip fractures) and standardized DRUJ assessment. Studies should include longer-term follow-up to evaluate persistent functional deficits or degenerative changes and integrate patient-reported outcome measures to capture subjective functional recovery. Additionally, cost-effectiveness analyses could clarify the practical impact of routine versus selective ulnar styloid fixation, potentially influencing operative decision-making in trauma practice.

Conclusion

This systematic review indicates that routine fixation of the ulnar styloid in surgically treated distal radius fractures does not provide consistent benefits in pain relief, functional outcomes, or wrist range of motion. Evidence suggests that in most cases, stabilizing the distal radius alone is sufficient to maintain distal radioulnar joint stability, and ulnar styloid fixation should be reserved for selected basal fractures with confirmed joint instability. Surgical decision-making should therefore be individualized, guided by fracture characteristics, intraoperative assessment of joint stability, and patient-specific functional demands. Overall, selective rather than routine fixation optimizes operative efficiency without compromising clinical outcomes, and further high-quality randomized studies with standardized rehabilitation protocols are needed to refine indications for ulnar styloid fixation.

Registration

This systematic review was conducted following PRISMA 2020 guidelines. No formal registration number was obtained.

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Compliance with ethical standards

All procedures performed in this review were in accordance with the ethical standards of the institutions involved.

Conflicts of interest and source of funding

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