



Midterm outcomes and survivorship of arthroscopic elbow debridement: a comparison of posttraumatic versus primary degenerative osteoarthritis

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Background: Arthroscopic debridement is an effective means of surgical management of both degenerative osteoarthritis (DOA) and posttraumatic arthritis (PTA) of the elbow. However, the difference in the efficacy and longevity of this procedure when performed for these two distinct pathologies remains in question. The purpose of this study was to identify and compare the midterm outcomes and survivorship of arthroscopic debridement of elbow PTA and DOA.

Methods: A retrospective analysis of patients undergoing arthroscopic debridement of DOA and PTA of the elbow was performed. A questionnaire containing the Oxford Elbow Score, as well as questions regarding the incidence of reoperation, additional nonoperative intervention, complications, pain, and satisfaction, was given at 5 years, minimum, after surgery. The midterm survivorship of arthroscopic debridement free of reoperation for any reason, as well as the remaining outcome measurements obtained via the questionnaire and in-office evaluation, was compared between PTA and DOA cohorts.

Results: Eighty patients (DOA = 36, PTA = 44) were included in this study for analysis. All 36 patients with DOA were noted to be male. Follow-up time at the date of questionnaire response was 7.9 years (range, 5.6–11.8) in the DOA cohort and 8.6 years (range, 5.7–12.7) in the PTA cohort. Reoperation rates of 5.6% and 11.4% were identified in the DOA and PTA cohorts, respectively. No statistical difference was noted in reoperation rate, survivorship, or any measured patient-reported outcomes between cohorts at the final follow-up visit. Both cohorts demonstrated a significant improvement in Visual Analog Scale pain scores ($P < .001$) and ROM. Postoperative ROM was obtained at the final clinic visit at an average follow-up duration of 151 days and 255 days in the DOA and PTA cohorts, respectively. However, no difference in the degree of improvement in either outcome variable was identified after a comparison between cohorts.

Conclusion: Arthroscopic debridement is an equally efficacious treatment option for DOA and PTA of the elbow. Patients with either pathology can expect satisfactory elbow function and an improvement in pain with little chance of reoperation at the midterm of the follow-up duration.

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Elbow arthritis can arise from a number of pathologic mechanisms, with two of the most common etiologies being degenerative osteoarthritis (DOA) and posttraumatic arthritis (PTA).²⁶ Despite the mechanism, presenting symptoms are often similar as patients

complain of primarily mechanical symptoms, including stiffness, pain throughout range of motion (ROM), and a locking sensation.²⁶ In spite of this similarity, population studies have revealed clear differences in demographics and radiologic features between these two etiologies of arthritis. These differences highlight the need for further investigation into patient outcomes after the most commonly used surgical treatment options for either pathology.

DOA of the elbow is most prevalent in middle-aged male adults with a history of laborious activities.²⁶ This pathology is somewhat rare and is known to occur most commonly in the ulnohumeral

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joint of the dominant extremity, resulting in pain and diminished ROM with flexion and extension of the elbow.⁴ In contrast, PTA tends to occur in a younger patient population because of the greater incidence of trauma in adolescence.⁵ This can arise from fracture-related malalignment of articular geometry or ligamentous instability resulting in abnormal joint contact pressure within the ulnohumeral or radiocapitellar joint space.^{4,17} Although these two etiologies of elbow arthritis commonly follow a similar treatment algorithm, the aforementioned nuances that differentiate DOA and PTA may have a significant impact on treatment. In addition, the primary location of arthritis within the elbow may alter surgical recommendations.

Arthroscopic debridement represents a commonly used treatment method in the surgical management of elbow arthritis, regardless of etiology.^{1,14} Outcomes after arthroscopic debridement of elbow PTA and DOA have been previously examined, with the longest reported average follow-up duration being 4.5 and 5.6 years, respectively.^{3,6,12,13,16,17,21,22,24,25,27} Reoperation rates after arthroscopic management of DOA of the elbow range from 0 to 11.6%.^{2,13,18} In comparison, arthroscopic debridement of elbow PTA has demonstrated a reoperation rate of 2.3%–7.2%.^{3,17,20,24} To our knowledge, a direct comparison of the survivorship of arthroscopic elbow debridement for DOA vs. that for PTA has yet to be undertaken.

The purpose of the present study is to identify and compare the midterm patient-reported outcomes and survivorship after arthroscopic elbow debridement of PTA vs. DOA. For the purposes of this study, the time point “midterm” in follow-up was defined as 5 years, minimum, from the date of surgery.

Materials and methods

Institutional review board approval was obtained before conducting this study. A retrospective review was performed of all patients undergoing arthroscopic debridement of primary DOA and PTA of the elbow at a single institution from July 2004 to July 2014. Patients were identified in our institution's database using the Current Procedural Terminology codes 29834–29838. All procedures were performed by 1 of 10 fellowship-trained shoulder and elbow orthopedic surgeons. The inclusion criteria consisted of a diagnosis of elbow PTA (radiographically evident osteoarthritis (OA) with a documented history of trauma to the affected elbow) or primary DOA (radiographically evident OA without a documented history of trauma to the affected elbow), a minimum of 5 years between the date of surgery and onset of data collection, and age greater than 18 years at the time of surgery. The exclusion criteria consisted of a diagnosis of isolated loose bodies without radiographically evident OA, a history of inflammatory arthritis, a history of infectious arthropathy, prior open or arthroscopic debridement of the ipsilateral elbow, and lack of response to the distributed questionnaire.

The primary outcome measure of this study was the survivorship of arthroscopic debridement free from reoperation for any reason at the final follow-up visit. Secondary outcome measures included elbow ROM, complication rate, Visual Analog Scale (VAS) pain score, Oxford Elbow Score (OES), time to return to work/sport, satisfaction, and need for any additional nonoperative treatment to the affected elbow. Patients were separated into PTA and DOA cohorts based on the etiology of elbow arthritis. Primary and secondary outcome measures were then calculated and compared between cohorts. In addition, preoperative and postoperative elbow ROM and VAS pain scores were compared within individual cohorts.

Demographic data were extracted from patient electronic medical records (Table I). Preoperative flexion/extension and

pronation/supination ROM and VAS pain scores were obtained at the final preoperative office visit via physical examination and questioning of pain rated on a scale of 1–10, respectively. Postoperative ROM was recorded by the operating surgeon during physical examination at the latest postoperative follow-up clinic visit. This was completed before reoperation in all patients requiring an additional surgery after the arthroscopic debridement.

Procedure-related data, including the indications for surgery and procedures performed, were collected from patient operative reports (Table II). “Mechanical Complication of Hardware” was diagnosed by the operative surgeon if the patient exhibited elbow pain with active and passive ROM that was attributed to the presence of metal hardware. “Ulnar neuropathy” was diagnosed via the presence of subjective numbness and tingling of the small finger and the ulnar aspect of the ring finger as reported by the patient during preoperative clinic evaluation. “Loose Hardware” was defined as radiographic evidence of loosening as stated in preoperative clinic notes. Patients indicated for surgery for hardware loosening demonstrated no signs of infection on physical examination and possessed normal C-reactive protein levels and erythrocyte sedimentation rates on serology. Finally, inciting injuries leading to PTA as documented in preoperative clinic notes were recorded (Table III).

A patient questionnaire was distributed to all included patients. This questionnaire consisted of the 12-item OES and 7 additional questions derived by the authors. The OES was selected for use as it has been validated in its assessment of patient-reported outcomes after elbow surgeries.⁸ The questionnaire was released once per week for three consecutive weeks via REDCap electronic software (Vanderbilt University, Nashville, TN, USA).^{10,11} Patients who had not completed the questionnaire within 1 week of the final electronic release date were contacted via telephone by a member of the research team (D.A.D., A.J.S., Q.T.C., N.J.M.). The questionnaire session was then conducted following a formatted script. Any patient not answering the phone was called again 24 hours later in a final attempt to obtain a response.

All statistical analyses were performed using R Studio (Version 3.5.1, Vienna, Austria) and Microsoft Excel (Microsoft Inc, Redmond, WA, USA). *t* Tests were used for comparison of parametric data, while Mann-Whitney U tests were used in the analysis of nonparametric data. Chi-Square or Fisher's Exact tests were used for the analysis of categorical data. Survivorship was assessed by the Kaplan-Meier method to estimate survival probabilities and 95% confidence intervals. The alpha risk was set to 0.05 for all tests to estimate statistical significance.

Results

A total of 80 patients were included in the study for analysis. Data were collected from 36 patients with DOA (REDCap = 10, telephone = 26) and 44 patients with PTA (REDCap = 37, telephone = 7). The average follow-up duration up until the date of receiving questionnaire response was 7.9 years (range, 5.6–11.8) in the DOA cohort and 8.6 years (range, 5.7–12.7) in the PTA cohort ($P = .100$). Demographic characteristics of each cohort are listed in Table I.

Preoperative diagnoses and indications for surgery can be found in Table II. Of note, 4 patients (11.1%) in the DOA cohort underwent a surgery to address the ulnar nerve (decompression or transposition) at the time of index arthroscopic debridement. This was performed for a diagnosis of subluxating ulnar nerve in one patient and concomitant ulnar neuropathy in 3 patients. Similarly, 7 patients (15.9%) in the PTA cohort underwent a surgery to address the ulnar nerve during the index arthroscopic debridement. This was again performed for a diagnosis of

Table I
Patient demographics.

Demographic variable	DOA (n = 36)	PTA (n = 44)	P value
Gender, n (%)			<.001
Female	0 (0.00)	18 (40.9)	
Male	36 (100)	26 (59.1)	
Age, mean (range)	50.0 (29.0-68.0)	44.2 (18.0-70.0)	.019
Follow-up years for questionnaire, mean (range)	7.9 (5.6-11.8)	8.6 (5.7-12.7)	.100
Follow-up days for postoperative clinic visit, mean (range)	151 (16-1303)	255 (35-1716)	.095
Laterality, n (%)			.009
Left	7 (19.4)	22 (50.0)	
Right	29 (80.6)	22 (50.0)	
Surgery to dominant extremity, n (%)	31 (86.1)	24 (50.0)	.005
Occupation			.680
Nonlabor	13 (36.1%)	19 (43.2%)	
Labor	23 (63.9%)	25 (56.8%)	
Lifts weights			.252
No	20 (55.6%)	31 (70.5%)	
Yes	16 (44.4%)	13 (29.5%)	

DOA, degenerative osteoarthritis; PTA, posttraumatic arthritis.

Table II
Preoperative diagnoses and surgical characteristics.

Operative report designation	DOA (n = 36)	n (%)	PTA (n = 44)	n (%)
Preoperative diagnosis				
Osteoarthritis	36 (100)		Posttraumatic arthritis	44 (100)
Loose body	27 (75)		Posttraumatic stiffness	21 (48)
Bone spur	2 (6)		Loose body	24 (55)
Contracture	9 (25)		Mechanical Complication of Hardware	2 (5)
Ulnar neuropathy	3 (8)		OCD	1 (2)
Synovitis	1 (3)		Malunion	1 (2)
			Synovitis	0 (0)
			Ulnar neuropathy	6 (14)
Indication for surgery				
Pain	32 (89)		Pain	33 (75)
Decreased ROM	16 (44)		Decreased ROM	23 (52)
Mechanical symptoms	17 (39)		Mechanical symptoms	14 (32)
Nerve symptoms	2 (6)		Nerve symptoms	5 (11)
			Loose hardware	2 (5)
			Ligament insufficiency	1 (2)
Ulnar nerve demographics				
Palpable subluxation	1 (3)		Palpable subluxation	1 (2)
Surgery to ulnar nerve	4 (11)		Surgery to ulnar nerve	7 (16)

DOA, degenerative osteoarthritis; PTA, posttraumatic arthritis; OCD, osteochondritis disicans; ROM, range of motion.

Table III
Inciting traumatic elbow injuries leading to posttraumatic arthritis.

Inciting trauma	n
Intra-articular distal humerus fracture	3
Capitellar fracture	3
Radial head fracture	13
Nonspecific elbow fracture	3
Nonspecific elbow trauma	8
Hyperextension injury	6
Simple elbow dislocation	7
Complex fracture-dislocation of elbow (Terrible Triad Injury)	1

subluxating ulnar nerve in one patient and concomitant ulnar neuropathy in 6 patients.

Survivorship

Two patients (5.6%) diagnosed with DOA and 5 patients (11.4%) with PTA were found to have undergone reoperation to the affected elbow at the final follow-up visit ($P = .449$). This occurred at an average of 514 days (1.4 years) from the date of index procedure in the DOA cohort and 1449 days (4.0 years) in the PTA cohort

($P = .256$). The Kaplan-Meier analysis demonstrated no difference in midterm survivorship between the patient cohorts ($P = .38$) (Fig. 1). Both patients requiring reoperation in the DOA cohort underwent a second isolated arthroscopic debridement. The patients requiring reoperation in the PTA cohort underwent repeat arthroscopic debridement for ROM limitation ($n = 2$), open debridement for ROM limitation ($n = 1$), open release and debridement of lateral epicondylitis ($n = 1$), and total elbow arthroplasty ($n = 1$). Of note, 3 of these PTA patients had a documented history of surgery before arthroscopic debridement, including open reduction and internal fixation of the olecranon, lateral condyle excision, and open reduction and internal fixation of the capitellum.

Twelve patients (33.3%) within the DOA cohort and 13 patients (29.5%) in the PTA cohort reported receiving an additional nonoperative treatment to the affected elbow after the index arthroscopic debridement ($P = .904$). This included corticosteroid injections (DOA: $n = 7$, PTA: $n = 13$), physical therapy (DOA: $n = 3$, PTA: $n = 8$), nonsteroidal anti-inflammatory drug use (DOA and PTA: $n = 5$), opioid medications (DOA and PTA: $n = 1$), steroid dose-pack prescription (DOA: $n = 1$), a home exercise program (DOA: $n = 1$, PTA: $n = 4$), hyaluronic acid injection (PTA: $n = 1$), acupuncture (PTA:

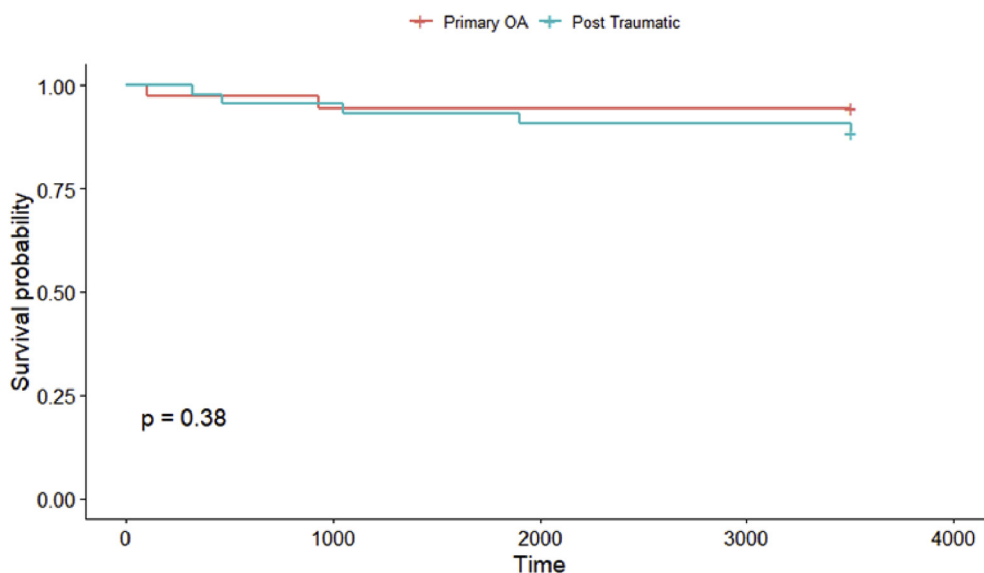


Figure 1 Kaplan-Meier survival analysis curve comparing the survivorship of patients in the primary degenerative osteoarthritis and posttraumatic arthritis cohorts. Time is represented in the form of days. OA, osteoarthritis.

n = 1), and extension bracing (PTA: n = 2). All patients undergoing reoperation had failed a trial of nonoperative management before the repeat surgery.

Complications

Complications related to the index arthroscopic procedure were reported in 19.4% (n = 7) of patients in the DOA cohort and 15.9% (n = 7) of patients in the PTA cohort (P = .982). This included prolonged postoperative stiffness (DOA: n = 5, PTA: n = 3), heterotopic ossification (HO) (DOA: n = 1, PTA: n = 1), olecranon bursitis (DOA: n = 1), wound dehiscence (PTA: n = 1), infection (PTA: n = 3), and residual ulnar neuropathy (PTA: n = 3). No patients reporting complications in the DOA cohort required reoperation. However, 2 patients reporting complications in the PTA cohort required reoperation. One patient underwent reoperation for continued stiffness, while the second reported reoperation for a combination of wound dehiscence, infection, continued stiffness, and residual ulnar neuropathy. This second patient underwent reoperation at an outside facility, resulting in an inability to determine the exact procedure performed.

Range of motion

A comparison of preoperative and postoperative ROM values within and between DOA and PTA cohorts can be found in Table IV. Postoperative ROM data were collected at the final clinic follow-up visit, which occurred at an average of 151 days (range, 16-1303 days) for patients with DOA and 255 days (range, 35-1716 days) for patients with PTA (P = .095). Of note, preoperative ROM data were not available for 2 patients regarding flexion/extension and for 3 patients regarding pronation/supination. Postoperative ROM data were unavailable for 3 patients regarding pronation/supination and 1 patient regarding flexion/extension.

Subjective patient outcomes

Patient-reported outcomes are provided in Table V. Two patients in the DOA cohort and 2 patients in the PTA cohort were noted to have not completed the OES portion of the questionnaire.

Table IV

A comparison of preoperative, postoperative, and delta (Δ) range of motion (ROM) values compared between patients cohorts.

Plane of motion	DOA, (range)	PTA, (range)	P value
Preoperative			
Flexion	118.1 (90-150)	127.8 (90-150)	.004
Extension	26.2 (3-50)	20.6 (-10 to 45)	.039
Supination	79.3 (40-90)	83.0 (45-90)	.272
Pronation	81.3 (40-90)	85.5 (50-90)	.179
Postoperative			
Flexion	126.7 (90-145)	133.1 (100-150)	.011
Extension	11.3 (3-30)	10.6 (-10 to 30)	.696
Supination	86.3 (50-90)	86.1 (50-90)	.922
Pronation	86.3 (50-90)	86.2 (50-90)	.965
Delta (Δ)			
Flexion	8.6*	5.3*	.312
Extension	14.9*	10.0*	.067
Supination	7.0*	3.1*	.152
Pronation	5.0*	0.7	.035

DOA, degenerative osteoarthritis; PTA, posttraumatic arthritis. Extension is presented as the number of degrees short of neutral alignment. A positive Δ represents a gain in degrees of elbow motion in the specified direction. *A significant improvement in ROM (P < .05).

Discussion

The primary purpose of this study was to identify and compare the survivorship of arthroscopic elbow debridement between patients with DOA vs. those with PTA. No significant difference in survivorship or reoperation rates was identified between the cohorts. Furthermore, we found no difference in OES values or complication rates between the cohorts. We did observe that both etiologies demonstrated a significant improvement in VAS pain scores and ROM after arthroscopic elbow debridement without a significant difference in the degree of improvement between the cohorts.

This study further defines some notable differences in the demographics of elbow arthritis based on the etiology. Patients with DOA were exclusively male in our study population, compared to 60% of those with PTA. Patients with PTA developed symptoms requiring surgery at an average of 6 years earlier than those with DOA. DOA of the elbow requiring a surgical intervention occurred

Table V

A comparison of subjective outcomes at the final follow-up visit among patient cohorts.

Patient-reported outcome	DOA	PTA	P value
Preoperative VAS, (range)	6.1 (0-10)	6.4 (0-10)	.688
Postoperative VAS, (range)	1.7 (0-8)	2.0 (0-8)	.585
Delta (Δ) VAS	-4.4	-4.4	.962
Time to return to work/sport, (weeks)	n (%)	n (%)	.101
<2	8 (22)	12 (29)	
2-6	13 (36)	10 (24)	
6-12	8 (22)	7 (17)	
3-6	2 (6)	5 (12)	
6-9	1 (3)	1 (3)	
9-12	4 (11)	1 (3)	
>12	0 (0)	6 (14)	
Satisfaction	n (%)	n (%)	.115
Very satisfied	18 (50)	21 (50)	
Satisfied	10 (28)	11 (26)	
Natural	4 (11)	7 (17)	
Unsatisfied	0 (0)	3 (7)	
Very unsatisfied	4 (11)	0 (0)	
Oxford Elbow Score, (range)	42.7 (5-48)	39.5 (13-48)	.154

DOA, degenerative osteoarthritis; PTA, posttraumatic arthritis; VAS, Visual Analog Scale.

A negative Δ value represents a decrease in pain score.

mostly in the dominant arm (86%), whereas PTA was found to occur equally in either extremity.

Several studies have attempted to define the outcomes of arthroscopic debridement of primary DOA and PTA of the elbow; however, a paucity of literature exists directly comparing outcomes in these two distinct patient cohorts. In addition, the reported length of follow-up in this literature is varied and often less than 5 years. Studies evaluating clinical outcomes after arthroscopic debridement of DOA of the elbow have noted a reoperation rate of 0–11.6% over an average follow-up duration of 2.9–5.6 years (Table VI).^{2,7,13,18} Similarly, literature assessing the outcomes of arthroscopic debridement of PTA of the elbow has reported a reoperation rate of 2.3%–7.7% at an average follow-up duration of 1–3.2 years (Table VI).^{3,12,20,24} One of the few studies directly comparing the outcomes of this procedure among patients suffering from DOA and PTA of the elbow did so at an average follow-up duration of 3.7 years.¹⁹ Of note, this study did not report the rate of reoperation identified in either cohort over the postoperative period. The reoperation rates of 5.6% and 11.4% identified in our study within the DOA and PTA cohorts, respectively, are consistent with those reported in current literature. However, the present study is the first to both report and compare the survivorship of this procedure at midterm follow-up when performed for either etiology of elbow arthritis. Although the rate of reoperation after debridement of PTA was nearly double that of patients with DOA, no difference in survivorship or reoperation rates was noted between the evaluated patient cohorts. It is possible that with a greater study power, a statistical difference in reoperation and survivorship may have been identified. Nonetheless, our data indicate a similar efficacy of arthroscopic debridement to prevent the need for an additional surgery in the treatment of either pathology at a longer postoperative follow-up than previously reported.

The safety of arthroscopic elbow debridement has been thoroughly explored; however, a direct comparison of complication rates between etiologies of arthritis has yet to be undertaken. A complication rate of 0–5% after arthroscopic debridement of primary DOA of the elbow has been identified (Table VI).^{2,7,13,18} In contrast, a complication rate of 7%–27% has been reported after arthroscopic treatment of elbow PTA (Table VI).^{3,12,20,24} This

includes both major and minor complications, such as neurovascular injury, infection, neuropraxia, worsening pain/stiffness, and HO. Our patient population reported a complication rate of 19.4% and 15.9% among those treated for DOA and PTA of the elbow, respectively, with no statistical difference identified. The complication rate identified within the DOA cohort is greater than that described in current literature. However, the reported complications within this cohort were relatively minor, including prolonged postoperative stiffness, olecranon bursitis, and HO, none of which resulted in reoperation. In addition to persistent stiffness, patients within the PTA cohort reported wound dehiscence, infection, and persistent ulnar neuropathy resulting in reoperation for 2 patients. This is not surprising as these complications demonstrate increased morbidity compared to prolonged stiffness and are more difficult to treat nonoperatively.

Current literature supports an improvement in elbow ROM and subjective pain scores,^{1,10,15,20,21} as well as adequate patient satisfaction,^{7,10,20} after arthroscopic debridement of elbow OA. These conclusions are reflected in our data, which indicate an improvement in VAS pain scores and elbow ROM among both the evaluated cohorts. A study by Merolla et al directly comparing the outcomes of this treatment option between patients with DOA and those with PTA showed a similar improvement in flexion-extension ROM at a longer average follow-up of 44 months.¹⁹ Of note, no difference in the degree of ROM improvement was noted between our study cohorts. A difference in ROM improvement was expected because of the differences in pathoanatomy that exist between these two etiologies of arthritis, including the severity and location of elbow pain, and this could have been detected with a longer follow-up duration. In addition, we noted an exceptional satisfaction rate of 77.8% (“Satisfied” or “Very Satisfied”) and 76.2% in patients with DOA and PTA, respectively, with no statistical difference noted between etiologies. This is consistent with the results noted by Merolla et al at a short-term follow-up, implying a similar efficacy of arthroscopic debridement to produce a satisfactory subjective result regardless of any indication over the entirety of postoperative follow-up.¹⁹

A significant improvement in subjective function after arthroscopic elbow debridement of both PTA and DOA has been noted in previous literature.^{2,16–18,24} These studies demonstrate an improvement in both the Mayo Elbow Performance Score and Disabilities of the Arm, Shoulder, and Hand score at an average follow-up duration of 26.5–54 months for either etiology. The study by Merolla et al directly comparing the functional outcomes of this procedure among etiologies of arthritis noted a significantly greater postoperative Mayo Elbow Performance Score and OES in patients treated for PTA than in those treated for DOA.¹⁹ In contrast, our results demonstrate a lack of difference in postoperative OES at a much longer follow-up. This suggests that the greater degree of short-term subjective function noted in patients with PTA appears to dissipate as patients reach the midterm of follow-up. However, our cohort underwent surgery via 10 different surgeons, resulting in a lack of a standardized technique that may account for the difference between our functional outcomes and those of Merolla et al.

Limitations were noted to exist in this study. While not statistically significant, patients with PTA demonstrated a decreased survivorship, less improvement in ROM, and lower OES. It is possible with greater power that a difference between groups could have been identified. However, this study represents the most patients and the longest follow-up duration presently in the literature. Our study did not include a preoperative OES for comparison; therefore, we are unable to conclude that arthroscopic debridement provides a definitive improvement in subjective patient

Table VI

A collection of literature illustrating the known rates of reoperation and complications after arthroscopic debridement of posttraumatic arthritis or degenerative osteoarthritis of the elbow.

	Study	n	Average age, yr	Reoperation rate	Complication rate	Average length of follow-up
DOA	Adams et al ²	41	52.8	5%	5%	176.3 weeks
	Kelly et al ¹³	24	51	0%	0%	67 mo
	Lim et al ¹⁸	43	51.4	11.6%	0%	38.4 mo
PTA	Cohen et al ⁷	26	46	0%	0%	35.3 mo
	Ball et al ^{3,*}	14	36.9	7.2%	7%	-
	Nguyen et al ²⁰	22	42	4.5%	27%	25 mo
	Schreiner et al ²⁴	44	40.8	2.3%	20%	3.1 yr
	Junior et al ¹²	24	34.6	7.7%	17%	38.4 mo

DOA, degenerative osteoarthritis; PTA, posttraumatic arthritis.

All major and minor complications (neurovascular damage, neuropraxia, infection, increased stiffness, heterotopic ossification, significant pain) were included in the stated complication rate.

*This study reported a range of 12-29 mo of follow-up with no mention of the average length.

function in either studied cohort. However, we identified an average postoperative OES of 42.7 and 39.5 in the DOA and PTA cohorts, respectively. This represents a satisfactory functional outcome, as the highest possible score is 48, indicating no functional elbow pain or disability.⁸ In addition, all patient-reported outcomes collected via questionnaire, including the incidence of complications, are subjected to recall bias and are subjective in nature. Finally, the retrospective nature of this study resulted in a limitation of information including preoperative and postoperative ROM and radiographs. This restricted our ability to evaluate radiographic outcomes after surgery.

Despite these limitations, the data presented in this study provide valuable information regarding the longevity of pain relief and expected functional level after arthroscopic debridement of the elbow. Similarly, we were able to confirm a lack of difference in the measured outcomes after arthroscopic debridement of DOA or PTA of the elbow. This indicates an equal efficacy of this procedure in the treatment of either etiology of elbow arthritis at the midterm of follow-up. Our results also act to corroborate current literature demonstrating the success of this procedure with a longer follow-up than previously reported.^{2,9,13,15,18,19,23,27} In addition, this study is the first to report both the rate of additional nonoperative intervention and the time to return to work or sport after this procedure. This information regarding return to work and requirement of further treatment may be valuable when counseling the younger patient population commonly affected by this pathology.

Conclusion

The purpose of this study was to identify and compare the midterm patient-reported outcomes and survivorship after arthroscopic debridement of PTA vs. DOA of the elbow. A reoperation rate of 5.6% and 11.4% were noted at an average follow-up of 7.9 and 8.6 years among patients with DOA and PTA, respectively. Both cohorts demonstrated a significant improvement in pain and ROM at the final follow-up visit. No difference in reoperation rates, survivorship, complications, ROM, pain, or OES was noted between the cohorts at the final follow-up visit.

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