

# Comparative study between Mini open and all arthroscopic rotator cuff full thickness tear repair in Iraqi patients

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## Abstract

**Background:** One of the most prevalent shoulder pathologies in both young and older age groups is rotator cuff tears. **Objective:** This paper aims to conduct a comparative study between mini-open and all arthroscopic rotator cuff full-thickness tear repair in Iraqi patients. **Patient and methods:** This study was a comparative study between mini-open and all arthroscopic rotator cuff full-thickness tear repair in Iraqi patients, with 42 cases were collected from Anbar - Iraq hospitals between 18<sup>th</sup> March 2021 to 16<sup>th</sup> April 2022. This study was conducted to divide patients into comparison mini-open surgery with (22) and arthroscopic surgery with (20) for patients above 35 and under 60 years. The comparative study data of rotator cuff patients were analysed by the SPSS program. **Results and discussion:** In the present study, which is comparing the results for mini-open as well as all-arthroscopic surgeries for RCTR, it was found that patients who underwent arthroscopic surgery experienced less pain in the immediate postoperative period, improved shoulder flexion, and a lower incidence of complications. Numerous studies comparing the results of all-arthroscopic and mini-open procedures have been done in the past literature, and they all found comparable results. Our study examined the complication rates following arthroscopic compared to open rotator cuff surgery. According to the authors, individuals receiving open surgery were more likely to experience any unfavorable side effects and be readmitted following surgery during 30 days of their first procedure. The patients having open surgery remained older and were more probable to have concomitant illnesses, though. **Conclusion:** According to the study's findings, individuals with rotator cuff tears who underwent arthroscopic surgery experienced less pain than those who underwent small open surgery, had greater shoulder flexibility and function after surgery, and experienced no post-operative complications. Our findings could help to explain why arthroscopic surgery is so common among surgeons

**Keywords:** Rotator cuff, mini-open surgery, and arthroscopic surgery.

## Introduction

One of the most prevalent shoulder pathologies in both young and older age groups is rotator cuff tears [1]. About 22% of people have this illness, and the prevalence rises with age. According to the data, fewer than 5% (or roughly more than 250,000 cases) of Rotator cuff tears across the USA were surgically repaired [2]. The expense of repairing rotator cuff injuries is high; it is projected to be more than \$3 billion annually in the USA. [3-6]

The results of these research are questionable, though. The surgery's result may be impacted by the size and form of the tear, muscle fiber atrophy, as well as tendon retraction. Additionally, surgeons have looked at how surgical approaches could impact RCTR results [7-13]. The effectiveness of various surgical procedures has been assessed in several retrospective as well as a few prospective comparison studies with relation to pain, joint mobility, complications, and operation time [14-16]. However, with only a brief (6 weeks to 6 months) duration of follow-up, most of the research concentrated on early or long-term post-operative pain [17]. The objective of the paper was conducting a study for Iraqi patients to compare between mini-open and all arthroscopic rotator cuff full-thickness tear repair.

### Patients and methods

This study was a comparative study between mini-open and all arthroscopic rotator cuff full-thickness tear repair in Iraqi patients, with 42 cases were collected from Anbar - Iraq hospitals between 18<sup>th</sup> March 2021 to 16<sup>th</sup> April 2022. This study was conducted to divide patients into comparison mini-open surgery with (22) and arthroscopic surgery with (20) for patients above 35 and under 60 years. The comparative study data of rotator cuff patients were analysed by the SPSS program.

This was treated with the Clinical of characteristics related to demographics with rotator cuffs depending on the ages of patients among (35-60) years, as shown in Table 1. This study also looked at the Clinical of demographic variables with rotator cuffs according to gender for both males and females, as seen in Table 2. This study was also interested in detecting markers of rotator cuff problems, which include Crepitus, a crackling feeling, Pain while raising and lowering the arm, as well as Weakness during lifting or rotating the arm, as indicated in Table 3.

Moreover, this paper was interested into the Clinical outcomes of the involved side of rotator cuff patients which contain two parts which are right and left where these outcomes can be clarified in Figure 1. In addition, this paper was determined post-operative complications of rotator cuff patients, which are Chondrolysis, Deep infection, Deltoid injury, and Osteonecrosis where these factors can be found in Figure 2.

To further of outcomes, this study was assessed of Post-operative VAS score of rotator cuff patients in comparison between Arthroscopic surgery patients and Mini open surgery patients where include Shoulder Pain, Deep infection, and Osteonecrosis, where these factors have been shown in Table 4. This paper was assessed of outcomes in comparison with two surgeries to find out of parameters affect through preoperative and postoperative through assessment of rotator cuff patients using the Quick Dash score where have on Shoulder flexion and Shoulder abduction. Then these outcomes can be found in Table 5.

### Results

**Table 1: Clinical of demographic characteristics with rotator cuff based on ages.**

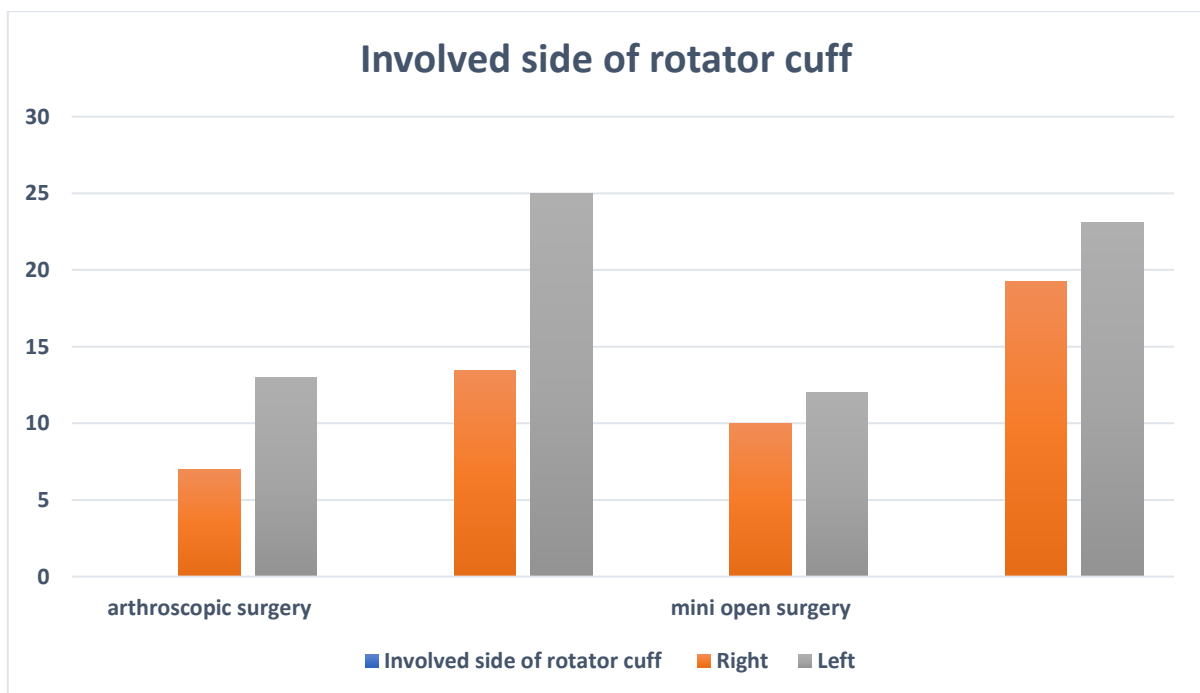
N	V	42
	Mi	0
M		45.5952
SEM		1.09112
Me		45.0000
Mo		35.00 <sup>a</sup>
SD		7.07127
Var		50.003
Ra		25.00
Min		35.00
Max		60.00
S		1915.00

**Table 2: Clinical of demographic characteristics with rotator cuff based on sex.**

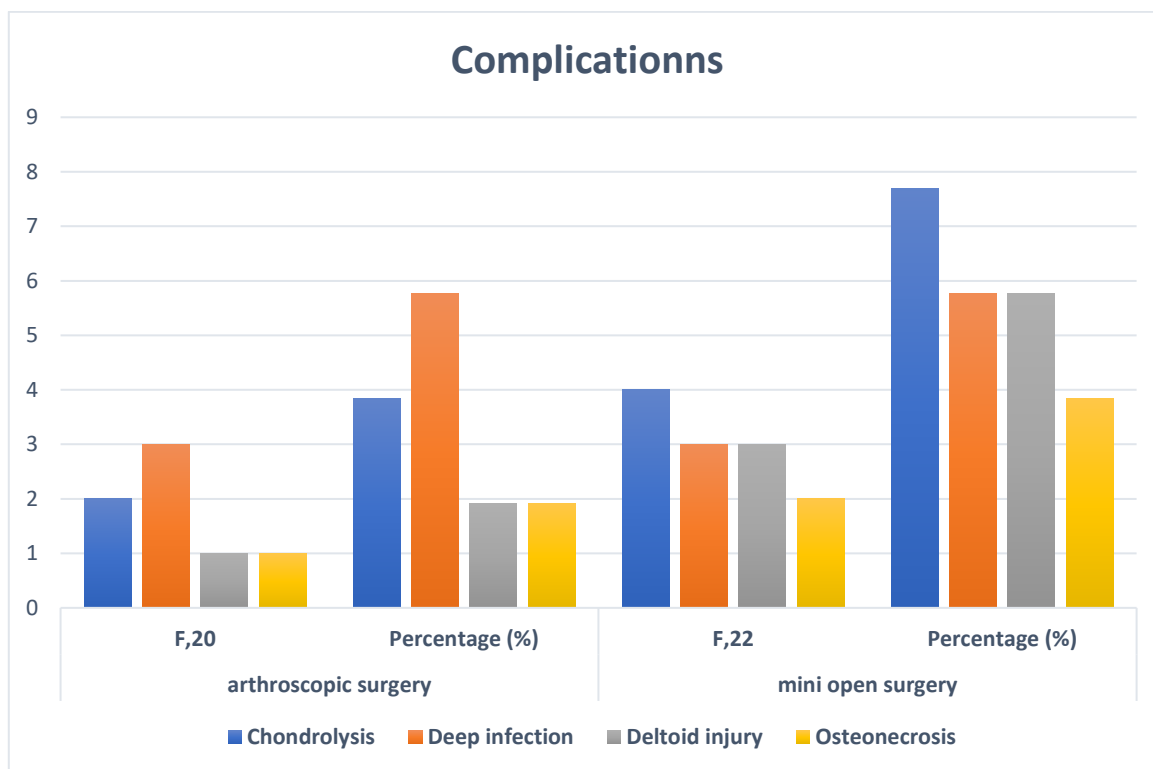
		<i>F, 42</i>	<i>P (%)</i>	<i>VP (%)</i>	<i>CP (%)</i>
<i>V</i>	<i>Female</i>	17	40.5	40.5	40.5
	<i>Male</i>	25	59.5	59.5	100.0
	<i>T</i>	<i>42</i>	<i>100.0</i>	<i>100.0</i>	

**Table 3: Clinical of demographic characteristics with rotator cuff based on symptoms.**

		<i>F, 42</i>	<i>P (%)</i>	<i>VP (%)</i>	<i>CP (%)</i>
<i>V</i>	<i>Crepitus</i>	10	23.8	23.8	23.8
	<i>Feel of crackling sensation</i>	7	16.7	16.7	40.5
	<i>Pain when lifting and lowering arm</i>	16	38.1	38.1	78.6
	<i>Weakness when lifting or rotating arm</i>	9	21.4	21.4	100.0
	<i>T</i>	<i>42</i>	<i>100.0</i>	<i>100.0</i>	



**Figure 1: Clinical outcomes of the involved side of rotator cuff patients.**



**Figure 2: Post-operative complications of rotator cuff patients.**

**Table 4: Post-operative VAS score of rotator cuff patients in comparison between Arthroscopic surgery patients and Mini open surgery patients.**

Post-operative variables	VAS score	Arthroscopic surgery patients, 20	Mini open surgery patients, 22	P-value
Shoulder Pain		3.25±0.66	6.74±1.48	0.03997
Deep infection		5.21±0.268	8.38±0.44	0.0422
Osteonecrosis		4.711	7.588	0.0388

**Table 5: Assessment of rotator cuff patients using Quick Dash score.**

Variables	Arthroscopic surgery patients, 20	Mini open surgery patients, 22	P-value
Shoulder flexion			
Pre-operative	92.636±14.77	78.553±10.52	0.00357

Post-operative	144.89±13.56	125.624±9.88	0.00264
<b><i>Shoulder abduction</i></b>			
Pre-operative	94.269±14.327	81.238±8.455	0.00155
Post-operative	148.652	131.246	0.00244

### Discussion

In the current study, which compared the outcomes of mini-open and all-arthroscopic RCTR surgeries, it was discovered that patients who underwent arthroscopic surgery had a decrease in pain to the days following surgery, improved shoulder flexion, and a lower incidence of complications. Numerous studies comparing the outcomes of all-arthroscopic as well as mini-open procedures have already been published in the past, and all have revealed comparable results.

Ji et al.'s [18] review of the outcomes of randomized controlled trials comparing the outcomes of arthroscopic and mini-open rotator cuff repair found no differences in terms for surgical time, functional result score, VAS pain rating, or range of motion (ROM). In recent research, Bayle et al. compared 87 patients' arthroscopic and open RCTR procedures during a 12-month follow-up. At one year following surgery, the patients were evaluated using the American Shoulder as well as Elbow Surgeons (ASES) and simple shoulder value (SSV) overall functional evaluation, as well as ROM of shoulder joints. To analyze tendon retraction as well as fatty degeneration during follow-up, the patients were further assessed using an MRI (magnetic resonance imaging) or an arthroscopic computed tomography scan. [18]

We examined arthroscopic and mini-open surgical methods in the current investigation. When pain was assessed seven days after surgery, those who had mini-open surgery reported much more discomfort. Despite the results of the study by Bayle et al., the functional evaluation score and flexion range of motion did improve more noticeably in our investigation. Additionally, in our study, the same surgeon carried out both procedures. However, two separate surgeons used two distinct procedures in the research by Bayle et al. [19]. The differences in the surgeons' experiences with each approach may account for them. Kasten et al. prospectively evaluated the supraspinatus tendon restoration procedures using mini-open and all-arthroscopic techniques in prior research. Thirty-four cases in total with comparable MRI results were considered. Baker et al. compared the complication rates after arthroscopic rotator cuff surgery versus open rotator cuff operation. According to the authors, those who had open surgery were more likely to have negative side effects and be readmitted within 30 days of their first treatment. The patients having open surgery remained older and were more probable to have concomitant illnesses, though.

### Conclusion

According to the study's findings, individuals with rotator cuff tears who underwent arthroscopic surgery experienced less pain than those who underwent small open surgery, had greater shoulder flexibility and function after surgery, and experienced no post-operative complications. Our findings could help to explain why arthroscopic surgery is so common among surgeons.

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