e-ISSN: 0976-822X, p-ISSN:2961-6042

Available online on http://www.ijcpr.com/

International Journal of Current Pharmaceutical Review and Research 2025; 17(9); 1246-1251

Original Research Article

Prevalence of Adhesive Capsulitis in Type 2 Diabetes Mellitus: Insights from a Tertiary Care Centre in North India

Sajad Ahmad Sumji [1], Touseef Ahmad Mir[2], Asif Anwar[3]

[1]Assistant Professor, Department of General Medicine Government Medical College, Baramulla, J&K, India

[2,3]Senior Resident, Department of General Medicine Government Medical College, Baramulla, J&K, India

Received: 01-06-2025 / Revised: 15-07-2025 / Accepted: 21-08-2025

Corresponding author: Dr. Sajad Ahmad Sumji

Conflict of interest: Nil

Abstract

Background: Adhesive capsulitis (AC), also known as frozen shoulder, is an inflammatory condition characterized by pain, stiffness, and progressive restriction of shoulder movement. Patients with type 2 diabetes mellitus (T2DM) are at an increased risk of AC; however, prevalence estimates vary considerably across populations. Limited data exist from North India, particularly Jammu and Kashmir.

Objectives: To determine the prevalence of adhesive capsulitis in patients with T2DM attending a tertiary care hospital in Kashmir, India, and to identify the associated demographic and clinical factors.

Methods: This cross-sectional study was conducted in the outpatient department of a tertiary care hospital in North India between September 2024 and March 2025. A total of 397 consecutive patients with T2DM (defined by the ADA 2024 criteria) were enrolled using non-probability sampling. Patients with systemic conditions or secondary causes of AC were excluded from the study. The diagnosis of AC was clinical, in accordance with the AAOS of Orthopaedic Surgeons guidelines, complemented by shoulder radiographs to exclude other pathologies. Demographic and clinical data, including age, sex, occupation, diabetes duration, and glycemic control (good ≤7% vs. poor >7% HbA1c), were collected. Statistical analysis was performed using chi-square testing and logistic regression, with $p < 0.05$ considered significant.

Results: Of the 397 participants (mean age 56.0 ± 12.2 years; 58.4% females), the mean diabetes duration was 7.2 ± 4.3 years and mean HbA1c was 10.2 ± 3.0%. Poor glycemic control was observed in 72.5% of patients. The prevalence of AC was 14.4% (57/397). Higher rates were observed in females (16.8% vs. 11.5%) and patients >60 years (15.0% vs. 13.7%), although the difference was not statistically significant. Occupational status was significantly associated with AC (p=0.048), the and prevalence was highest among unemployed participants (32.3%), followed by non-sedentary (15.0%) and sedentary (10.2%) workers. In the logistic regression analysis, only occupation emerged as an independent predictor (OR: 3.135, 95% CI: 1.203–8.170, p=0.019).

Conclusion: Adhesive capsulitis was found in 14.4% of T2DM patients, a prevalence consistent with global and Indian reports. Among the studied factors, occupation independently influenced the risk, with unemployed individuals being the most affected. Given the significant functional impairment associated with AC, routine musculoskeletal screening of patients with diabetes and early physiotherapy referral are recommended to prevent disability.

Keywords: Adhesive capsulitis, Type 2 DM, cross-sectional study, Prevalance.

Introduction

Adhesive capsulitis, also known as frozen shoulder, is an inflammatory condition characterized by shoulder stiffness, pain, and progressive movement limitation. The condition is categorized as primary (idiopathic) or secondary, depending on the underlying etiology. Primary adhesive capsulitis, which develops gradually without a clear cause, is associated with systemic conditions such as diabetes mellitus, thyroid dysfunction, cervical spondylosis, autoimmune rheumatic diseases, and Parkinson's disease, and the use of medications such as fluoroquinolones and barbiturates [1,2]. In contrast, secondary adhesive capsulitis arises following shoulder trauma, fractures, rotator cuff tears, surgery, or prolonged immobilization [3,4]. The overall prevalence of adhesive capsulitis in the general population is reported to be 3–5%, with a higher incidence in women (female-to-male ratio of 1.4:1) and frequent involvement of the non-dominant shoulder [5]. The natural history of

adhesive capsulitis progresses through three clinical stages: an initial inflammatory phase characterized by pain, a fibrotic phase marked by progressive stiffness and loss of range of motion (ROM), and a final resolution phase with gradual restoration of mobility [3].

The diagnosis is primarily clinical and follows the American Academy of Orthopaedic Surgeons' criteria, which emphasize the gradual onset of global restriction of shoulder movements in the absence of significant radiographic abnormalities [6,7]. The prevalence of adhesive capsulitis is substantially higher in patients with diabetes, reported to be up to 20% [3]. With an estimated 438 million individuals projected to be affected by diabetes mellitus worldwide by 2030, particularly within Asian populations [8], adhesive capsulitis represents an important cause of disability and healthcare burden, especially in resource-limited settings [9].

Several studies have highlighted the increased risk of adhesive capsulitis in patients with type 2 diabetes mellitus (T2DM), with poorer outcomes observed in patients with long-standing disease [10,11]. The reported prevalence rates among Indian populations and neighboring countries vary considerably, ranging from 11% to 16.4% in India to as high as 43.1% in a neighboring country [12,13,14]. These discrepancies may reflect regional variations, differences in diagnostic criteria, and population-specific factors. Therefore, the present study was undertaken to determine the prevalence of adhesive capsulitis in patients with T2DM attending a tertiary care hospital in North India. Identifying this association is essential for timely diagnosis, targeted management, and reduction of disability in high-risk groups.

Materials and Methods

This observational, cross-sectional study was conducted in the Outpatient Department of General Medicine at the Government Medical College, Baramulla, Jammu and Kashmir, India. The study period will be from September 2024 to March 2025. Patients with a confirmed diagnosis of type 2 diabetes mellitus attending the outpatient clinic during the study period were screened for eligibility. A non-probability consecutive sampling technique was used to recruit participants until the desired sample size was achieved. This study was designed to determine the prevalence of adhesive capsulitis among individuals with type 2 diabetes mellitus in a tertiary care setting.

Inclusion criteria

Individuals with a confirmed diagnosis of type 2 diabetes mellitus were included in the study. The diagnosis was established in accordance with the American Diabetes Association (ADA) 2024 criteria, defined as the presence of one or more of the following:

Glycated haemoglobin (HbA1c) level ≥ 6.5%

Random plasma glucose ≥ 200 mg/dL in the presence of classic symptoms of hyperglycaemia

Fasting venous plasma glucose ≥ 126 mg/dL

Previously established diagnosis of diabetes mellitus and/or current use of anti-hyperglycaemic therapy

Adhesive capsulitis was diagnosed clinically, in accordance with the AAOS criteria, based on a history of gradual-onset shoulder pain with progressive limitation of movement and examination findings of reduced active and passive ranges of motion—particularly abduction, internal rotation, and external rotation—in the absence of significant radiographic abnormalities. (5)

Patients with medical conditions predisposing them to adhesive capsulitis or with secondary adhesive capsulitis due to surgery or fracture were excluded, restricting the study population to those with adhesive capsulitis and type 2 diabetes mellitus. Shoulder radiographs were performed to exclude other causes of pain and motion loss (destructive arthropathy, fracture, calcific tendonitis), which show characteristic abnormalities, whereas adhesive capsulitis typically presents with normal X-rays-. The study was conducted after obtaining approval from the Institutional Ethics Committee. Written informed consent was obtained from all participants prior to enrolment.

Demographic and clinical data, including age, sex, occupation, duration of diabetes, and glycemic control, were collected using a structured proforma. HbA1c levels were used to categorize patients as having good (≤7%) or poor (>7%) glycemic control. Occupation was categorized as sedentary (minimal physical activity; sitting >6 h/day, standing or walking <2 h/day, lifting <4.5 kg), non-sedentary, or unemployed (15,16].

Data were analyzed using SPSS version 23 (IBM Corp., Armonk, NY, USA). Continuous variables (age, HbA1c, and diabetes duration) are expressed as mean ± standard deviation. Categorical variables (sex, occupation, diabetes control, and adhesive capsulitis) were presented as frequencies and percentages. The chi-square test was used to assess associations, with $p < 0.05$ considered statistically significant. Logistic regression was used to identify the independent predictors of adhesive capsulitis.

Results

Clinical and Demographic Characteristics: The study included 397 patients, of whom 232 (58.4%) were female and 165 (41.6%) were male patients. The mean age was 56.0 ± 12.2 years, with 213 patients (53.6%) aged > 60 years. Regarding

occupational status, 147 (37.0%) patients were employed in sedentary work, 219 (55.0%) were in non-sedentary occupations, and 31 (9.0%) were unemployed. The mean diabetes duration was 7.2 ± 4.3 years. The mean HbA1c level was 10.2 ± 3.0%, and 288 patients (72.5%) were classified as having poor glycemic control.

Table 1: Clinical and demographic characteristics of patients with type 2 diabetes mellitus (n = 397)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Female	232	58.4
	Male	165	41.6
Age	Mean ± SD	56.0 ± 12.2	—
	>60 years	213	53.6
Occupation	Non-sedentary	219	55.0
	Sedentary	147	37.0
	Unemployed	31	9.0
Diabetes duration	Mean ± SD	7.2 ± 4.3	—
HbA1c (%)	Mean ± SD	10.2 ± 3.0	—
Glycaemic control	Good (≤7%)	109	27.5
	Poor (>7%)	288	72.5

Prevalence and Clinical Profile: Among 397 patients with type 2 diabetes mellitus, adhesive capsulitis was diagnosed in 57 (14.4%). The condition was more frequent in females (16.8%) than in males (11.5%) and slightly more common in patients aged >60 years (15.0%) than in those aged ≤60 years (13.7%).

Table 2: Prevalence of adhesive capsulitis in type 2 diabetes

Study / Region	Setting / Sample size	Prevalence of AC (%)	Notes
Wang et al.,2017(Meta-analysis, global)	Pooled >7,000 patients	~13%	Diabetes confers 2–4× risk vs. non-diabetics
Hand et al., 2007 (UK)	Hospital, mixed DM	17%	Higher vs. general population (2–5%)
Balci et al., 1999 (Turkey)	Hospital, T2DM	22.4%	Among type 2 DM patients
Liew et al., 2019 (Multi-ethnic, Singapore)	Community cohort	~15%	Higher prevalence in the Asian ethnicity
Mavani et al.2024(India, community)	Community survey, n=600	12.2%	Lower end of Indian reports
Samath Thani et al., 2018 (Kerala, India)	Tertiary care, n=300	32.3%	Hospital-based, long-duration DM
Arumugam et al., 2010 (Udupi, India)	Elderly diabetics (≥60 y)	29.6%	Duration >5 years is strongly associated
Other Indian series (various)	Mixed hospital/community	8–29%	Variation by setting and diagnostic criteria
Our study (2024–25)	Hospital-based, n=397	14.4%	Consistent with pooled global and national estimates

Table 2 compares our prevalence with that of previously reported international, Asian, and Indian studies. Our estimate of 14.4% falls within the global range and is close to the community-based Indian data. AC = adhesive capsulitis; DM = diabetes mellitus; T2DM = type 2 diabetes mellitus.

Table 3: Stratification of adhesive capsulitis by demographic and clinical variables (n = 397)

Variable	Category	Absent n (%)	Present n (%)	p-value
Gender	Female	193 (83.2)	39 (16.8)	0.118
	Male	146 (88.5)	19 (11.5)	
Age	≤60 years	140 (86.3)	22 (13.7)	0.672
	>60 years	157 (85.0)	28 (15.0)	
Occupation	Non-sedentary	186 (85.0)	33 (15.0)	0.048*
	Sedentary	132 (89.8)	15 (10.2)	
	Unemployed	21 (67.7)	10 (32.3)	
Diabetes duration	≤4 years	95 (87.2)	14 (12.8)	0.394
	≥5 years	244 (85.3)	42 (14.7)	
Glycaemic control	Good (≤7%)	97 (89.0)	12 (11.0)	0.203
	Poor (>7%)	242 (84.0)	46 (16.0)	

***p < 0.05 statistically significant**

Table 4: Logistic regression analysis of predictors of adhesive capsulitis

Variable	B (Beta)	SE	Wald	do	p-value	Exp(B)	95% CI for Exp(B)
Gender (female)	-0.765	0.521	2.155	1	0.142	0.466	0.167 – 1.295
Age (>60 yrs)	-0.318	0.344	0.856	1	0.355	0.727	0.372 – 1.423
Occupation	1.142	0.487	5.500	1	0.019*	3.135	1.203 – 8.170
Diabetes duration	0.385	0.301	1.632	1	0.201	1.470	0.814 – 2.657
Glycaemic control	-0.541	0.365	2.197	1	0.138	0.582	0.285 – 1.188
Constant	-2.954	0.812	13.221	1	<0.001	0.052	—

***p < 0.05 statistically significant**

In the logistic regression analysis assessing the impact of various clinical predictors on adhesive capsulitis, only occupation emerged as statistically significant (p = 0.019), with an odds ratio of 3.135. Sex (B =-0.765; Exp(B) = 0.466) and diabetes control (B =-0.541; Exp(B) = 0.582) suggested decreased odds of adhesive capsulitis, but neither reached statistical significance (p-values: 0.142 and 0.138, respectively). Additionally, age (B = -0.318; Exp(B) = 0.727) and diabetes duration (B = 0.385; Exp(B) = 1.470) showed trends toward lower and higher odds, respectively, but were not statistically significant (p = 0.355 and 0.201, respectively). The constant (B = -2.954) was highly significant (p < 0.001), indicating a strong baseline effect. Overall, these findings suggest that, while occupation significantly influences the odds of adhesive capsulitis, other variables did not demonstrate meaningful associations, as shown in Table 4

Discussion

The diagnosis of adhesive capsulitis is primarily based on clinical history and physical examination, whereas radiographic studies are reserved for excluding other shoulder pathologies, such as arthritis or fractures [17,18]. Adhesive capsulitis has a profound impact on work productivity, quality of life, and mental well-being [19,20]. Although traditionally considered a self-limiting disorder that resolves within one to three years, nearly half of the affected individuals continue to experience persistent symptoms, underscoring its potential for long-term morbidity [21]. The prevalence of adhesive capsulitis in the general population is estimated to be 3–5%, whereas the frequency is markedly higher among individuals with diabetes mellitus, reaching up to 20% in some reports. Several studies have identified poor glycemic control (elevated HbA1c levels) and increasing age as important risk factors for adhesive capsulitis in patients with diabetes [22,23].

In contrast, the present study found a prevalence of 14.2% among patients with type 2 diabetes mellitus, which is comparable to the study by Sahu et al. [12]. The prevalence rates of this condition among diabetic cohorts vary widely, with studies in primary care and community settings reporting rates ranging from 10% to 36% [24].

Importantly, no statistically significant association was observed between adhesive capsulitis and sex, age, duration of diabetes, or glycemic control in our cohort. The only variable that emerged as significant in the logistic regression analysis was occupation, with non-sedentary workers exhibiting higher odds of adhesive capsulitis. These findings suggest that, in addition to metabolic factors, occupational or mechanical stressors may contribute substantially to disease development. The discrepancy between our results and those of previous local studies could be attributed to differences in study design, diagnostic criteria, regional variations, or patient characteristics, including family history and treatment regimens.

The treatment of adhesive capsulitis relies on symptomatic relief and improvement of shoulder ROM. Nonsteroidal anti-inflammatory drugs (NSAIDs) have been shown to reduce pain in the initial phase 25,26. Physical therapy, in the form of stretching, gentle ROM exercises, and gradual graded resistance training, helps control pain and improve shoulder mobility [25,27].

The management of adhesive capsulitis aims to reduce pain and restore shoulder mobility. Nonsteroidal anti-inflammatory drugs (NSAIDs) are commonly used during the initial inflammatory phase to provide symptomatic relief [26]. However, vigorous rehabilitation should be avoided as it may exacerbate symptoms. Instead, structured physical therapy with gentle range-of-motion and stretching exercises is the cornerstone of conservative treatment. Pharmacological options, such as oral corticosteroids, can provide short-term pain relief, but their benefits typically last only a few weeks. Intra-articular steroid injections and hydro dilatation have demonstrated greater efficacy in reducing pain, improving shoulder function, and enhancing the range of motion, particularly in the early stages of the disease [25,28].

For patients who remain refractory to these conservative measures, more invasive interventions, such as manipulation under anesthesia, arthroscopic capsular release, or open surgical release, may be considered. These advanced modalities are usually tailored to the patient's clinical profile, underlying cause, and comorbid conditions, with the goal of

improving long-term functional outcomes [25,29,30].

Limitations and future research

This study had some limitations. The cross-sectional design prevents the inference of causality, and reliance on clinical criteria may have under- or overestimated the prevalence. As this was a single-center study, its generalizability to rural populations may be limited. Potential confounders, such as family history, insulin therapy, smoking, and alcohol use, were not evaluated. Future research should adopt standardized diagnostic criteria, include larger community samples, and assess longitudinal incidence to clarify the temporal relationship between glycemic control and AC development.

Conclusion

In summary, adhesive capsulitis was present in 14.4% of patients with type 2 diabetes in our cohort of 397 individuals, a rate consistent with both international and Indian studies. These findings reinforce the importance of musculoskeletal screening in diabetes care and underscore the need for further multicenter, prospective research across India and Asia. No significant association was found with demographic or clinical factors, except for occupation, which was an independent predictor. As a potentially treatable condition with a significant impact on the quality of life, adhesive capsulitis should be actively screened in patients with diabetes.

Early diagnosis, patient education, timely physiotherapy, and appropriate medical or interventional therapy can reduce morbidity and disability. Awareness programs are recommended to improve the recognition and management of adhesive capsulitis among the diabetic population in India.

Our findings highlight the need to incorporate musculoskeletal assessments into diabetes care. Routine shoulder screening, particularly in older patients and those with poor metabolic control, may facilitate early detection and referral for physiotherapy, potentially mitigating disability.

Public health strategies must also raise awareness among patients and clinicians regarding AC as a frequent but often neglected complication of diabetes.

References

1. Small KM, Adler RS, Shah SH, et al.: ACR Appropriateness Criteria® for shoulder pain atraumatic. J Am Coll Radial. 2018, 15:388-402. 10.1016/j.jacr.2018.09.032.
2. Papalia R, Torre G, Papalia G, et al.: Frozen shoulder or shoulder stiffness from Parkinson disease? Musculoskeletal Surg. 2019, 103:115-9. 10.1007/s12306-018-0567-3.
3. Le HV, Lee SJ, Nazarian A, et al. Adhesive capsulitis of the shoulder: a review of pathophysiology and current clinical treatments. Shoulder Elbow. 2017, 9:75-84. 10.1177/1758573216676786.
4. Tue. G, Masuzoe O, Tucci F, et al. Can secondary adhesive capsulitis complicate calcific tendinitis of the rotator cuff? Ultrasound imaging analysis. Clin Pact. 2024, 14:579-89. 10.3390/clinpract14020045.
5. St Angelo JM, Taqi M, Fabiano SE: Adhesive capsulitis. Stat Pearls [Internet]. Stat Pearls Publishing, Treasure Island (FL), 2024.
6. McKean D, Yoong P, Brooks R, et al. Shoulder manipulation under targeted ultrasound-guided rotator interval block for adhesive capsulitis: A case report 2019, 48:1269-74. 10.1007/s00256-018-3105-3.
7. Allen GM: The diagnosis and management of shoulder pain. J Ultrason. 2018, 18:234-9. 10.15557/JoU.2018.0034.
8. Outsoar K, da Rocha Fernandes JD, Huang Y, et al.: IDF diabetes atlas: global estimates for the prevalence of diabetes for 2015 and 2040. Diabetes Res Clin Pact. 2017, 128:40-50. 10.1016/j.diabres.2017.03.024.
9. Butt NI, Mahmood K, Kanwal N, Ashfaq F Acanthosis nigricans in patients with type II diabetes mellitus at a tertiary care hospital of Lahore. J Bahria Unit Med Dent Coll. 2023, 13:13-7. 10.51985/JBUMDC202266.
10. Sheridan MA, Hannafin JA: Upper extremity: emphasis on frozen shoulder. Ortho Clin North Am. 2006, 37:531-9. 10.1016/j.ocl.2006.09. 009.
11. Kingston K, Curry EJ, Galvin JW, et al.: Shoulder adhesive capsulitis: epidemiology and predictors of surgery. J Shoulder Elbow Surg. 2018, 27:1437-43. 10.1016/j.jse.2018.04. 004.
12. Sahu M, Ilias M, Pandey R, Saxena S, Saad T, Mishra N. Prevalence of Frozen Shoulder among patients with diabetes: a cross-sectional study at a tertiary care center. J Pharm Bioallied Sci. 2024; 16(Suppl 4): S3601-S3603. Doi: 10.4103/jpbs.jpbs_1028_24. Pub 2024 December 27. PMID: 39926887; PMCID: PMC11805150.
13. Mathew AJ, Nair JB, Pillai SS. Rheumatic-musculoskeletal manifestations in patients with type 2 diabetes mellitus in South India. Int J Rheum Dis. 2011 February;14(1):55-60. Doi: 10.1111/j.1756-185X.2010.01587. x. Pub 2011 January 24. PMID: 21303482.
14. Inayat F, Ali NS, Shahid H, Younus F: Prevalence and determinants of frozen shoulder in patients with diabetes: a single centre experience from Pakistan. Cureus. 2017, 9:1544. 10.7759/cureus.1544.

15. Sedentary work is defined as work (2024). Accessed: September 3, 2024: https://www.lawinsider.com/dictionary/sedentary-work.
16. Magnon V, Duthie F, Ailette C: Sedentariness: a need for a definition. Front Public Health. 2018, 6:372. 10.3389/fpubh.2018.00372.
17. Le HV, Lee SJ, Nazarian A, et al. Adhesive capsulitis of the shoulder: a review of pathophysiology and current clinical treatments. Shoulder Elbow. 2017, 9:75-84. 10.1177/1758573216676786.
18. Jacob L, Gyasi RM, Koyanagi A, Haro JM, Smith L, Kostov K: Prevalence of and risk factors for adhesive capsulitis of the shoulder in older adults from Germany. J Clin Med. 2023, 12:669. 10.3390/jcm12020669.
19. Jacob L, Gyasi RM, Koyanagi A, Haro JM, Smith L, Kostov K: Prevalence of and risk factors for adhesive capsulitis of the shoulder in older adults from Germany. J Clin Med. 2023, 12:669. 10.3390/jcm12020669.
20. Bouaicha S, Wieser K, Kriechling P, Scholz-Odermatt SM. Large-scale assessment of the healthcare burden of adhesive capsulitis of the shoulder joint. Swiss Med Wkly. 2020, 150:20188. 10.4414/smw.2020.20188.
21. Le HV, Lee SJ, Nazarian A, et al. Adhesive capsulitis of the shoulder: a review of pathophysiology and current clinical treatments. Shoulder Elbow. 2017, 9:75-84. 10.1177/1758573216676786.
22. Chan JH, Ho BS, Alvi HM, Saltzman MD, Marra G: The relationship between the incidence of adhesive capsulitis and haemoglobin A1c. J Shoulder Elbow Surg. 2017, 26:1834-7. 10.1016/j.jse.2017.03.015.
23. Dubowitz N, Xue W, Long Q, et al.: Aging is associated with increased HbA1c levels, independently of glucose levels and insulin resistance, and also with decreased HbA1c diagnostic specificity. Diabetes Med. 2014, 31:927-35. 10.1111/dme.12459.
24. Tighe CB, Oakley WS Jr. The prevalence of diabetes and adhesive capsulitis of the shoulder. South Med J 2008; 101:591-5.
25. St Angelo JM, Taqi M, Fabiano SE: Adhesive capsulitis. Stat Pearls [Internet]. Stat Pearls Publishing, Treasure Island (FL), 2024.
26. Georgiann's D, Markopoulos G, Devitri E, Bambinas I: Adhesive capsulitis of the shoulder. Is there a consensus regarding treatment? A comprehensive review. Open Ortho J. 2017, 11:65-76. 10.2174/1874325001711010065.
27. Vermeulen HM, Rosing PM, Obermann WR, Cessie S, Vliet Vineland TPM: Comparison of high-grade and low-grade mobilization techniques in the management of adhesive capsulitis of the shoulder: randomized controlled trial. Phys Ther. 2006, 86:355-68. 10.1093/pt./86.3.355.
28. Buchbinder R, Green S, Forbes A, Hall S, Lawler G: Arthrography joint distension with saline and steroid improves function and reduces pain in patients with painful stiff shoulder: results of a randomised, double blind, placebo-controlled trial. Ann Rheum Dis. 2004, 63:302-9. 10.1136/ard.2002.004655.
29. Rangan A, Brealey SD, Keding A, et al.: Management of adults with primary frozen shoulder in secondary care (UK FROST): a multicentre, pragmatic, three-arm, superiority randomised clinical trial. Lancet. 2020, 396:977-89. 10.1016/S0140-6736(20)32719-7
30. 30. Randlett M, Rossi LA, Seidenberg EE, Campos C, Ignacio T, Matignon GD, Bongiovanni SL: Midterm outcomes after arthroscopic anteroinferior capsular release for the treatment of idiopathic adhesive capsulitis. Arthroscopy. 2017, 33:503-8. 10.1016/j.arthro.2016.08.024.