

Frozen shoulder

Orthopedisch perspectief

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16 november 2013



Wat is frozen shoulder?

- Duplay 1872 Periarthrite scapulohumerale
- Dickson & Crosby 1932 Periarthritis of the shoulder
- Pasteur 1932 Tenosynovitis LHB
- Codman 1934 Uncalcified tendonitis
"frozen shoulder"
- Lippman 1943 Scarring of LHB
- Nevasier * 1945 Adhesive capsulitis
- Moseley 1945 Varied symptoms, periarthritis

* Arthroscopic stages of Frozen Shoulder: Nevasier
Nevasier, Orthop Clin North Am, 18:439-443, 1987

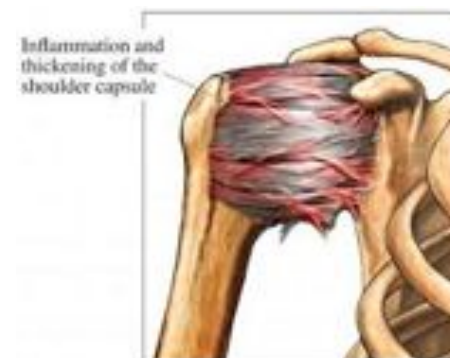


Wat is frozen shoulder?

- Nevasier capsulitis adhesiva

(obv OK- en post mortem beelden)

- Stage 1: Erythematous/ fibrinous synovium
patient presents as impingement
- Stage 2: Red, angry, thick synovium,
thick, contracted interval, tight
joint space adhesions in the inferior fold
- Stage 3: Pink synovium
contracted inferior fold, tight joint space
- Stage 4: no evidence of synovitis
tight inferior fold and joint



Arthroscopic stages of Frozen Shoulder: Nevasier
Nevasier, Orthop Clin North Am, 18:439-443, 1987

Wat is frozen shoulder?

- Prevalentie plm 2%
- 16% van mensen met schouderklachten bij huisarts hebben beperking van de passieve beweeglijkheid
- Vrouw > man
- 40-60 jaar
- Bdz 6-34%
- Recurrence unusual (!)



- Galatz L, Neviaser R. The frozen shoulder. In: Wulker N, Mansat M, Fu F, eds. Shoulder surgery: an illustrated textbook. London: M Dunitz, 2001:317-29.
- Hannafin J, Chiaia T. Adhesive capsulitis. Clin Orthop 2000;372:95- 109.
- Neviaser R, Neviaser T. The frozen shoulder: diagnosis and management. Clin Orthop 1987;223:59-64.
- Cameron R, McMillan J, Kelly I. Recurrence of a 'primary frozen shoulder': a case report. J Shoulder Elbow Surg 2000;9:65-7.
- Reeves B. The natural history of the frozen shoulder syndrome. Scand J Rheumatol 1975;4:193-6.
- Bulgen D, Binder A, Hazleman B, Park J. Immunological studies in frozen shoulder. J Rheumatol 1982;9:893-8.
- Van der Windt DA, Koes BW, De Jong BA, Bouter LM. Shoulder disorders in general practice: incidence, patient characteristics, and management. Ann Rheum Dis 1995;54:959-64
- Stevenson Trojan T. Evaluation of shoulder pain. J Fam Pract 2002;51:605-11



Risicofactoren

Table I. Conditions associated with adhesive capsulitis in the literature

Authors	Condition
Stam ¹¹	Upper limb trauma
Arkkila et al ¹²	→ Diabetes
Choy et al ¹³	ACTH deficiency
Wohlgethan ¹⁴	Hyperthyroidism
Bowman et al ¹⁵	→ Hypothyroidism
Okamura and Ozaki ¹⁷	Reduced bone mineral density
Lundberg and Nilsson ¹⁸	Osteopenia
Tuten et al ¹⁹	Cardiac surgery
Pineda et al ²⁰	Cardiac catheterisation through the brachial artery
Bruckner and Nye ²¹	Neurosurgery
Patten and Hillel ²²	Radical neck dissection
Smith et al ²³	→ Dupuytren's disease
Riley et al ²⁴	Parkinson's disease
Boyle-Walker et al ²⁵	Cardiac disease
Wadsworth ²⁶	Pulmonary disease
Jayson ²⁷	Stroke
Bunker and Esler ²⁸	Hyperlipidaemia
Hutchinson et al ²⁹	Treatment with matrixmetalloproteinase inhibitor



Mogelijke oorzaken

- Niet duidelijk
- Neurodystrofisch proces?
 - Jeracitano D, Cooper R, Lyon L, Jayson M. Abnormal temperature control suggesting sympathetic dysfunction in the shoulder skin of patients with frozen shoulder. *Br J Rheum* 1992;31:539-42.
 - Muller L, Muller L, Happ J, Kerschbaumer F. Frozen shoulder: a sympathetic dystrophy? *Arch Orthop Trauma Surg* 2000;120:84-7.
 - Wiffen F. What role does the sympathetic nervous system play in the development of ongoing pain of adhesive capsulitis? *J Manual Manipulative Therapy* 2002;10:17-23.
 - Muller L, Rittmeister M, John J, Happ J, Kerschbaumer F. Frozen shoulder: an algoneurodystrophic process? *Acta Orthop Belg* 2002;68(Suppl):79-85.
 - Mani R, Cooper C, Kidd B, Cole J, Cawley M. Use of laser Doppler flowmetry and transcutaneous oxygen tension electrodes to assess local autonomic dysfunction in patients with frozen shoulder. *J R Soc Med* 1989;82:536-8.



Differentiaal diagnose

- Glenohumerale artrose
- Myogene beperking
- Hypertonie / pijn
- Psychosomatische oorzaak
- Bicepspeespathologie
- Andere capsulaire beperking / GIRD



Stadia en klachten

Freezing (Averages 2 to 8 months untreated)

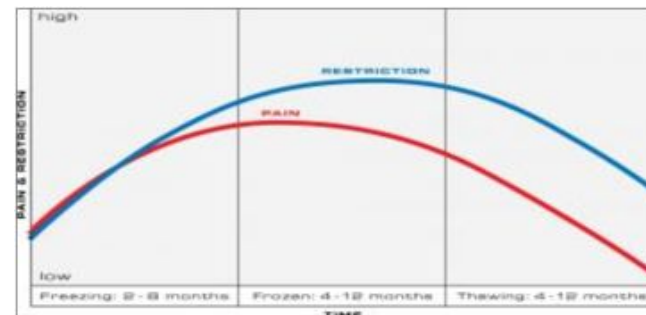
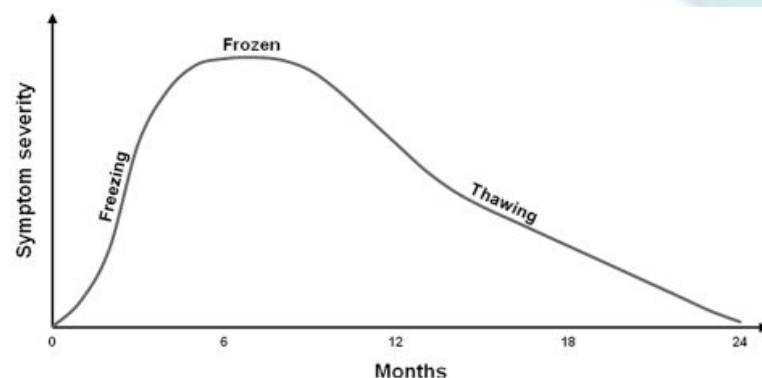
- Painful and increasingly restricted movement
- Painful with inactivity such as when attempting to sleep
- Rapid movements produce spasms and extreme pain
- Increasingly painful stage

Frozen (Averages 4 to 12 months untreated)

- Notably restricted movement with some pain
- Decreasing pain, increasing stiffness.
- Spasms decreasing or disappearing
- Mobility slowly increasing with decreasing pain
- Night pain lessens and often disappears at this stage

Thawing (Averages 4 to 12 months untreated)

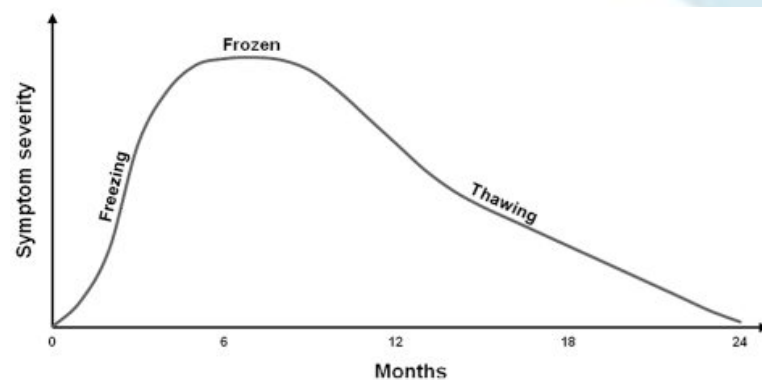
- Decreasingly painful
- Increasing mobility



Stadia en klachten

Pre-Freezing

- symptoms for 1 to 3 months, getting worse.
- difficult to identify your problem as adhesive capsulitis
- pain with active movement and passive motion
- the shoulder usually aches not using it, but pain increases and becomes "sharp" with movement.
- mild reduction in motion most noticeable in external rotation
- start to lose motion in flexion and abduction
- pain during the day and at night



Beloop frozen shoulder

- Natuurlijk beloop prospectieve studie

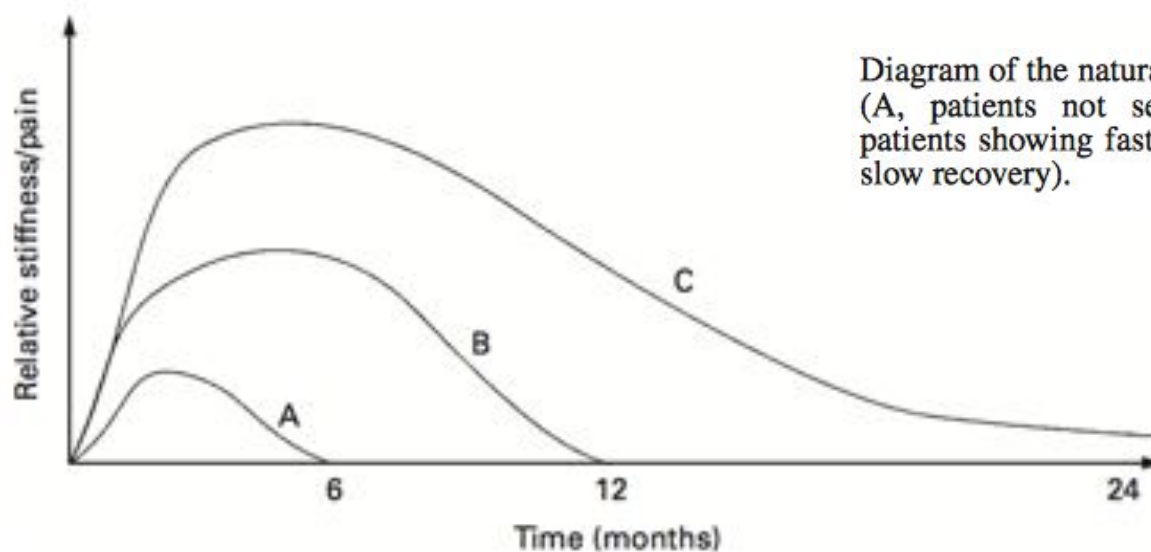


Diagram of the natural history of adhesive capsulitis (A, patients not seeking medical attention; B, patients showing fast recovery; C, patients showing slow recovery).



Chambler AF, Carr AJ.
J Bone Joint Surg Br. 2003 Aug;85(6):789-95.
The role of surgery in frozen shoulder.

Wat is frozen shoulder?

- Beperking in de beweeglijkheid van het schoudergewricht door ontsteking van het gewrichtskapsel.
- Frozen shoulder is een aandoening waarbij de bewegingsmogelijkheid van het schoudergewricht sterk is verminderd door verminderde elasticiteit van het gewrichtskapsel. Voor de diagnose frozen shoulder is een bewegingsbeperking van meer dan 50% gedurende langer dan drie maanden vereist.

Wikipedia

- Stijfheid = frozen shouder?
- Stijfheid (verkort kapsel) vs capsulitis adhesiva. ←



Wat is frozen shoulder?

- Beperking gewrichtskapsel



Synovitis GH gewricht



Studie Rijnland ZH

A. Kolk, C.P.J. Visser

Arthroscopie schouder (2012), n=175 (retrospectief)



Identificatie van factoren die het ontstaan van pijn met stijfheid na een arthroscopische schouder- operatie beïnvloeden

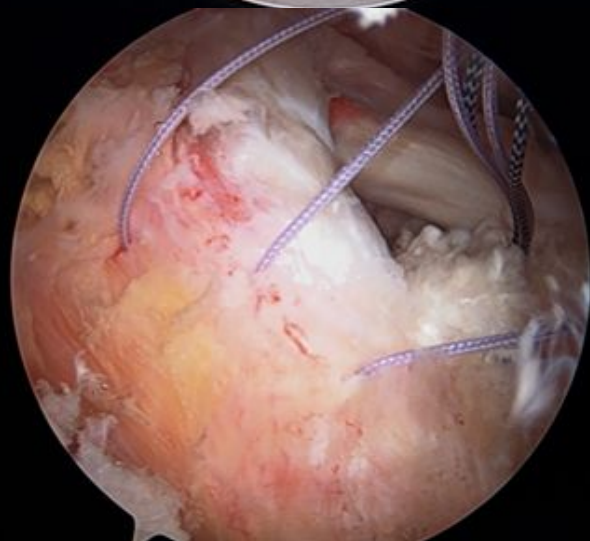
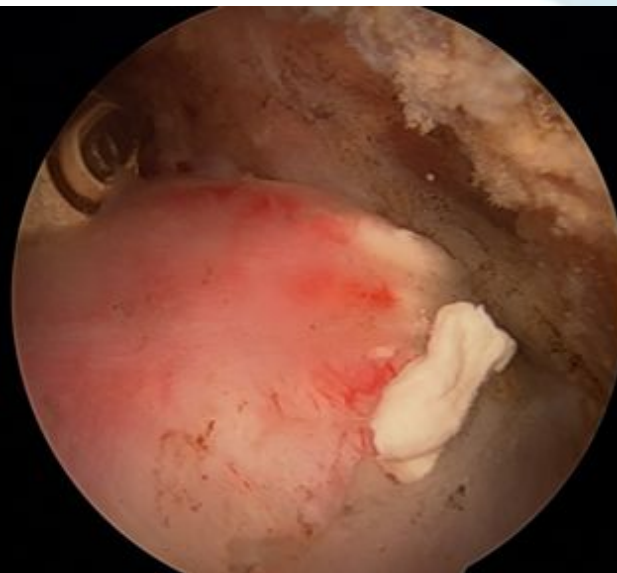
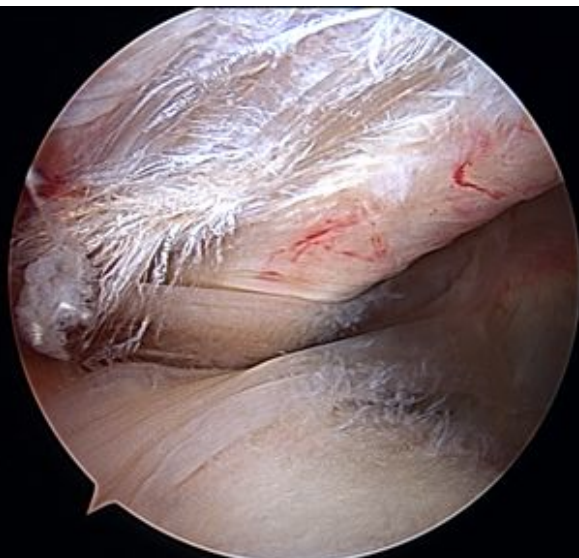


Studie Rijnland ZH

- **Inclusie:**
 - SAPS evt met AC artrose
 - Geen frozen/freezing shoulders, ook niet in VG
- **Scopische ingreep subacromiaal:**
 - Bursectomie
 - Verwijderen lig. coracoacromiale
 - SA decompressie
 - Evt. i.c.m. distale clavicularesectie



Studie Rijnland ZH



Studie Rijnland ZH

- Resultaten:

Incidentie 15,4 % (175)

- SAPS incl. AC 19,5 % (126)
- Cuff repair 5,9 % (32)
- Bankart repair 5,6 % (17)

N=175		Geen FS	FS	Chi ² p waarde / T. Toets *
Diabetes Mellitus	JA	7%	7%	0,902
	NEE	93%	93%	
Geslacht	M	50%	41%	0,366
	F	50%	59%	
Leeftijd (jr)		52,8	53,5	0,783 *



Studie Rijnland ZH

- Risicofactoren

N=175		Geen FS	FS	Chi ² p waarde / T. Toets *
Duur klachten (mnd)		45	27	0,008 *
ASA classificatie	1	34%	33%	0,045
	2	65%	59%	
	3	1%	8%	
Dupuytren		0%	4%	0,019
		100%	96%	
Bursitis beeld		28%	48%	0,034
		72%	52%	



Studie Rijnland ZH

Verklaring hoge percentage:

- Irritatie gewricht i.v.m. scopie i.a.?
- Deel voorstadium FS versus SAPS?
- Als gevolg behandeling van de bursa?
 - **Synovitis bursa (bursaprikkeling) & glenohumorale beperking?**
Cytokinen: IL-1a, IL-6, COX 2, TNF in bursa verhoogd (*14 prim. FS vs 7 controles*)
Inflammatory cytokines are overexpressed in the subacromial bursa of frozen shoulder.
Yun-Mee Lho, et al. J Shoulder Elbow Surg (2013) 22, 666-672
- Gestart met prospectieve studie



Therapeutische opties

- Supervised neglected
- NSAID
- Injectie corticosteroiden i.a.
- Zenuwblokkade n. suprascapularis
- Hydrodistension
- Fysiotherapie (diverse modaliteiten)
- Manipulatie onder anesthesie
- Arthroscopische release
- Combinatie



Therapeutische opties

Table III. Summary of results for the surgical release of frozen shoulder

Author/s	Number of patients	Mean age (yrs)	Male:female ratio	Mean time of preop symptoms	Surgical treatment	Mean follow-up	Results
Ozaki et al ⁴⁶	17	53.5	10:7	10.5 mths	Open release and MUA	6.8 yrs	94% gained full ROM and pain relief
Omari and Bunker ⁸⁵	25	52.6	13:12	Not stated	Open release and MUA	19.5 mths	Increase in American Shoulder and Elbow Surgeon Score from 18.74 to 71.1
Segmuller et al ⁸⁶	24	50	14:10	Not stated	Arthroscopic release and full abduction	13.5 mths	88% satisfied, 76% normal function
Ogilvie-Harris et al ⁸⁷	38	32-72	14:24	Min 12 mths	20 MUA/20 arthroscopic release	2-5 yrs	ROM similar but release provided better function and pain relief
Warner et al ⁸⁸	23	48	11:12	12 mths	Arthroscopic release and MUA	39 mths	Mean Constant score increase by 48 points
Beaufils et al ⁸⁹	25	48	6:19	13 mths	Arthroscopic release	21 mths	69% very satisfied or satisfied Helps ROM during recovery
Pearsall et al ⁹⁰	46	49	22:24	12 mths	Arthroscopic release and steroid course	22 mths	83% normal or only mild symptoms
Watson et al ⁹¹	73	52	42:31	19.7 mths	Arthroscopic release	12 mths	Pain reduced by 2.2 wks ROM 10% that of other shoulder by 5.5 wks
Gerber et al ⁹²	45	50.8	37:8	8 mths	Arthroscopic release and MUA	26 mths	Mean Constant score increase from 41 to 75 points
Jerosch ⁹³	28	49	13:15	24 mths	Arthroscopic release	22 mths	Mean Constant score increase by 41 points
Bennett ⁹⁴	31	60	12:19	Min 6 wks	Arthroscopic release	18 mths (min)	Mean Constant score increase from 37 to 78 points
Nicholson ⁹⁵	68	50	27:41	Not stated	Arthroscopic release	3 yrs	Increase in ASES from 35.5 to 93 points
Massoud et al ⁹⁶	43	48	27:16	14.3 mths	MUA ± arthroscopic release	35 mths	Mean Constant score increase from 20.3 to 63.7 points



Orthopedische opties

- Grootste manco studies MUA en Scopie:
 - Geen controlegroep (natuurlijk beloop)
 - Snelle interventie (binnen natuurlijk beloop)
 - Data geven geen inzicht in verandering beloop
 - Geen gerandomiseerde trials (OK/conservatief)



Surgery should be in the armamentarium of orthopaedic surgeons, but there is limited evidence to show that it will truly change the natural course of this disabling condition.

The role of surgery in frozen shoulder. Chambler AF, Carr AJ. JBJS Br. 2003 Aug;85(6):789-95.

Given the low level of evidence and lack of direct comparison studies, there is no clear difference in shoulder ROM or patient-reported outcomes when comparing a manipulation under anaesthesia to an arthroscopic capsular release for the treatment of recalcitrant idiopathic or secondary-systemic adhesive capsulitis.



Comparison of manipulation and arthroscopic capsular release for adhesive capsulitis: a systematic review. John A. Grant, Nicholas Schroeder, Bruce S. Miller, James E. Carpenter. J Shoulder Elbow Surg (2013) 22, 1135-1145

Orthopedisch perspectief

Take home:

- Frequent voorkomend, vaak niet duidelijk
- Toenemende pijn en bewegingsbeperking
- NSAID en injectie in "beginfase" zinvol
 - Injectie intra-articulair
- Bij verdenking freezing: (schouder)orthopeed
 - Geen prikdokter
- FT: pijnbestrijding (triggerpoints)
- Mobilisaties zinvol nà freezing fase (cave pijn)
- Terughoudend met MUA of OK

