

Clavicle fracture

Who, when and how to operate

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Overlæge

AO Advanced
Fredericia, 25.-28. april 2022

Disclosure: No potential conflicts of interest

Faculty: Peter Ivan Andersen

I have no financial relationships with commercial entities
that produce health-care related products.

Case

Per 51 år gl

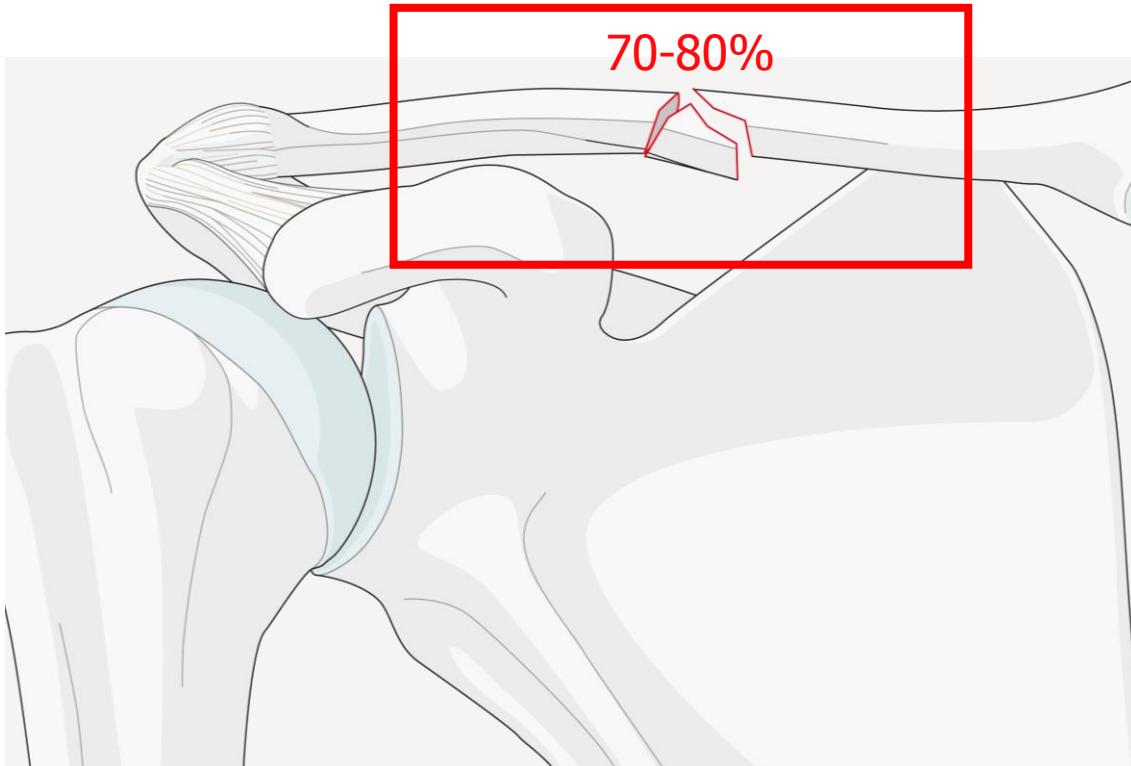
- Motionscyklist
- 55 km/t
- Operation?



Learning objectives

- Describe the role of nonoperative treatment of clavicular fractures
- List the indications for operative fixation of clavicular fractures
- Discuss differences in plate fixation

Epidemiology



- 2,5-5% af alle brud hos voksne
- Oftest mænd under 30 år
- Fald fra cykel eller motorcykel
- Forkærlighed for side?

“Traditional teaching”

- “With surgery, you trade a bump for a scar”
- “Function is normal even following clavicular malunion”
- “All clavicle fractures heal”

Indications

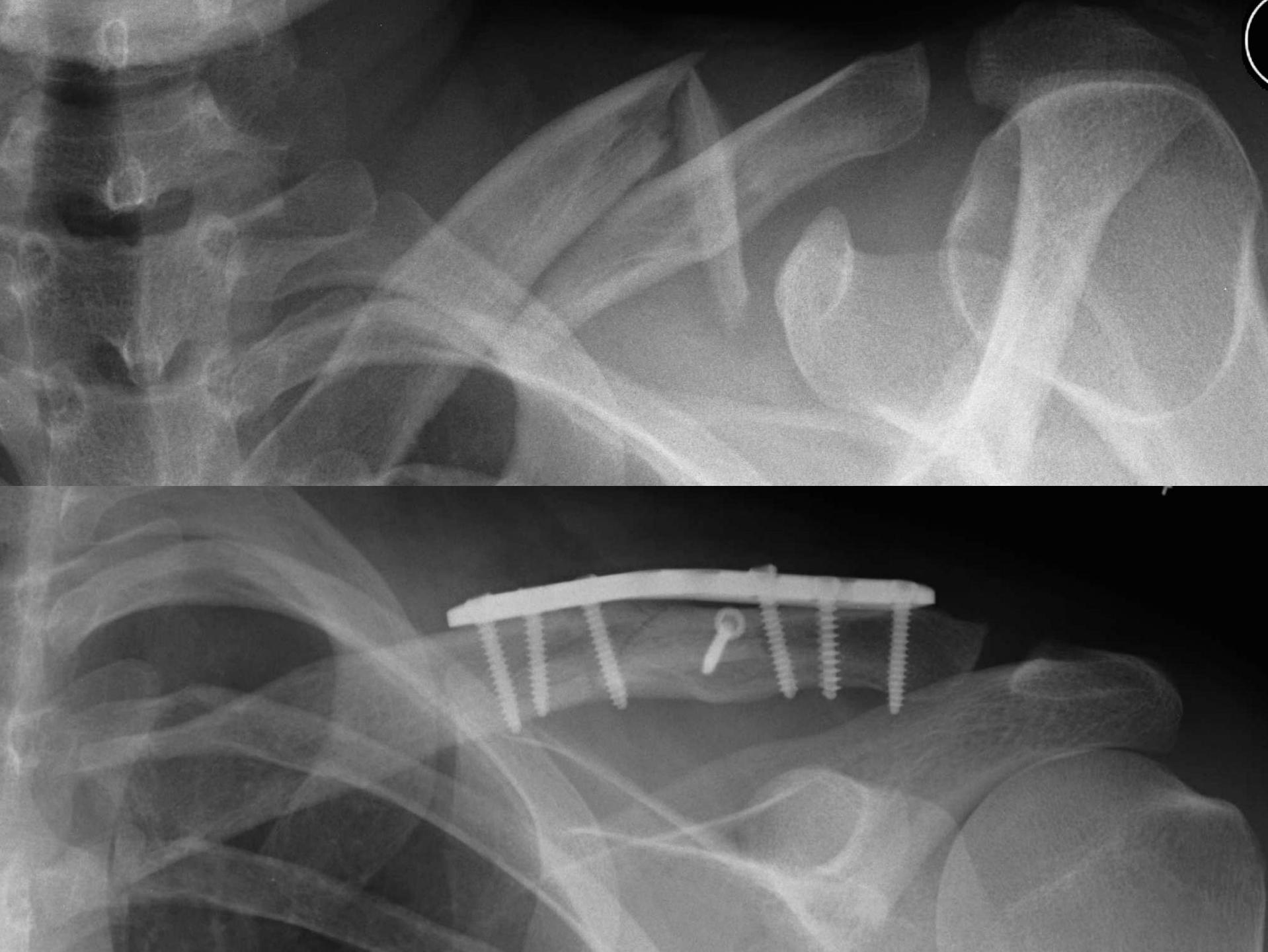
J Bone Joint Surg Am. 2007 Jan;89(1):1-10.

Nonoperative Treatment Compared with Plate Fixation of Displaced Midshaft Clavicular Fractures *n=132* A Multicenter, Randomized Clinical Trial

By the Canadian Orthopaedic Trauma Society



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Methods

Canadian Orthopaedic Trauma Society

Inclusion: completely displaced (ie, no contact between the principal fragments) middle third clavicle fractures in adults (16–60 years old) with no absolute or relative indications.

Nonoperative: **sling**

Operative: open reduction internal fixation (ORIF) using **small fragment plates and screws**

Outcome: Constant Shoulder Score, DASH scores collected at 6 weeks, 3 months, 6 months, 12 months, and 2 years

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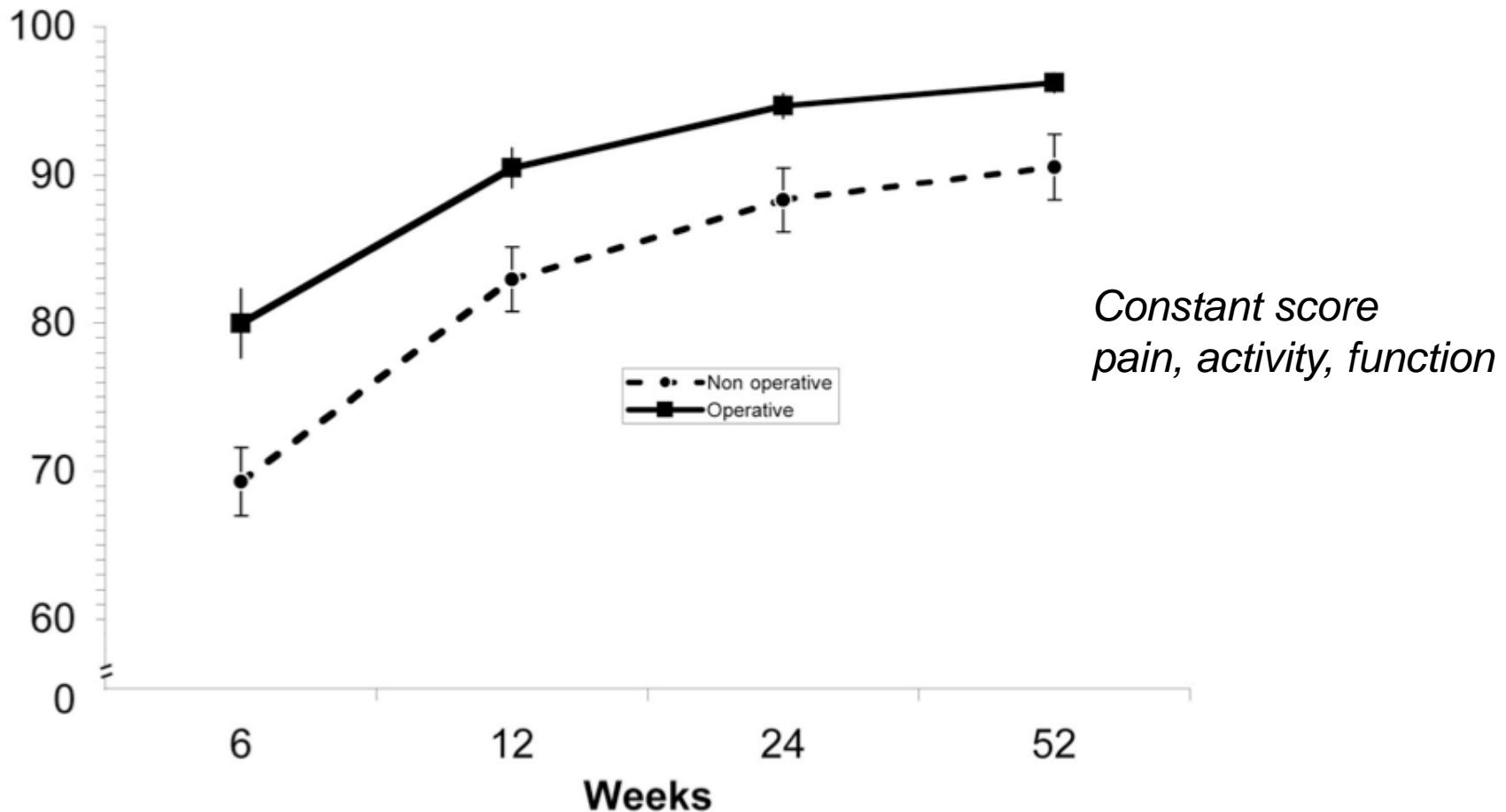
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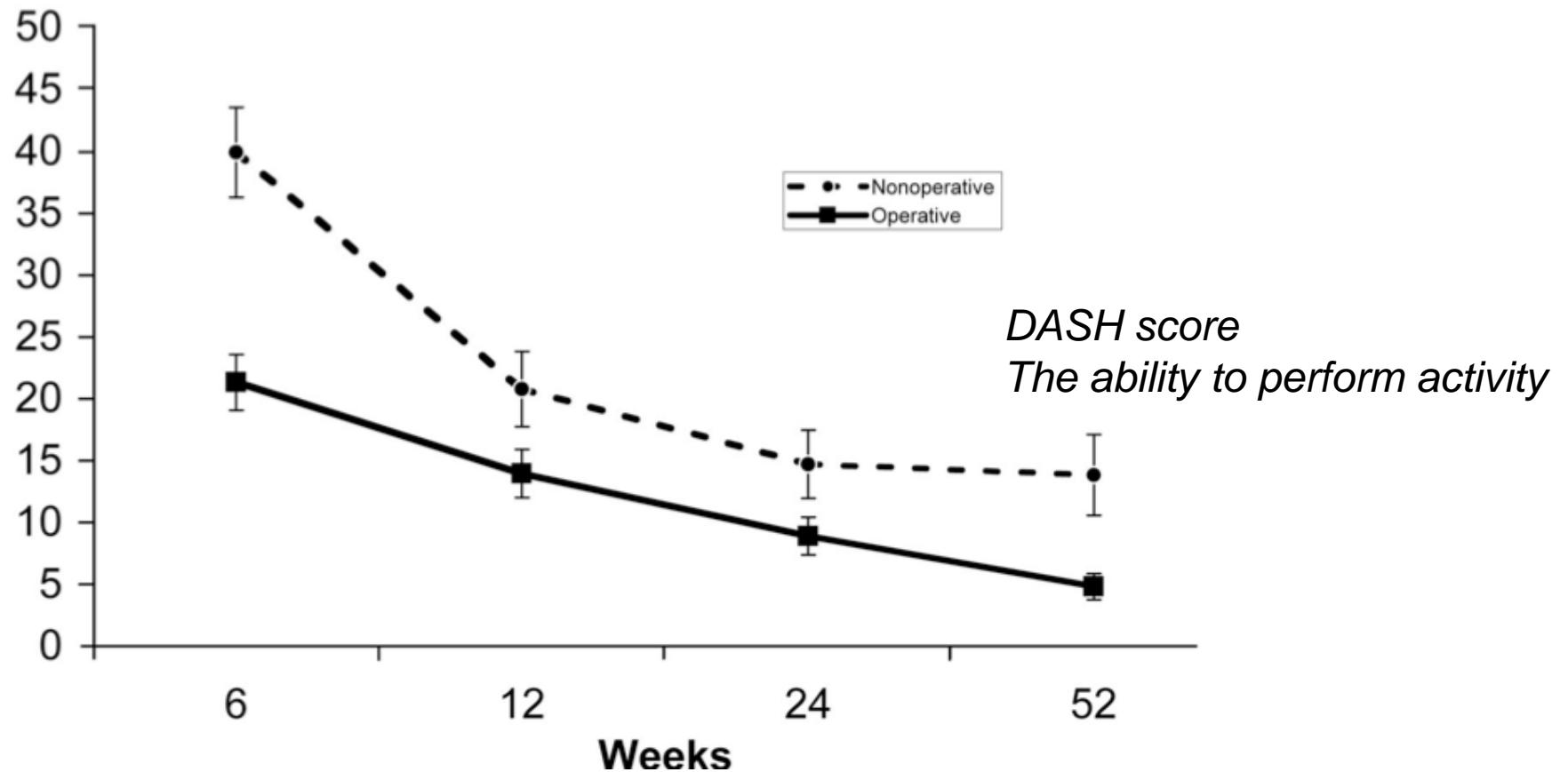
Constant Shoulder Score

Canadian Orthopaedic Trauma Society



DASH scores

Canadian Orthopaedic Trauma Society



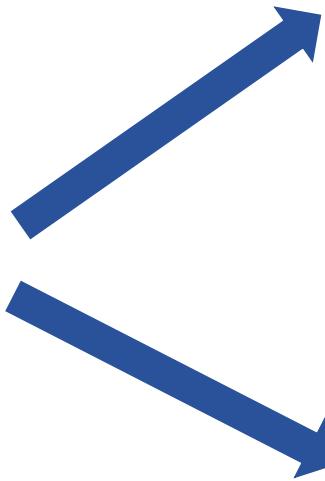
Study conclusions

Canadian Orthopaedic Trauma Society

Data supports early operative plate fixation of completely displaced midshaft clavicle fractures in young active individuals

Nonoperative treatment of midshaft clavicular fractures should be reconsidered

What are the issues? If conservative treatment?



Nonunion



Malunion

Can we predict who will suffer nonunion?

Robinson CM, Court-Brown CM, McQueen

MM, et al. Estimating the risk of nonunion following nonoperative treatment of a clavicular fracture. *J Bone Joint Surg Am.* 2004 Jul;86-A(7):1359–1365.

Calculated probability of a nonunion at 24 weeks after a clavicular shaft fractures, based on age, sex, comminution, and displacement*

Age (yr)	Probability of a Nonunion							
	Not Displaced, Not Comminuted		Displaced, Not Comminuted		Comminuted, Not Displaced		Displaced and Comminuted	
	Males	Females	Males	Females	Males	Females	Males	Females
20	<1%	2%	8%	16%	2%	7%	18%	30%
30	<1%	3%	10%	20%	4%	9%	20%	35%
40	1%	5%	13%	26%	5%	12%	25%	38%
50	2%	6%	18%	28%	6%	13%	29%	40%
60	2%	7%	19%	30%	8%	15%	31%	44%
70	4%	10%	21%	37%	9%	18%	35%	49%

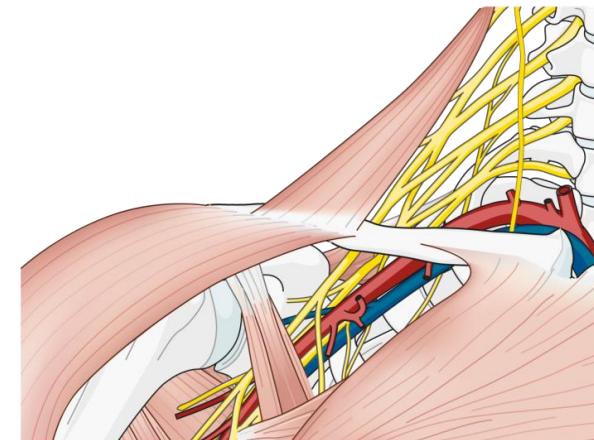
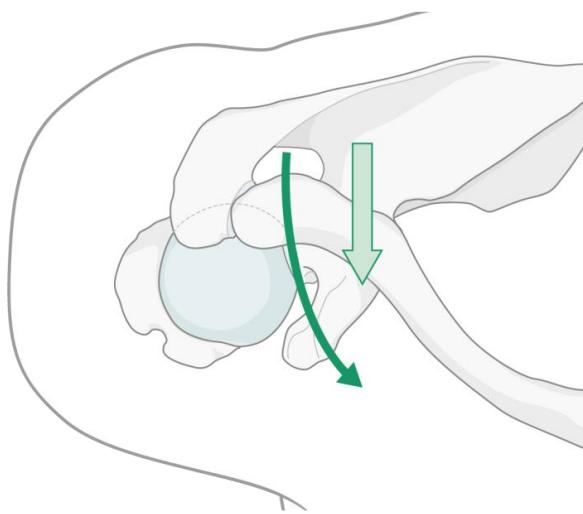
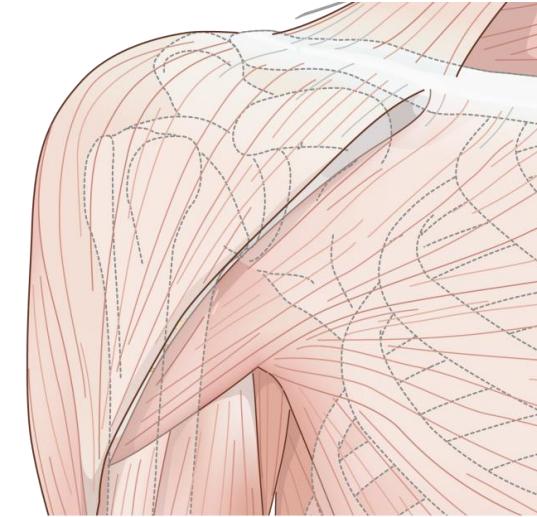
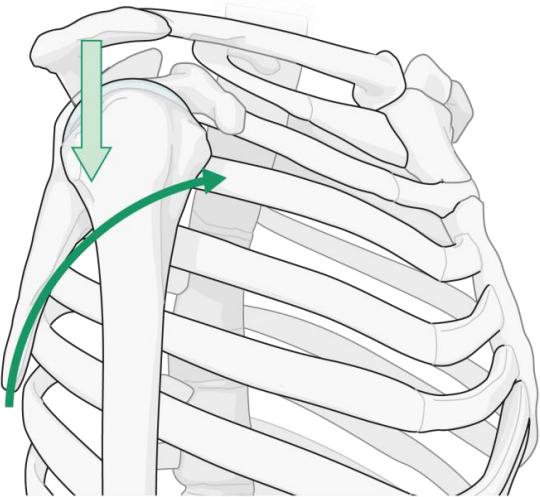
*The values are based on studies including a total of 581 fractures^{9,125}.

Is this malunion a problem?



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Clavicular malunion



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1. Kort klinisk retningslinje vedr.

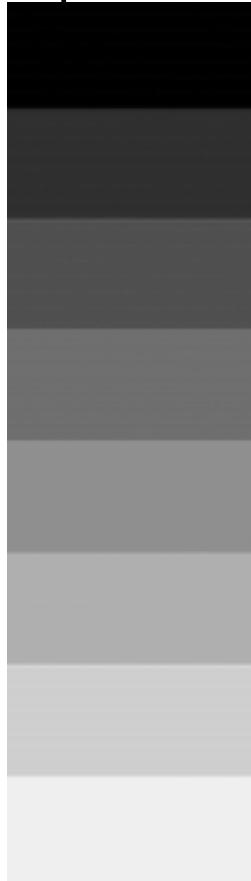
Operativ eller konservativ behandling af displacede midtskafts clavicular frakturer hos voksne.

Anbefaling:

Anvend kun operativ behandling af dislocerede midtskafts clavicular frakturer efter nøje overvejelse, da den gavnlige effekt er usikker og lille, og der er dokumenterede skadefirekninger såsom infektion, kar/nervelæsioner og efterfølgende stort behov for fjernelse af osteosyntesematerialet.

Indication of surgery

Operative



Nonoperative

- Absolute
 - Open fracture
 - Neurovascular compromise

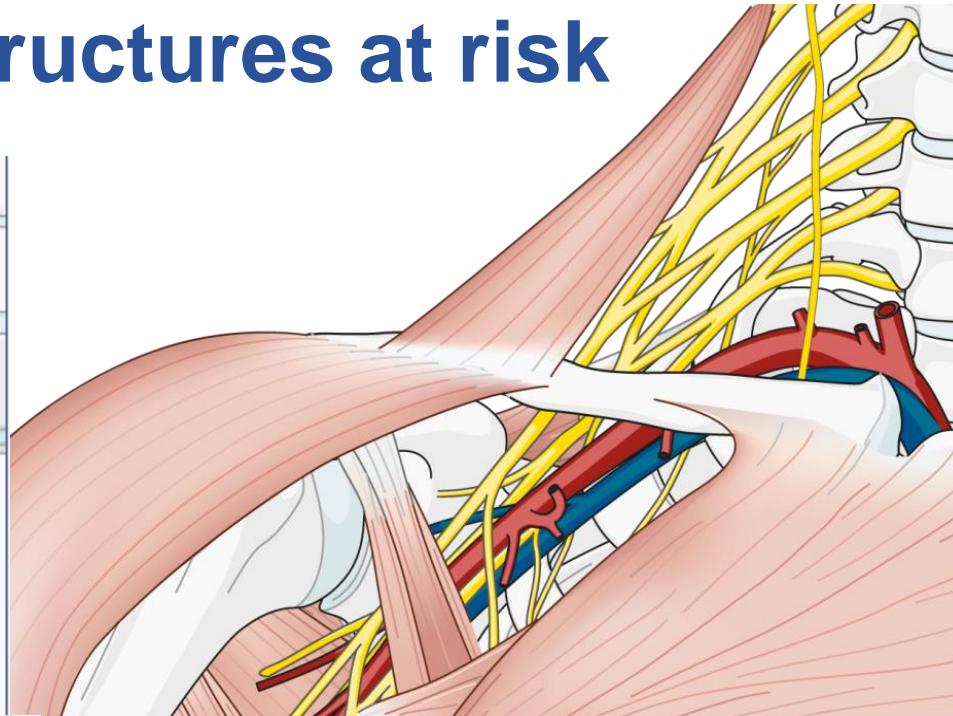
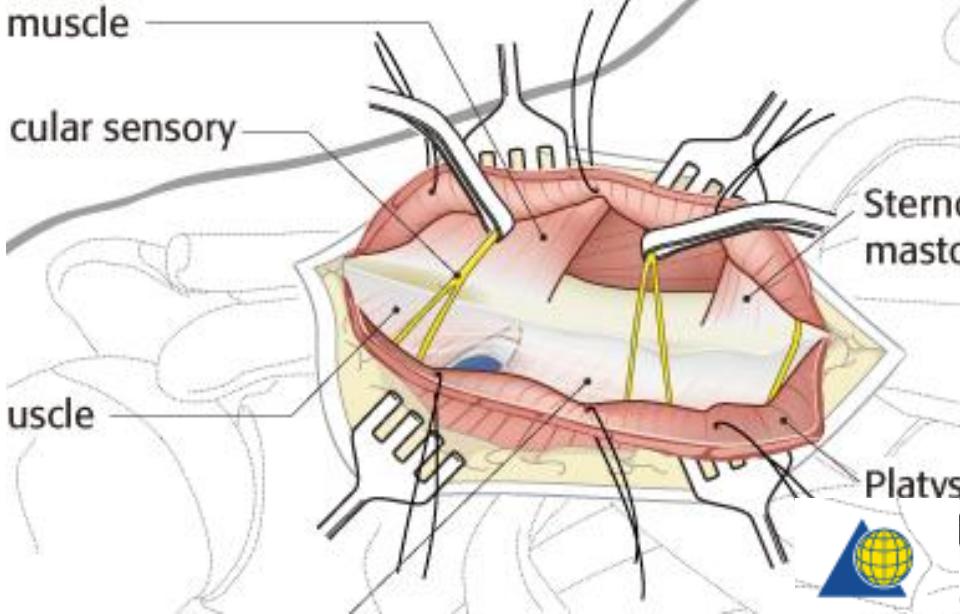
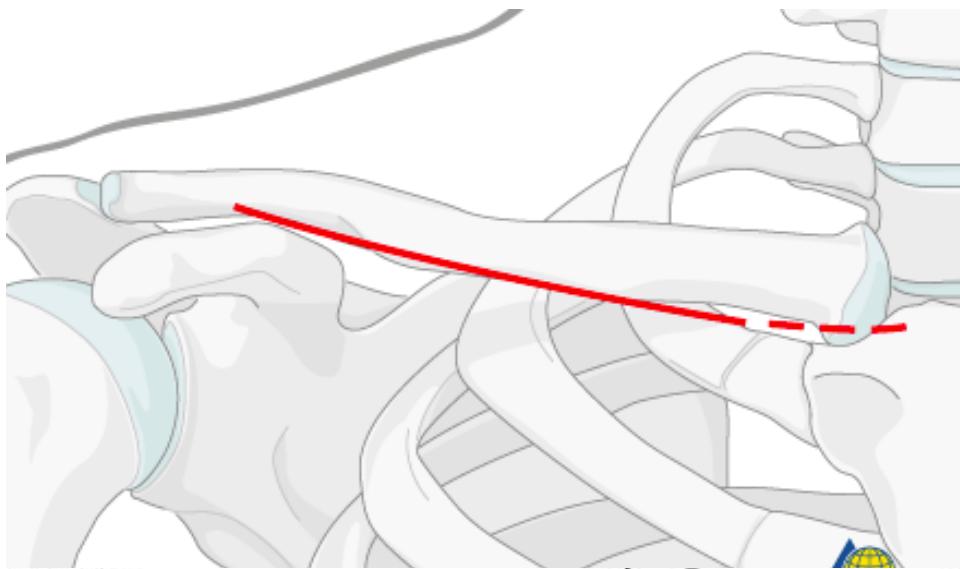
- Relative
 - Polytrauma
 - “Floating shoulder”

- “Significant displacement”

- Undisplaced fracture



Technique: approach and structures at risk

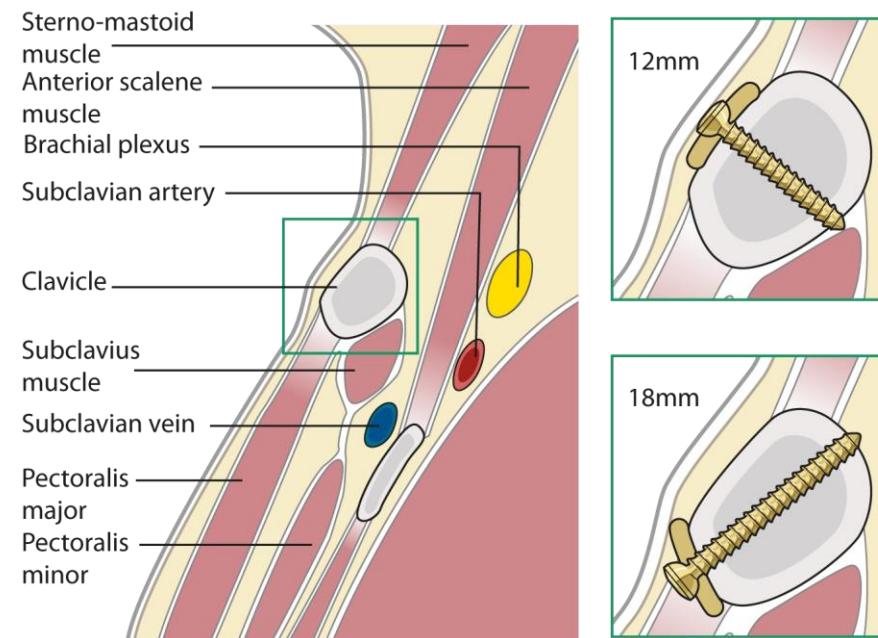


Other considerations

Type of plate

Position of plate

Hardware removal



Case Per



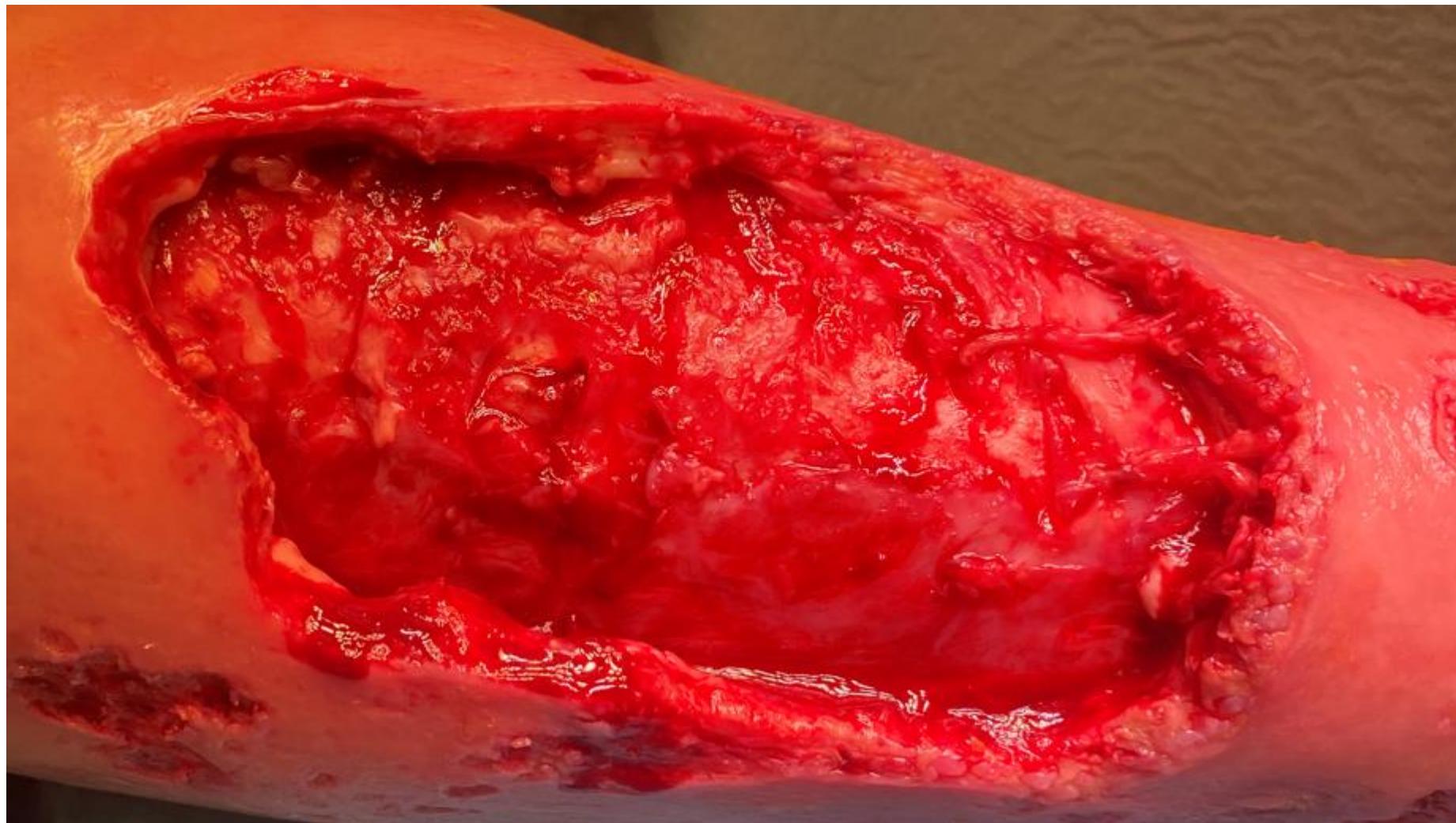
Tilfreds? Postoperativt regime?

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9 dage efter operationen



Efter talrige sårrevisioner, VAC mm...



1 års kontrol



1-års røntgen og klinisk kontrol af højresidig klavikelfraktur fra juli 2018.

Pådrog sig samtidig en højresidig ramus superior og inferior fraktur i bækkenet.

Patienten har stadig manglende følesans på forsiden af brystkassen omkring arret, og i perioder stikkende og smertende fornemmelse svarende til arm og kraveben. Har derudover nedsat bevægelighed i skulderleddet.

Bemærker også i perioder, hvor han afstår fra træning (4-5-dages påskeferie), at der hurtigt tilkommer smerter i muskulaturen omkring højre skulder.

Patienten har de sidste par mdr. haft 2-3 sygedage pga. hovedpine trækkende op fra disse spændinger i muskulaturen.

I forhold til bækkenet kan patienten fortsat ikke løbe ud i terræn, kan godt løbe let på løbebånd. Får gener fra lysken ved forsøg på løb.



Højre skulder: Der bemærkes nedsat bevægelighed især i forhold til indadrotation. Kan på venstre arm få hånden om på skulderen op til midt mellem skulderbladene, højre hånd kan kun nå om på korsbenet.

Take-home messages

- Midtskafts klavikel frakturer skal primært håndteres konservativt
- Der er kun få absolute operationsindikationer
- Osteosynter kun nøje udvalgte patienter – efter grundig information