

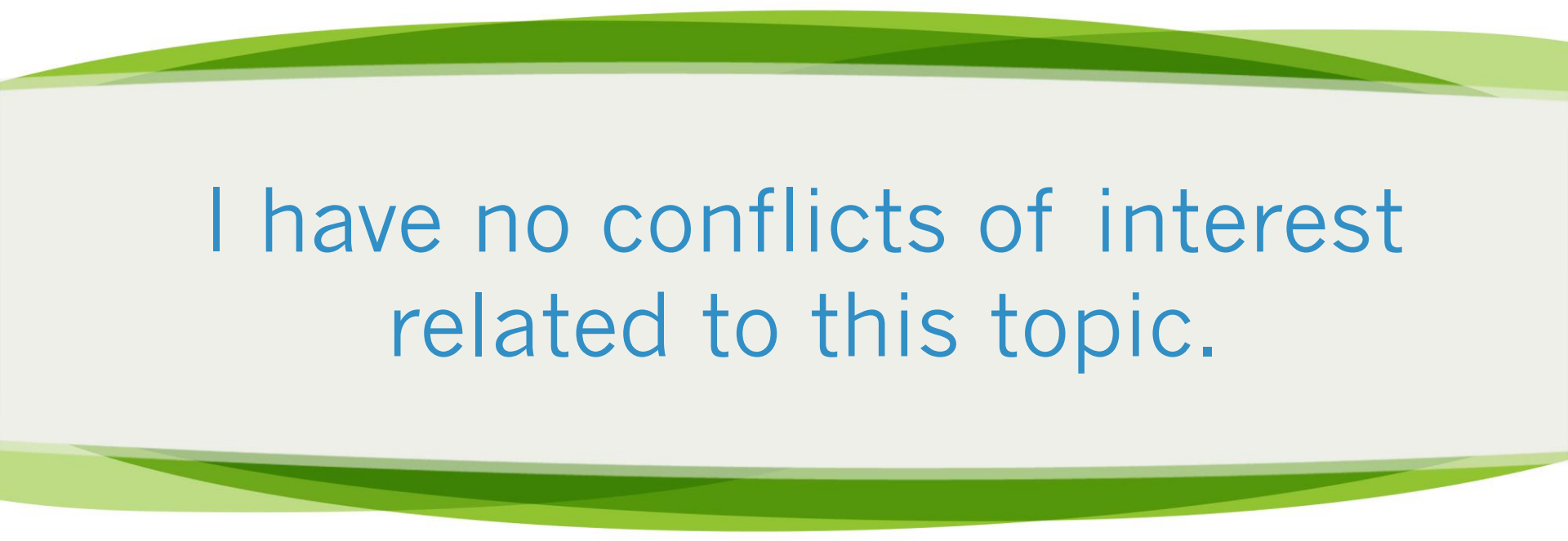
Lateral Ankle Instability Surgery: Is a New Standard Emerging?

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Fellowship Trained in Foot
& Ankle Reconstruction

Special Thanks:

Greg Berlet, MD
Kyle Peterson, DPM



I have no conflicts of interest
related to this topic.

Agenda

- Establish open Modified-Brostrom as the current “standard” for primary lateral ankle ligament repair
- Review patient populations that need special considerations
- What is an arthroscopic Brostrom and is it poised to become the new “standard”?
- What is the influence of cost on our decision to adopt arthroscopic Brostrom?



Live Poll Question #1

- My technique of choice for primary lateral ankle ligament repair in an uncomplicated case is:
 1. Open Modified Brostrom (no arthroscopy)
 2. Ankle Arthroscopy followed by open Modified Brostrom
 3. Arthroscopic Brostrom
 4. Other

Live Poll Question #2

- When I perform lateral ankle ligament primary repairs, I utilize soft tissue anchors.....
 1. commonly, 75-100% of the time.
 2. sometimes, 25 – 75% of the time.
 3. rarely, up to 25 % of the time.
 4. Never.

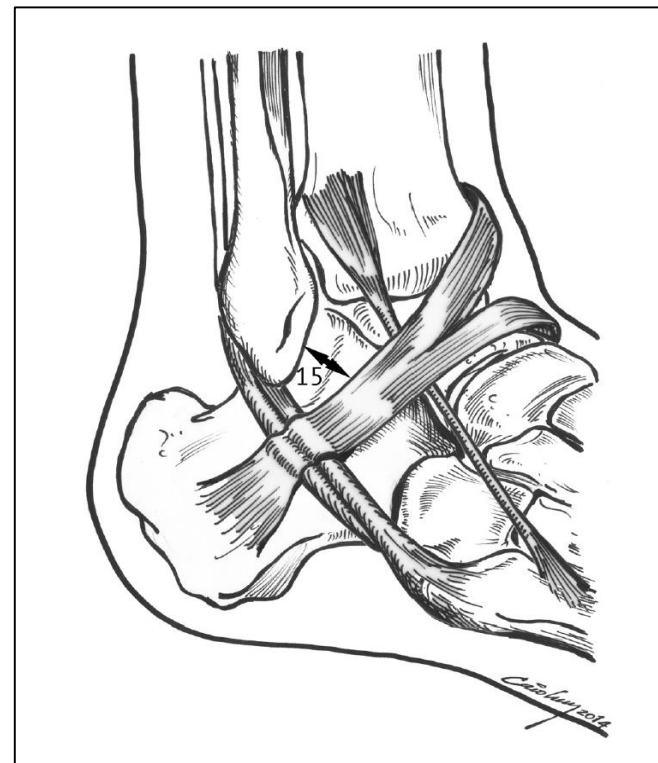
Chronic Lateral Ankle Instability

- Ankle sprains are the most common lower extremity injury.
- Up to 55% will never seek evaluation (McKay et al Br JBJs 2001)
- Despite appropriate non-surgical treatment, up to 20% of ankle sprain patients have persistent pain/instability complaints.
- Open surgical repair has proven to be effective and safe.



Evolution of Lateral Ankle Ligament Repair

- Brostrom, *Acta Chir Scand*, 1966
- Gould *Foot Ankle* 1980
- Karlsson *JBJS* 1988
- Not much has changed since and open modified Brostrom (MB). It reigns as the “gold” standard.

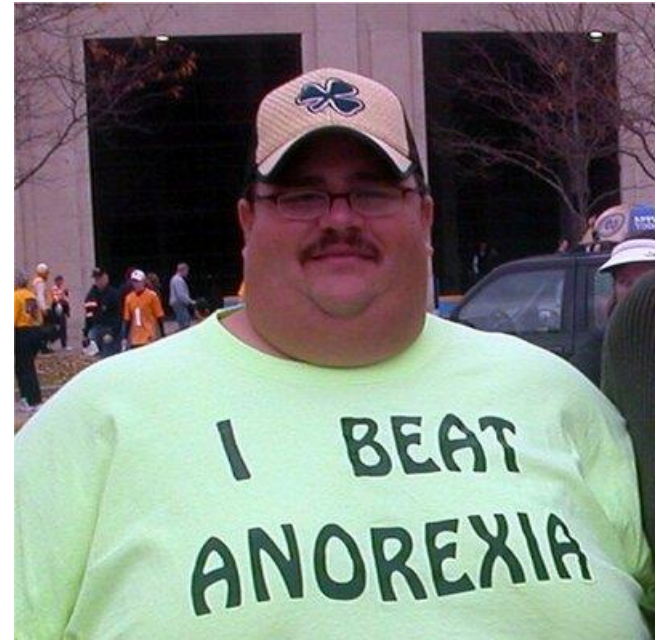


Evolution of Lateral Ankle Ligament Repair

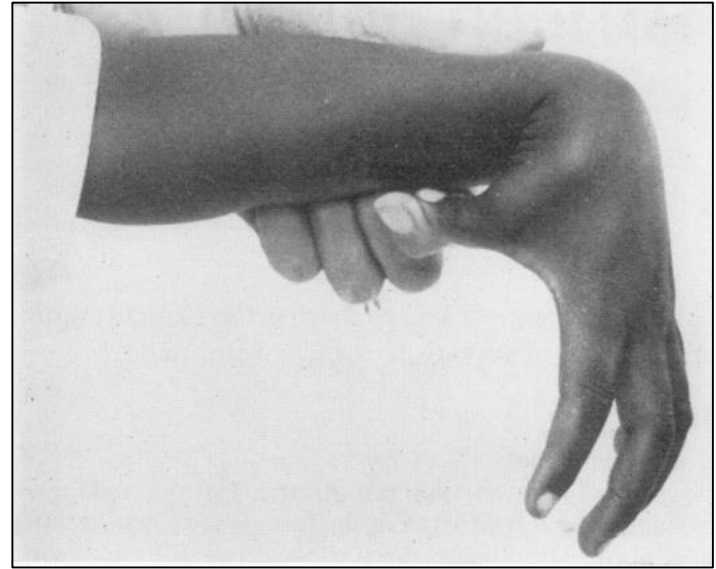
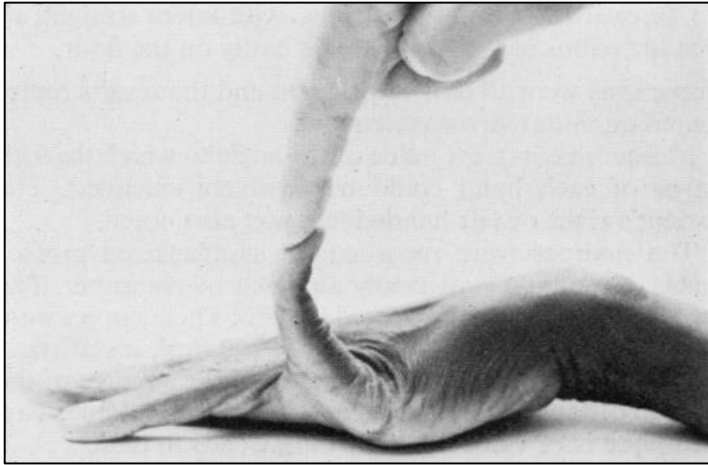
- Guelfi F&A Sx, 2018
 - 13 studies, 505 pts
 - 6.1 year avg f/u
 - AOFAS 90.1 avg, 2 studies with Karlsson score 95, 88.2
 - G&E 91.7%
 - Buerer et al RTSport 4.7 mo
 - Schmidt RTW 38.5 days
 - 7.92% compl (supr wound 2%, sensory disturbances 2%, swelling >6 mo 1.4%, rerupture 1%)
- So JFAS 2017
 - 11 studies, 669 pts
 - 8.4 year avg f/u
 - 1.2% revision rate
 - Overconstraint #1 reason
 - 5.6% complication rate
 - 42% nerve related

Special Considerations

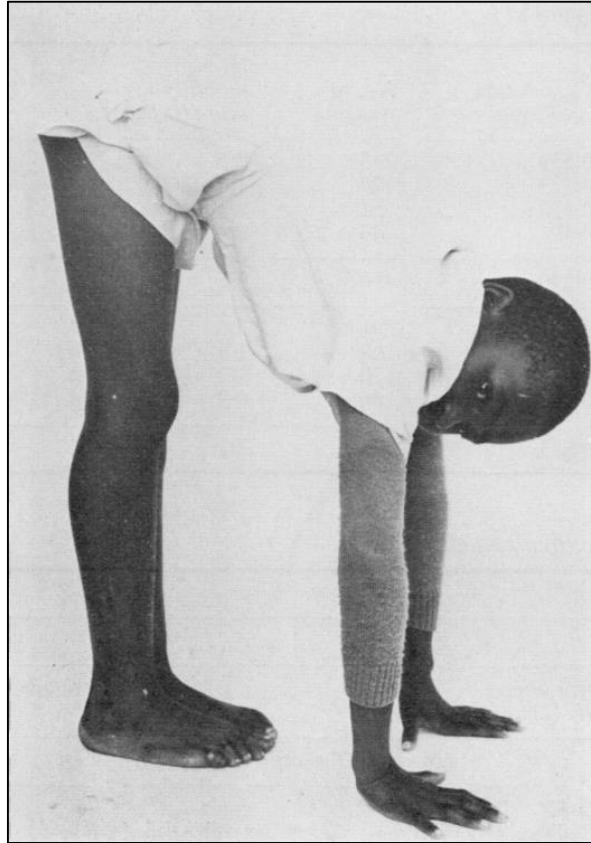
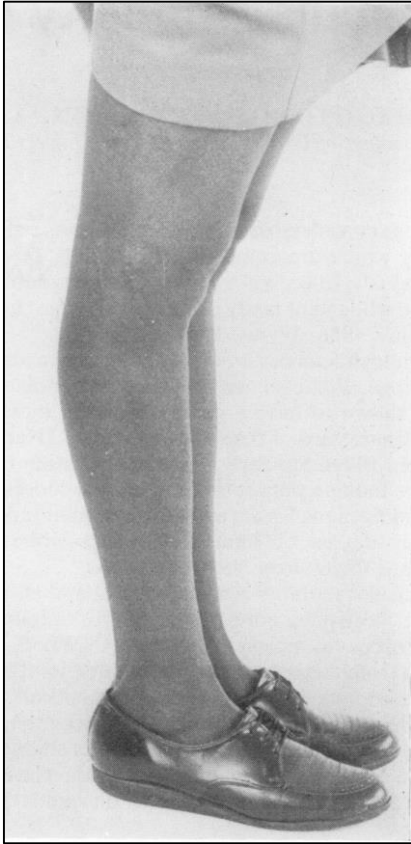
- Ligamentous Laxity
- Hindfoot Varus / Cavus
- High BMI
- High Demand Athlete
- Fibular Ossicles
- Revision Surgery
- Subtalar instability



Ligamentous Laxity Score



Ligamentous Laxity Score



- Park et al, AJSM, 2016
- Generalized Ligamentous Laxity is an Independent Risk Factor of Poor Outcomes after MB

Subtalar Joint Instability

- 80% of patients with chronic ankle instability (Denegar et al, Med Sci, 1999)
- Make STJ stability exam part of your routine
- Ehlers Danlos patients beware
- ALWAYS manually inspect the CFL (MRI can miss tears)



Varus / Cavus



Subfibular Ossicles

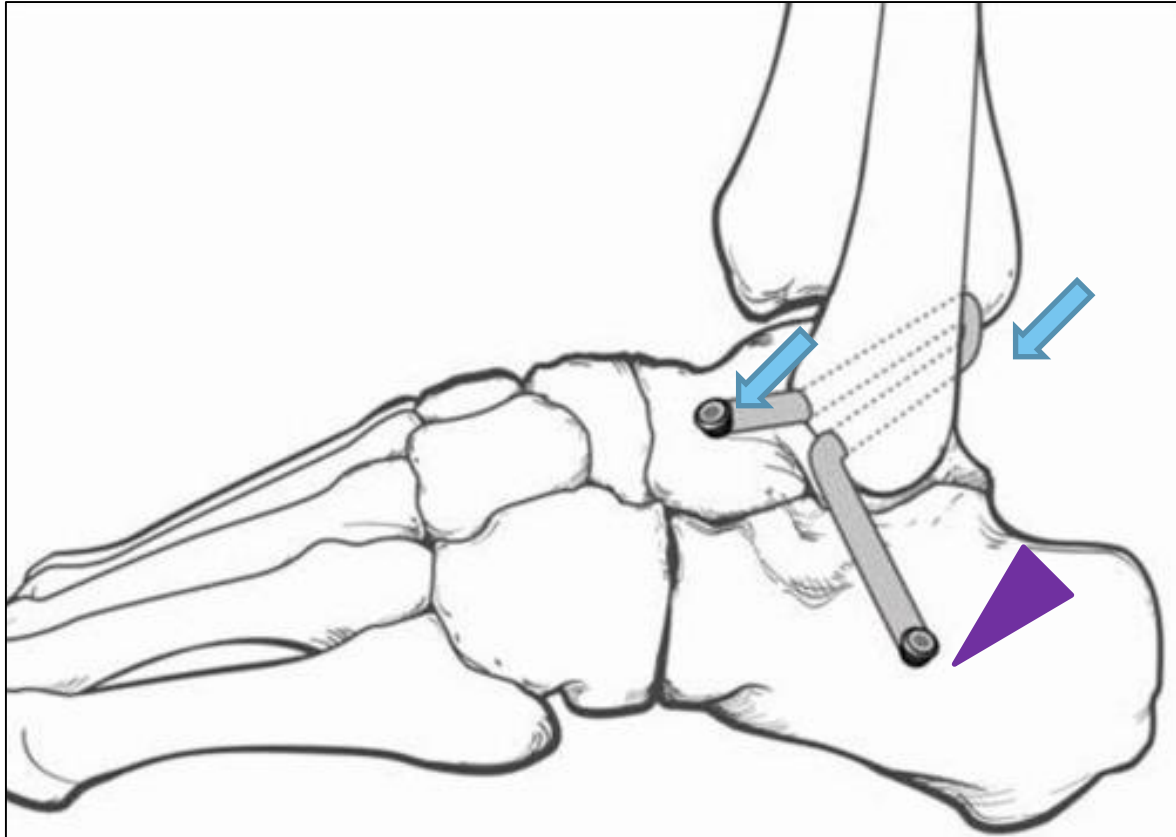


Elite/High-Demand Athlete

- Guillo 2013 #16, 8
 - “Severe sprain acute repair of lateral ligaments in elite athletes reduces risk of developing chronic lateral ankle ligament instability”
- Takao AJSM 2012
- Li AJSM 2009

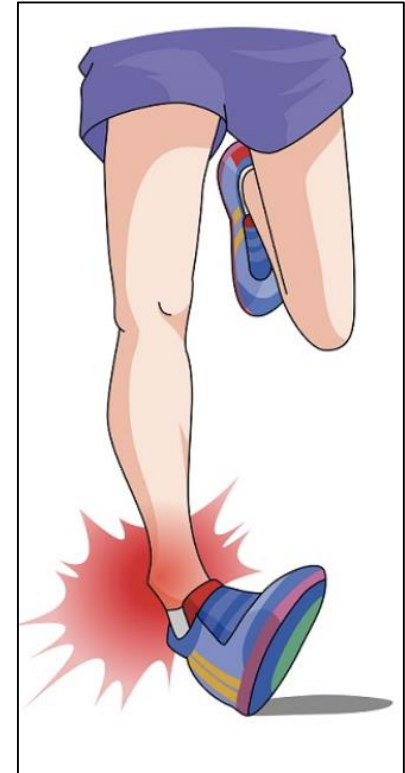


Revisions



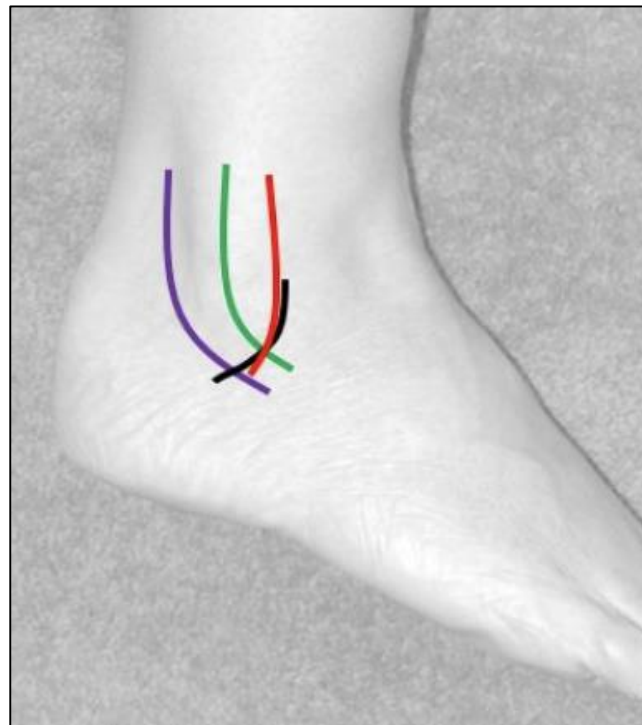
Indications for Modified Brostrom

- Recurrent post-injury lateral ankle instability after failed non-operative treatment for 6 mo.
 - immobilization
 - Physical therapy
 - Bracing
- Inability to resume pre-injury activities for greater than 6 mo



Modified Brostrom Procedural Pearls

- Positioning
- Incision
- Peroneal and CFL inspection
- Avoid over-tensioning
- Tie locking knots



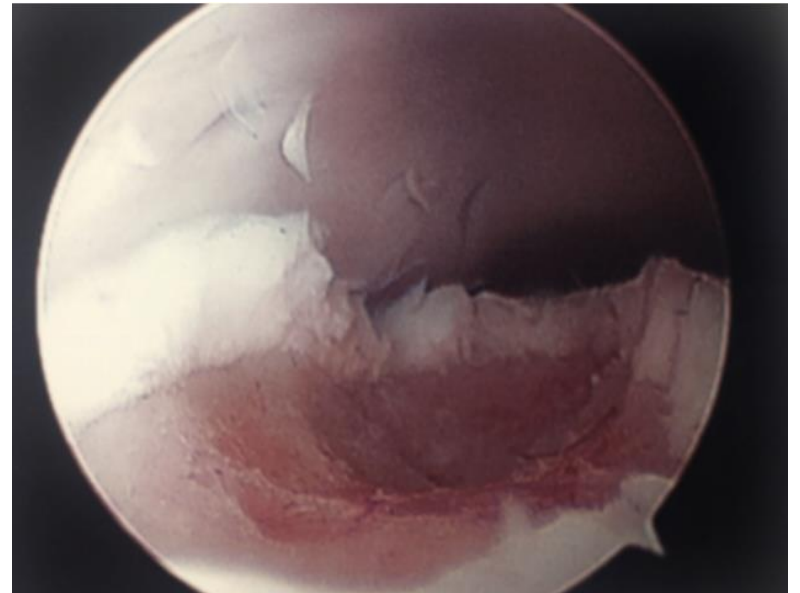
Modified Brostrom Procedural Pearls





Arthroscopy's Role in Lateral Ligament Repair Surgery

- Should we Pre-Scope all Modified Brostroms?
 - Choi AJSM 2008 (97%)
 - Ferkel FAI 2007 (95%)
 - Ferkel FAI 1999(93%)
 - Hua JARS 2010 (91%)
 - Yeo FAI 2016 (68%)
 - Hintermann 2002 (66%)



Can we then make the leap to all-arthroscopic MB?

- Yeo et al, FAI, 2016 says **YES**
- Roger Mann Award Winner
- Level I study
- 1 year f/u
- All-inside scope repair vs anchor-less open MB
- AOFAS, Karlsson/VAS/stress radiographs
- All patients had arthroscopic exam
- Clinical and radiographic outcomes were equal between both groups and in line with established high standards

Hua et al commentary of scope vs open Aug 2018

- Great summary of where we are right now with scope repairs in the research.
- He admits that current research shows an unacceptably high overall complication rate of 11.5%
- Declares that procedural modifications are necessary to reduce complications
- Scope suture “safe zone” Acevedo AJSM 2015
- His 2017 comparison of 37 Open vs 23 arthroscopic repairs at 2 years f/u showed:
 - No instability recurrences / revisions
 - No wound infection
 - No numbness complications
 - Outcome scores as good as open

Can we make the leap to all-arthroscopic MB?

- Post-Op AOFAS
 - Hua 2017 AJSM 93.3 @ 3.5 years
 - Cottom 2013 FFAS 95 @ 1 year
 - Nery 2011 AJSM 90 @ 9.8 years
 - Kim 2011 Orthopedics 92.5 @ 1.3 years



Matteo et al, 2018, F&A Sx, scope vs open, systematic review

- 19 studies (13 open, 6 scope)
- Open
 - 13 studies, 505 pts
 - 73.4 mo avg f/u
 - AOFAS 90.1 avg, 2 studies with Karlsson scope 95, 88.2
 - G&E 91.7%
 - Buerer et al RTSport 4.7 mo
 - Schmidt RTW 38.5 days
 - 7.92% compl (supr wound 2%, sensory disturbances 2%, swelling >6 mo 1.4%, rerupture 1%)
- Scope
 - 6 studies, 216 pts
 - 37.4 mo avg f/u
 - AOFAS 92.48, 1 Karlsson 90.2
 - No RTSport or RTW data
 - 15.27% complication rate (4% neuritis of SPN, delayed wound healing 3.7%, persistent pain 1.4%, prominent knots 1.4%, supr infx 1%, dvt 1%)

Can we make the leap to all-arthroscopic MB?

AOFAS Annual Meeting 2018

Comparison of Mid-term Outcomes Between an Arthroscopic and an Open Modified Broström Procedure for Ankle Instability

Young Koo Lee, MD, PhD, SungBum Park, MD, SangWoo Lee, MD

Category: Arthroscopy

Keywords: Chronic lateral ankle instability, arthroscopy, Broström procedure

AOFAS Annual Meeting 2018

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Comparison of the period of return to practice in All-Inside Arthroscopic and Open Techniques for the Modified Broström Procedure for Ankle Instability

Young Koo Lee, MD, PhD, Sun Geun Lee, MD

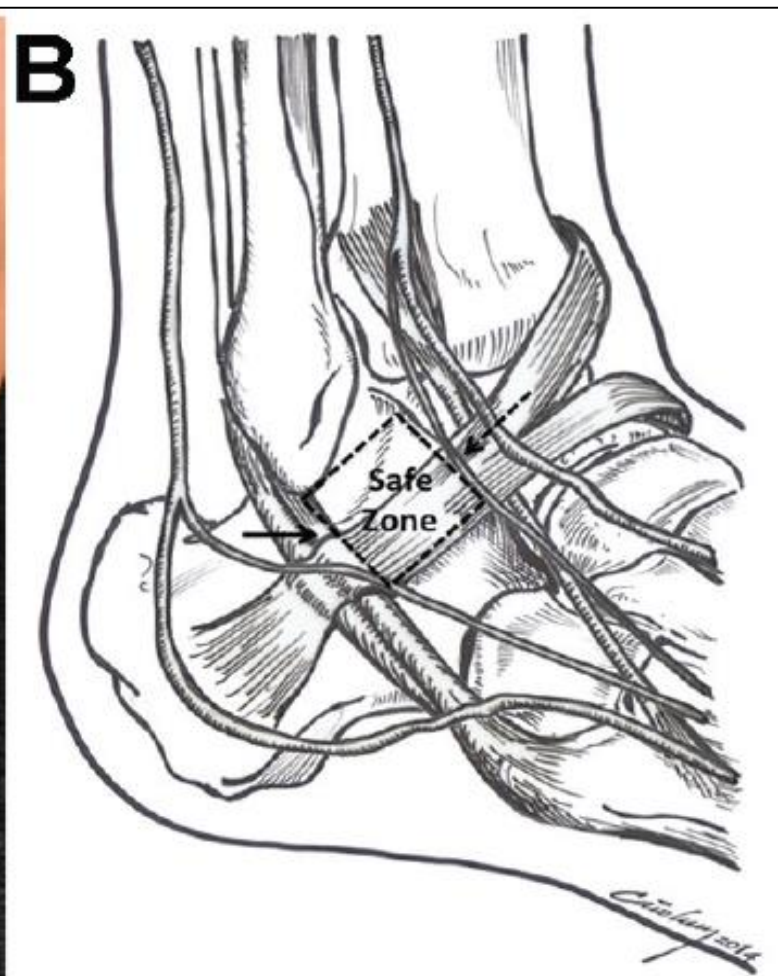
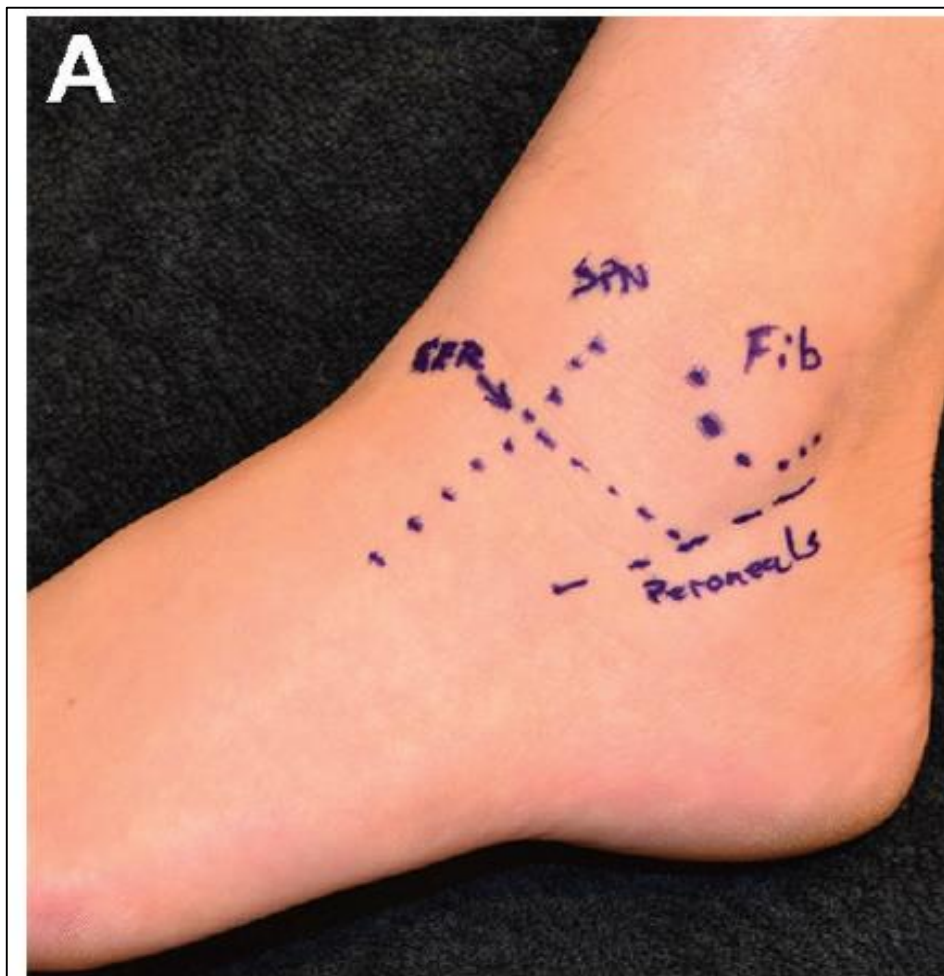
Category: Arthroscopy

Keywords: lateral ankle instability; arthroscopic Modified Broström operation: Open Modified Broström operation

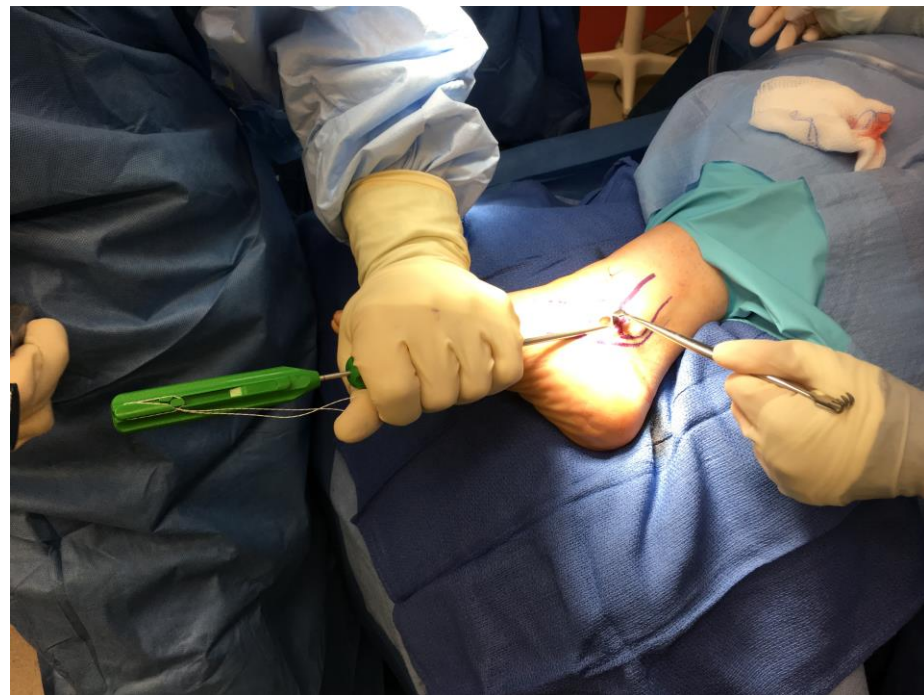
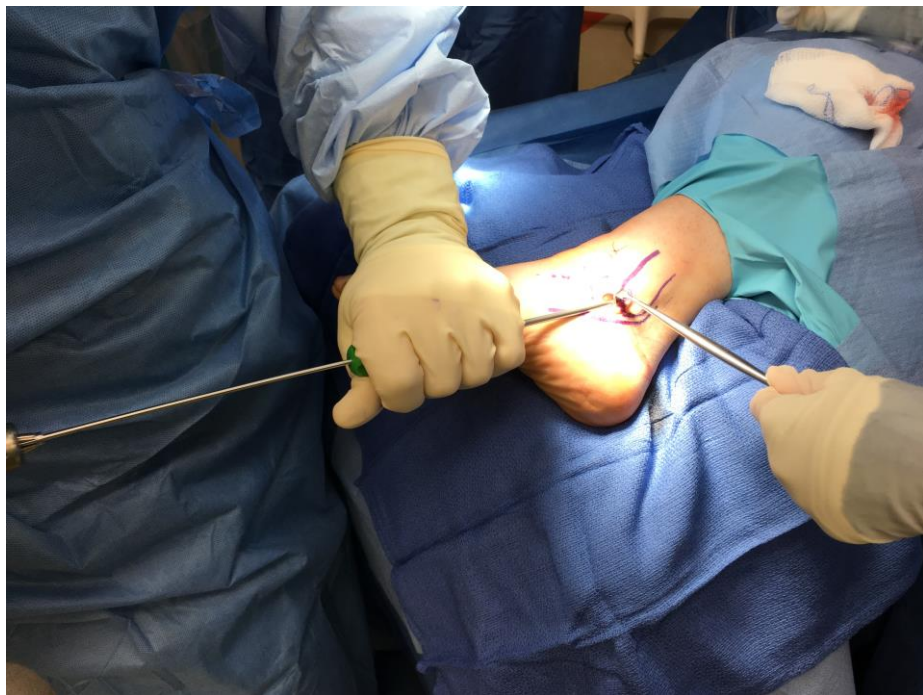
What exactly IS an arthroscopic Brostrom?

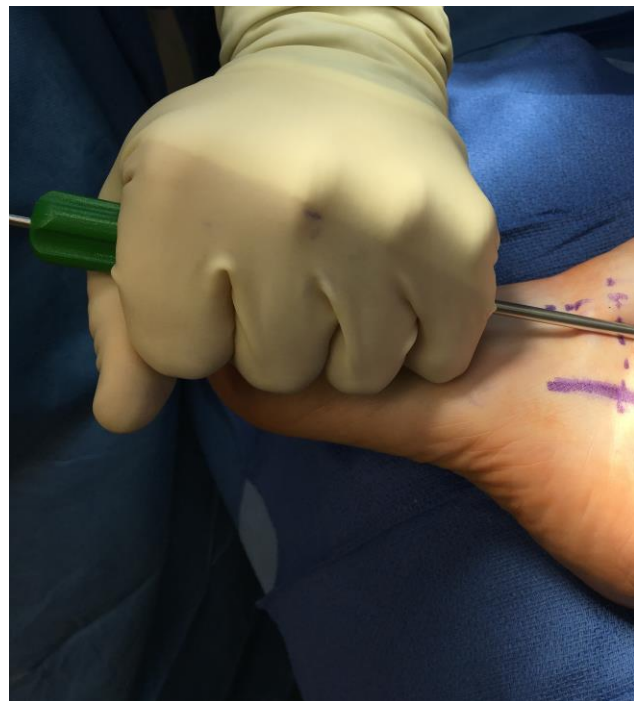
- Scope “assisted” mini-open
- ATFL re-attachment
- All-inside ATFL plication

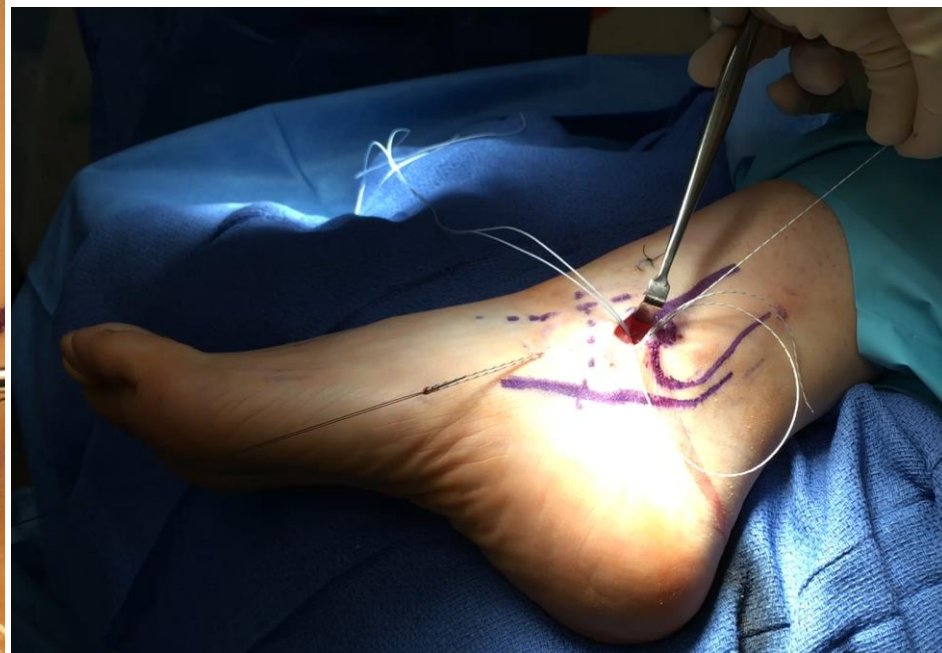


















What's The Score?

- Pro-Open

- It's the standard, high bar
- Never miss CFL pathology
- Minimize STJ instability failures by always getting a good quality Gould
- Peroneal tendon inspection
- Lower complications
- Cheaper

- Pro-Scope

- More efficient
- Reduced post op pain?
- Scope ensures intra-articular lesions not missed
- Better cosmesis, less wound complication?
- Faster return to sport/work?

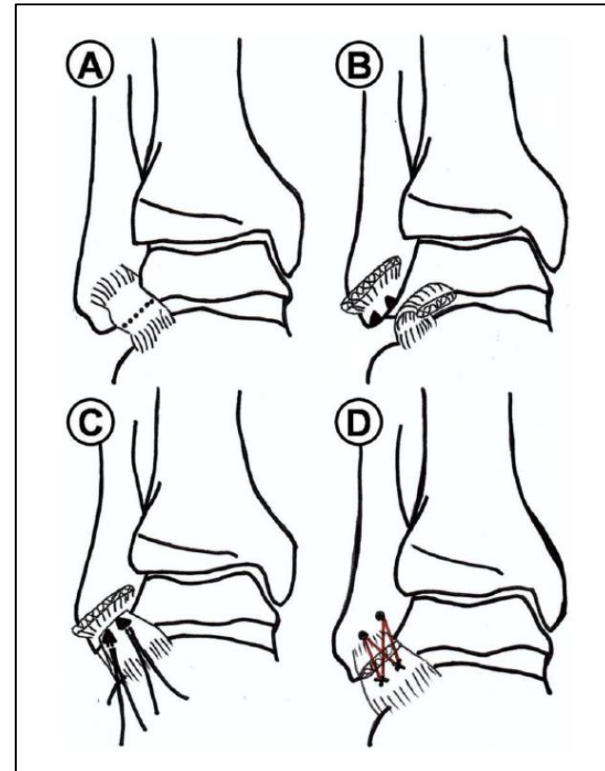
Can't deny the inevitable: “arthroscopy IS the future”....Can we?

- Less invasive? - yep
- Quicker recovery? - maybe
 - Petrera 2014 AJSM
immediate WB with 2 anchors
- Lower complications? -not yet
- Just as strong? – Yep
 - Giza 2013
 - Lee 2016
- Just as effective? – yep
- More efficient? – I think YES



Modified Brostrom with 2 anchors vs with suture-bridge in high demand athletes

- Both did very well
 - AOFAS 92.1 vs 90.8
 - FAOS 90.6 vs 90.1
 - Karlsson score 90.5 vs 91.6
 - Satis Sefton score 91.7 vs 90.5%
 - Equal func scores
 - Telos device no diff
- **Adding the 2 anchors increased cost 1.85 times**



Live Poll Question #3

- In 10 years, I think that the majority of primary lateral ankle ligament repairs will be done arthroscopically:
 1. True
 2. False

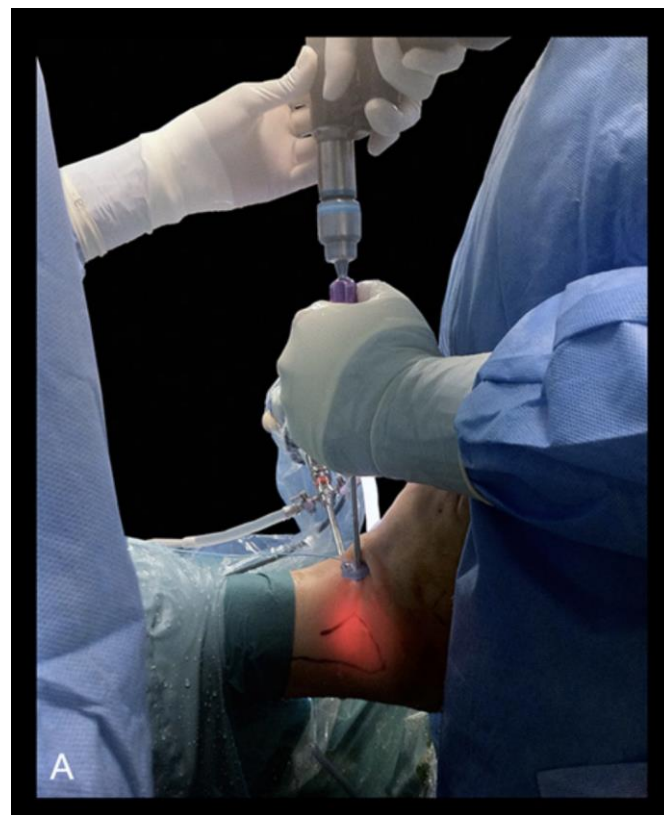
Take Home Points

- 2018 Standards for primary lateral ankle ligament repair
 - Open Brostrom primary cases
 - Pre-scope
 - Avoid in pts with high Beighton score
 - Acceptable revision rate < 2%
 - Expected complication rate 5-7%



Take Home Points

- All arthroscopic MB definitely has a promising future
 - Very effective
 - High patient satisfaction
 - Minimally invasive
 - Efficient
 - Complication rates are falling as the techniques evolve



Thanks!



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