Tarsometatarsal joint injury/arthritis

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Lisfranc injury

• Named after a Napoleonic surgeon who didn’t actually describe the injury – he described amputation through the joints
Jacques Lisfranc de St. Martin

- 1790 – 1847
- “A surgeon and gynaecologist”
- Trained as an assistant to Guillaume Dupuytren
- “Pioneered operations including removal of the rectum, lithotomy in women as well as amputation of the cervix”
What do we call the “Lisfranc joints?”

- The tarsometatarsal joints
- Anatomy well known to you
- The second metatarsal base is recessed and the strong ligament is on the plantar surface connecting the medial cuneiform to the base of the second metatarsal...the “Lisfranc ligament”
Lisfranc anatomy

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Common injury

• Commonly missed
• Commonly underestimated
• Long time to recovery
• Don’t always do well!

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Common - ?Really?

• No not really!

• 0.2% of fractures

• 1:70,000 people in a hospital catchment area

• 20% are missed
Mechanism of injury

• 43% Motor vehicle accidents
• 24% from falls, jumps or twisting injury
• 13% due to crush injury
Important to differentiate
High velocity vs low velocity
55 y.o man – illustrative case

• Falls off a ladder
• Pain and tenderness midfoot unable to weight-bear
• Plantar ecchymosis sign
Examination

- Tender over midfoot
- “Piano key sign” causes intense pain
Initial x-rays

- “Something is going on at the 1-2 Interval?”
- Suspect Lisfranc injury
Examination under anaesthetic
Lisfranc injury – marked instability

- Needs reduction and fixation
Post - op

- 6 weeks non-weight bearing
- 4 weeks in a walking boot
- Patient doing very well
- Routine screw removal at 6 months

- “Pay the lady at the door”
Patient returns at 12 months

- Doc it hurts
- I can’t walk long distances
- I certainly can’t run
- I have developed a lump on the inside of my foot
Look carefully
The ligament didn’t heal

- But Doc’ – I’ve already spent 6 weeks in plaster and 4 weeks in a boot
- I was told you were the second best in town
- What do I do now?

- My foot is terrible – I can’t go on like this!
Non-operatively – “Jolly him along”

• Buy a bike
• Take up swimming
• Firm insole
• Cortisone injection under ultrasound control by a reliable radiologist
• Anti-inflammatory
Doc’ is there nothing else that can be done?

Salvage is a fusion
How is it done?
X-rays on the table

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What next?

- 6 weeks non-weight bearing/ 4 weeks in a boot
- Swelling for 6 months
- Fusion rate is 90%
- Function surprisingly good!

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What does the literature say?

• No demonstrable instability (<2mm) separation on x-ray (EUA stable)
• Non-weight bearing 6 weeks protected weight bearing 4 weeks
• 16 weeks off sport
RCT pure ligamentous injury
ORIF vs primary fusion

- ORIF Reduction and fixation 20 patients
- Primary arthrodesis 21 patients
- The arthrodesis patients did better (92%) rated their recovery to pre-injury level compared to (65%) in the ORIF group

Ly and Coetzee JBJS Am 88(3) 2006
Another RCT

- 40 patients comparing ORIF to primary arthrodesis
- No difference at any point in time – SF-36/patient reported satisfaction
- Obviously fewer operations in the primary arthrodesis group.

Henning et. al Foot Ankle 30(10) 2009
Should we be doing primary arthrodesis?

- Consider in high energy injuries
- Consider in severe articular cartilage damage
- Athletic injuries I would still treat with reduction and fixation but always warn the patient that they do not always heal
How not to miss a Lisfranc?

• Suspicion
• Try to get weight bearing x-rays
• Look for the gap between the bases of first and second metatarsals
• Is the second metatarsal aligned with the intermediate cuneiform?
• A comparison weight bearing film of the other foot is very useful.
Note the relationships
I rarely order an MRI
(for Lisfranc injuries)
Tarso-metatarsal arthritis
Midfoot arthritis

- More common in older patients
- Presents with pain and swelling across the midfoot
Why are the second and third joints more frequently involved?

• Sagittal motion at the tarso-metatarsal joints

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ie. Motion increases laterally
Primary vs secondary arthritis

• Primary occurs in the 6\textsuperscript{th} decade
• Secondary most often after a Lisfranc injury occurs in the 4\textsuperscript{th} decade
• Either can be associated with a flat foot
Symptoms

• Pain
• Swelling
• Pressure in shoes
• Night pain
Good plain x-rays
Treatment – Non surgical

• Anti-inflammatories
• Rocker soled shoes
• “Skip lacing” the shoes
• Cortisone – 3 months relief (Drakonaki EE, Kho JS, Sharp RJ, Ostlere SJ. Efficacy of ultrasound-guided steroid injections for pain management of midfoot joint degenerative disease. Skeletal radiology 2011;40:1001-6)

• No evidence for PRP and stem cells
Surgical treatment

• Fusion of the first, second and third joints
• Fourth and fifth joints no perfect solution
• Good operation long recovery
“Bob’s Balls” zirconium arthroplasty

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