Tarsometatarsal joint injury/arthritis

John P. Negrine FRACS

Foot and ankle surgeon

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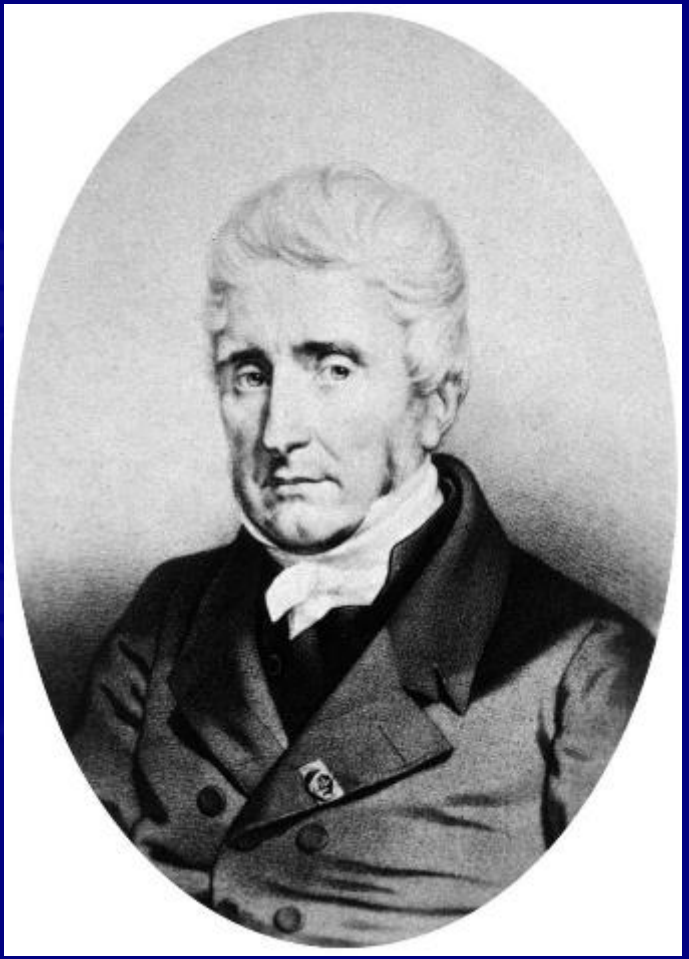
Lisfranc injury

- Named after a Napoleonic surgeon who didn't actually describe the injury – he described am amputation through the joints



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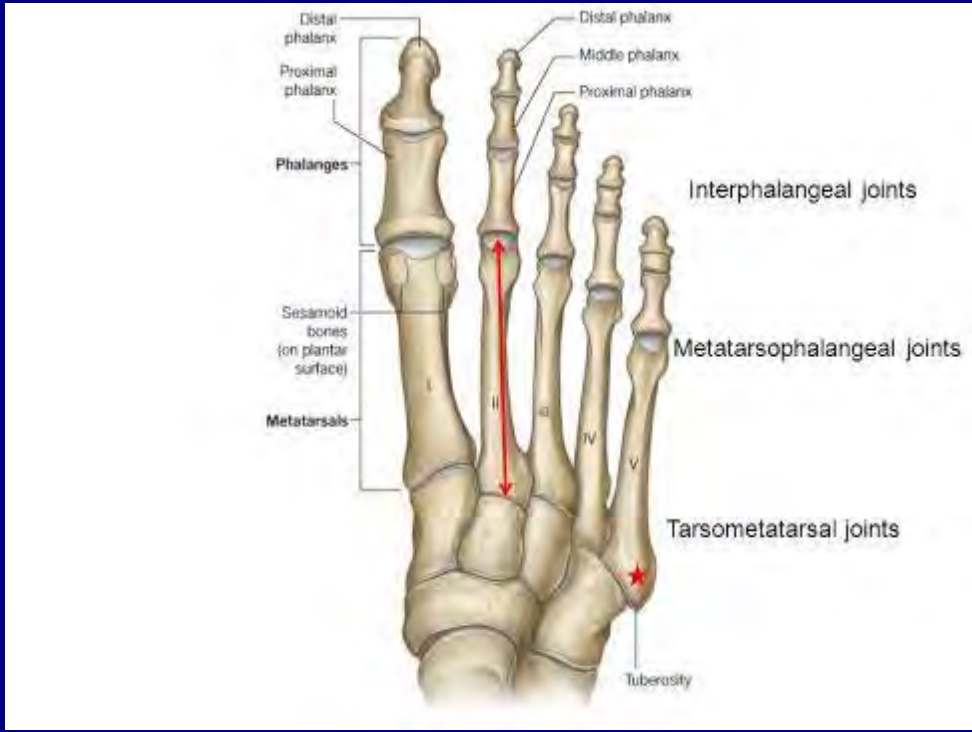
Jacques Lisfranc de St. Martin

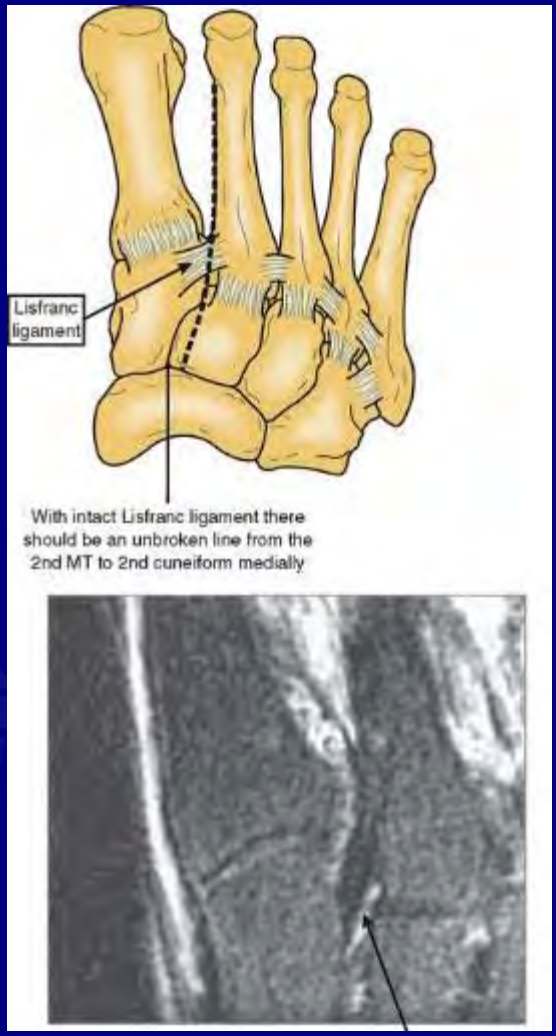
- 1790 – 1847
- “A surgeon and gynaecologist”
- Trained as an assistant to Guillaume Dupuytren
- “Pioneered operations including removal of the rectum, lithotomy in women as well as amputation of the cervix”

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

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Mechanism of injury

- 43% Motor vehicle accidents
- 24% from falls, jumps or twisting injury
- 13% due to crush injury

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Important to differentiate High velocity vs low velocity

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55 y.o man – illustrative case

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

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Examination

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

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Initial x-rays

- “Something is going on at the 1-2 Interval?”
- Suspect Lisfranc injury

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Examination under anaesthetic

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Lisfranc injury – marked instability

- Needs reduction and fixation

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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”

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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

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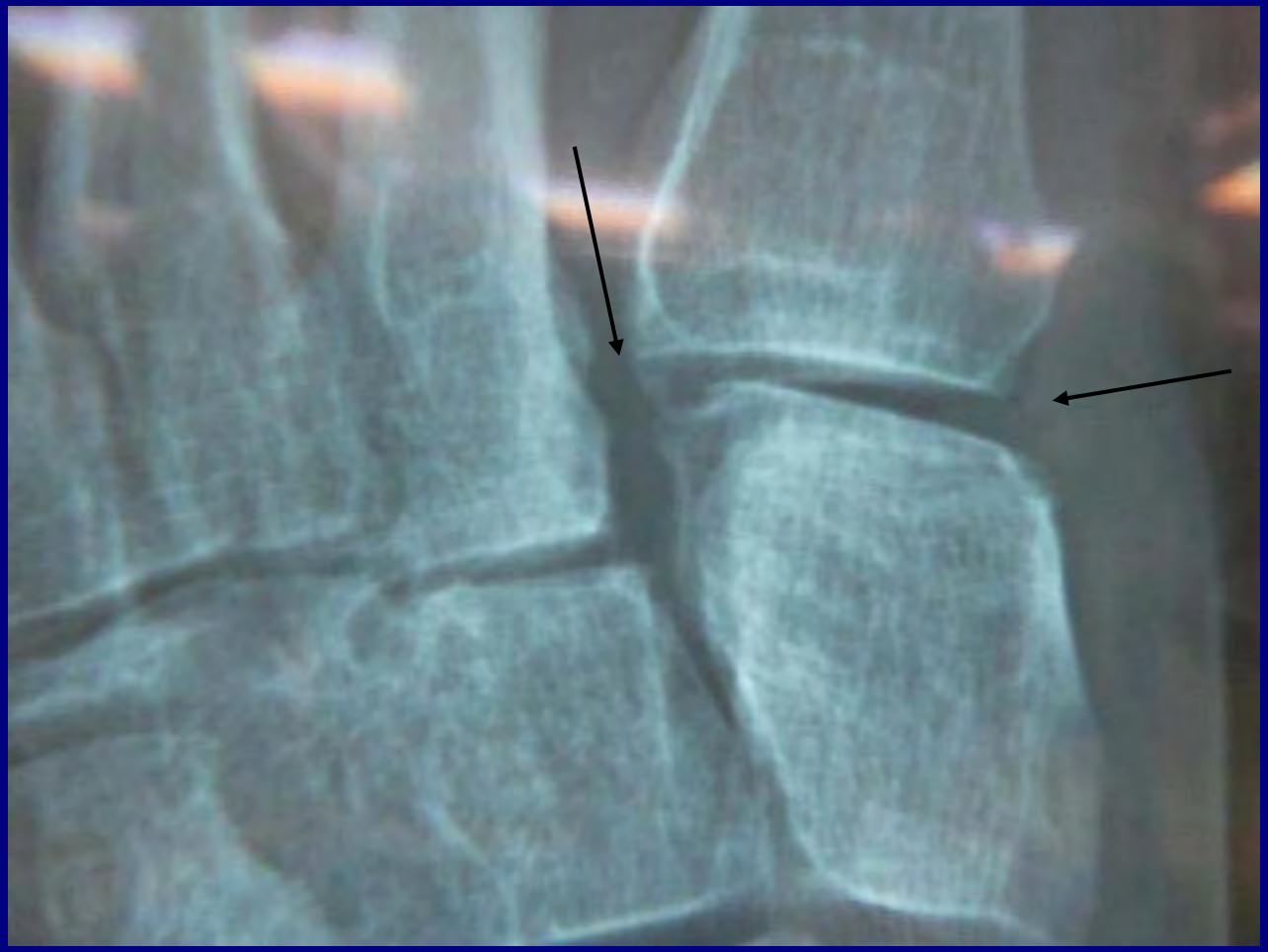
Look carefully



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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!

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Non- operatively – "Jolly him along"

- Buy a bike
- Take up swimming
- Firm insole
- Cortisone injection under ultrasound control by a reliable radiologist
- Anti- inflammatories

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Doc' is there nothing else that can be done?

Salvage is a fusion

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How is it done?

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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

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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

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How not to miss a Lisfranc?

- Suspicion
- Try to get weight bearing xrays
- 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.

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Note the relationships

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I rarely order an MRI

(for Lisfranc injuries)

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Tarso-metatarsal arthritis

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Midfoot arthritis

- More common in older patients
- Presents with pain and swelling across the midfoot

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Why are the second and third joints more frequently involved?

- Sagittal motion at the tarso-metatarsal joints

1	1.6
2	0.6
3	3.5
4	9.6
5	10.2

ie. Motion increases laterally

Primary vs secondary arthritis

- Primary occurs in the 6th decade
- Secondary most often after a Lisfranc injury occurs in the 4th decade
- Either can be associated with a flat foot

Symptoms

- Pain
- Swelling
- Pressure in shoes
- Night pain

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Good plain xrays

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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

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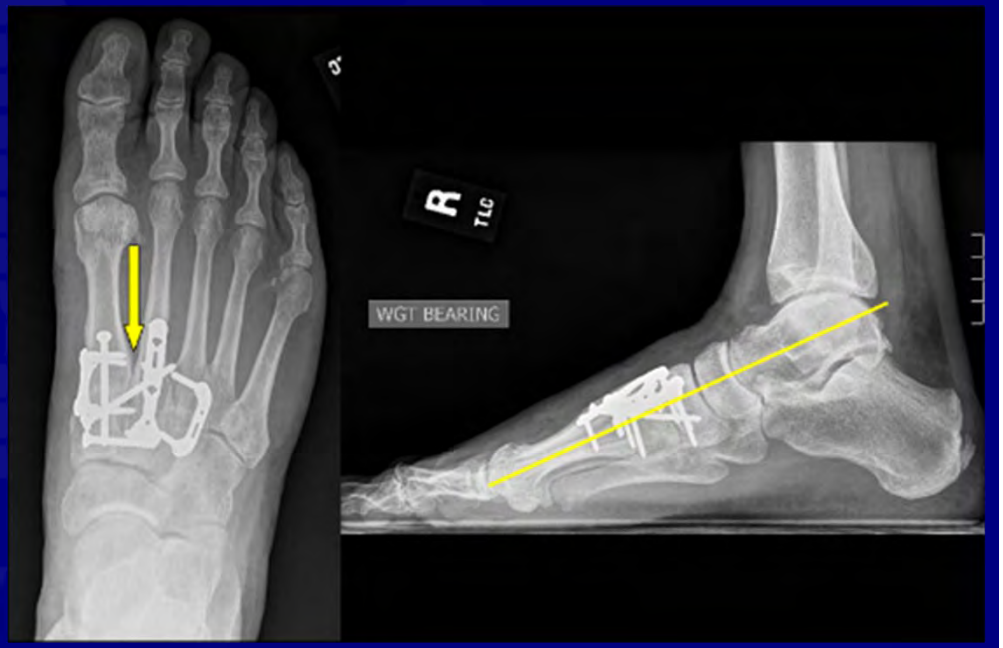
Surgical treatment

- Fusion of the first, second and third joints
- Fourth and fifth joints no perfect solution
- Good operation long recovery



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“Bob’s Balls” zirconium arthroplasty

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