5\textsuperscript{th} Metatarsal Base Fractures
5th Metatarsal Fracture
Anatomy

- Joint between 4th/5th metatarsals ("4:5 joint")
- Cuboid-metatarsal joint

Also attached to the base of the 5th metatarsal are:
- Tendon of peroneus tertius
- Tendon of peroneus brevis
- Lateral band of the plantar fascia

Stress zone
Stable zone
Vascular Watershed

- Nutrient artery
- Multiple metaphyseal vessels
- Ligament and tendon footprints
Classification

- Head fractures
- Shaft fractures
- Stress fractures
- "True Jones" fractures
- Tuberosity fractures
Quill Fractures of the Proximal 5th Metatarsal
FRACTURE OF THE BASE OF THE FIFTH META-
TARSAL BONE BY INDIRECT VIOLENCE.

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Some months ago, whilst dancing, I trod on the outer side
of my foot, my heel at the moment being off the ground. Some-
things gave way midway down my foot, and I at once suspected a
rupture of the peroneus longus tendon. By the help of a friend
I managed to walk to my cab, a distance of over 300 or 400 yards.
The following morning I carefully examined my foot and dis-
covered that my tendon was intact. There was a slight swelling
over the base of the fifth metatarsal bone. I endeavored to obtain
crepitus and failed. A finger on the spot gave exquisite pain.
Body pressure on the toes, even the slightest, was painful; but
when the pressure was deviated to the outer side the pain was
still greater. Extension of the ankle and flexion of the toes were
immediately felt at the base of the fifth metatarsal.

I hobbled down-stairs to my colleague, Dr. David Morgan,
and asked him to X-ray my foot. This was done, and the fifth
metatarsal was found fractured about three-fourths of an inch
from its base. (Fig. 1.)

I could recall many cases which had come to me with
similar symptoms arising from the transmission of body
weight to a foot during the position of equino varus. In most
cases I had in robust fashion vainly searched for crepitus;
in all, the disability lasted several weeks.

I had scarcely recovered, when I saw a young man of thirty
years with Dr. Floyd, of Birkenhead. He had been away fishing,
and stepping from stone to stone he placed the whole of his body
weight upon an inverted foot. He felt, as he said, something

6 cases
Acute adduction injuries
(Within ¾” of styloid process)
Fig. 1.—Fracture near the base of the fifth metatarsal bone. Case 1.
Fig. 2.—Fracture near the base of the fifth metatarsal bone. Case 2.
Fig. 3.—Fracture near the base of the fifth metatarsal bone. Case 3.
Zone 1  Avulsion Fracture

Avulsion of what?  Theodorou 2003
Treatment

Zone 1 Avulsions

Common
Usually minimally displaced

RICE
Elastic support bandage
No follow up

1% non union rate
Call clinic at 2 months if still painful
Zone 2 Fracture
Zone 3 Fracture
Treatment

Zone 2/3 Fractures

Is there a difference?

Acute injury
Chronic injury
Pro-dromal pain followed by fracture?
Acute Injury “Jones”

Zone 2/3

Small numbers but significant difference
Surgical group united at 7.5 weeks, sport at 8 weeks
Non surgical group united at 14.5 weeks, sport at 15 weeks
5 non unions in the non operative group

Fix in young sportsmen
Patient choice

Non operative non WB for 6 weeks in AFO
Chronic Injuries  “Stress Fractures”

Zone 2/3


Stress fractures will heal in a cast

Median time to union was 5 months (Clapper)
11 months (Torg)

Torg found that patients kept non-weight bearing initially (mean time of 6 weeks) were more likely to unite and did so quicker than those who bore weight immediately.

Internal fixation
My Algorithm

Zone 1
Non operative treatment
As little support as patient will tolerate

Zone 2/3
Acute Injury “Jones”
Fix in serious athletes
Patient choice

Zone 2/3
Chronic Injury “Stress Fracture”
Prodromal symptoms
Cortical thickening
Non union
Fix in majority
Fixation Methods
Fixation Methods
Fixation Methods
Fixation Methods

Common screw sizes 4.5-6.5mm
Non cannulated stiffer
Controversy in the literature

Two broad groups
What do I do?

Largest screw that the canal will take 4.5-6.5mm
Pre op template
Guide wire (II)
3.2 mm drill
4.5 mm tap then try 6.5mm tap
All threads across fracture site
Non cannulated screw
Beware the bowed 5th Metatarsal
WB 2-4 weeks Sport at 8 weeks
Don’t take it out
Other Fixation Methods

- Tension bands
- Plates
- Non Unions
- Hypertrophic/Atrophic
Apophysis

Girls 9-11 yo
Boys 11-14 yo
Fuses within 2 years of appearance