

APOA Foot & Ankle Council Presents..

Case of the Fortnight

15th May 2021



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Presented by:



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Section 2016-2020

Learning Points:

- Jones fracture occurs in a specific location of the 5th metatarsal. It is prone to delayed and non-union, especially in athletes.
- More often than not internal fixation gives better results.
- If you follow the technical points of the video, the surgery will be more predictable.
- Give the fracture at least 8 weeks before heavy impact activities are attempted.

Title:

A case of Jones Fracture

*Upcoming Case of the Fortnight
on 1st June 2021*

Presented by:

Prof. Andri Primadhi, MD

Assistant Professor
Universitas Padjadjaran Medical
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Bandung, Indonesia



Title:

Chronic Achilles Tendon Rupture

Want to present a case? Write to...



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A case of Jones Fracture

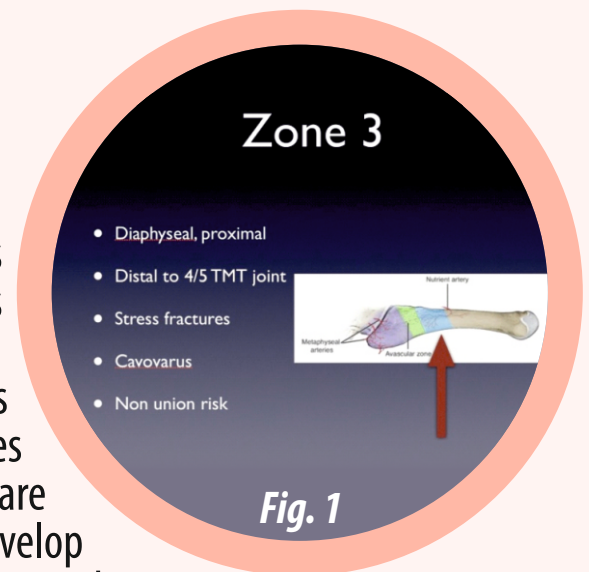
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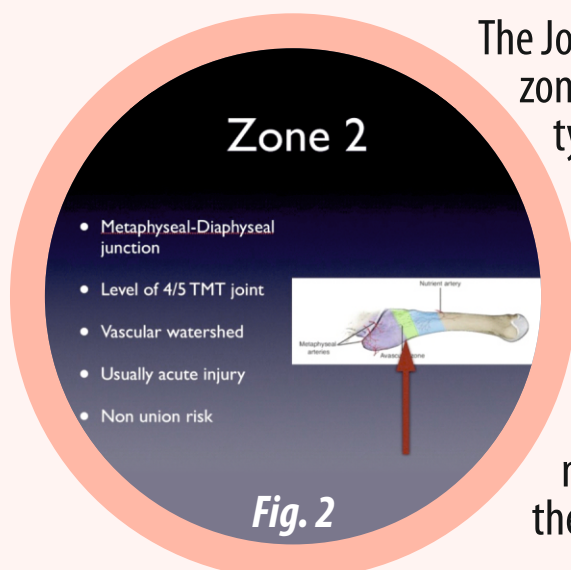
St. Vincent's Private Hospital, Melbourne, Australia

Chairman, APOA Foot & Ankle, Section 2016-2020

The case described today is a Jones fracture which was suffered by an elite Australian rules footballer. In this game the players are required to run for up to 15 km during a two hour game. So the fitness level required is very high and although it is a physical game the athletes need to be very aerobically fit. So stress fractures (**Fig. 1**) are a risk in the sport. The players that are most likely to develop stress fractures are the younger players that are trying to reach a certain level of fitness and taller players which have more forces across their feet.



The case today is of the second type. This player was 21 years of age and was originally a refugee from South Sudan. He came to Australia in 2005 and took up Australian football at the age of 12. He was a gifted athlete and reached the highest professional level. He was 200 cm tall and 93 kg.



The Jones fracture (**Fig. 2**) is a fracture which occurs in the critical zones of the fifth metatarsal. This is different from the avulsion type fracture which occurs proximal to the tarso-metatarsal joint. Once the fracture involves the zones distal to this joint there is higher risk of non-union. It is my opinion that most cases of this type are best treated with surgery. This provides a stable fixation with the best chance of healing. In a professional athlete situation it is almost mandatory to perform surgery for this fracture as the consequence of a non-union and delayed return to support can seriously affect the athlete's career.

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The main assistance I can give in today's case is to give guidance as to some surgical technique tips that make the operation very safe and simple procedure. The procedure is normally performed through two very small incisions, one to insert the screw and the second, which is my preference is to perform a small incision over the fracture site to insert bone graft. This is not mandatory but it provides benefits with little risk.

I prefer to perform the surgery with the patient in the lateral position (**Fig. 3**). The foot is prepared and able to be moved freely so as to obtain the appropriate x-rays. An image intensifier is essential. Initially an incision is made in line with the fifth metatarsal but proximal to the cuboid. One can use a guide wire over the skin and checking on the x-ray to obtain an appropriate incision point.

The other important decision to make is whether to use a solid screw or a cannulated screw. With a headless cannulated screw the insertion point in the base of the fifth metatarsal is not as critical. With a solid screw using a large head the entry point needs to be more medial and dorsal to avoid symptoms from the screw. Given that I have always used a headless cannulated screw for this fracture I will explain this technique.

Initially the entry point is made with the guide wire (**Fig. 4, 5**). This needs to be fairly central in the base of the fifth metatarsal. The trick is that the wire does not need to go very far into the bone initially. It can be quite tricky to put the wire in and all the way through

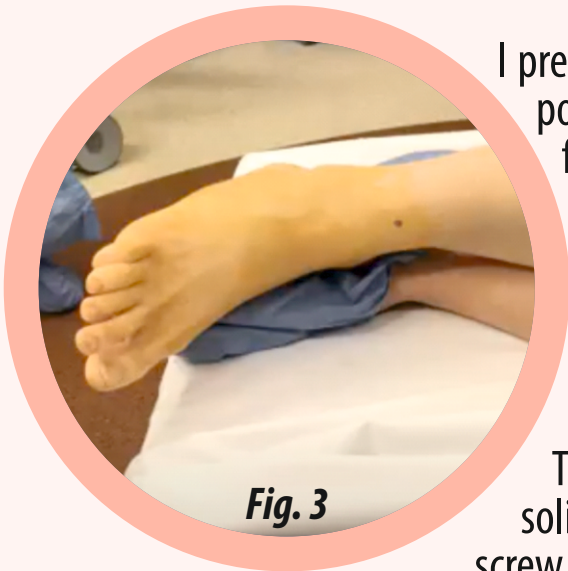


Fig. 3

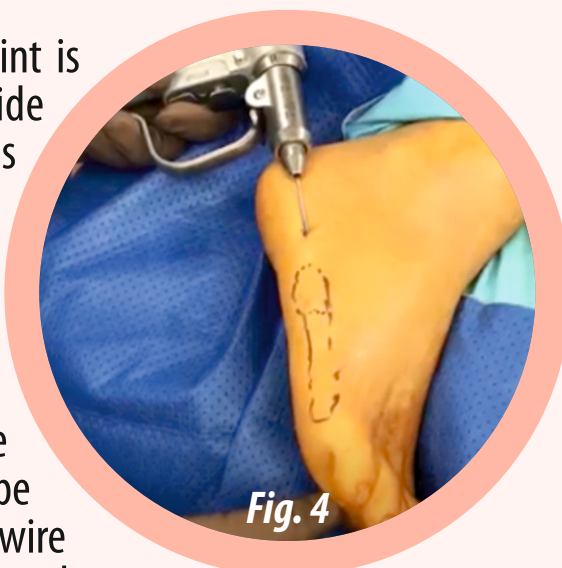


Fig. 4



Fig. 5

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the fracture into the canal. In my technique I make a guide wire hole proximally and then pass the drill over the wire into the proximal end of the fifth metatarsal. Then the wire and the screw are removed.

Once this has been performed there is a larger entry point to pass the wire again and this makes it much easier to insert the wire more accurately so that it can then go into the canal across the fracture. You will need to check the x-rays in both the anterior and lateral views. Once the wire has passed the fracture the drill can be passed over the wire. Be careful to use a skin protector as the drill can become very close and damage the skin near the incision. Another technique tip here is to harvest the bone from the drill reaming which can be used for later grafting.

My preference is to use an Acutrak 4/5 screw. This fits in the canal well both proximally and distally. The length is usually between 40 and 45 mm.

I locate the fracture on X-ray and make a mark on the skin. Here I make a small incision and expose the fracture. The fracture line is always the most visible on the plantar surface. So I place the graft there and into any fracture area that is visible.

In some rare cases when there is a large curve of the fifth metatarsal a second osteotomy is made in the neck to elevate the bone. This flattens out the line of the metatarsal reducing the arch pressure on the fracture. This is a fairly new approach but there is some good data to showing its benefits with the sporting population.

The patient is placed in a back slab for 10 days and is non-weight-bearing. This time is critical to allow the initial osteoblastic activity to occur. The patient is then transferred to a moon boot and is able to weight bear as comfortable for the next four weeks. They are able to do some weight training and other exercises that do not involve putting pressure on foot.

At six weeks another x-rays is performed. If the fracture is healing well and there are no weight bearing symptoms in the patient, they can start a progressive return to higher impact activities. If symptoms begin again then x-rays will need to be performed and the patient will need to be

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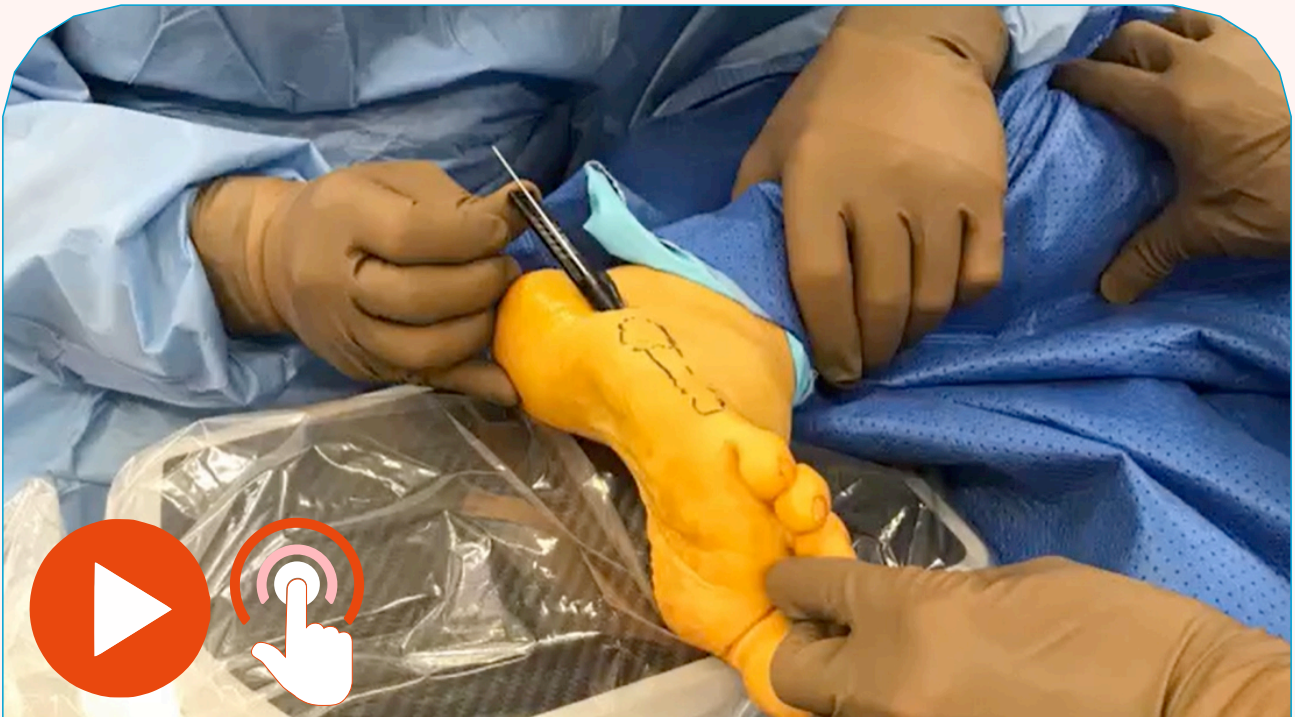


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rested for a longer time. The full union of the bone is only seen around 10 or 12 weeks (**Fig. 6**). This is the time when I am happy for a player to return to the field. If you follow this protocol you will be very unlikely to have a non-union.

Problems occur if the fixation is not performed correctly, the fracture is not bone grafted or the patient returns to weight-bearing activities too quickly. Of the patients that I have seen for second opinions a non-union can always be traced back to one of these three issues. So if you can avoid these problems, there will be little to worry about.



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