



Foot and Ankle during COVID-19: Virtual Examination and Red Flags

Mr Matthew Welck

Consultant Foot & Ankle Surgeon
Honorary Associate Clinical Professor, UCL

RNOH, Spire Bushey, HCA The Wellington, The Princess Grace



MATTHEW WELCK
CONSULTANT ORTHOPAEDIC SURGEON
FOOT AND ANKLE SPECIALIST



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10	Hospital Universitario La Paz	Traumatología y Cirugía Ortopédica	Madrid	Spain
11	Istituto Ortopedico Rizzoli	Ortopedico	Bologna	Italy
12	Asan Medical Center	Department of Orthopedic Surgery	Seoul	South Korea
13	KyungHee University Medical Center	Department of Orthopedic Surgery	Seoul	South Korea
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CONSULTANT ORTHOPAEDIC SURGEON
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Relevant to you!

- Foot and Ankle Virtual Consultations
 - How to perform
 - What NOT to miss
- Common lockdown conditions to be aware of
- Steroid Injections
 - Affect on Immunosuppression
 - Affect on Vaccine
- Keeping Patients Safe.

• www.matthewwelck.com

- Slides all on website.
- 45 mins then stop for questions
- Interactive & Anonymous!

Virtual Consultations: Our practice

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CONSULTANT ORTHOPAEDIC SURGEON
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Likely to persist in some capacity.

-: Main barrier is physical examination, rapport, doctor-patient relationships

+: Convenient for Patient, cheaper, faster

Sometimes screening tool to allow pre consult investigation

I see most patients F2F for initial consult: examination e.g stability, flexibility, strength.

Some follow ups are now virtual

Post ops... see... unless injection etc.

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The Virtual Foot and Ankle Physical Examination

Foot & Ankle International®
1–10

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Stephanie K. Eble, BA¹ , Oliver B. Hansen, BA¹ ,
Scott J. Ellis, MD¹ , and Mark C. Drakos, MD¹

Comprehensive technique for virtual foot and ankle examination

documentation template.

Mainly for F&A surgeon but some useful tips





Preparation

- Medical/Operative History, Medication list to hand.
- Dress Appropriately.
 - Test IT

Table 1. Patient Guidelines for Appropriate Dress and Instructions for Setting up the Camera.

For patients (intended to be provided before the telehealth visit)

Recommended Devices: A portable laptop or tablet is preferable for use during the telehealth visit, as it is stable and the camera can be easily tilted as needed. A mobile phone can also be used, though it may be difficult to position properly unless a family member or friend is available to hold the phone in position.

Patient Clothing: Both ankles and knees should be exposed. Wear gym shorts that end at least 3 inches above the knee. Shoes and socks off.

Examination Space: 10 to 15 feet of open space should be available to allow you to move for gait analysis.

Lighting: The brightest area in the room should be behind the camera, not facing it.

Patient Position: Begin seated and with your camera at eye level. During the physical examination you will be asked to reposition yourself and your camera as described below, based on the body part being examined.

Camera Repositioning (when instructed to do so during the examination):

Standing: Camera should be placed at shin level with knees to feet visible on the video. You will need 10 feet of space to walk. The camera should also be movable to give an overhead view of the feet.

Seated: Sitting on a stool/high chair with feet not touching the floor. The camera should be placed on a table at shin level with knees to feet visible on the video.

Please test out the positioning and camera images prior to the visit. The required distance and angle of the camera position will vary with the type of device.



A guide to the telemedicine consultation for your foot or ankle condition.



A patients guide to the telemedicine consultation for your foot or ankle condition.

Ensure that you are in a private place and that your conversation cannot be overheard by others. Your privacy is important!

Recommended devices:

A portable laptop is ideal for your telehealth consultation as it very stable and the camera can easily be tilted as needed. A mobile phone can also be used, it might help having an assistant or family member to hold the phone; if no one is available you can use a makeshift stand resting the phone or tablet the back of a chair or wedging it in a polystyrene box if you have one available.

Clothing:

Your doctor will need to look closely at your ankles and feet. Before your telemedicine consultation make sure the both of your ankles, your feet and your knees are visible. It's a good idea to wear a pair of shorts that end 3 inches above your knee, make sure that your shoes and socks are removed! It is important that both legs are exposed so that both sides

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FOOT AND ANKLE SPECIALIST



● <https://www.youtube.com/watch?v=6Nh4lYD0JT4>



Basics

Look

- Gait
- Seated and Standing position. Front, Side, Back, Underneath.

Feel

- Mark Before. One finger.

Move

- Active PF/DF, I/E etc
- Passive if someone with them.

Strength

- Tip toes – 4/5 PF, Heels 4/5 DF. Heel raise,

Flexibility, Stability,

- Difficult. Feel from above

NV

- Pulses not possible. CR
- Patient can touch own feet to describe.

Table 2. Foot and Ankle Virtual Examination Template, Including a List of Each Examination to Be Performed, a Checklist for Medical Record Documentation, and Corresponding Verbal Instructions for Clinicians to Provide to Patients During the Virtual Examination.

Examination	Documentation	Verbal Instructions for Patient
Vital signs (provided on patient intake form if possible)		
Height and weight	<input type="checkbox"/> Height: _____ <input type="checkbox"/> Weight: _____	
Temperature	<input type="checkbox"/> Temp: _____ <input type="checkbox"/> Location: _____	
Heart rate (HR)	<input type="checkbox"/> HR: _____	
Blood pressure (BP)	<input type="checkbox"/> BP: _____/_____	
Gait		
Standard walking (heel to toe)	<input type="checkbox"/> Antalgic <input type="checkbox"/> Coxalgic <input type="checkbox"/> Trendelenberg <input type="checkbox"/> Flexed knee <input type="checkbox"/> Stiff knee <input type="checkbox"/> Varus thrust <input type="checkbox"/> Valgus thrust	"Walk directly away from the camera for at least four steps. Turn around and walk directly back toward the camera for at least four steps. Make sure you are in view of the camera while walking."
Toe walking	<input type="checkbox"/> Adequate calf/Achilles strength <input type="checkbox"/> Weakened calf/Achilles	"Walk directly away from the camera on your tip toes for at least four steps. Turn around and walk back towards the camera on your tip toes."
Heel walking	<input type="checkbox"/> Adequate ankle dorsiflexion strength <input type="checkbox"/> Weak ankle dorsiflexion strength	"Walk directly away from the camera on your heels for at least four steps. Then walk back towards the camera on your heels while staying in view of the camera throughout."
Inspection/palpation		
Hindfoot alignment (posterior view)	<input type="checkbox"/> Neutral <input type="checkbox"/> Mild varus <input type="checkbox"/> Severe varus <input type="checkbox"/> Mild valgus <input type="checkbox"/> Severe valgus	"Stand facing away from the camera so that the doctor can see the back of your legs and heels, from your feet to your knees."
AP foot alignment (from above)	<input type="checkbox"/> Neutral <input type="checkbox"/> Mild abduction <input type="checkbox"/> Severe abduction <input type="checkbox"/> Mild adduction <input type="checkbox"/> Severe adduction	"Stand and hold the camera over your feet so that the doctor can see your ankles and feet from above."
Tenderness	<input type="checkbox"/> Locate area of concern	"Point with one finger to the area of maximal tenderness while positioning the camera so that the doctor can see that area."
Skin integrity	<input type="checkbox"/> Dorsal surface integrity <input type="checkbox"/> Plantar surface integrity	"While sitting, raise your foot so that the doctor can see the bottom surface. Then place your foot down and position the camera so that the top surface is visible."
Range of motion		
Dorsiflexion and plantarflexion	Active ROM <input type="checkbox"/> Normal ROM <input type="checkbox"/> Limited ROM <input type="checkbox"/> Motion painful Passive ROM <input type="checkbox"/> Normal ROM <input type="checkbox"/> Limited ROM <input type="checkbox"/> Motion painful	"While seated, position the camera so that the doctor can see the side of your foot. The foot being examined should be the one closest to the camera. Bend your knee to a 90-degree angle. First, using your own muscle power, bend your foot as far towards your shin as possible with your toes pointing up, then point your toes as far towards the ground as possible. Now manually manipulate the foot through the same motion, either yourself or with assistance from a family member or friend."
Gastroc tightness (compare to bent knee PF and DF above)	<input type="checkbox"/> Normal tightness <input type="checkbox"/> Mild tightness <input type="checkbox"/> Severe tightness	"Remain seated and perform the same motion as before, but with your knee straight. You may need to reposition the camera for the doctor to see your foot and ankle."

Examination	Documentation	Verbal Instructions for Patient
Inversion and eversion	Active ROM <input type="checkbox"/> Normal ROM <input type="checkbox"/> Limited ROM <input type="checkbox"/> Motion painful Passive ROM <input type="checkbox"/> Normal ROM <input type="checkbox"/> Limited ROM <input type="checkbox"/> Motion painful	"Sit with the camera facing the front of your feet and ankles. First, using your own muscle power and trying to keep your toes facing forwards, rotate your foot as far inwards as possible, then as far outwards as possible. Now manually manipulate the foot through the same motion, either yourself or with assistance from a family member or friend."
Strength tests (assisted by an examiner)		"To complete the following tests, you will need someone to help provide resistance as you complete the described motions. This will give us a sense of your strength. Position the camera for each exercise so that the doctor can see your feet and ankles."
Ankle dorsiflexion strength	Remote Examiner <input type="checkbox"/> Unable <input type="checkbox"/> Very weak <input type="checkbox"/> Somewhat weak <input type="checkbox"/> Symmetric	"The examiner will place his/her hands on the top of each foot. The examiner will resist as you attempt to bend your ankles up such that your toes point toward your face, as if you are easing off of the gas pedal. The examiner will test both ankles at the same time and describe the strength as 'very weak,' 'somewhat weak,' or 'same as other side.'"
Ankle plantarflexion strength	Remote Examiner <input type="checkbox"/> Unable <input type="checkbox"/> Very weak <input type="checkbox"/> Somewhat weak <input type="checkbox"/> Symmetric	"The examiner will place his/her hands on the bottom of each foot. The examiner will resist as you attempt to press your feet down, as if you are pressing down on the gas pedal. The examiner will test both legs at the same time and will describe the strength as 'very weak,' 'somewhat weak,' or 'same as other side.'"
Big toe strength	Remote Examiner <input type="checkbox"/> Unable <input type="checkbox"/> Very weak <input type="checkbox"/> Somewhat weak <input type="checkbox"/> Symmetric	"The examiner will place his/her hands on the top of each big toe. The examiner will resist as you attempt to point your big toes toward your face. The examiner will test both big toes at the same time and will describe the strength as 'very weak,' 'somewhat weak,' or 'same as other side.'"
Eversion strength	Remote Examiner <input type="checkbox"/> Unable <input type="checkbox"/> Very weak <input type="checkbox"/> Somewhat weak <input type="checkbox"/> Symmetric	"The examiner will place his/her hands on the outside border of each foot. Resist the examiner as he/she pushes on the outside border of each foot. The examiner will test both legs at the same time and will describe the strength as 'very weak,' 'somewhat weak,' or 'same as other side.'"
Inversion strength	Remote Examiner <input type="checkbox"/> Unable <input type="checkbox"/> Very weak <input type="checkbox"/> Somewhat weak <input type="checkbox"/> Symmetric	"The examiner will place his/her hands on the inside border of each foot. Resist the examiner as he/she pushes on the inside border of each foot. The examiner will test both legs at the same time and will describe the strength as 'very weak,' 'somewhat weak,' or 'same as other side.'"
Circulation		
Foot perfusion (visual)	<input type="checkbox"/> Adequate perfusion visually <input type="checkbox"/> Inadequate perfusion visually	"While seated, turn your foot so that the doctor can see the bottom surface. Then face the top surface of your foot to the camera."
Foot perfusion (temperature)	<input type="checkbox"/> Symmetric <input type="checkbox"/> Cooler <input type="checkbox"/> Hotter	"Does your foot feel the same temperature on both sides?"
Capillary refill	<input type="checkbox"/> <2 seconds <input type="checkbox"/> >2 seconds	"Position the camera so that your doctor can see your toes. Press the soft pad of your big toe or toenail until it turns white. Then, release your thumb and allow it to pink back up. How long did it take to pink back up?"

MATTHEW WELCK

CONSULTANT ORTHOPAEDIC SURGEON
FOOT AND ANKLE SPECIALIST



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Case 1

- 44 year old male. IVDU
- Sudden onset, red, hot, painful joint.
- Difficulty WB
- Systemic flu like symptoms.
- On examination joint appears red and swollen, warm to the touch.
- The patient resists movement and the joint is very irritable to small active and passive movement.
- **WHAT IS THE DIAGNOSIS?**
- **HOW WOULD YOU MANAGE?**

Poll





Septic arthritis of the ankle

- SEPTIC ARTHRITIS
- URGENT REFERRAL A&E

Key points.

- Immunosuppressed. DM,
 - Alcoholic, Recent Injection, IVDU
- Timescale: rapid progression. (cf. inflammatory arthritis, better with splintage RICE, slower onset, less progressive)
- Worsening/progressive symptoms. Pain is present and does not improve with rest
- Treatment: Urgent washout. IV antibiotics.



Case 2

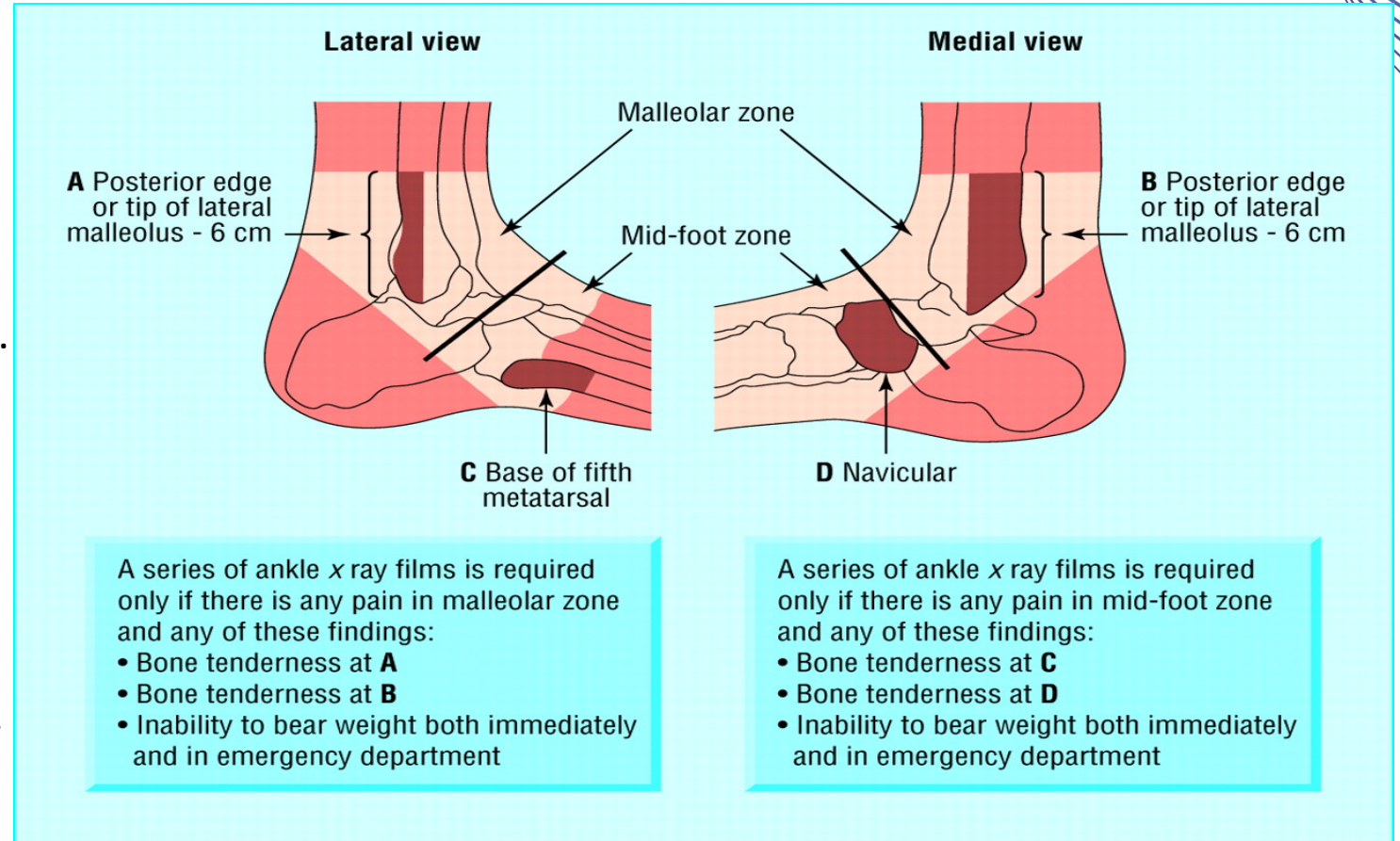
- Sunday night 54 yr M slipped on wet leaves, injuring his ankle.
- 18 yr old daughter rushed to his aid fell downstairs twisting her foot
- They got home went to bed
- Father woke up with ankle swollen++ Difficulty weight bearing
- Daughter swollen foot ++. Difficulty weight bearing
- Examination: father Swollen ankle very tender to touch laterally and medially. Difficult WB sideways movement very painful
- Daughter very painful to walk, grossly swollen foot bruising along sole. Bony tenderness dorsum foot.
- A. DAD: DIAGNOSIS
- B. DAUGHTER: DIAGNOSIS

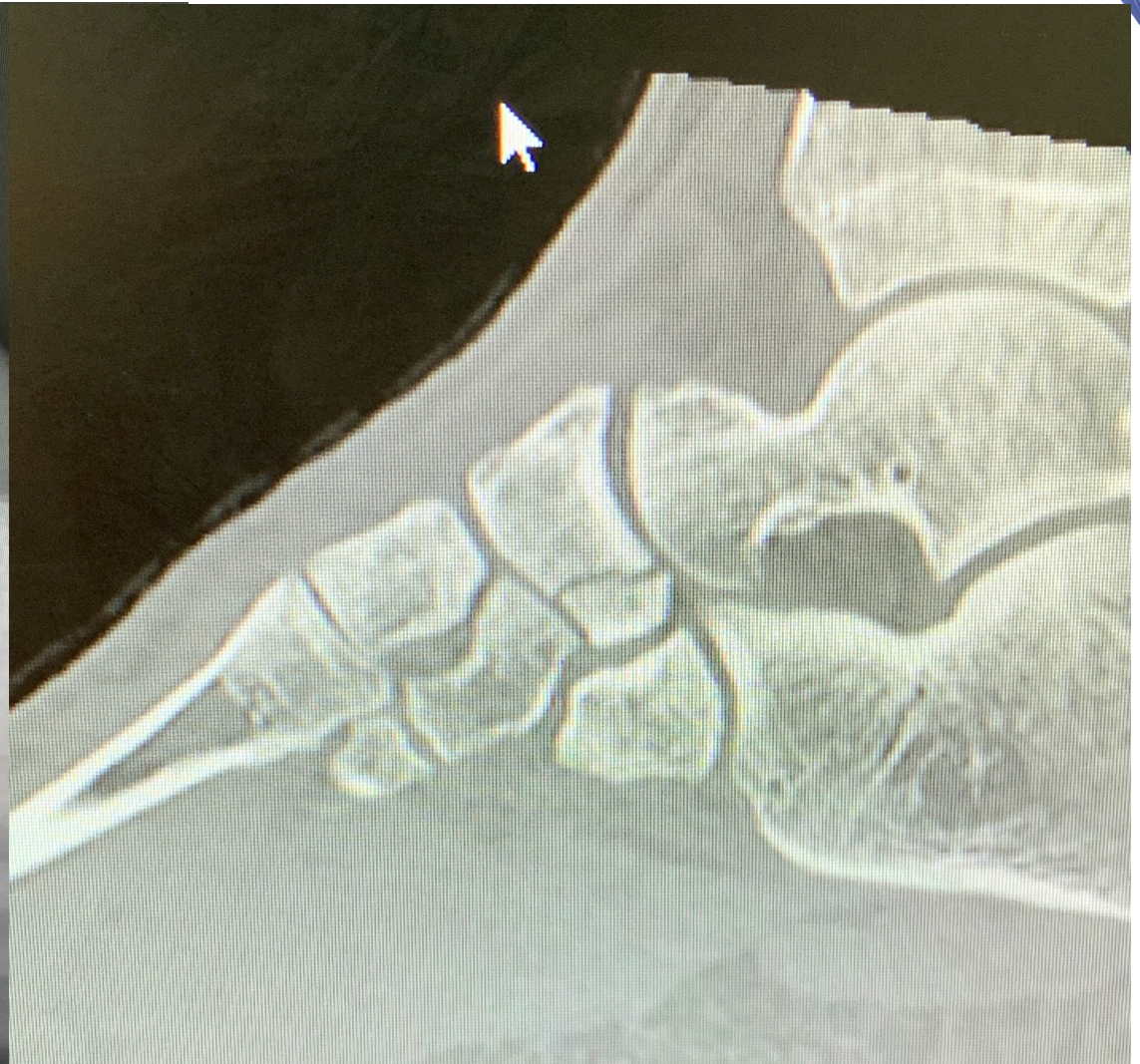




Fractures and Dislocations

- **Father...** Possible fractured ankle
 - As struggling to weight bear, Hx of trauma, swelling,
 - Tender ++ over lateral malleolus and medial.
 - Management URGENT REFERRAL: xray ankle.
-
- **Daughter ...**Severe foot swelling,
 - difficulty weight bearing, history of trauma.
 - Plantar bruising. Examination tenderness ++ midfoot.
 - Lisfranc midfoot dislocation
 - Urgent referral FOOT xray.

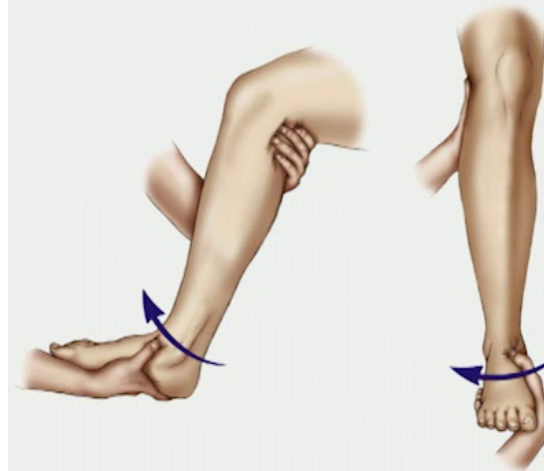




Ligamentous Injury that may need referral.

- Lateral ligaments tend to require 2 weeks rest, ideally in boot/brace, RICE.
- REST PAIN
- Medial Tenderness should prompt referral.
- Anterior tenderness should prompt referral
- Posterior Tenderness

Evaluation: Physical Exam



Palpation

- Direct syndesmosis tenderness

Special Tests

- External Rotation Test
- Squeeze Test



Image Source: M. Morrey MD

Case 3





- A POTENTIAL TUMOUR. B 2WW REFERRAL TO SURGEON OR SARCOMA SERVICE.
- Ganglion: by far most common. Soft. Compressible. Flutuate. Smooth. No deep pain.
- PMH Ca. Prostate, Breast, Kidney
- Weight loss
- Night pain
- Deep intense pain
- Mass
- Lymphadenopathy.



Case 4

- 38 yr male.
- Playing tennis
- Hx: Felt like his partner had hit him at the back of the ankle unable to play on.
- Swelling, initially severe pain but settled rapidly
- Presents limping, swollen ankle

What is the diagnosis.





TA rupture

- Hx: audible snap, 'been kicked'. May settle.
- O/E: unable to SLHR
- Chronic more difficult as calf squeeze may be normal.

Delay in Rx can cause significant complications,
inability to return to sport...

Sensitivity of tests for acute achilles tendon rupture

Gap	0.73
Ankle of declination	0.88
Calf squeeze	0.96

Simmonds' triad of tests 100% sensitive





Case 5

- 48 yr old male.
- Poorly controlled diabetes type 2 takes Insulin.
- Numbness in feet in stocking distribution.
- Presents with a 10 day history of a red, warm, painful, swollen foot.
- No history of trauma, no penetrating injuries or ulcers.
- Patient says swelling better in the morning.
- Examination. In pain foot swollen and erythematous, feels warmer than rt foot.

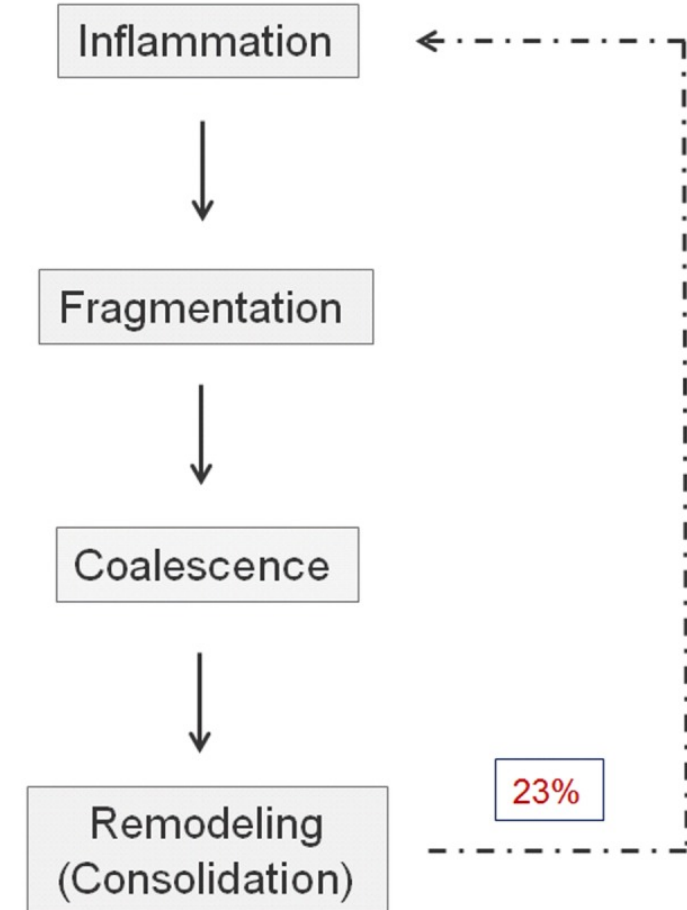
• **What is the most likely Diagnosis**



Charcot Foot/ DFU.

- Multiple Medico-legal cases
- DM, reduced sensation
- May be a history of innocuous or unnoticed trauma.
- Deformity
- Swelling
- Increased heat
- No skin break or lesion
- Redness resolves with elevation.
- Can lead to severe deformity, ulceration, OM, ultimately amputation.
- CHARCOT FOOT CAN BE PAINFUL!

Charcot Foot



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FOOT AND ANKLE SPECIALIST



Frequent Lockdown Conditions

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Achilles Tendinopathy

- Insertional and Non insertional

Metatarsal Stress Fractures

Achilles Ruptures

Sprains

Ankle, Hindfoot, Midfoot, Forefoot OA

- Increased walking, less physiotherapy,

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Steroid Injections

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Steroid Injections causing Immunosuppression

- Scientific evidence is relatively non specific, based on Suppression of adrenal axis, which last varying times depending on steroid
- Increased risk appears to be 1:1000
- Current Guidelines from societies vary, most conclude use with caution and only when alternative therapies failed.
- World Evidence: Australian societies have not stopped steroid intra-articular administration



Management of patients with musculoskeletal and rheumatic conditions who:

- are on corticosteroids
- require initiation of oral/IV corticosteroids
- require a corticosteroid injection





- “Only consider a steroid injection if a patient has:
 - High levels of pain and disability,
 - Failed first-line measures.
 - Persistent symptoms will have a significant negative effect on their health and wellbeing.
 - After obtaining informed consent.”

MSK conditions and Vaccination

COVID-19 vaccination and MSK

08/01/2021 by Garreth



British
Orthopaedic
Association



British Society for
Rheumatology



RAIRDA
Rare Autoimmune Rheumatic Disease Alliance

**Principles for COVID-19
Vaccination in
Musculoskeletal and
Rheumatology for Clinicians**

Chapter 14a - COVID-19 - SARS-CoV-2

25 January 2021

14a

COVID-19 - SARS-CoV-2

NOTIFIABLE

The virus

 versusarthritis.org



British Society for
Rheumatology



British
Orthopaedic
Association



British Society of
Skeletal Radiologists

**VERSUS
ARTHRITIS**

**Making decisions with my healthcare professional
about the COVID-19 vaccine when I have a
rheumatology condition, or a musculoskeletal (joint,
bone, spine or muscle) condition**

- None of the current UK approved COVID-19 vaccines are considered to be 'live' so are considered safe in immunosuppressed patients.
 - AZ contacts a live adenovirus vector but is non replicating.
- Issue: Immune response may not be as effective (esp rituximab).
- Steroids
 - HAD VACCINE: Non essential injections – consider deferring for 2 weeks after vaccine.
 - NOT HAD VACCINE: Do not delay vaccine for someone who has had, is taking or due to have steroids in any form. If possible 2 weeks after.
- Surgery
 - Elective surgery: 7 days between vaccination and surgery (before and after).
- Immunosuppressants. ***
 - *'As there is no evidence on response (to the COVID-19 vaccines) in immunosuppressed individuals, there is also no evidence upon which to base advice on the optimal timing of delivery. Specialists may advise their patients based on their knowledge and understanding of their immune status and likely immune response to vaccination, but should also consider the risk from COVID-19 and the patient's likelihood of exposure'*
 - If about to start IS, consider vaccinating first (min 2/52 before, ideally both doses)
 - Rituximab dose ideally wait 2 weeks after vaccine. Except in severe organ threatening disease. d/r Rheum.

My take on info...



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How we are keeping Patients Safe

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RISK ASSESSMENT

Patient risk factors

Consultants should clearly document the patient risk factor/s (low/moderate/high) and the rationale for this risk rating on the booking form and in the OPD patients notes.

Any patients with **one or more high risk indicators** or **two or more moderate risk indicators** are managed as **high risk**.
Patients with **one moderate risk indicator** are managed as **moderate risk**.

Moderate indicators of risk	High indicators of risk
<p>People at moderate risk include people who:</p> <ul style="list-style-type: none"> • are 70 or older • have a lung condition that's not severe (such as asthma, COPD, emphysema or bronchitis) • have heart disease (such as heart failure) • have diabetes • have chronic kidney disease • have liver disease (such as hepatitis) • have a condition affecting the brain or nerves (such as Parkinson's disease, motor neurone disease, multiple sclerosis or cerebral palsy) • have a condition that means they have a high risk of getting infections • are taking medicine that can affect the immune system (such as low doses of steroids) • are very obese (a BMI of 40 or above) • are pregnant – see advice about pregnancy and coronavirus 	<p>People at high risk include people who:</p> <ul style="list-style-type: none"> • have had an organ transplant • are having chemotherapy or antibody treatment for cancer, including immunotherapy • having an intense course of radiotherapy (radical radiotherapy) for lung cancer • are having targeted cancer treatments that can affect the immune system (such as protein kinase inhibitors or PARP inhibitors) • have blood or bone marrow cancer (such as leukaemia, lymphoma or myeloma) • have had a bone marrow or stem cell transplant in the past 6 months, or are still taking immunosuppressant medicine • have been told by a doctor they have a severe lung condition (such as cystic fibrosis, severe asthma or severe COPD) • have a condition that means they have a very high risk of getting infections (such as SCID or sickle cell) • are taking medicine that makes them much more likely to get infections (such as high doses of steroids or immunosuppressant medicine) • have a serious heart condition and are pregnant



Protecting Patients

Green COVID-19 free pathways

Swabbing All staff and all inpatients

Isolation period before admission – 7-14 days.

No Visitors

OPA – staff and patient Temp checks, symptom checks, compulsory masks and hand gel all OPA
redesigned routes through hospital, social distancing reception, waiting areas.

Information Sheets



Contact Details



Thankyou



www.matthewwelck.com



secretary@matthewwelck.com



Linkedin: matthew welck. Instagram: welck_foot_ankle. Twitter: @welck_foot



Spire Bushey, RNOH Stanmore, Wellington, Princess Grace.



Metatarsal Stress Fractures

- Metatarsal Stress Fracture
- <https://www.youtube.com/watch?v=woB9YpRpUQk>

COVID-19 Lockdown

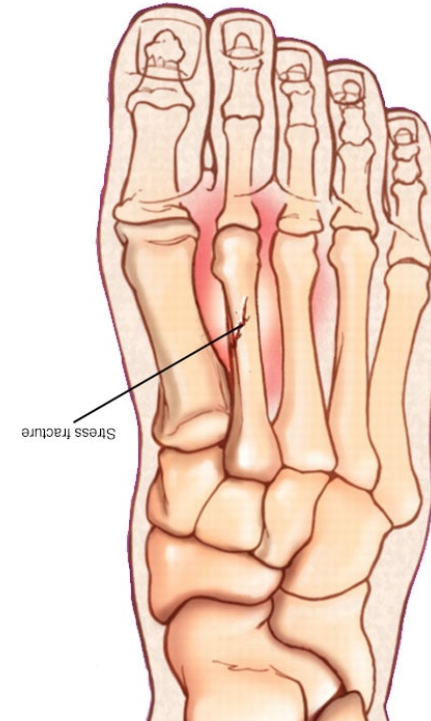
- More sedentary people are walking every day
- More active are outdoor running every day
- Increasing incidence of metatarsal stress fractures.
- No trauma!





What they are?

- Aka 'March fractures'
- Cracks in metatarsal bones due to increased stress
- 2/3 > 4/5.
- Shaft/neck > Base.





Why they happen...

1

Bone damage with not enough time to heal

- Bone fatigue:
 - Normal bone with excess demand on it and not enough time to repair. *
- Bone Insufficiency:
 - Normal demand on weakened bone

Who they affect...



- High impact athletes
 - runners. Jumpers, dancers
- Unaccustomed exercise
 - Maybe simple increase in frequency/distance , old/changed footwear (l
- High heels
- Low bone density
- Female Athletic triad
 - Athletes +
 - Hormonal imbalance, nutritional imbalance (eg Vit D), low bone density





Presentation

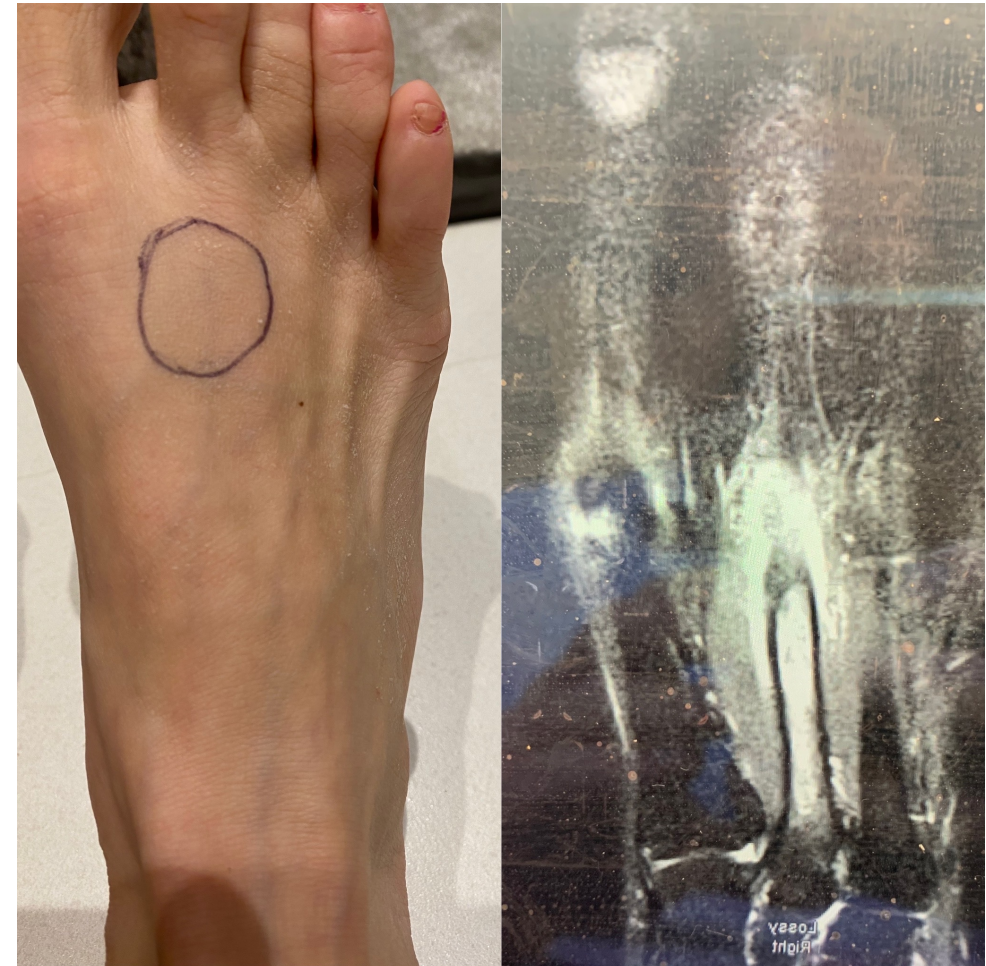
- Pain at top or bottom of foot on WB
- Painful to press
- Swelling





Investigation

- XR often normal for first few weeks
- CT – can still be negative
- **MRI**
- **Bone scan**





- Reduce WB. Initial NWB
- Rigid shoe/Boot WBAT upto 6 weeks



- Surgery
 - For resistant fractures (metatarsal base/
 - Drilling, bone graft, plates/screws.

