



US guided techniques in the lower extremity

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TOPICS

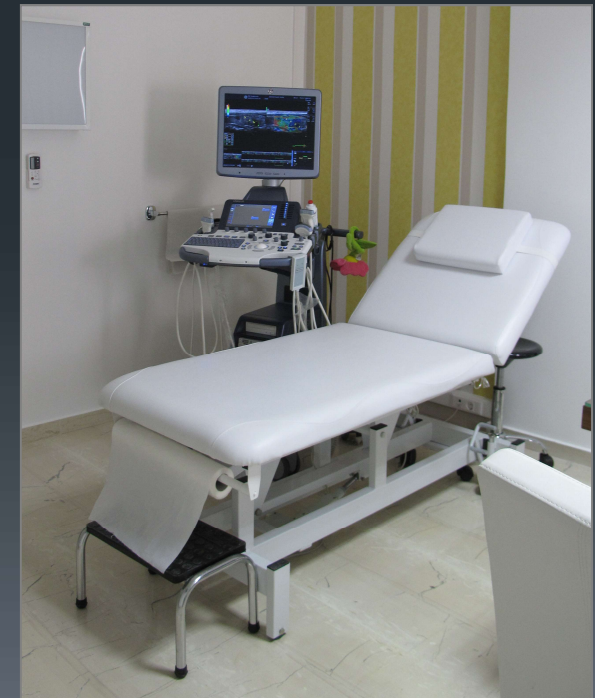
- **Intra articular injections hip, knee, ankle & foot**
- **Soft tissue injections and techniques:**
 - Gluteal tendinopathy –Greater trochanteric Bursa
 - Patella tendinopathy
 - Plantar fasciitis
 - Achilles tendinopathy
 - Ankle tendon sheath injections
 - Mortons neuromas
 - Nerve Blocks
 - Bursae and Ganglia

Intraarticular Injections

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OFFICE-BASED SET UP

- High resolution US systems
- High frequency (6-18MHz) linear probes
- Ergonomic probes
- Ergonomic set up for patient positioning
- Trained nurse/helper
- First Aid Equipment



Intraarticular Injections

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PROTOCOL

- Confirm the indication (*history, imaging*)
- Consent & Complications
- Sterile Conditions
- Aftercare instructions (*rehabilitation*)
- Follow up (*pain diaries-VAS scores*)

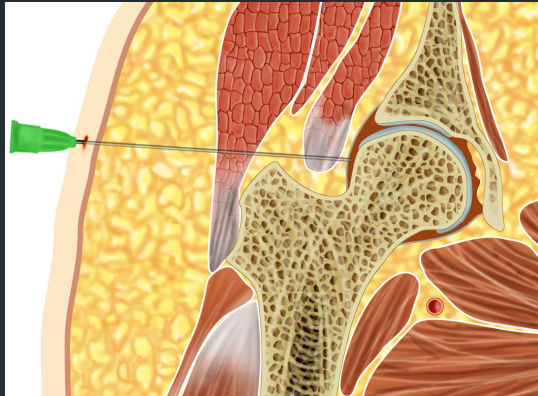


• Checklist

Radiology Procedure Checklist		
Procedure:		
Procedure site:		
Date of Procedure:		
Pre Procedure Checks		
	Yes	No
Has the patient's ID been checked?	<input type="checkbox"/>	
Has the patient been introduced to the procedural team members?	<input type="checkbox"/>	
Has patient confirmed procedure site and given verbal consent for procedure?	<input type="checkbox"/>	
Is there any possibility that the female patient is pregnant?	<input type="checkbox"/>	<input type="checkbox"/>
Does the patient have a known allergy e.g. local anaesthetic?	<input type="checkbox"/>	<input type="checkbox"/>
State allergies.....		
Are they asthmatic or have any breathing problems?	<input type="checkbox"/>	<input type="checkbox"/>
Do they have any heart problems e.g. Angina or high blood pressure?	<input type="checkbox"/>	<input type="checkbox"/>
Are they taking Warfarin or Heparin?	<input type="checkbox"/>	<input type="checkbox"/>
Is the patient diabetic?	<input type="checkbox"/>	<input type="checkbox"/>
Are they taking metformin or insulin?	<input type="checkbox"/>	<input type="checkbox"/>
Do they have fits, blackouts or epilepsy?	<input type="checkbox"/>	<input type="checkbox"/>
Have they ever had liver or kidney failure?	<input type="checkbox"/>	<input type="checkbox"/>
Are they currently taking any antibiotics?	<input type="checkbox"/>	<input type="checkbox"/>
Is the patient wearing a nicotine patch?	<input type="checkbox"/>	<input type="checkbox"/>
Has the patient made arrangements so they are <u>not</u> driving after the procedure?	<input type="checkbox"/>	<input type="checkbox"/>
Has essential imaging been reviewed?	<input type="checkbox"/>	
Are all IRMER requirements met?	<input type="checkbox"/>	
Radiographer/HCA		
Radiologist.....		
Post Procedure Checks		
Have all pieces of equipment used been accounted for?	<input type="checkbox"/>	
Have all drugs used been recorded?	<input type="checkbox"/>	
Have the instructions for post procedural care been given?	<input type="checkbox"/>	

Intra-articular injection HIP

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- longitudinal along the femoral neck
- mark the skin at the site of puncture
- Identify the femoral artery (medial to puncture)
- 5 ml of 1 % Lignocaine subcutaneously
- 22 G spinal needle
- needle obliquely onto the femoral neck



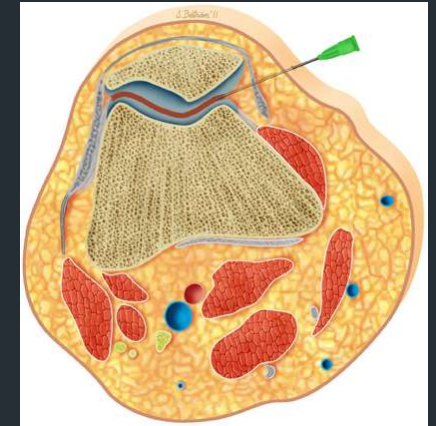
Intra-articular injection KNEE

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Very easy to perform blindly-so WHY US?

Using contrast injection to verify accuracy:

- 1/3 of blind knee injections were inaccurate
- US-guided injections by trainee more accurate than the blind by senior rheumatologist (83% versus 66%)



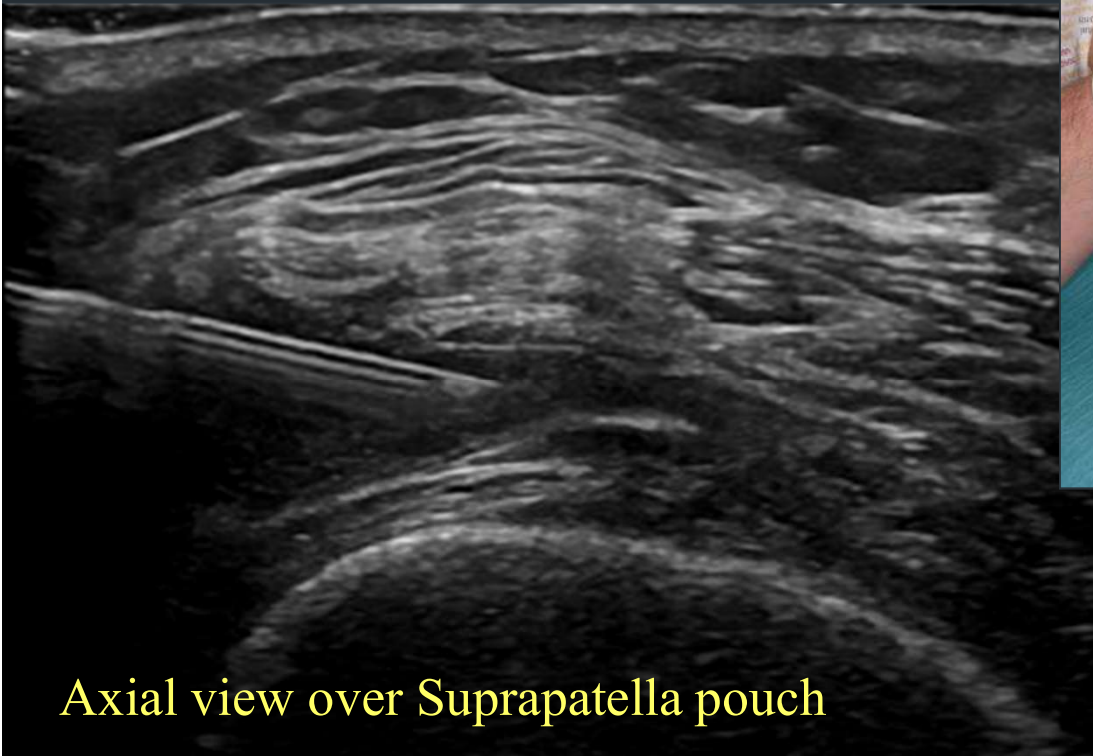
A randomized, double-blind, controlled study of guided corticosteroid injection in patients with inflammatory arthritis. Cunningham J, Arthritis Rheum 2010

Better accuracy than anatomical guidance (95.8% vs 77.8%)

*Cunningham J, Arthritis Rheum 2010
Sibbitt et al, J Clin Rheumatol 2011
Sibbitt et al, Scand J Rheumatol, 2012
Bercoff et al, Clin Interv Aging 2012*

Intra-articular injection KNEE

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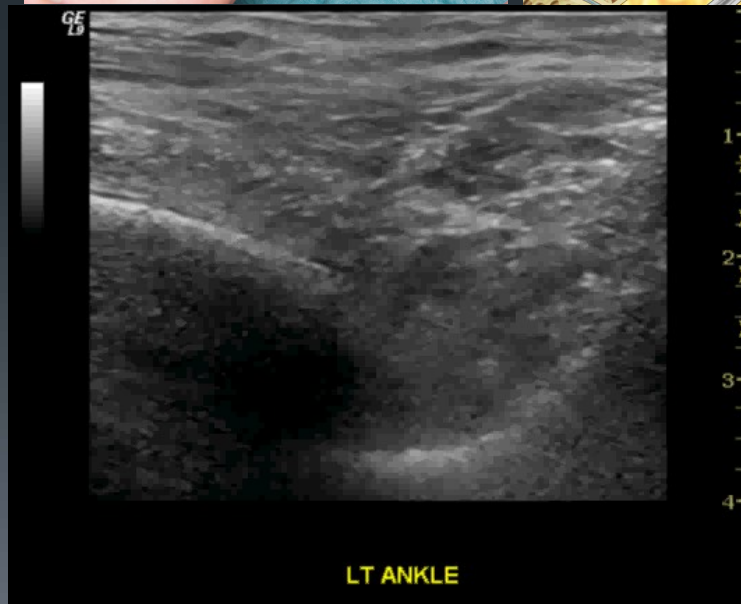
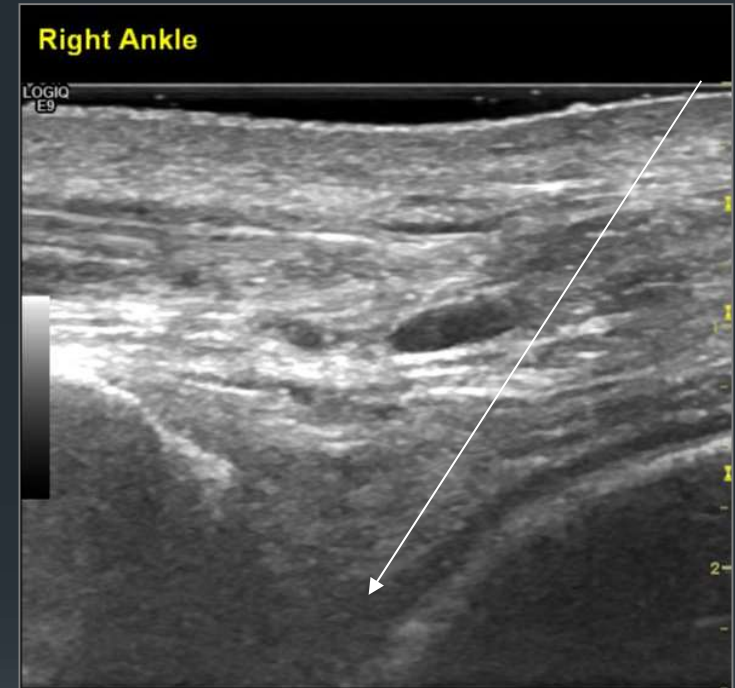
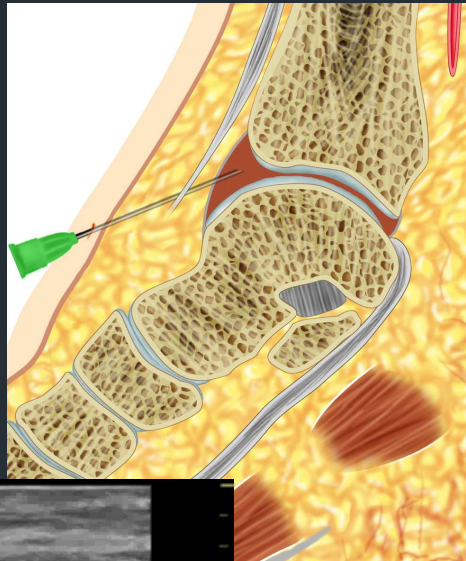


Axial view over Suprapatella pouch



Intra-articular injection ANKLE joint

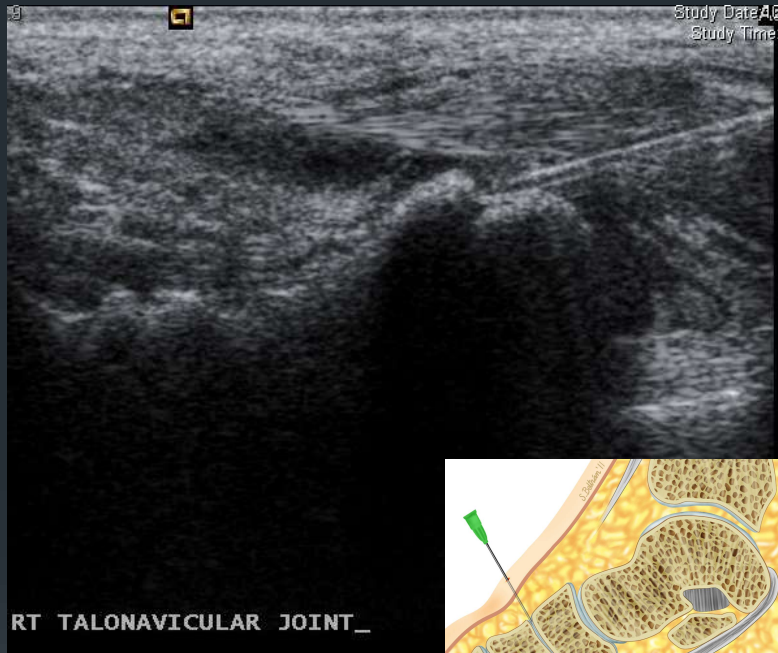
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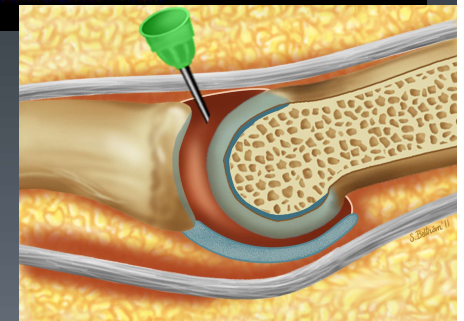
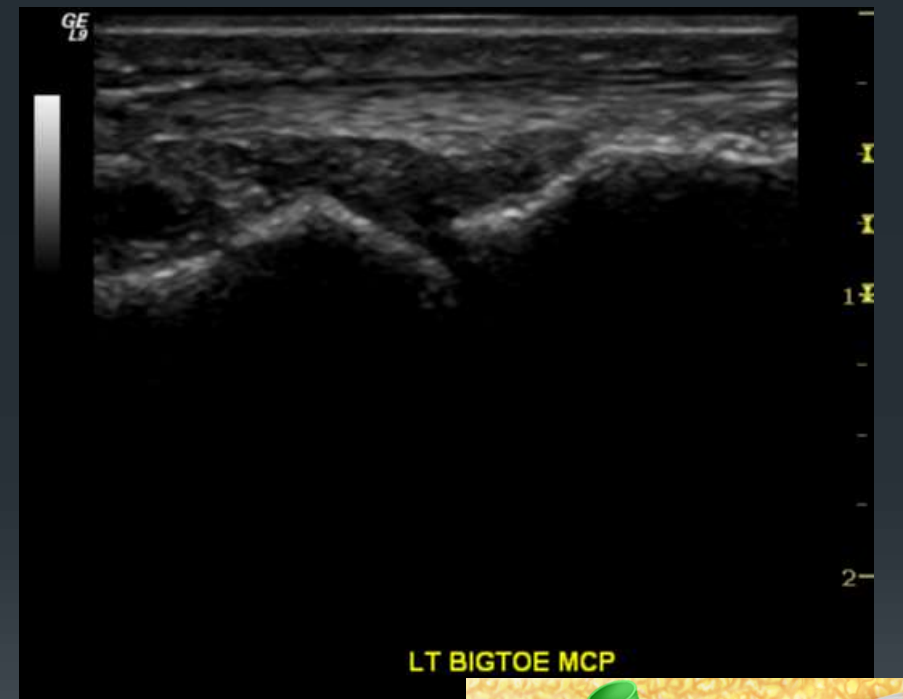
Avoid artery and tendons,
the needle inserted from distal probe edge
parallel to its long axis towards the joint space

Intra-articular injection FOOT

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- 23G blue needle
- No local anaesthetic
- May use bend needles
- parallel to transducer
- 1ml steroid and 1 ml anaesthetic

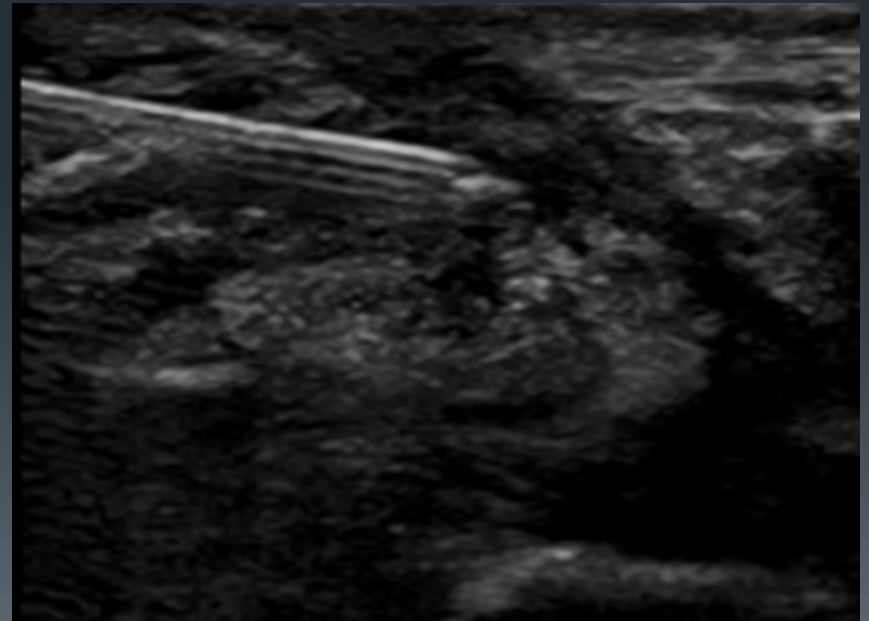


US guided Peritendinous injections

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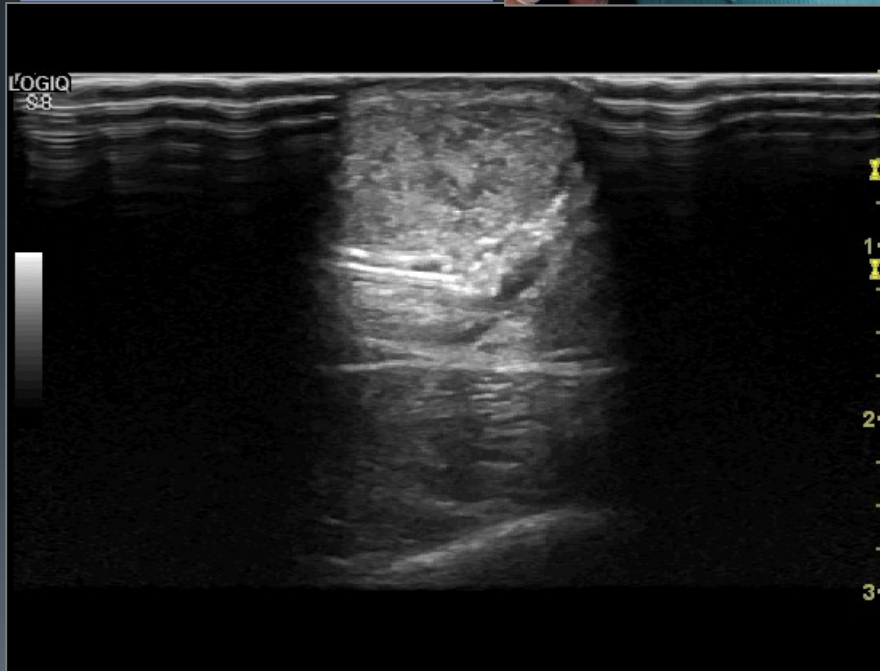
- 23G blue needle
- May use bend needles
- No local anaesthetic
- parallel to transducer
- 1ml steroid and 1-2 ml anaesthetic
- AROUND tendon (into the sheath)



US guided Tendon injections

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Achilles Tendinosis: Therapy



Dry needling

PRP-autologous blood injections

Sclerosing/dextrose injections

Paratendon stripping/Brisement

High volume Injections

20-40 mls saline

Anaesthetic

No steroid


OUTCOME (4w)

Reduce neovascularization

Reduce tendon thickness

Improve symptoms

Available online at www.sciencedirect.com

 ScienceDirect

Journal of Science and Medicine in Sport 13 (2010) 295–298

www.elsevier.com/locate/jsams

Original paper

The short-term effects of high volume image guided injections in resistant non-insertional Achilles tendinopathy

Joel Humphrey^a, Otto Chan^b, Tom Crisp^{a,b}, Nat Padhiar^{a,b}, Dylan Morrissey^a, Richard Twycross-Lewis^a, John King^b, Nicola Maffulli^{a,*}

US guided Tendon injections

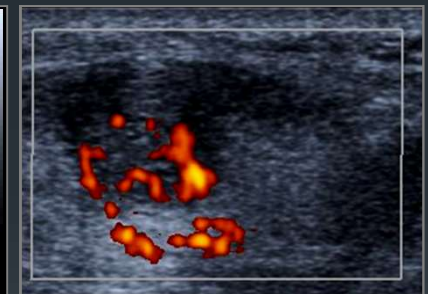
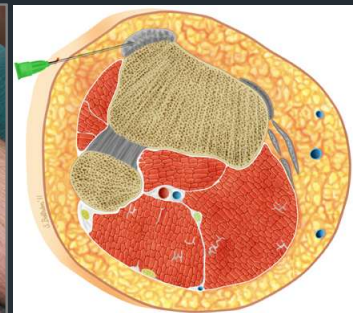
EUROSON 2013, Stuttgart
www.drakonaki.gr

Patella Tendinosis: Therapy

Dry Needling

(to stimulate healing response by platelet cascade)

+/- steroid, PRP, Tenocyte, sclerosing injections



Sclerosing injections: effective at 2/3 at 44w

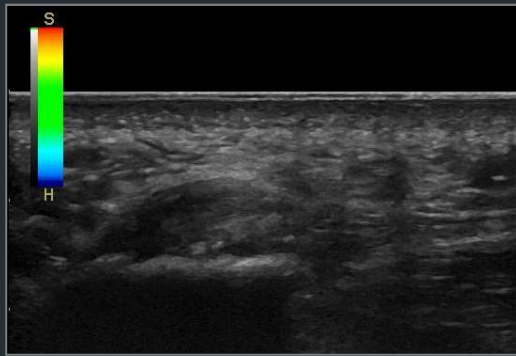
Dry needling: effective for mid tendon
but not for insertional tendinopathy

Testa V et al, Med Sci sports Exces 1999
Hoksrud et al, Am J Sport Med 2011

US guided Tendon injections

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Plantar Fasciitis

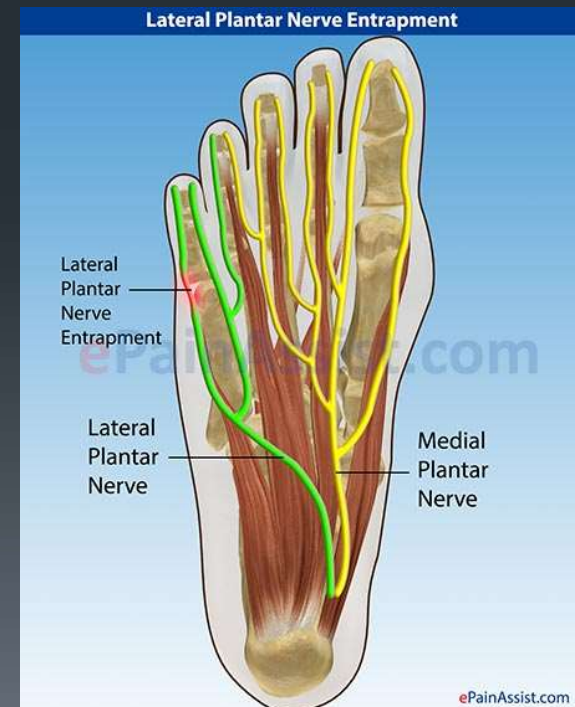


**Be aware of
lateral plantar nerve Injury**

Insert needle from the lateral side

Dry needling ± steroid
Reduce pain and swelling 4 weeks

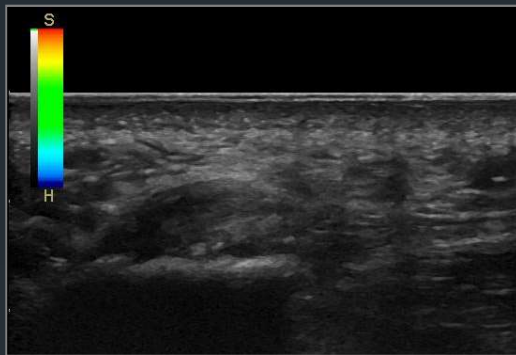
McNally et al, Semin MSK Radiol 2010



US guided Tendon injections

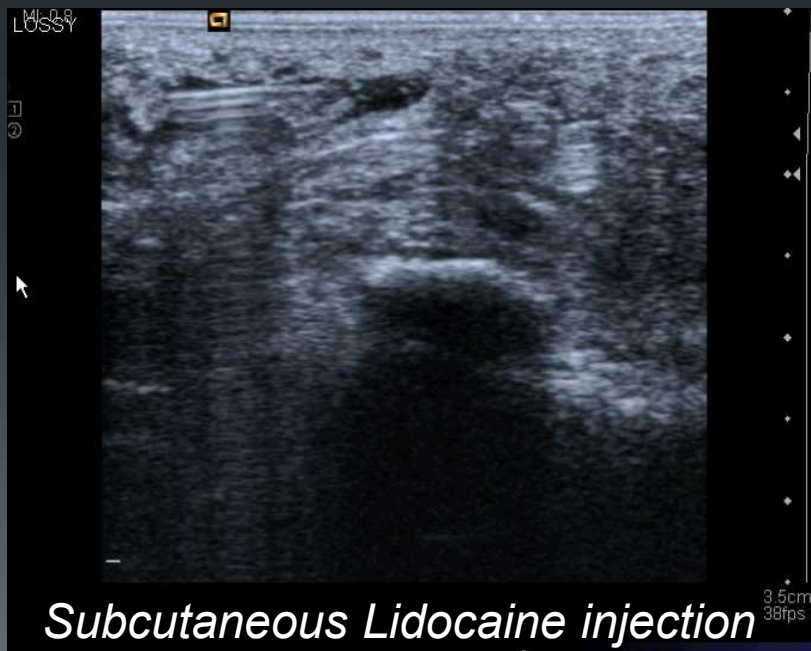
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NERVES

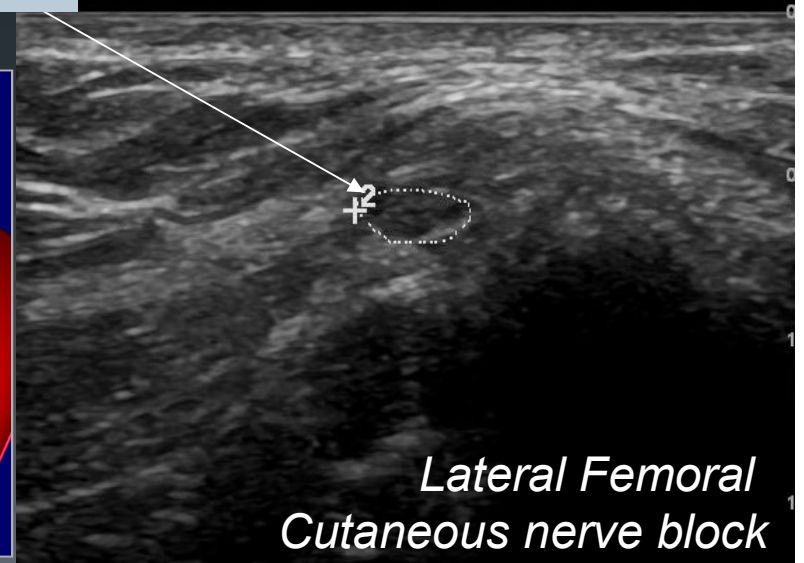
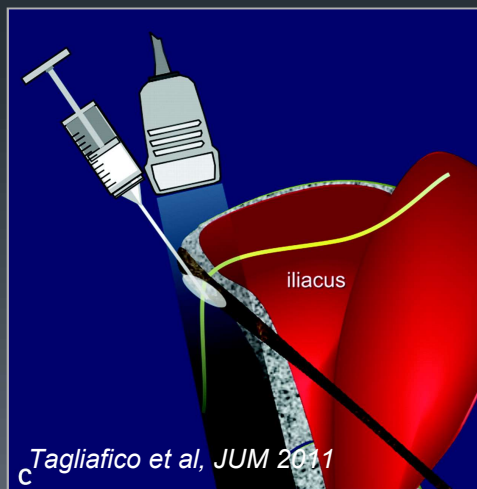
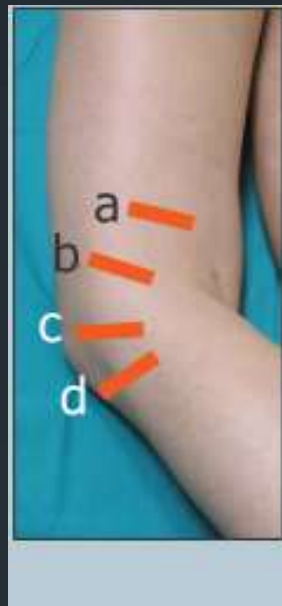
Morton's Neuromas

- Transducer along the axis of the metatarsal bones
- Shift across each MTP joint and identify the neuroma
- 23G blue needle with 1ml steroid and 1 ml anaesthetic
- Needle is inserted through the interdigital fold parallel to long axis of transducer
- the needle is visualized at the bottom left side of the US screen



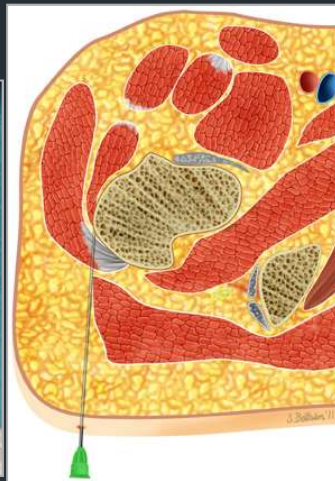
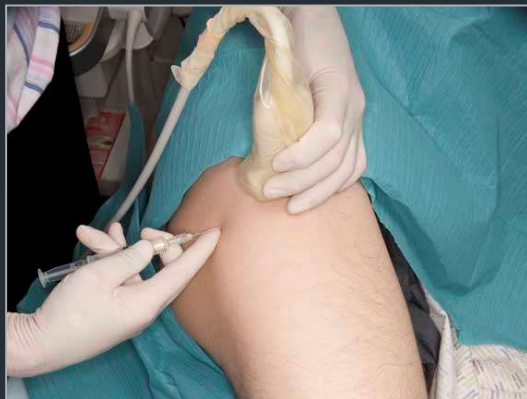
NERVES

Peripheral Nerve Blocks



SOFT TISSUE

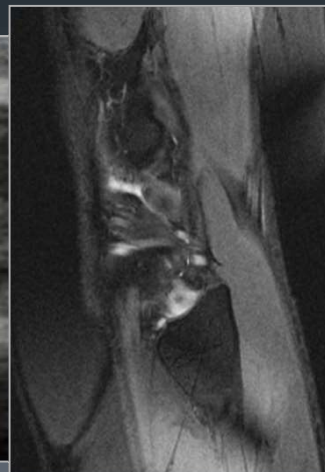
Ganglia, Bursae Injections



Greater trochanteric bursa injection



Tibiofibular joint ganglion aspiration



Semimembranosus bursitis

US-guided MSK intervention

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**INTERVENTIONAL MUSCULOSKELETAL
ULTRASOUND. THEORY AND PRACTICE.
University Hospital Antwerp (UZA)**

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Thank you