

RÉUNION ÉLARGIE DE PERFECTIONNEMENT
EN CHIRURGIE ORTHOPÉDIQUE ET TRAUMATOLOGIQUE

44^e
GECO

VEN. 17 > LUN. 20 JANVIER 2020
HÔTEL DU GOLF - ARC 1800

GECO

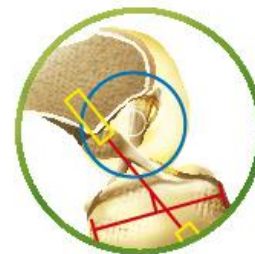
2^e COURS
PRATIQUE
D'ÉCHOGRAPHIE
MUSCULO-
SQUELETTIQUE
DU MEMBRE
INFÉRIEUR



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Stephan Konijnenberg MD

Meniscus dynamic imaging with **ultrasound**

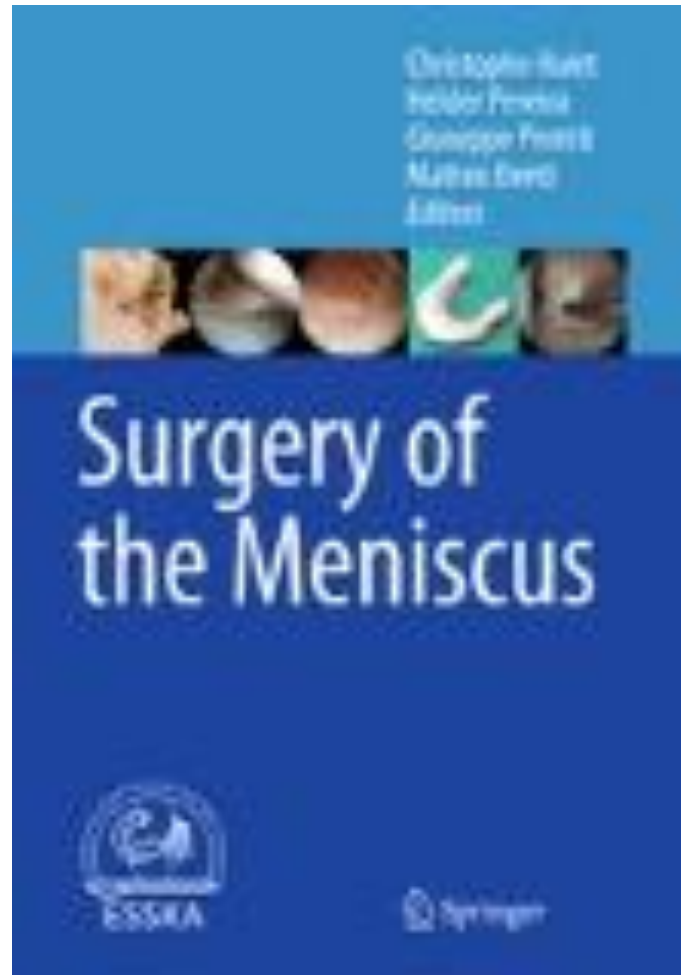


ICONE

www.icone.nl

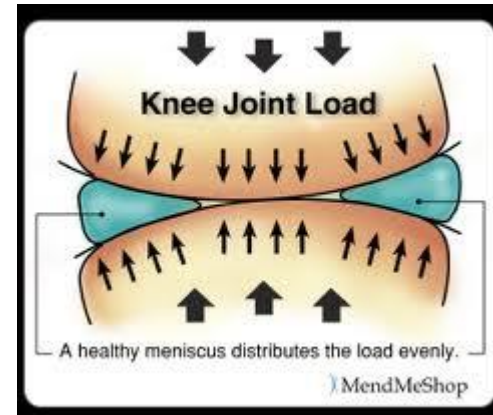
Book Surgery of the Meniscus ESSKA 2016

- Chapter 15

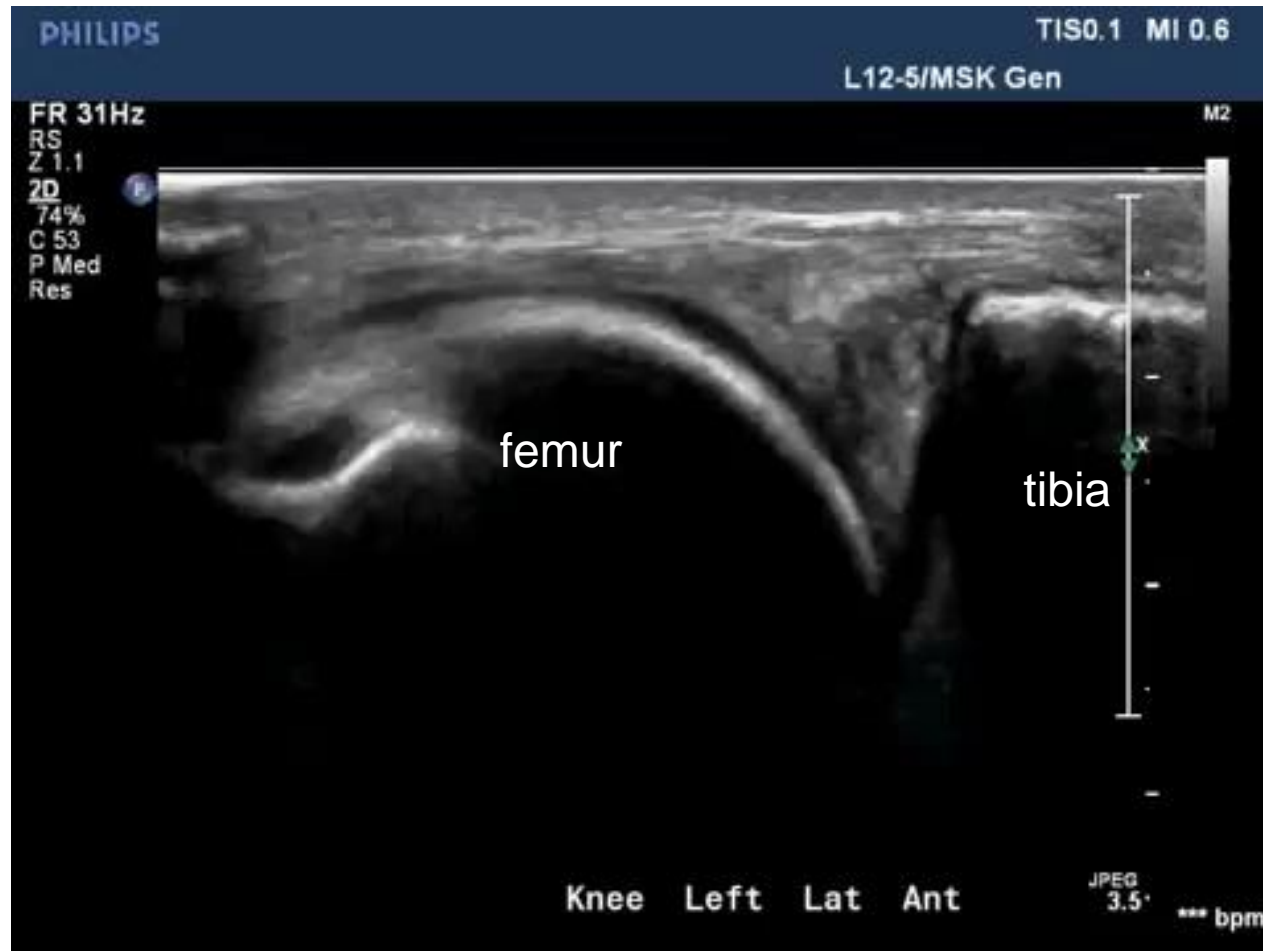


Meniscus lesions

- Conservative treatment
- Operative treatment
- Meniscal repair
- Important factor
- Ligamentous insufficiency



Dynamic HR meniscus ultrasound





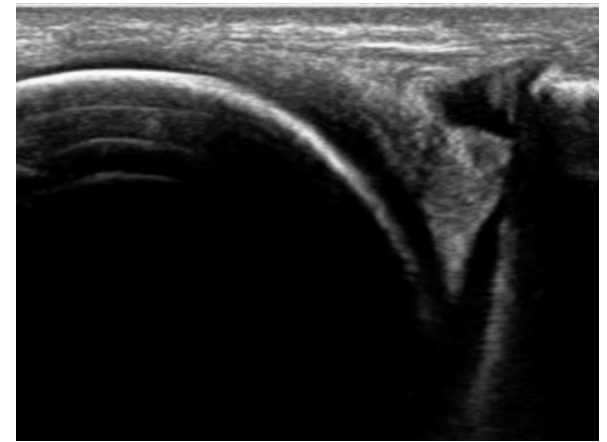
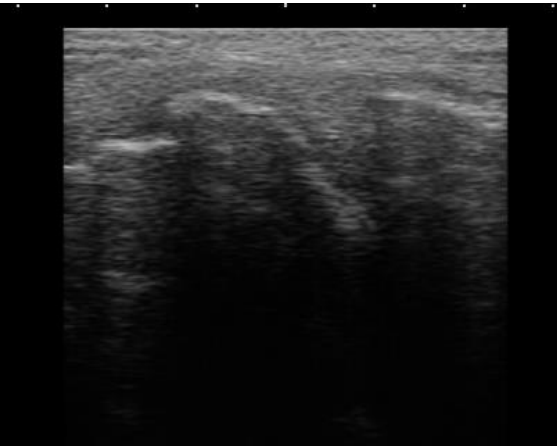
Equipment developments

- High resolution probe 2-22 MHz 1920 piezoelectric elements and sono CT software improvement , processor +++
- Non mobile ultrasound tower
- Linear probe > deeper images

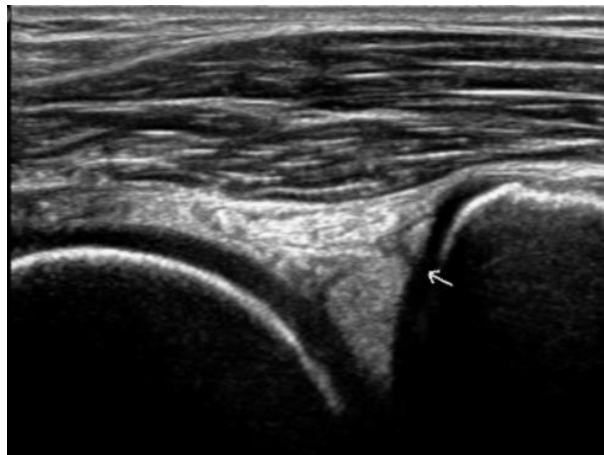


Improvements image quality

2006-2008 2008-2010 2011-2014



2015-
2018



Meniscus ultrasound literature

MRI vs MSU meniscus

2008 JBJS -B

Shetty et al London

2014 J Knee Surgery

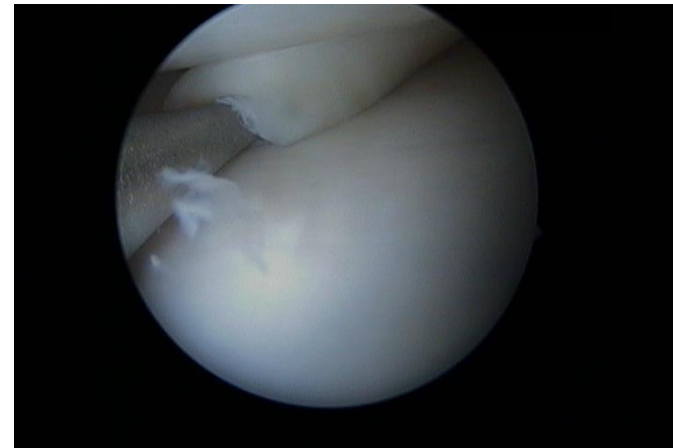
Cook et al Missouri USA

JBJS 2008 // J Knee Surgery 2014

- Arthroscopy – US – MRI
- 35 patients chronic 2008 // 71 patients acute 2014
- Sensitivity US 86 % MRI 86 % // US 91 % MRI 91 %
- Specificity US 69 % MRI 100 % // US 84 % MRI 66 %
- Pos PV US 83 % MRI 100 % // US 94 % MRI 84 %
- Neg PV US 75 % MRI 81 % // US 76 % MRI 80 %
- Shetty BJBS Br 2008 // Cook et al USA
- MRI not able to detect all lesions
- US dynamic MRI static

MRI might not be golden standard

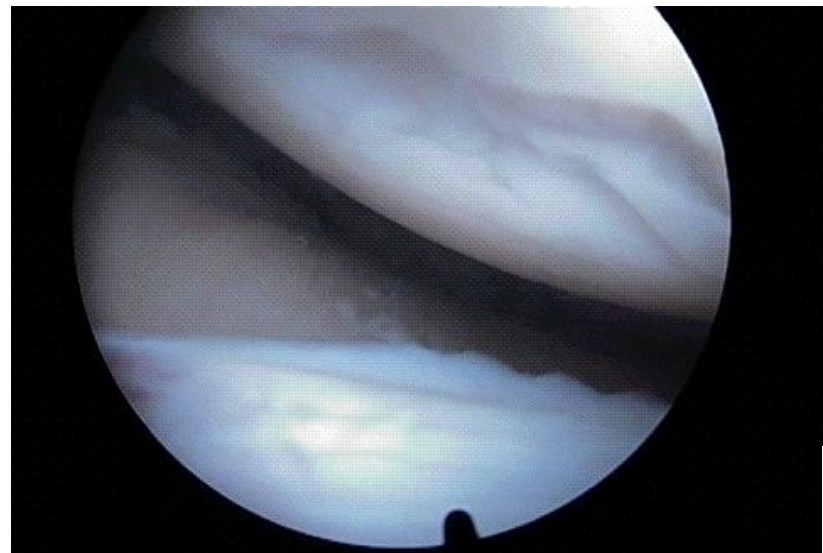
- Collateral lesions lateral / ALL / Segond MRI not reliable (Devitt / Feller / Whitehead KSSTA 2017)
- RAMP (MRI) Hidden lesions B Sonnery Cottet 2015
- False negative (MMPH) in ACL # Ahn 2016 45%



Ultrasound positions prone ,rotation, supine ,hyperflexion



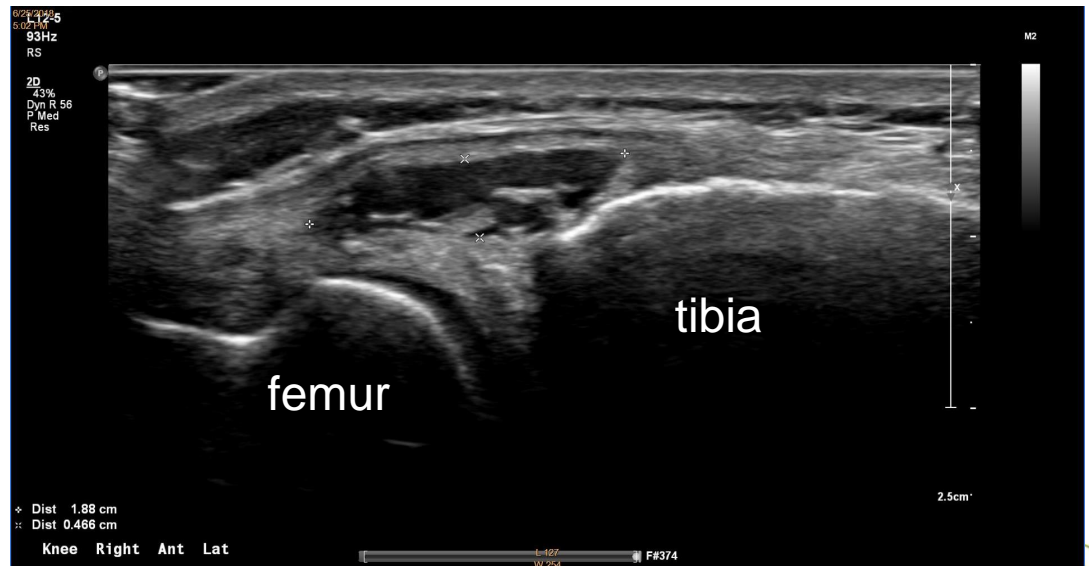
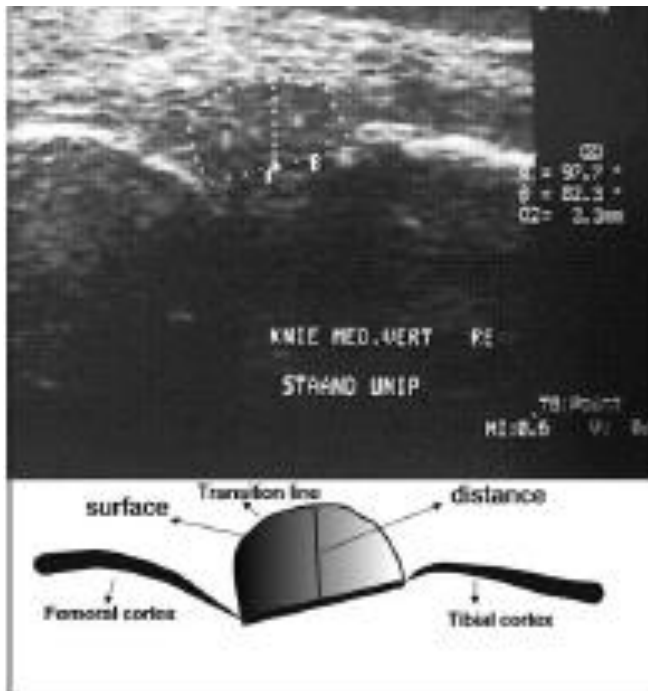
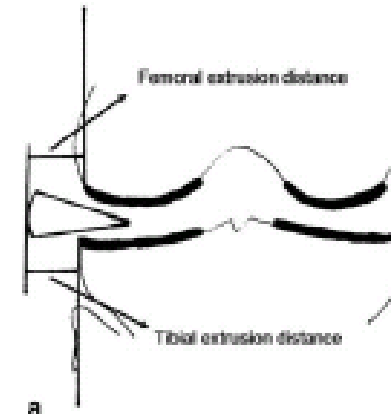
Meniscus US > Arthroscopy



Meniscus signs

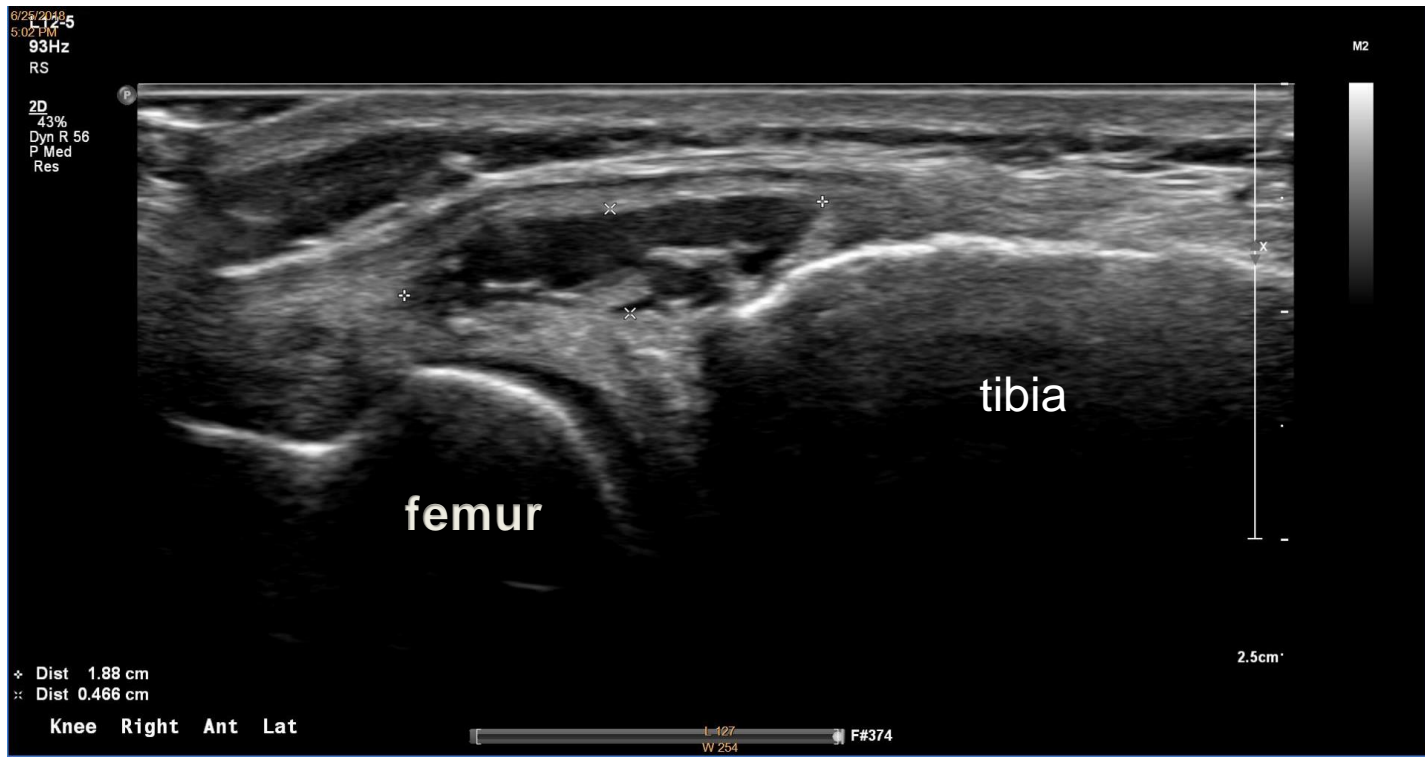
courtesy P Verdonk

- Lesion vs degeneration
- Protusion 3-4 mm
- Fluid / cyst formation

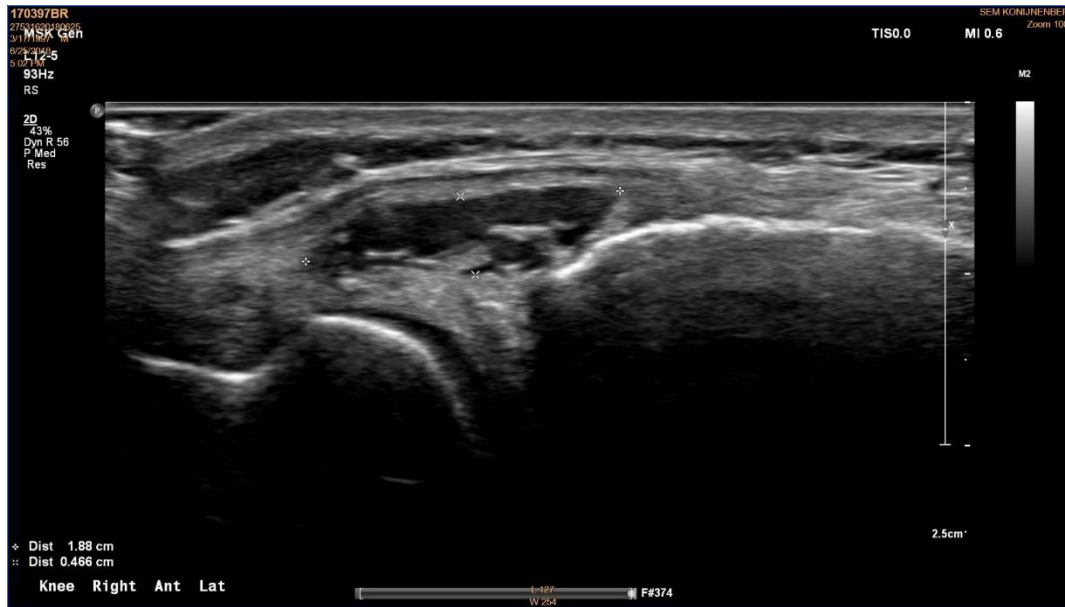


Meniscus cysts

- Lateral meniscus with radial tear .
- Outside layer of cyst (thick/thin) might predict need to resect the cyst wall .

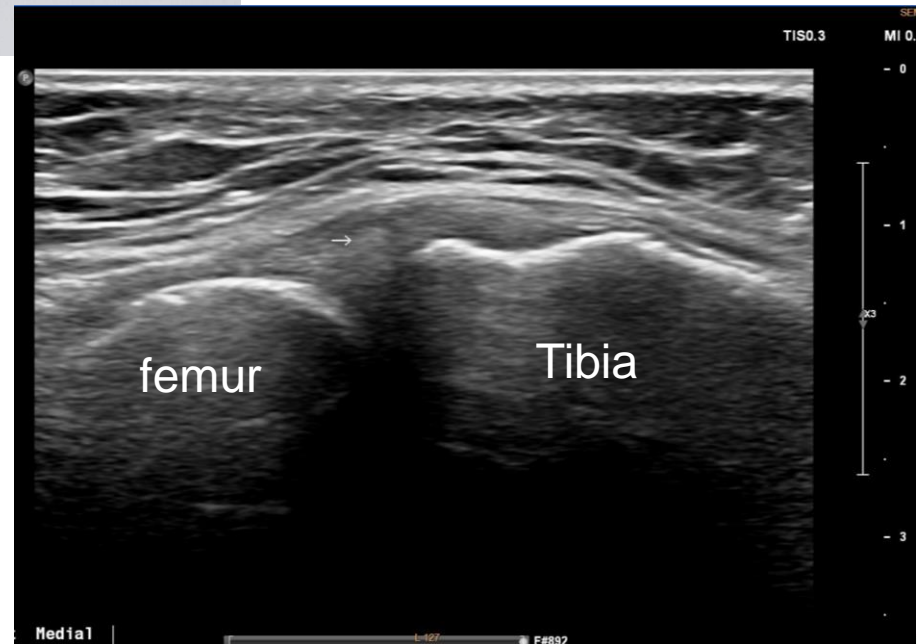
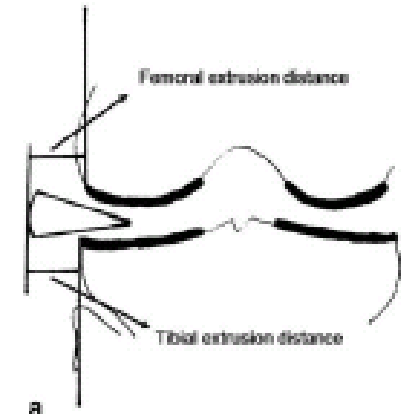
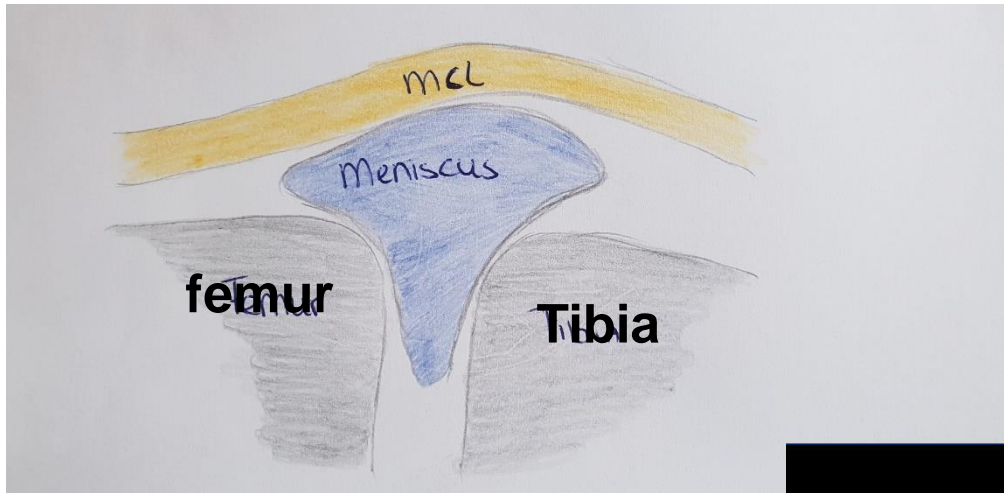


Meniscus cyst intervention

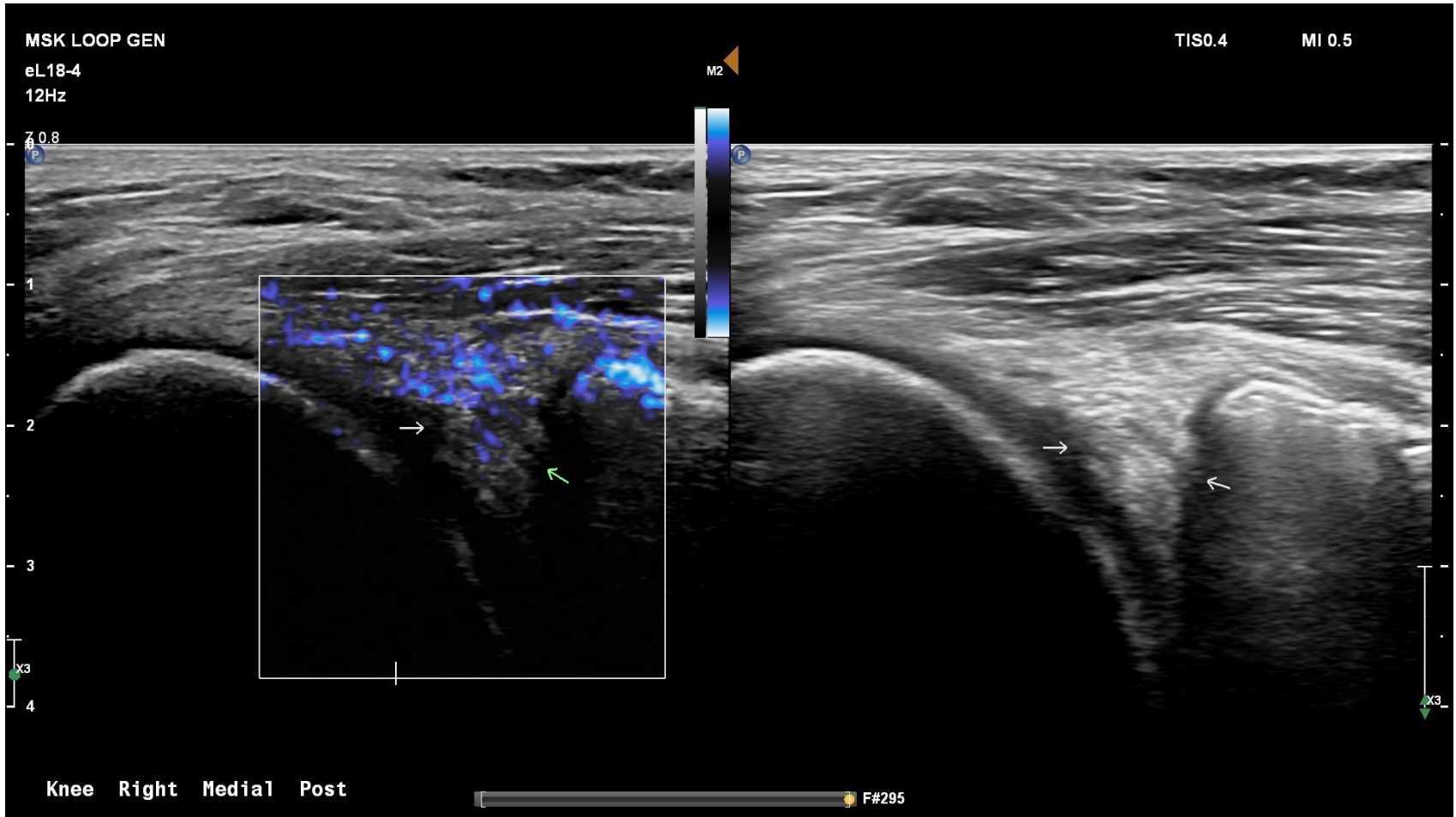


puncture,
aspiration,
injection

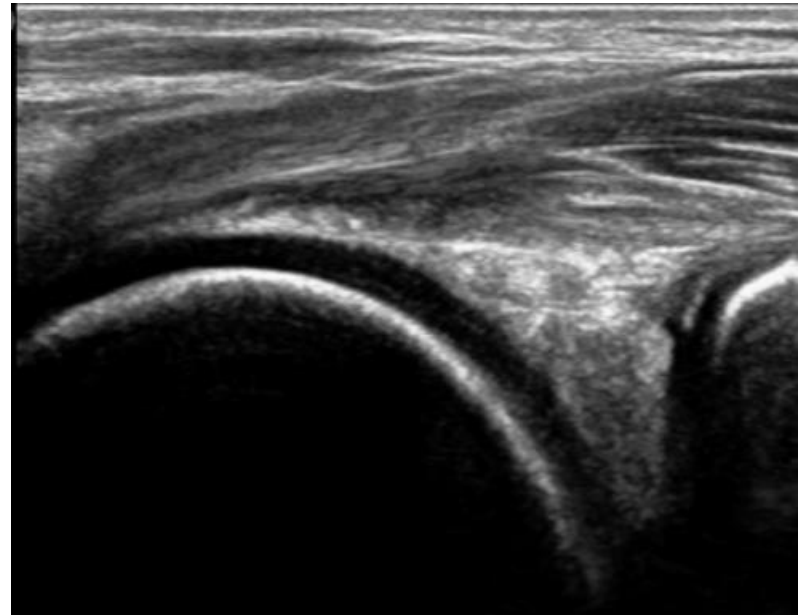
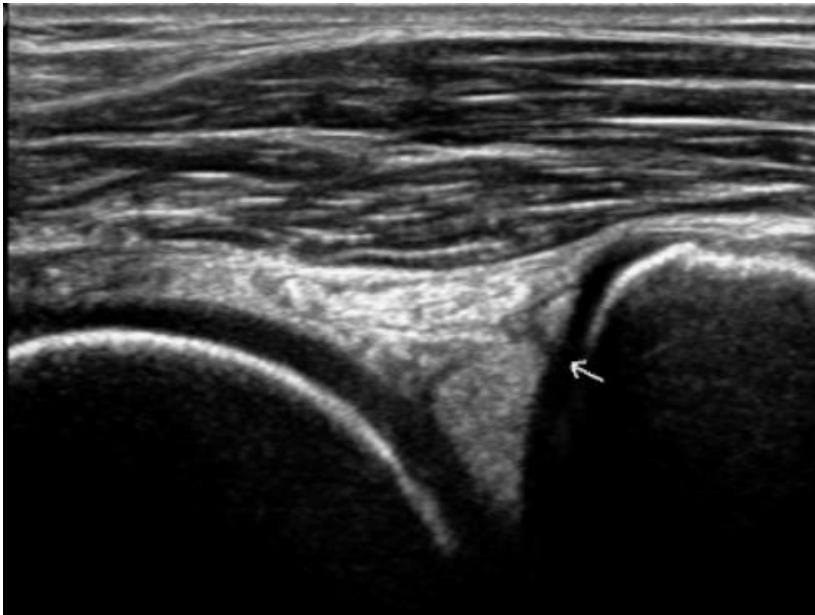
Meniscus extrusion



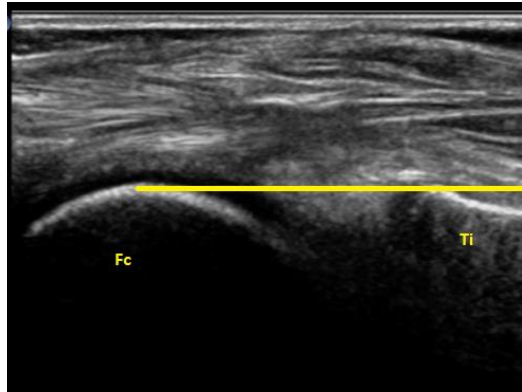
Meniscus vascularisation



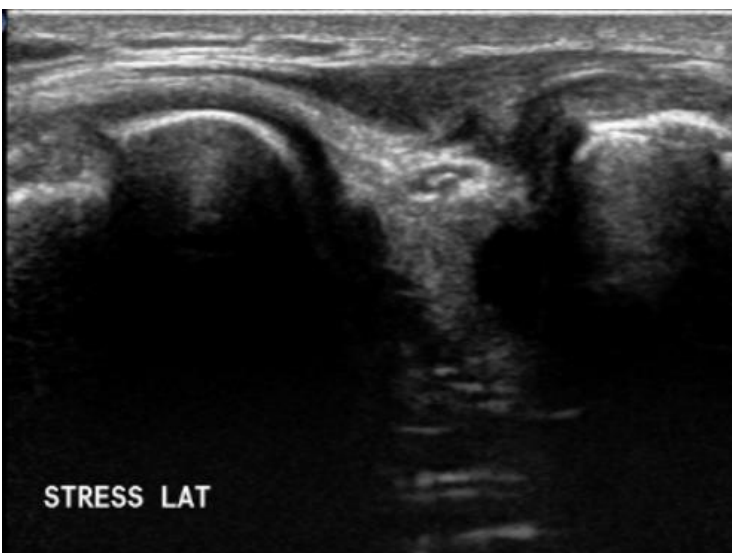
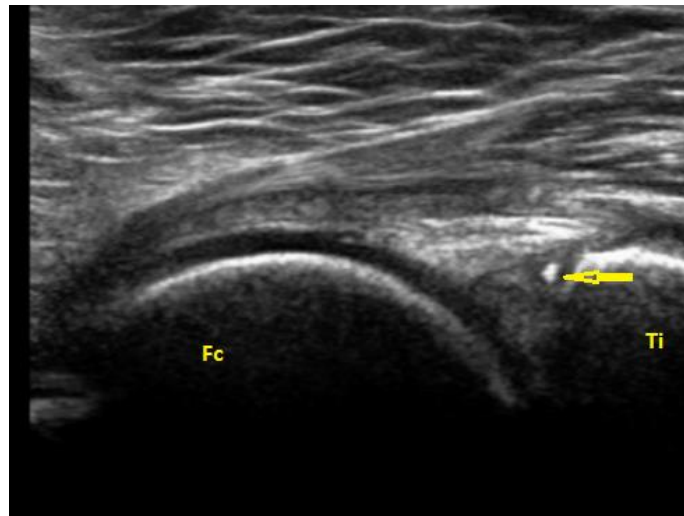
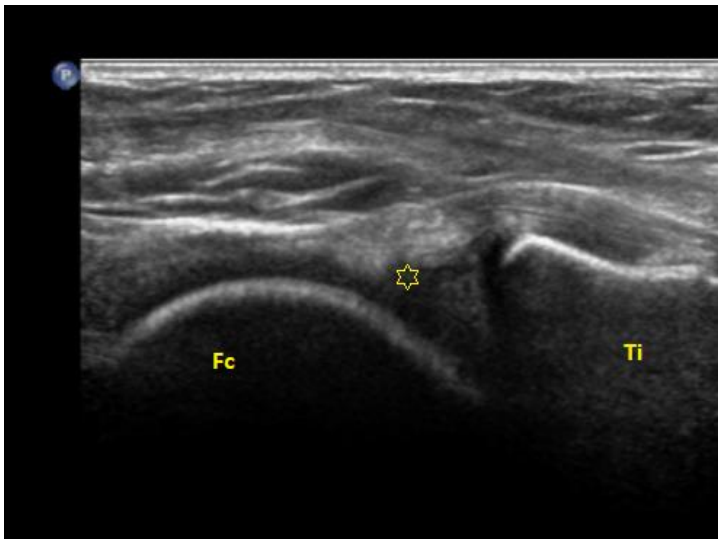
Sequential follow up in ACL / monitoring the meniscus @ 4 weeks conservative treatment



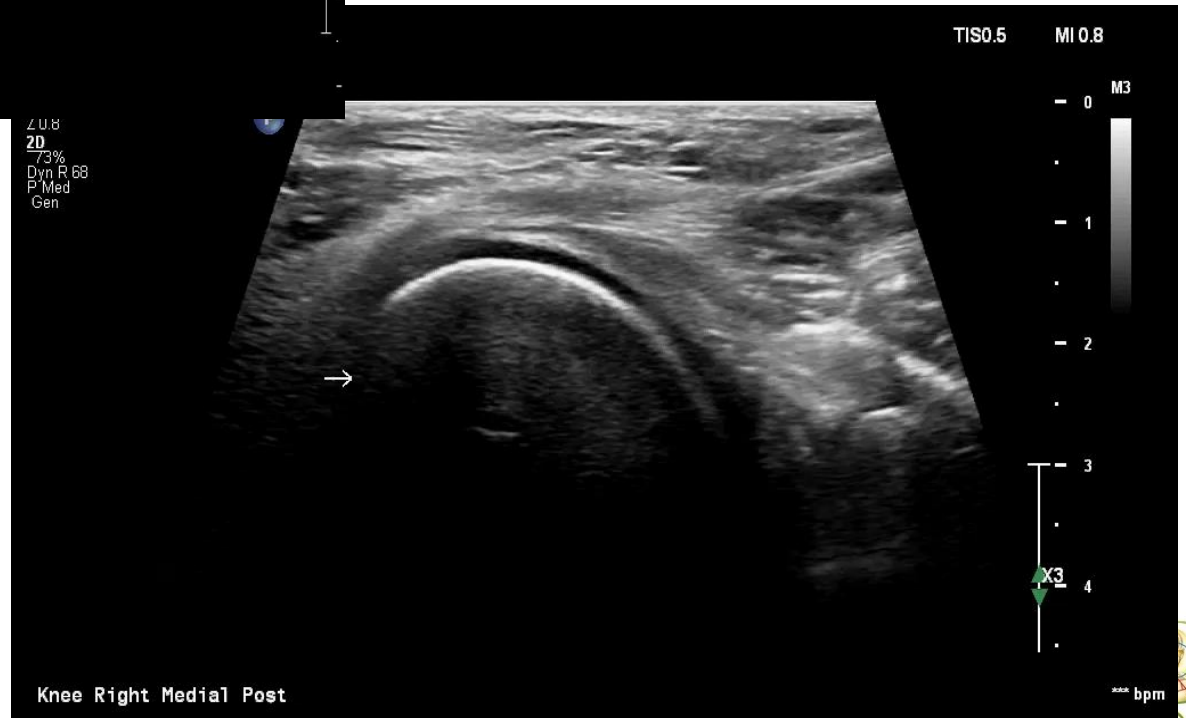
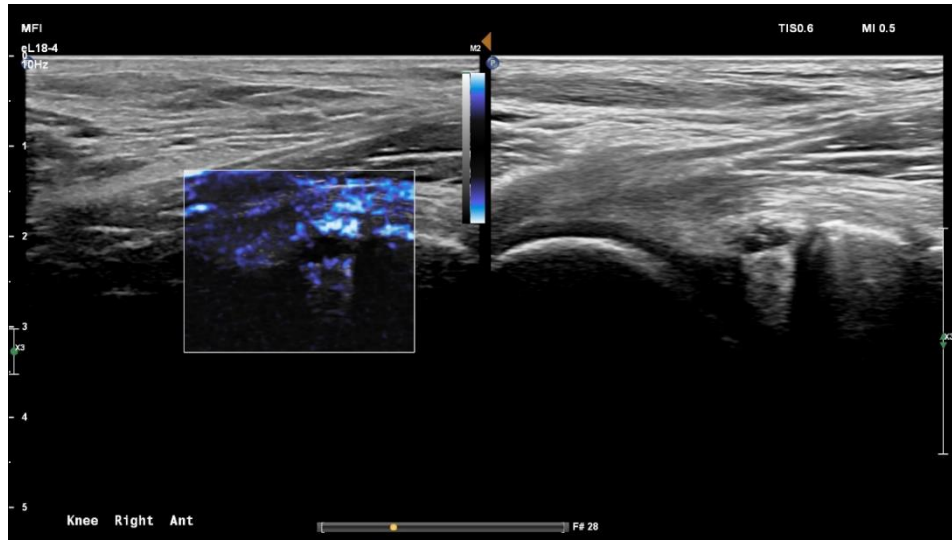
Meniscus / ACL def



Meniscus repair follow up



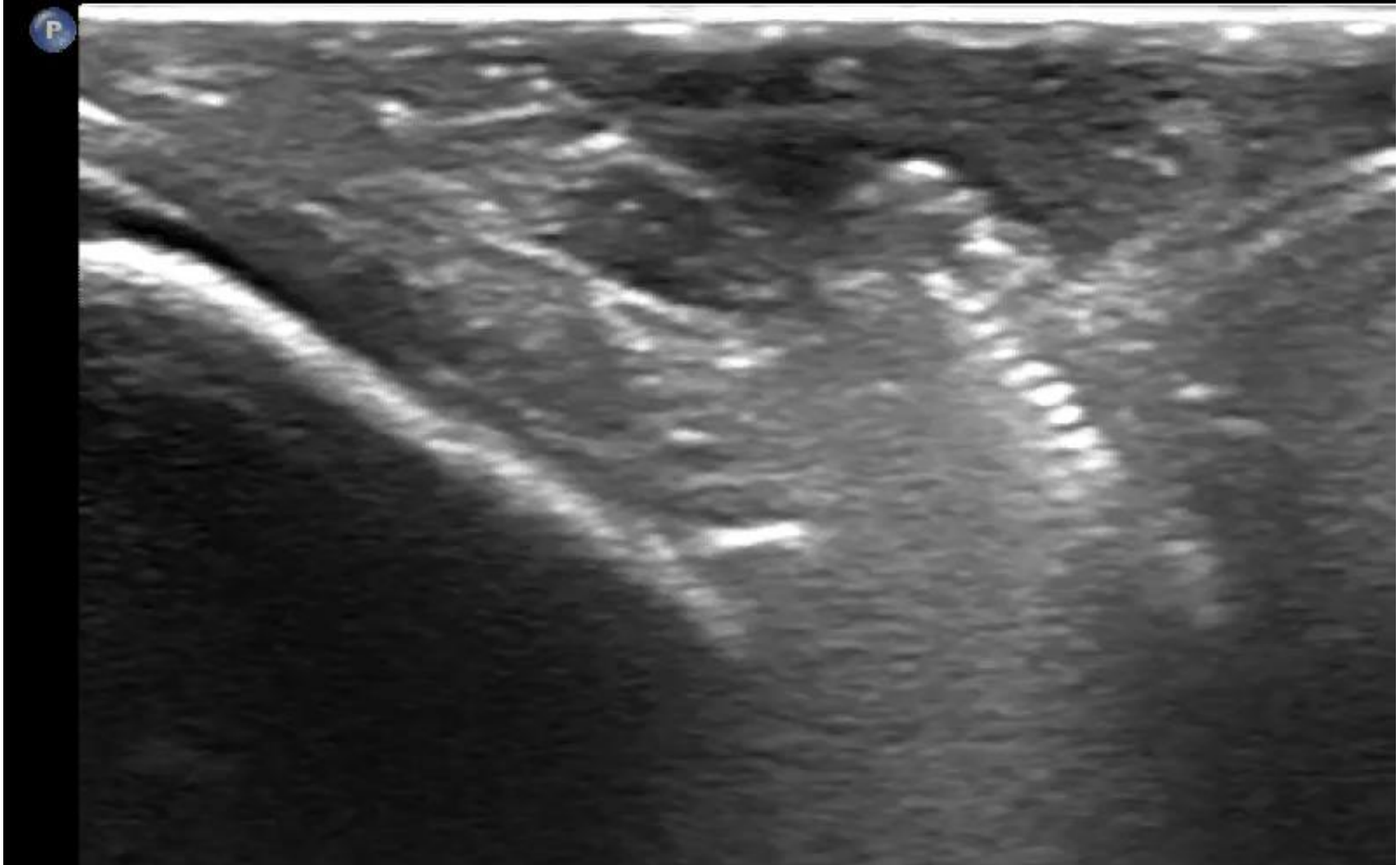
Meniscus trephination



Meniscus Ramp lesion

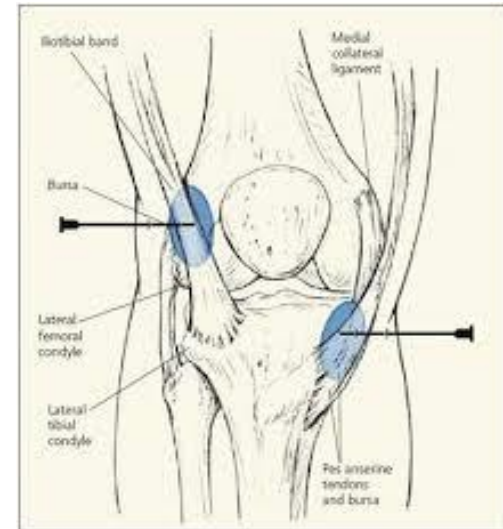


Pig meniscus > repair



Post operative imaging

- Meniscus residual lesions ?
- Pes anserinus ?
- Healing repaired meniscus ?
- DVT ?
- For these conditions MRI is not helpful in the short term (0-3 months)
- We use dynamic HR ultrasound if there is any problem in rehab .



Conclusion

- Dynamic HR ultrasound useful for meniscus pathology especially :
- Instability combined cases
- Follow up , postoperative conditions
- Monitoring healing /conservative treatment
- Repairability (vascularisation)
- Intervention