

Trauma Surgeon, Surgery and Medicolegal Practice

COMPASS CHAMBERS CONFERENCE 2023

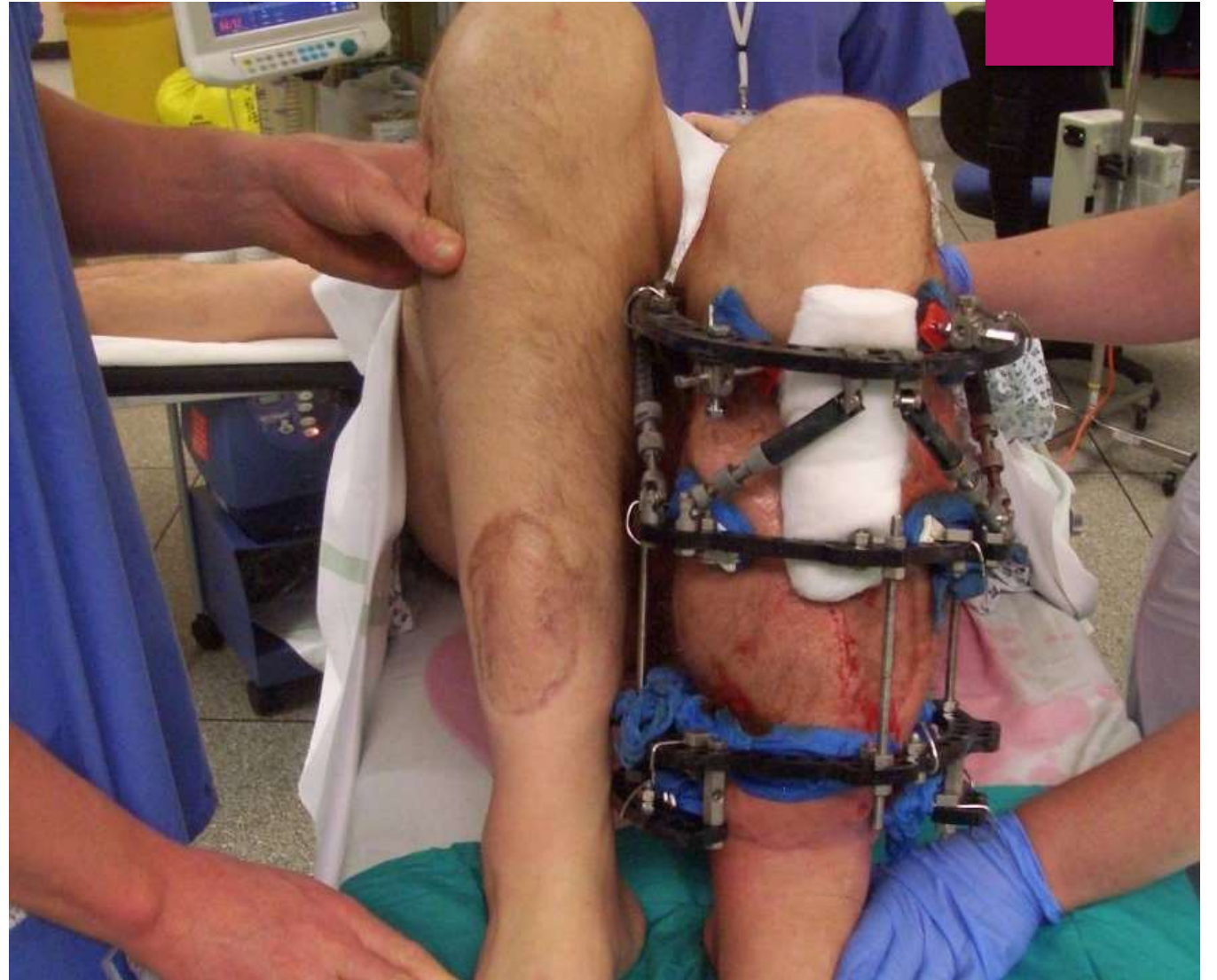
ANGUS D MACLEAN

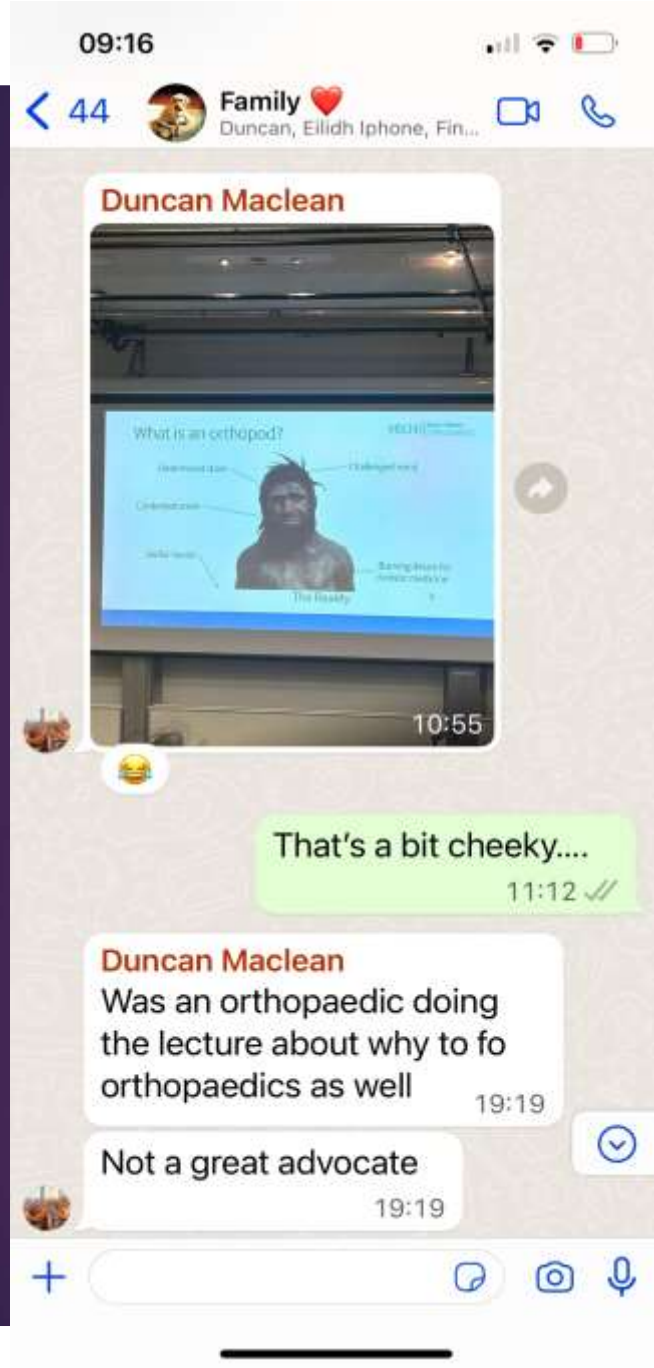
CONSULTANT ORTHOPAEDIC AND TRAUMA SURGEON

GLASGOW ROYAL INFIRMARY

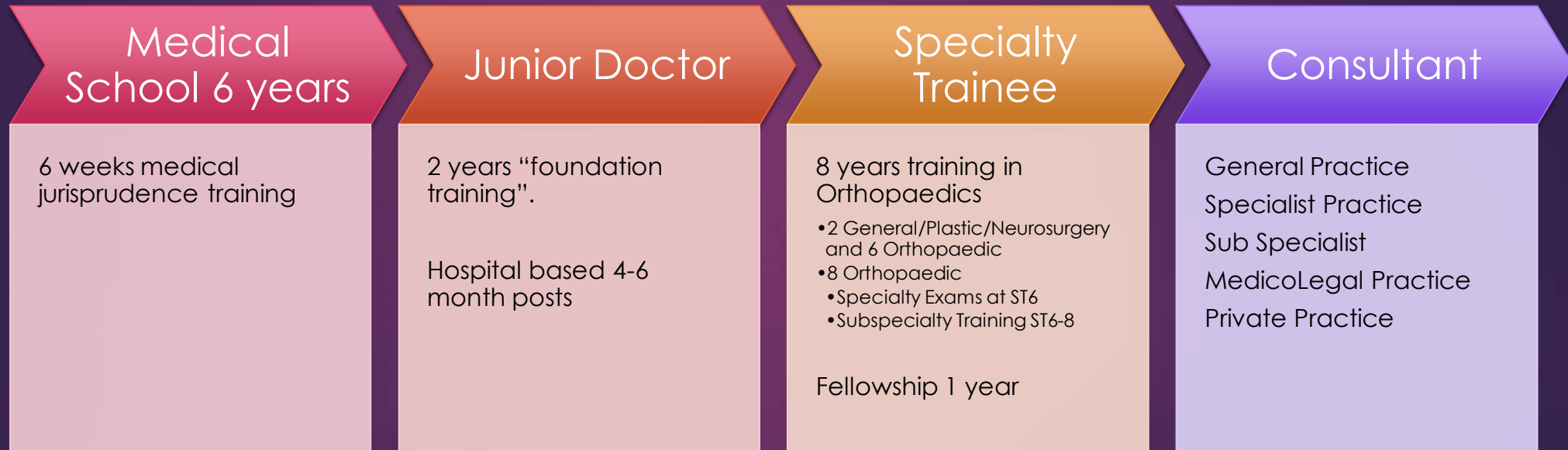
Scope of talk

- ▶ Evolution of the Orthopaedic Trauma Surgeon
- ▶ Trauma Surgery Evolution
- ▶ Medicolegal Evolving Topics





Where do Orthopaedic Surgeons Come From?



A photograph of three surgeons in an operating room, wearing blue scrubs, masks, and caps. They are focused on a patient lying on the table, with one surgeon in the foreground holding a yellow object. The background shows medical equipment and a green drape.

What About Me

- ▶ UK Trained
- ▶ Russia, USA and English Fellowships
- ▶ Sub Specialist in Limb Reconstruction
 - ▶ 4 in Scotland
 - ▶ Tertiary Trauma
 - ▶ Failed Trauma Care
 - ▶ Post Traumatic Reconstruction
 - ▶ Early Arthritis Treatments



Siberia 2004

- ▶ Ilizarov Institute
- ▶ Limb Reconstruction
- ▶ Complex Trauma





USA 2005

- ▶ Baltimore and New York
- ▶ Limb Reconstruction
- ▶ Knee Surgery

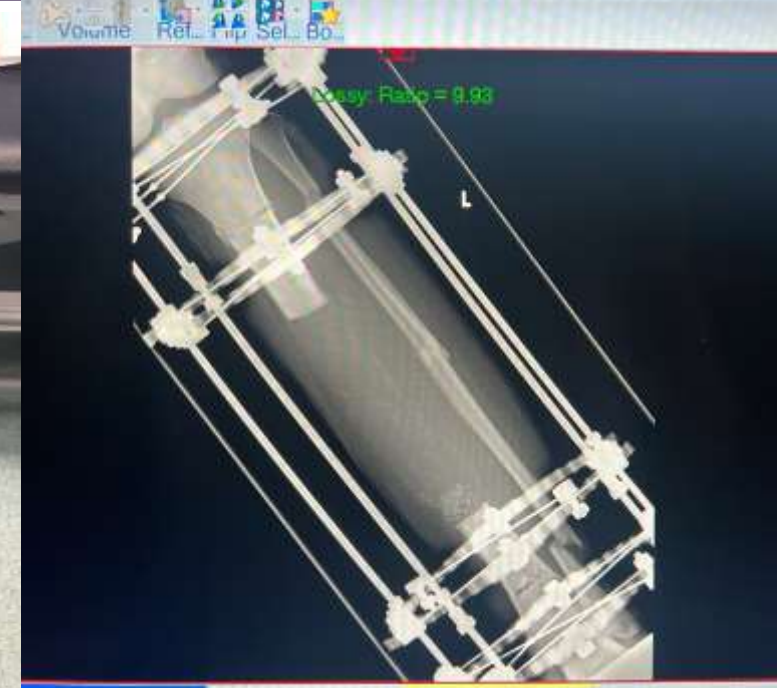
Bristol 2005

- ▶ Complex Trauma and Limb Reconstruction Fellowship
 - ▶ Surgery
 - ▶ Research
 - ▶ Trauma, CRPS
 - ▶ Contacts/Mentors



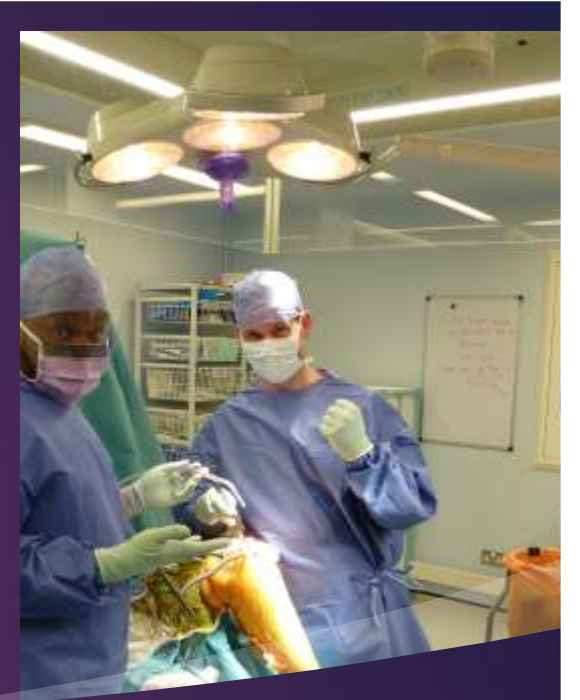
Glasgow Royal Infirmary 2005- Present

- ▶ Trauma
- ▶ Limb Reconstruction
 - ▶ Post Traumatic complications and Failures
 - ▶ Deformity Correction
 - ▶ Leg lengthening
 - ▶ Bone Infection
- ▶ Knee Surgery
- ▶ Clinical Director for Major Trauma Network



Current Practice

- ▶ Operate 3 days a Week NHS:
 - ▶ 1 Day Trauma
 - ▶ 1 Day Limb Recon
 - ▶ 1 Day Elective Orthopaedics
 - ▶ c500 Operations a year, Logbook >11,500 cases.
- ▶ Clinic 1 Day a week (45-50 patients) Around 50,000 clinic appts
- ▶ Medicolegal Practice 1 day a week
- ▶ Team: 1 Colleague, 2 Registrars, 1 Core Trainee, 1 Specialist Nurse, 1 Secretary



The West as it was...

- ▶ Major Trauma managed initially in local district hospitals
- ▶ Severe injuries and Complications Secondary to GRI (or not at all..)
- ▶ Initial "standard of care" a very low bar.



Landing an Airbus at Cumbernauld Airfield

- ▶ Runway
- ▶ Toilets
- ▶ Café
- ▶ Baggage Control
- ▶ Security
- ▶ Transport Links
- ▶ Etc etc....

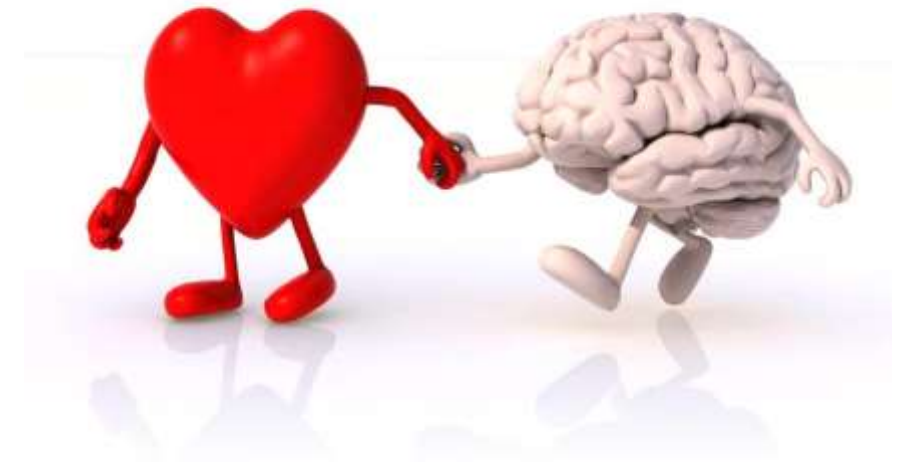
Clinical Director West Of Scotland Trauma Network 2017-20 Hearts and Minds

AIMS

- ▶ Sea Change in Trauma Care
- ▶ District Generals consolidate to single trauma unit
- ▶ Bypass local units to Major Trauma centre
 - ▶ Specialist Immediate and Definitive Care
 - ▶ Holistic Trauma care and Rehabilitation
- ▶ Mission to Convince:
 - ▶ Public
 - ▶ Ambulance Crews
 - ▶ Hospitals
 - ▶ Local lose expertise and consolidate
 - ▶ MTC gains Work
- ▶ COMPLETE CHANGE IN TRAUMA ORTHOPAEDIC SURGEONS WORK IN THE WEST



SCOTTISH
TRAUMA
NETWORK
WEST





A&E patients suffering trauma will no longer be treated at Inverclyde Royal Hospital



By Susan Lochrie
2 Comments



Nutritionist: If You Drink Olive Oil Day, This is What Happens

Navigation bar with categories: POLITICS, FOOTBALL, SPORT, TV & CELEBS, LIFE & STYLE, MORE.

- Former tanning salon could be new venue for restaurant and bar in Prestwick
- South Ayrshire Remembrance: Events to pay tribute to The Fallen this week
- Kilmarnock leave Capital empty-handed after frustrating Hibernian loss
- Free festive parking in Kilmarnock to be tweaked after ticket fiasco

Concerns raised as Ayrshire major trauma patients to be shipped to Glasgow

As part of a national plan, around 80 major trauma patients from Ayrshire will be treated at Glasgow's QEUH.

By Abi Smillie
UPDATED 14:02, 3 SEP 2021





25th June 2019

**Trauma plan for the West of Scotland moves
one step closer**

NHS Greater Glasgow and Clyde has given its go-ahead for a plan which aims to transform the way people suffering major trauma in the West of Scotland are treated, in the hope that lives can be saved and recovery improved for hundreds of patients each year.

Adult Trauma Triage Tool ≥ 16

Use this tool to Triage all Significantly Injured Patients or Patients involved in a High Mechanism Incident

Clinical Judgement is important and valued.

If you are concerned that your patient's triage category does not reflect their needs, you require clinical or logistical advice please contact the **Trauma Desk** directly on

03333

990 211

or by airwave by placing a callback to your local area dispatcher who will arrange a callback from the Trauma Desk.



Triage Questions

Step 1

Assess your Patient's Physiology

Does your Patient have any of the following:

- Systolic blood pressure < 90 mmHg, or no radial pulse
- Glasgow Coma Scale < 14
- Respiratory Rate < 10 or > 29 breaths/min

Step 2

Assess your Patient's Injuries

Does your Patient have any of the following:

- Penetrating injury to head, neck, torso or extremities proximal to elbow or knee
- Chest Wall Instability or deformity
- Two or more proximal limb fractures
- Crushed, degloved, mangled or pulseless extremity
- Amputation proximal to wrist or ankle
- Suspected Pelvic Fracture
- Open or Depressed Skull Fracture
- Paralysis

Step 3

Assess the Mechanism of Injury

Did any of the following occur:

- Fall > 20 Feet
- High Risk Vehicle Accident
 - With $> 12"$ intrusion
 - Ejection (partial or complete)
 - Death in same passenger compartment
- Vehicle Striking Pedestrian/Cyclist at > 20 mph
- Motorcycle accident at > 20 mph

Step 4

Special Considerations

Are any of the following present:

- Age > 55 years
- Bleeding Disorder or Anticoagulant Treatment
- Isolated Burns (Liaise with Trauma Desk)
- Pregnancy > 20 weeks
- Morbid Obesity

YES
NO

Response Category

Should the airway become compromised and cannot be managed, consider conveying/diverting to the nearest locally designated Emergency Department

Major trauma centre care



Your Patient requires Major Trauma Centre (MTC) Care

- If < 45 minutes from MTC = convey to MTC
- If > 45 minutes from MTC = contact Trauma Desk



If you do not think your patient requires MTC, contact Trauma Desk

Remember to pre-alert the receiving hospital via airwave if you are managing a patient triaged to MTC

Trauma unit care



Your Patient requires Trauma Unit (TU) Care

- Convey to the nearest TU, or MTC if closer
- If > 45 minutes from TU/MTC contact Trauma Desk



If you do not think your patient requires TU/MTC, contact Trauma Desk

Local



Convey your patient to the nearest Local Emergency Hospital

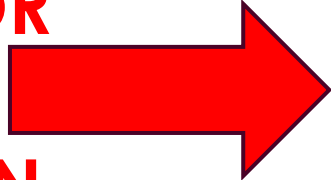


If you think your patient requires TU/MTC, contact Trauma Desk

West Trauma Network 2020 Hub and Spoke



**MAJOR
TRAUMA FOR
3 MILLION
POPULATION**



- 1. Dad hailed 'legend' after flying easyjet plane 'missing a captain' to Spain
- 2. Woman splashes cash after receiving £850,000 instead of usual £85 student grant
- 3. BBC's Roman Kemp set to quit showbiz as health worsens after shock diagnosis
- 4. Glasgow health board named as suspect in homicide probe over Milly Main's death

Hillwalker airlifted to hospital with multiple injuries after falling at Dumfries and Galloway landmark

The man lost his footing and fell into a burn, which swept him over a waterfall

- 1. Five businesses three hours or less from Glasgow that everyone should visit to celebrate the Year of Stories
- 2. Get your wardrobe ready for autumn and winter with Braehead Shopping Centre
- 3. Scottish man's 'rare' £199 eBay purchase turns out to be worth £138,400
- 4. Glasgow's lost Bridge Street station that was city's grandest railway terminal
- 5. NHS Green named as suspect in homicide probe


Lanarkshire schoolgirl had part of her skull stored in stomach in life-saving surgery

Chelsey Smith underwent the pioneering surgery after she sustained life-threatening injuries in a road crash. The 16-year-old has been able to go back to school.

By Holly Lennon, Journalist

07:16, 3 MAR 2023

Enter your postcode for local news and info



Man airlifted to hospital in Glasgow after motorcycle crash in Argyll



The man was airlifted to the Queen Elizabeth University Hospital. A man has been taken to hospital with serious injuries after a crash involving two motorcycles on the A82 in Argyll.

Three-year-old girl airlifted from Stornoway to Glasgow hospital after breaking her arm

The young kid was airlifted to Glasgow Royal Infirmary on Saturday

by Bailey Murren

October 18, 2022, 11:14 AM

Share Comment 1



The Stornoway child was taken to hospital in Glasgow with a limb-threatening injury. Image: Scottish Ambulance Service.

The P&J free daily newsletter

Start your day right. Get the top stories from the P&J delivered straight to your inbox.

Start your newsletter [SIGN UP](#)

A three-year-old girl has been airlifted from Stornoway to a hospital in Glasgow after breaking her arm.

Man, 42, airlifted to Glasgow hospital after serious crash



Nutritionist: If You Drink Olive Oil Every Day, This is What Happens

New Diet Discovery

Pedestrian airlifted to hospital after M8 crash near Harthill Services

18 October 2022



Rush hour traffic on the M8 was diverted following the crash

Results from
Trauma
Networks:

20% reduced mortality
from Trauma if survive
initial accident

Improved
morbidity/outcomes
for survivors



Robert Liston (1754-1847)

- ▶ 1800's Expert
- ▶ "Time me Gentlemen"
 - ▶ 10% mortality (average 25%)
 - ▶ Only recorded surgeon with 300% mortality
 - ▶ Accidentally removed Testicles with leg
- ▶today grossly negligent



An expert is somebody
who is more than 50 miles
from home, has no
responsibility for
implementing the advice
he gives, and shows slides.

Edwin Meese

Trauma/Orthopaedic Surgeon as an Expert Witness

EVOLVING TOPICS

What Value Should an Orthopaedic Opinion give?

- ▶ **Impartiality**
- ▶ **Assess Claimant**
 - ▶ Subjective (History) v Objective (Examination, Records, Imaging)
- ▶ **Differentiate Severity of Injuries**
- ▶ **Assess Treatment**
 - ▶ Negligence
 - ▶ Future requirements (acute and Longterm)
- ▶ **Quantify Recovery +/- Disability**
 - ▶ Expected v Actual
 - ▶ Possible Non organic: Deliberate v Psychological
- ▶ **Prognosis**
 - ▶ Further recovery
 - ▶ Potential for Deterioration – usually secondary to arthritis or complication

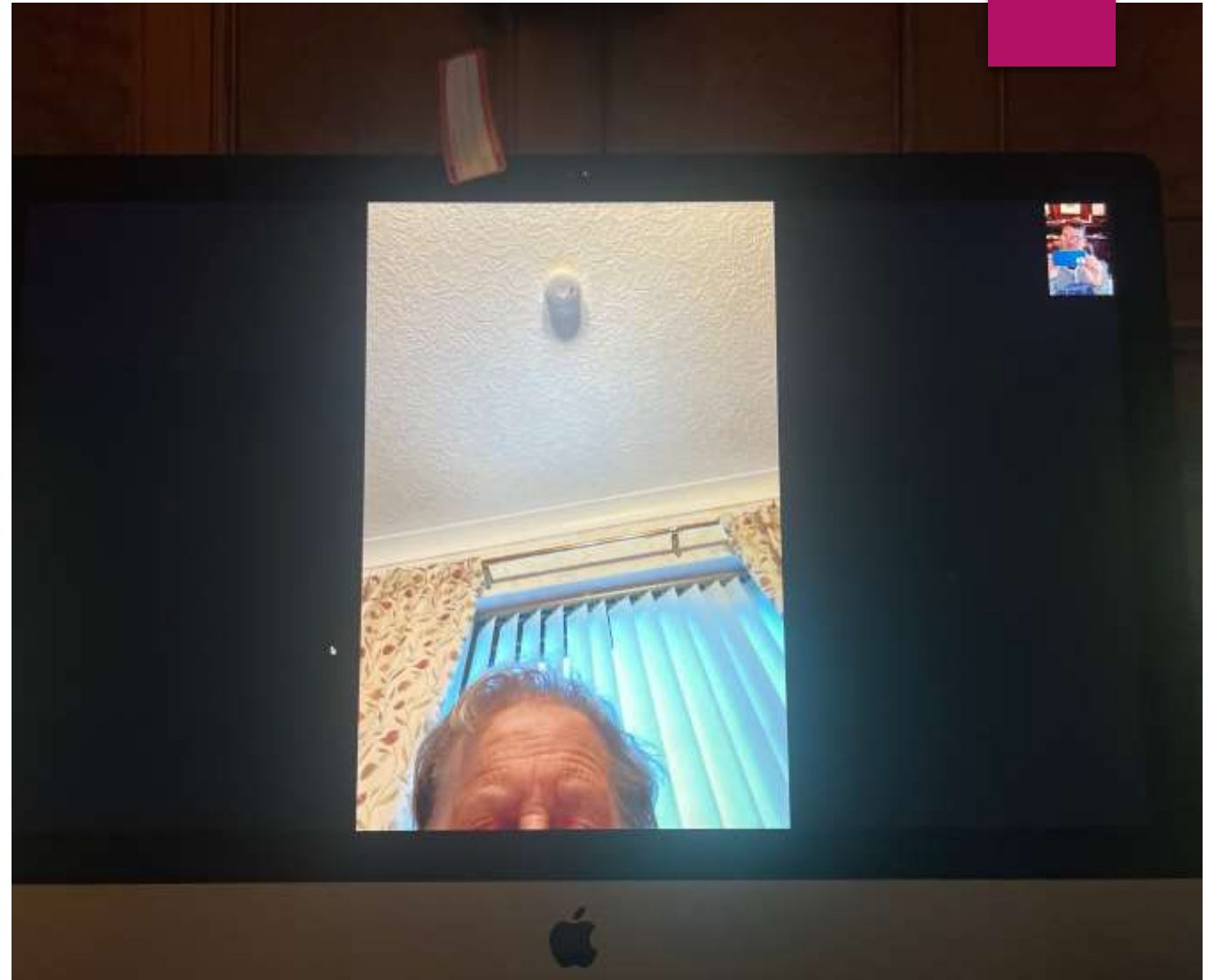
COVID -19

- ▶ Has a lot to answer for.....



Virtual Orthopaedic MedicoLegal Assessments

- ▶ Limited indications
 - ▶ When full recovery achieved and no examination needed
 - ▶ IT literate
- ▶ Brilliant for Meetings with Counsel





Walking

- ▶ OBSERVATION
 - ▶ Gait
 - ▶ Crutch use and Wear
 - ▶ Shoe Wear
 - ▶ Appropriateness
 - ▶ Consistency

Importance of Examination

- ▶ Virtual Assessments inadequate in Musculoskeletal injury



BACK EXAMINATION

Spine “Volvo
Award” 1979

“Non organic
Physical Signs in Low
Back Pain”

- ▶ Gordon Waddell et al
- ▶ Studied 350 back pain patients
- ▶ Validated physical tests and clinical signs
- ▶ Aimed to identify patients with psychological component to back pain condition
 - ▶ Direct appropriate treatment
 - ▶ Avoid surgery

Waddell's Signs (Non organic signs)

- ▶ 5 Categories
 - ▶ **Tenderness tests**
 - ▶ Superficial
 - ▶ Deep
 - ▶ **Simulation Tests**
 - ▶ Axial Loading
 - ▶ Simulated rotation
 - ▶ **Distraction Tests**
 - ▶ Straight Leg Raise
 - ▶ Dressing and Undressing
 - ▶ **Regional Disturbances**
 - ▶ Non anatomical Weakness or sensory loss
 - ▶ **Overreaction**
 - ▶ Moaning, groaning, Puffing, Panting, crying, wincing, sweating, collapsing, tremor,

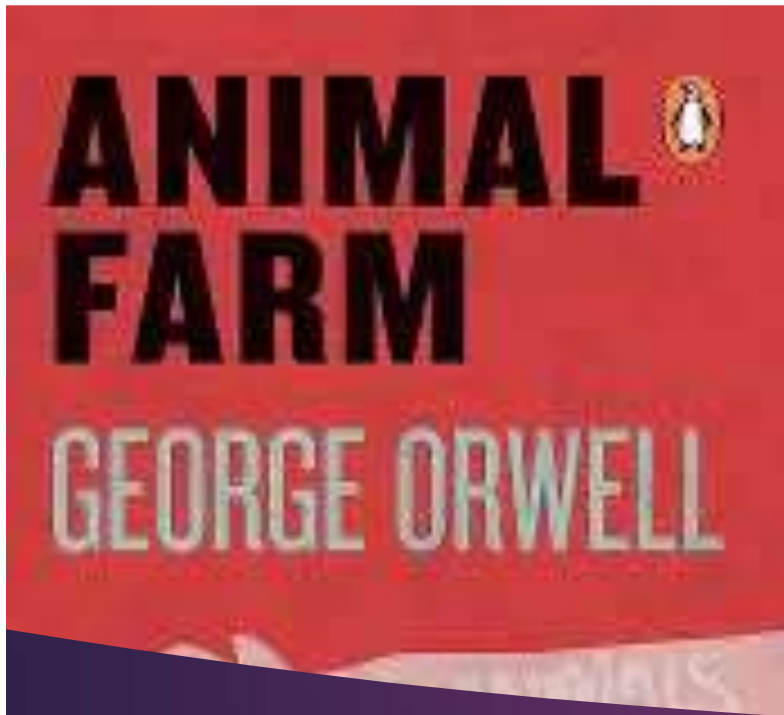
Waddell Conclusions

- ▶ Normal individuals have no positive signs
- ▶ 1 or 2 signs probably irrelevant
- ▶ 3 or more signs reproducible indicated significant psychological component to pain
- ▶ Waddell signs LESS common in patients with something wrong (Fracture, tumour, infection, disc)
- ▶ Very weak correlation with medicolegal situations.
- ▶ All patients with pain show some behavioural and emotional response.

Mis-use of Waddell Signs

- ▶ **NEVER** intended to identify malingering
 - ▶ Poor Correlation
- ▶ “Inappropriate”, “Illness behaviour” are poor terms in medicolegal context
 - ▶ Suggests “fraud” and deliberate
- ▶ Better to suggest
 - ▶ Psychological component to pain
 - ▶ Non organic component
- ▶ Medicolegal claim is a stressor
 - ▶ Likely to increase psychological distress





Imaging important:

- ▶ “All ankles are equal but some are more equal than others”



Quality of Treatment

- ▶ Standard of Care
 - ▶ Changing with modern care and networks
 - ▶ Poor Outcomes
 - ▶ Difficult cases v poor surgeons
 - ▶ Hunter v Hanley
- ▶ NHS Delays

Arthritis

Some tyres (and cars) are poorer and don't last as long as others (Genetics/Disease)

The more you drive and the worse you drive the more it wears (Osteoarthritis)

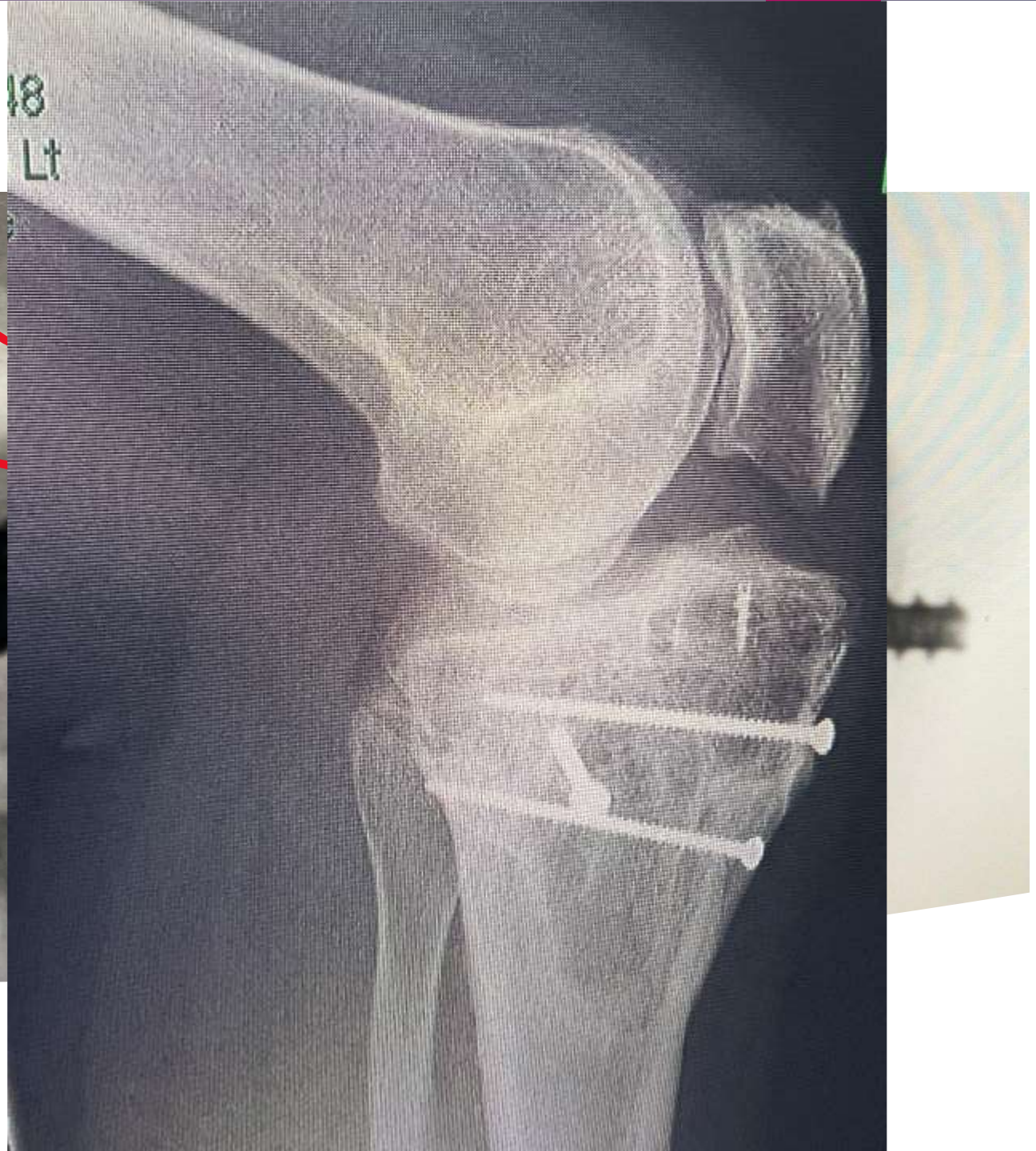
Failure car occur insidiously or acutely due to damage (Post traumatic Arthritis)

Worn tyres fail/burst (Acceleration/Aggravation)



Doomed

- ▶ Articular surface
 - ▶ Gap
 - ▶ Step
 - ▶ Incongruent
 - ▶ Accelerated degradation
 - ▶ Overload
 - ▶ Damage



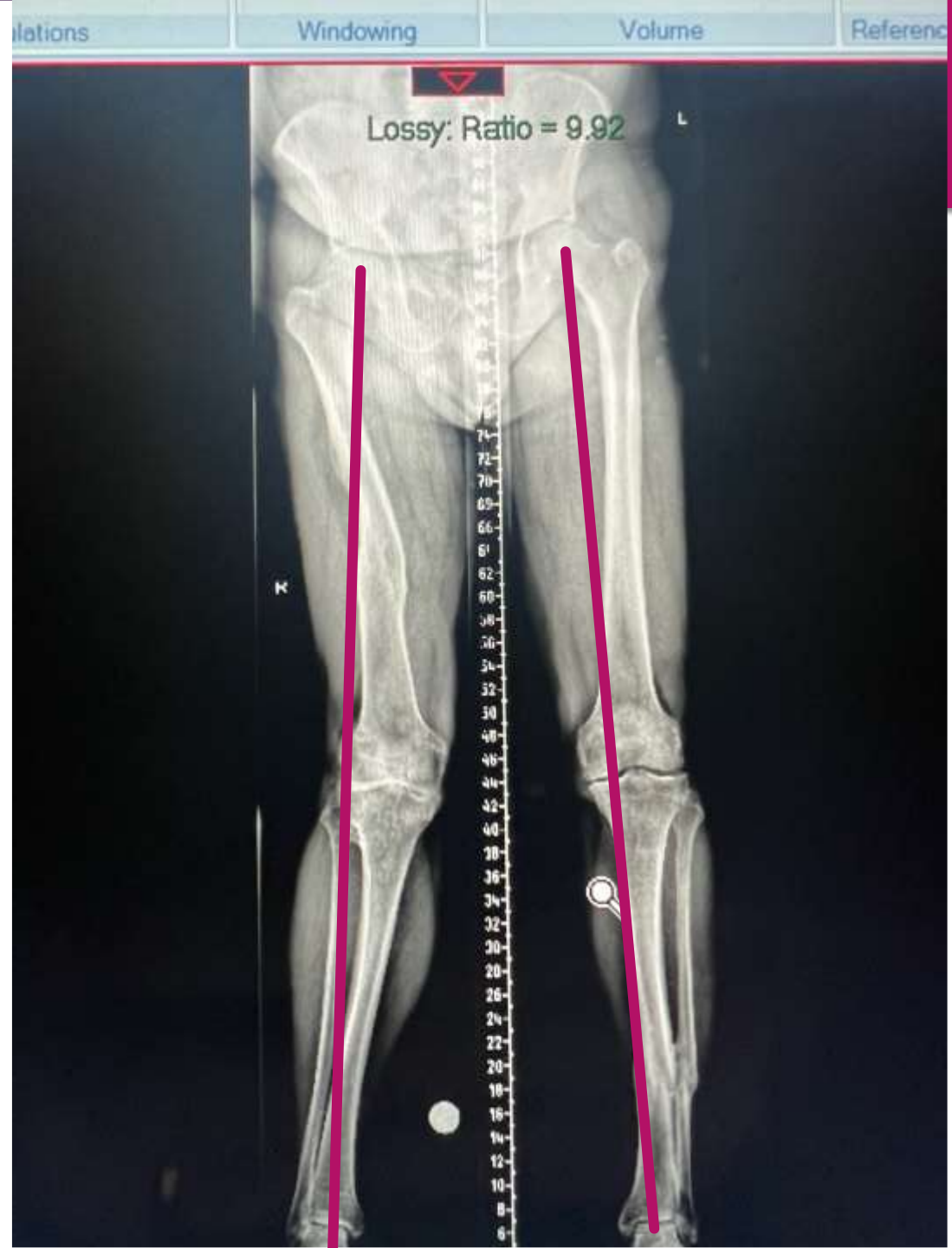
Insidious

62 year old
Man with
Knee arthritis

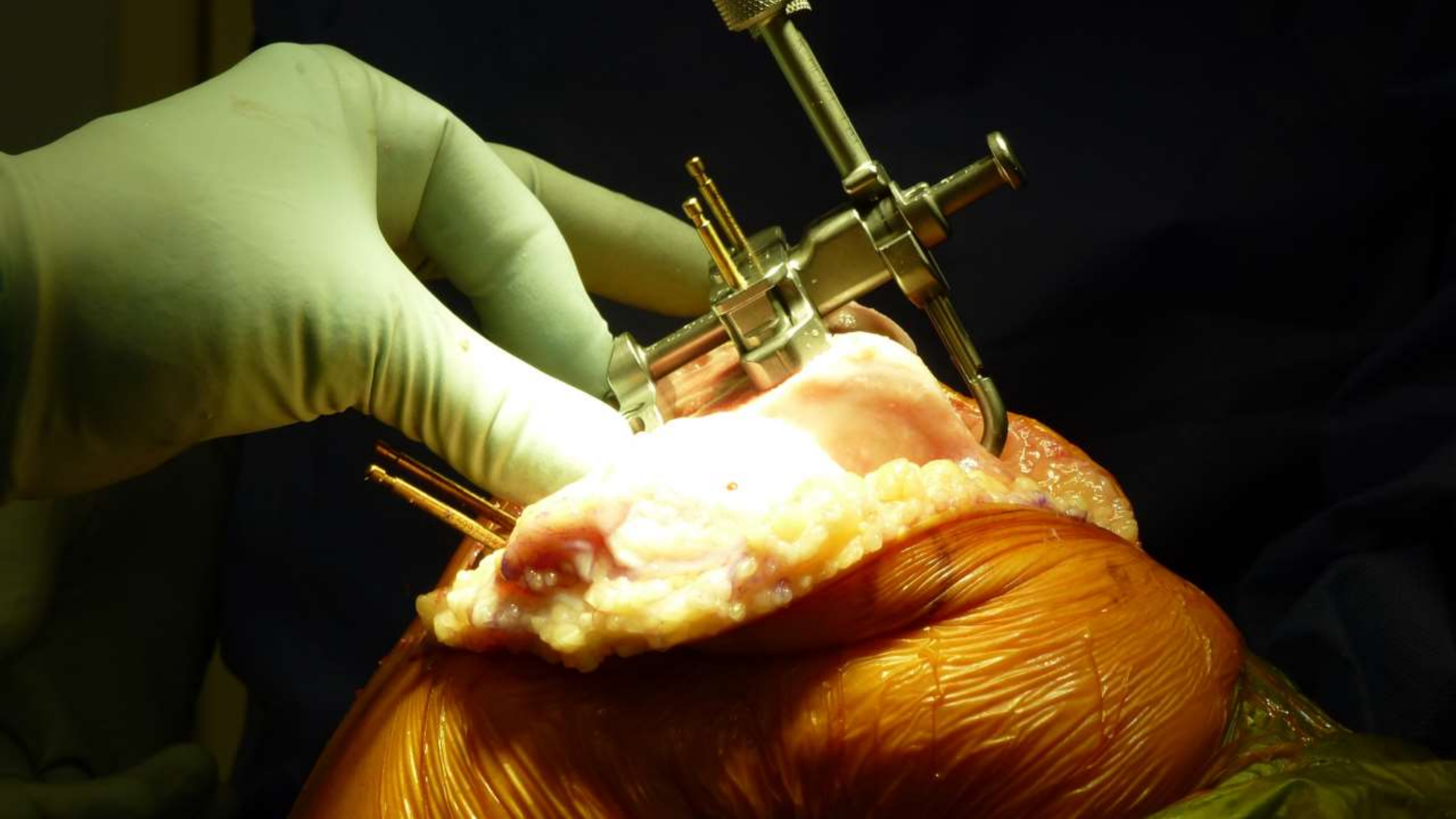


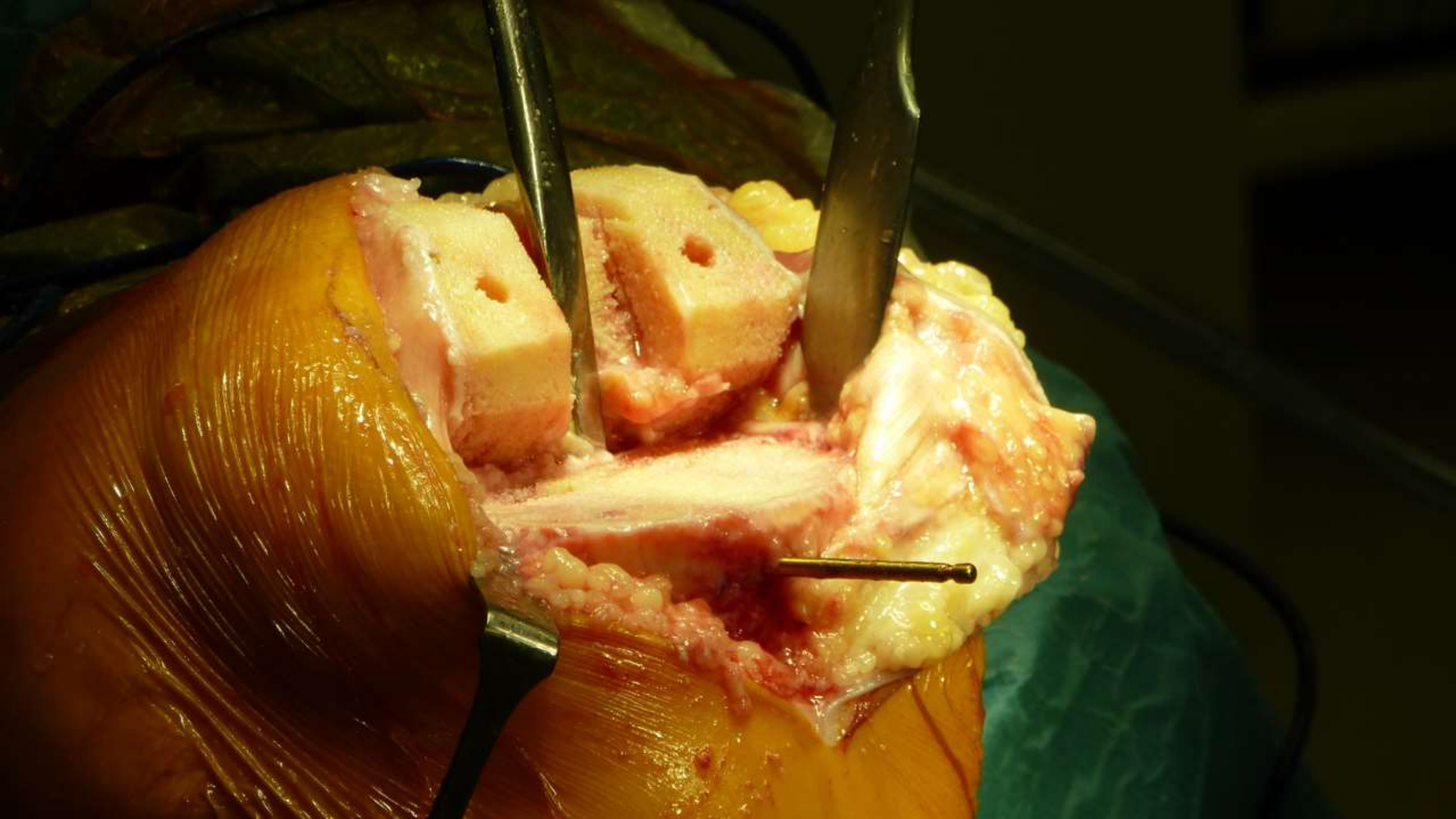
Insidious

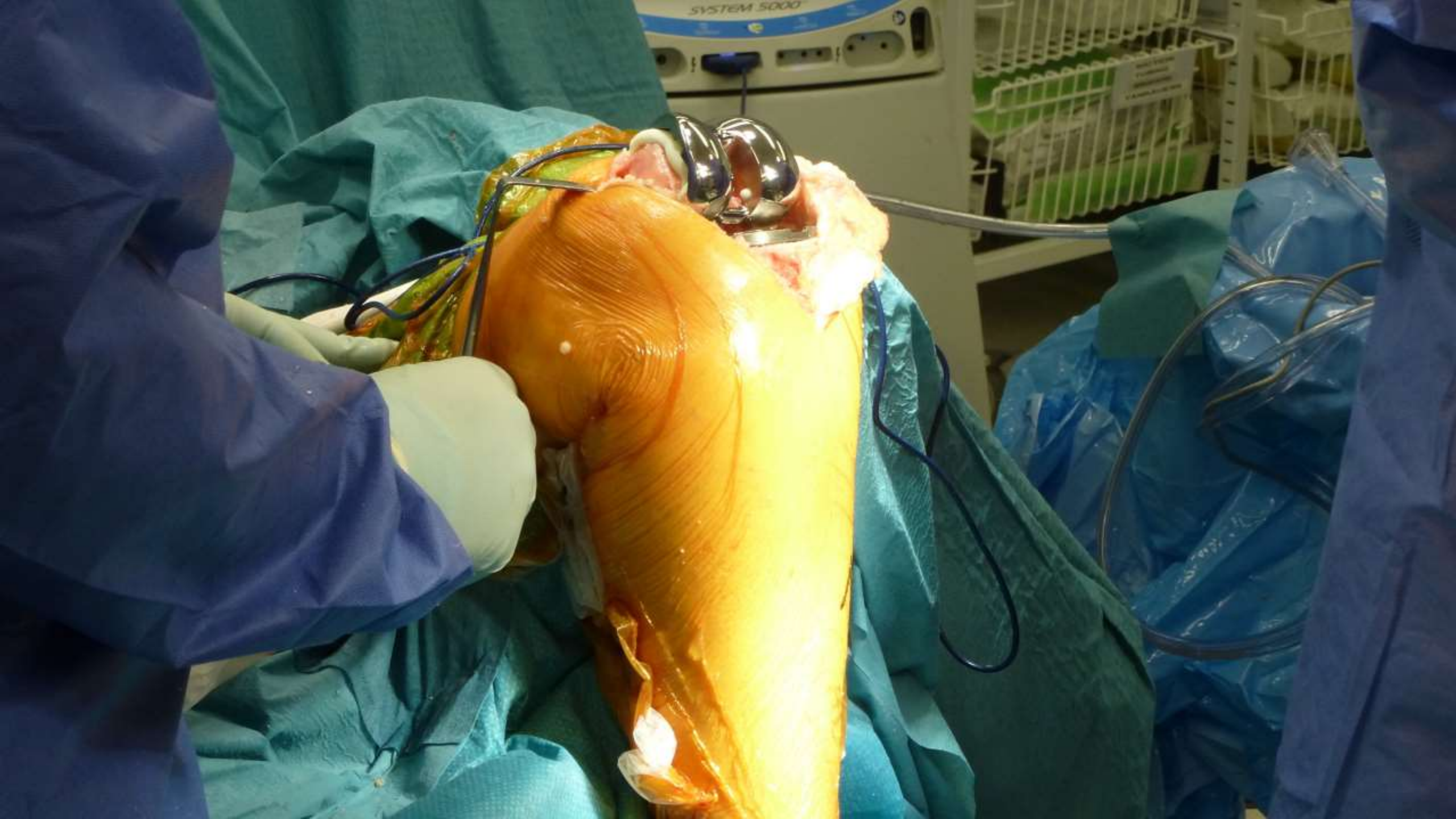
- ▶ Fractured both legs age 20
- ▶ Malalignment
- ▶ TOOK 42 YEARS TO DEVELOP
- ▶ RETIRED 5 YEARS EARLY













- ▶ 1990 – Lasts 10 years
- ▶ 2005 – Lasts 15 years
- ▶ 2023 - Over 60's will last for lifetime

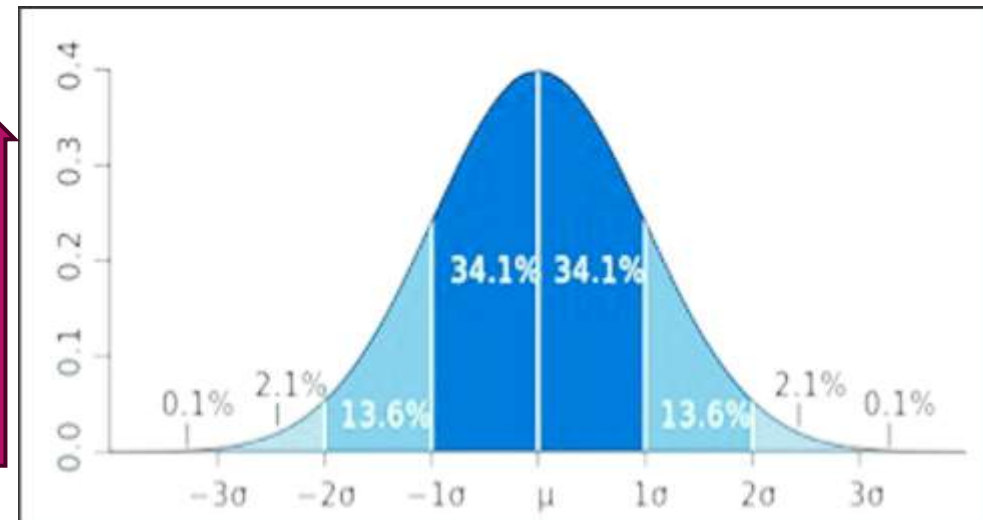
- ▶ Younger do less well
- ▶ Post Traumatic do less well

Opinion and Prognosis

REPORTED RECOVERY

% PATIENTS

- ▶ ACCEPT: If patient seems reasonable, correlates with injury, medical records, imaging and examination.
- ▶ Bell shaped curve of recoveries pushed to the right in medicolegal cases
- ▶ EXPLAIN: $>1SD$
- ▶ QUESTION: $>2SD$

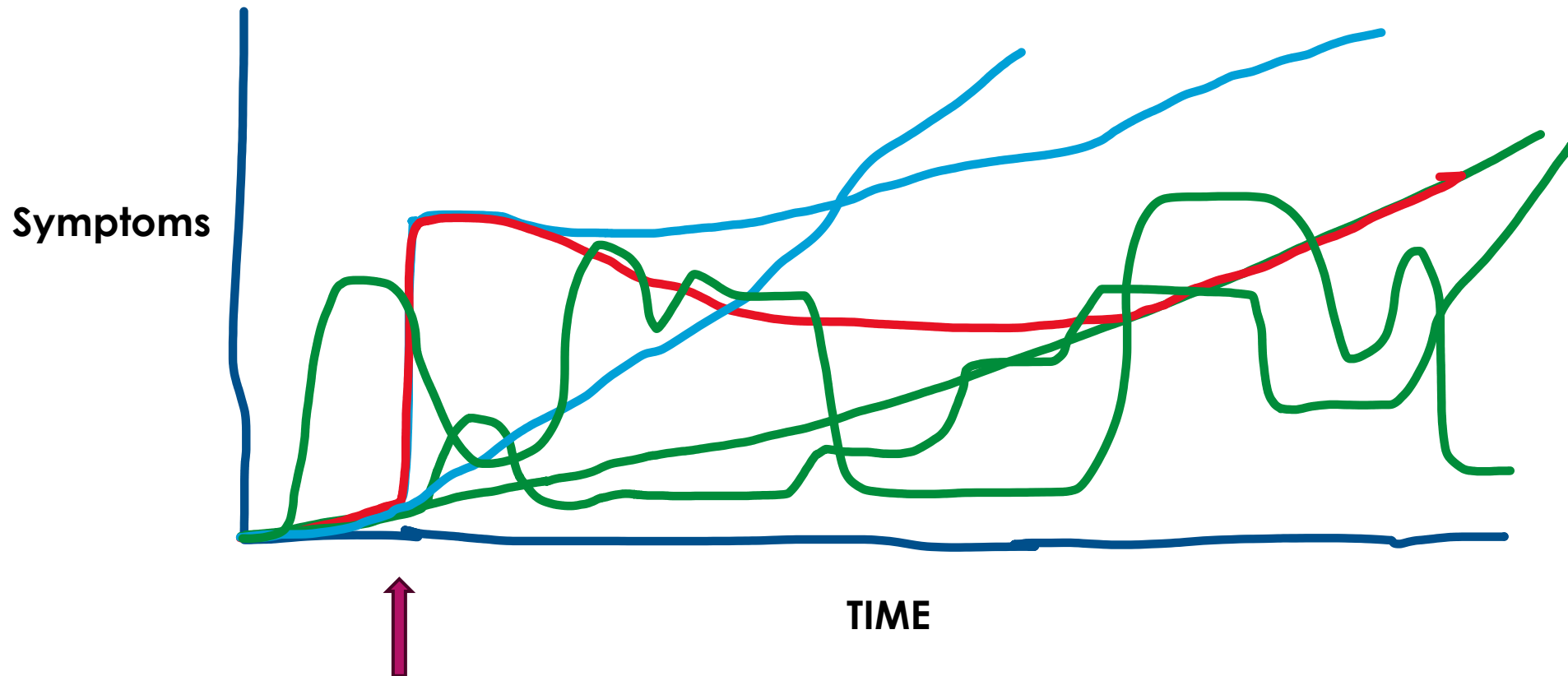


DEGREE OF RECOVERY
(Time or Quality)

Acceleration and Aggravation

- ▶ Generally in context of pre-existent degenerative conditions
 - ▶ Known and Unknown pre accident
 - ▶ Unknown difficult to explain to patient
- ▶ ACCELERATION:
 - ▶ Rate of change /time
 - ▶ Gets worse quicker than it would have but for the accident
 - ▶ Remains worse longterm.
- ▶ AGGRAVATION
 - ▶ To make a situation or condition worse
 - ▶ Generally finite and recedes to baseline/natural history

Acceleration and Aggravation v Natural History



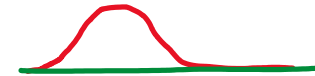
Quantifying Acceleration

- ▶ Mechanism of Injury
 - ▶ Severity of Injury (History v Records v Imaging)
 - ▶ Pre Existent Condition (History v Records)
 - ▶ Examination (Compare with Opposite side)
 - ▶ Progress since accident – Establish a trend – serial xrays/review
-
- ▶ Subjective based on Experience
 - ▶ No evidence base to rely on

Quantifying Aggravation

- ▶ When will it settle to natural history

- ▶ A) Already has – easy but unusual



- ▶ B) Finite point in future



- ▶ Trajectory of recovery to date (History and Records)

- ▶ Mechanism of Injury severity compared with normal day to day use

- ▶ Eg Trip vs 20' fall

- ▶ Difficulty is when condition was likely to progress naturally so never recedes to same level as pre-injury





THANK YOU