When Can I Play Again? Return To Play Following Joint Injuries.

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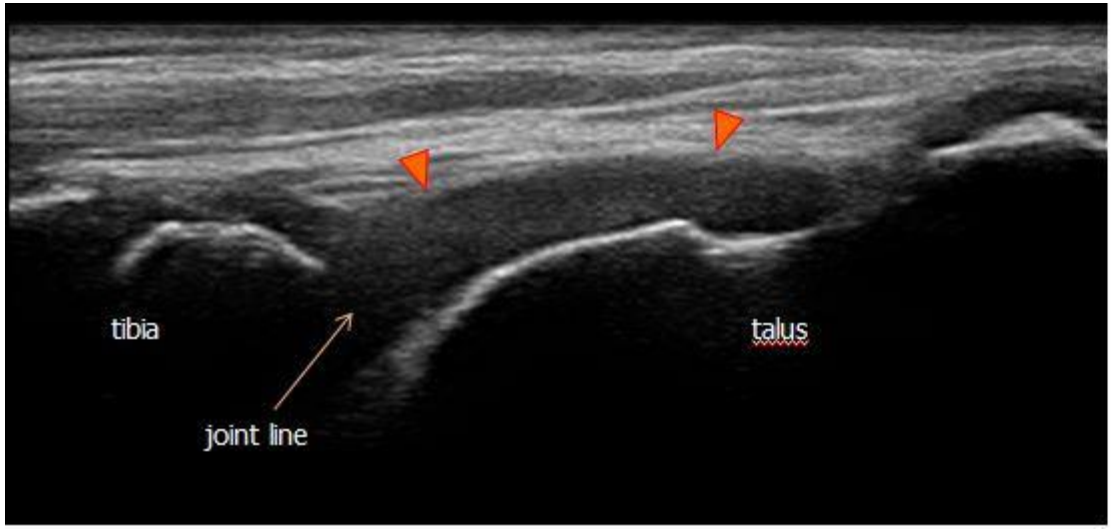
Conflicts of Interest

No Disclosures



Case Study

- 9yo male presents on Thursday with pain and swelling on the outside of his right ankle
- Was playing basketball with friends at school on the Wednesday lunchtime and thinks he “rolled his ankle”. Kept playing but was really sore by the time school was finished
- Treated at home Wednesday evening - extra dose of factor, PRICE
- Unwilling to take much weight on right leg, not moving foot much, bruising and warmth around ankle
- Medical History: Severe Haemophilia A – 2nd daily prophylaxis. No inhibitors

”School tryouts are next week – will I be OK to play?”

Determining Return To Sport

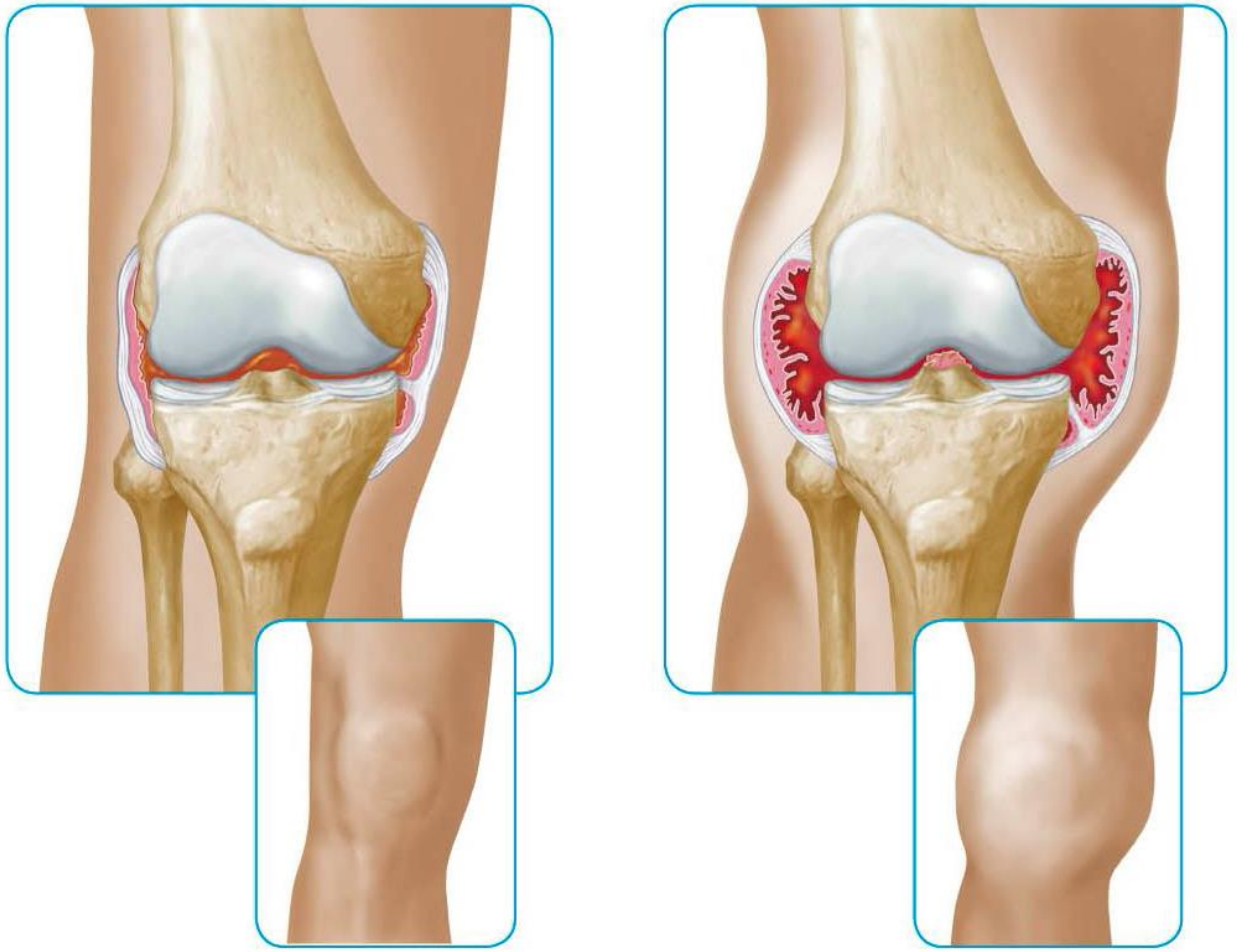
- Goal is to facilitate a timely and safe return to sport

- Determinants are complex and multifactorial
  - Injury Specific
  - Haemophilia Specific
  - Sport Specific

- Require an accurate diagnosis based upon
  - comprehensive subjective history
  - clinical assessment
  - +/- imaging (X-ray, MRI and U/S)

Injury Specifics

- Impact of blood in a joint space:
  - Blood has an inflammatory effect on the joint lining (synovium) that can ultimately lead to chronic thickening with increased blood vessels in the synovium
  - Iron and other inflammatory substances present in a joint following a bleed have detrimental effects on joint cartilage
  - Weight-bearing while there is blood in a joint can worsen cartilage damage
  - Changes to the underlying bone will eventually occur where there is damage to the joint cartilage



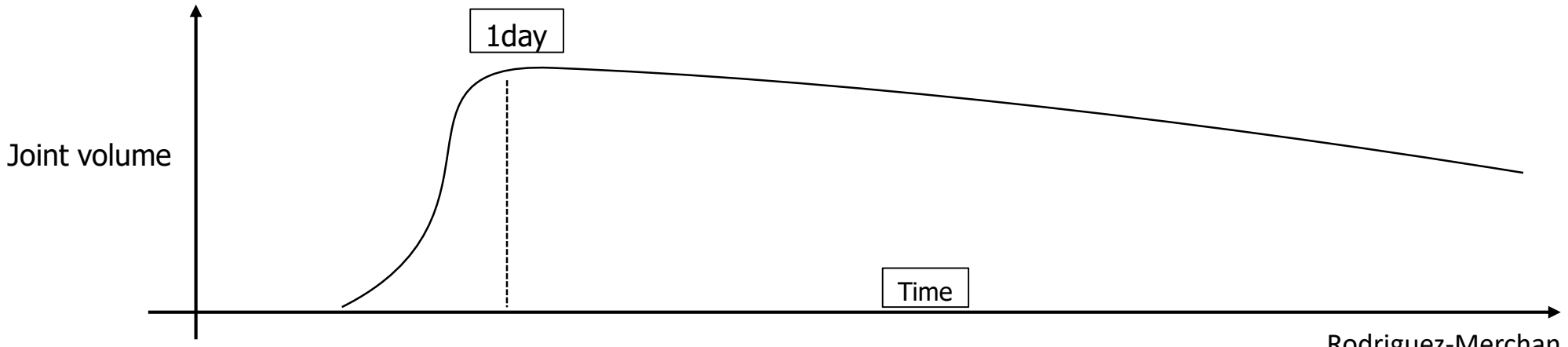
Mulder et al 2004; Valentino et al 2007; van Vulpen et al 2016; Hanley et al 2017

How long does blood stay in a joint?

- Pain/symptoms improving is a poor indication that there is no longer blood in the joint:
  - Imaging (ultrasound) studies have shown that persistent effusions last several days, and time to complete resolution is longer than time to loss of pain

IMAGING IS THE ONLY WAY TO CONFIRM RESOLUTION OF BLOOD IN THE JOINT SPACE

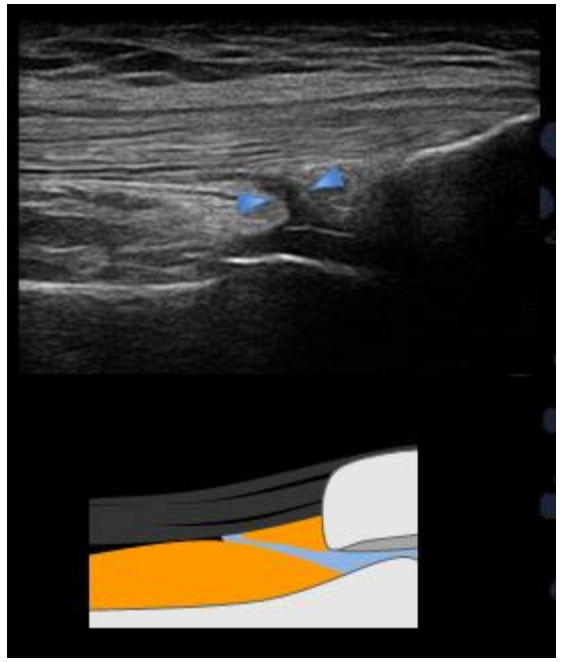
Non-weight-bearing is recommended for 3-4 days to allow time for blood to resorb



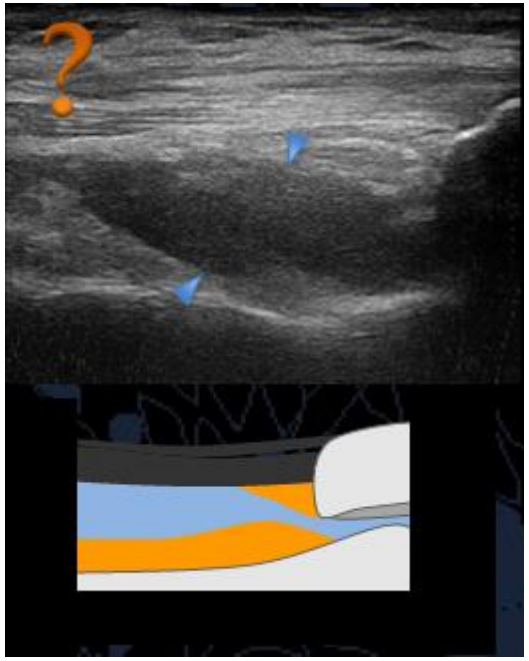
Rodriguez-Merchan et al 2011

Ultrasound of blood in joints

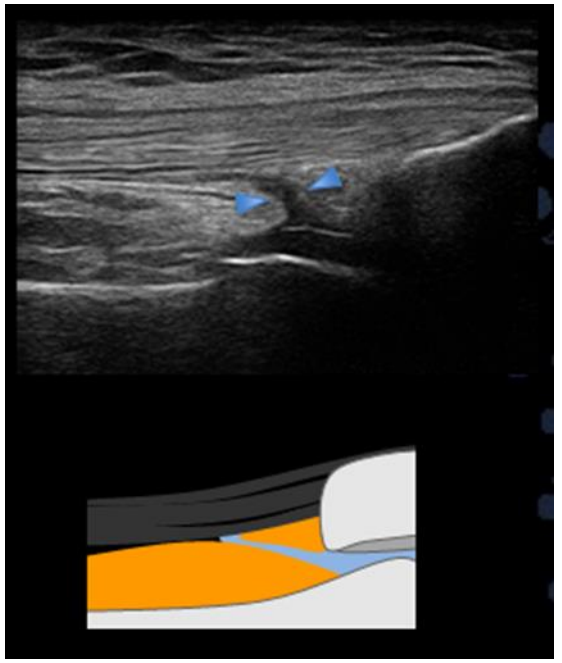
Baseline



Acute bleed



Baseline

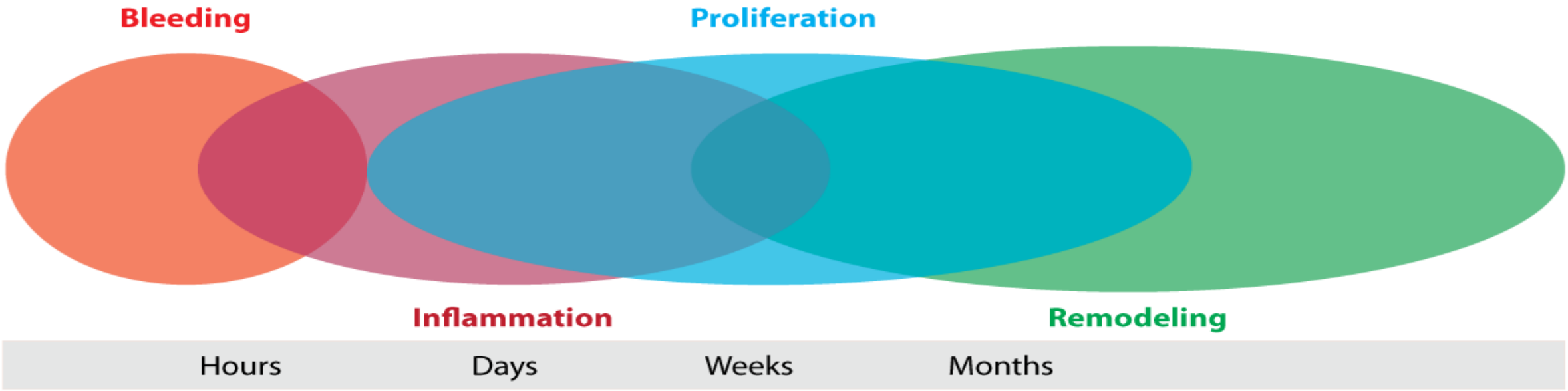


??? Time

What else happens with a joint bleed?

- Inflammatory mediators decrease proprioception (position sense) → Increased risk of injuring joint again as less aware of changes in joint position
- Pain inhibits muscle activation and strength → Joint less stable, and muscles less able to activate rapidly or strongly to prevent injury
- Swelling & pain limit movement → Stiffening of joint and loss of flexibility
- Mechanism of injury can also damage joint structures (e.g.: ligaments, tendons, joint capsule) → Increased complexity of rehabilitation process

What if the ankle bleed includes a ligament sprain?



- The repair/remodelling phase for a damaged ligament commences around day 21 after injury
- No clear consensus as to when a ligament is adequately repaired to provide a stable ankle joint

Richie et al 2015; Image credit to Andre Panagos MD

When is an ankle injury “better”?

OR: what is the risk of re-injury?

- Once an ankle injury occurs:
  - up to 80% of athletes will suffer recurrent sprain
  - up to 72% develop recurrent symptoms or chronic instability
  - recurrence most strongly correlates with premature return to sport

So does getting the timing right for return to play/sport decrease the risk of recurrent ankle symptoms?

Clanton et al 2012; Richie & Izadi 2015

Time To Return To Play

- No one timeframe fits all!

- Return to play depends on:
  - Recovery of range of motion
  - Recovery of balance and proprioception (joint position sense)
  - Return of agility
  - Regaining strength
  - Adequate endurance
  - Re-acquisition of sports-specific skills

- Does bracing or strapping help?
  - An individual decision between the patient and the HTC team!
  - Often thought to have a role to play in the prevention of recurrence

So can our 9 year old boy make try-outs?

Probably not ☹

- But maybe (just maybe) if…?
  - This is his first bleed in his right ankle
  - He is otherwise healthy with no other injuries
  - There is quick resolution of blood in his ankle joint shown on ultrasound
  - He has no pain or swelling with any activity
  - He shows full recovery of range of motion, strength, balance, proprioception, agility, endurance and basketball skills
  - He plays in a well-controlled school sport environment with appropriate footwear, court, referee, rules etc,
  - The HTC team agrees!

Take Home Messages

- Prevention is key.
- Early assessment / management allows for optimization of healing
- Extra Factor ≠ Treatment
- Physiotherapy forms a key component of rehabilitation – contact your HTC for advice
- Further research is required into Return to sport and re-injury timeframes in the bleeding disorder population.
- Recovery is slower than expected. Be patient.

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