

PRPP Injection

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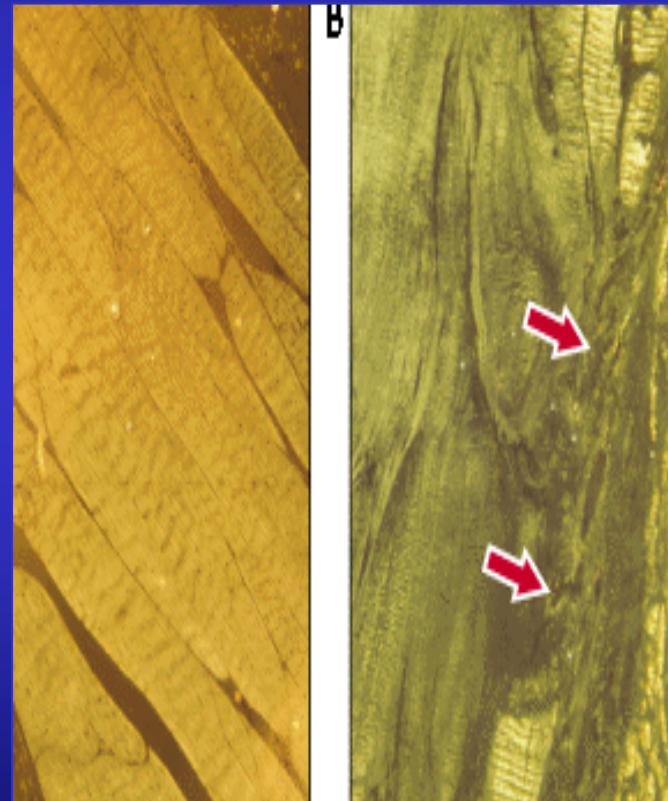
PRP injection - Outline

- Basic science
- PRPP preparations
- Literature
- Patient information



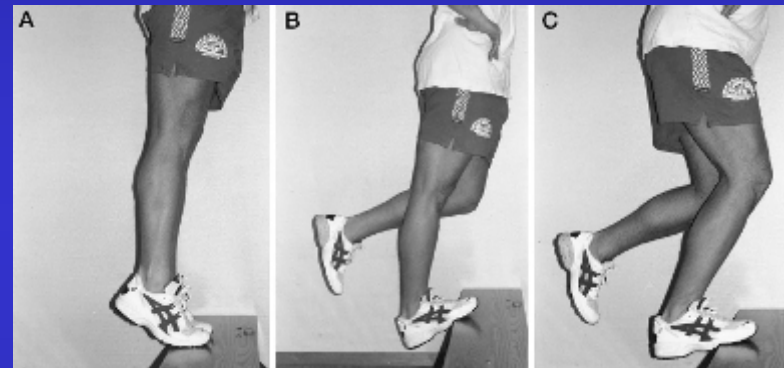
Tendonosis

- Breakdown of collagen architecture
- ‘Angiofibroplastic hyperplasia’
 - Fibre disruption
 - Increased cellularity
 - Neovascularity
- Prolonged healing time
- Poor blood supply



Historical Perspective

- Standard conservative management
- Rest, ice
- Medications – NSAID's
- Physio + rehabilitation
- Cortisone injection
- Surgery
- Tendinopathy – not always helpful
- Joint – Arthroplasty
- Is there another way we can treat?



Historical Perspective

- The role of biological therapy
- Edwards 2003. JHS
- Tennis Elbow
- 22/28 improved with whole blood injection
- The Goldberg effect!
- Could we do this better?



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What is PRPP?



- A volume of plasma that has a platelet count above baseline
- First used 1987 in open heart surgery, now widely used in many fields of medicine (orthopaedics, cosmetic surgery, wound care, ophthalmology)
- Removes the parts of the blood we don't need (RBC's/Excess plasma), whilst concentrating the part we want (platelet)



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How Does PRPP work?

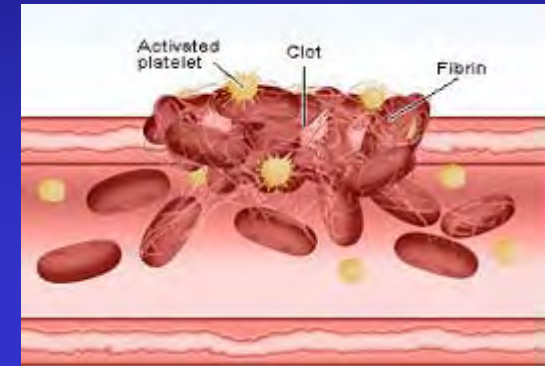
- Tissue healing regulated by complex processes using growth factors and cytokines
- Platelets are a rich source of bioactive molecules
- 1100 different proteins
- The exogenous introduction of growth factors may enhance tissue healing in compromised situations



How Does PRPP work?

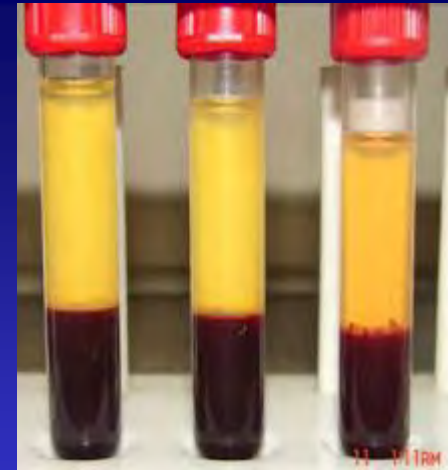
- Alpha Granules
 - TGF-B - cell replication
 - VEGF – angiogenesis
 - PDGF – tissue re-modelling
 - EGF – cell migration & replication

- Acute inflammation leading to collagen deposition and enhanced tissue repair



PRP Preparation

- Multiple methods proposed
- Simple spin preparations
- Commercial kits
- Maximise platelet counts!



PRP - Preparation



mett
physician

Evidence for PRPP

- Many studies
- Not all high quality
- Conflicting evidence
- Enough evidence to support its use



Evidence for PRP - Tendon

Positive Effect of an Autologous Platelet Concentrate in Lateral Epicondylitis in a Double-Blind Randomized Controlled Trial

Platelet-Rich Plasma Versus Corticosteroid Injection With a 1-Year Follow-up

Joost C. Peerbooms,* MD, Jordi Sluimer,[†] MD, Daniël J. Bruijn,* PhD, and Taco Gosens,^{†‡} PhD
From the *Department of Orthopaedic Surgery, HAGA Hospital, The Hague, Netherlands, and
[†]Department of Orthopaedic Surgery, St Elisabeth Hospital, Tilburg, Netherlands



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Tennis Elbow

- VAS scores at 12 months
- (>25% improvement)
- CSI – 49% (24/49) improved Vs PRP 73% (37/51) improved
- CSI better initially, PRP improved longer term



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Tennis Elbow

- Mishra AmJSM '06
- Chronic tennis elbow considering surgery
- 15 PRP, 5 LA injection
- 60% v 16% improvement @ 8/52
- 80% PRP @ 6/12



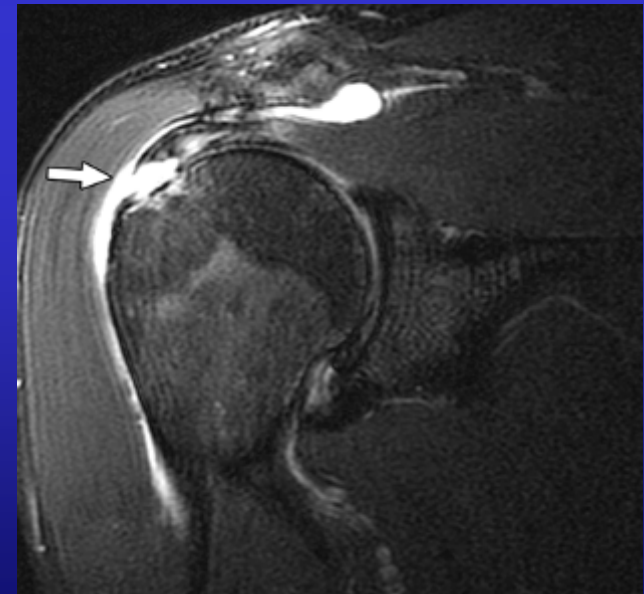
Plantar Fasciitis

- Martinelli, Orthop 2013
- 9/14 Excellent @ 12 months (64%)
- Barrett, Podiatry today '04
- 6/9 good at 2 months.



Rotator Cuff

- Gamradt. Techniques in Orthopaedics '07
- 14 patients rotator cuff tears, failed non-operative therapy
- 12/14 improved at 8/52
- 6/12 had MRI improvement of the tear



PRPP and Joint

- Knee OA
- Why does it work?
- Most likely down regulation/modulation of inflammation
- Positive effects on cartilage in vitro
- Does produce chondrocyte proliferation
- No evidence for slowing disease progression



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Evidence for PRP Joint

- Knee joint Osteoarthritis
- Patel 2013. AmJSM
- 156 knees
- 52 PRP, 50 X2 PRP, 46 NS
- Significant improvement in first 2 groups from 2-3/52 to 6/12
- No difference between 1 & 2 PRP injections
- NS deteriorated



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100, 200, 300, 400, 500, 600, 700, 800, 900, 1000

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PRP - Downsides

- Generally a safe procedure
- Post injection pain
- Almost everyone. Lasts from days to weeks
- Not universally successful
- Approx. 70% for tendonopathy



My Experience – At 2 months

‘The plural of anecdote is not data’

- Tennis elbow – 36/52. 75%
- Golfers elbow – 7/10. 70%
- Gluteal tendinopathy – 20/33. 60%
- Plantar Fascitis – 9/14. 64%
- Achilles – 11/18. 61%
- Patella tendon – 5/8. 62%



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Take Home Message

- Biologic treatments offer another alternative to our standard management options
- PRP has a good theoretical basis for treating chronic tendinopathy
- Whilst the literature is not always robust, there is enough evidence to support its use
- Post injection pain is the main side-effect



Thank You



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