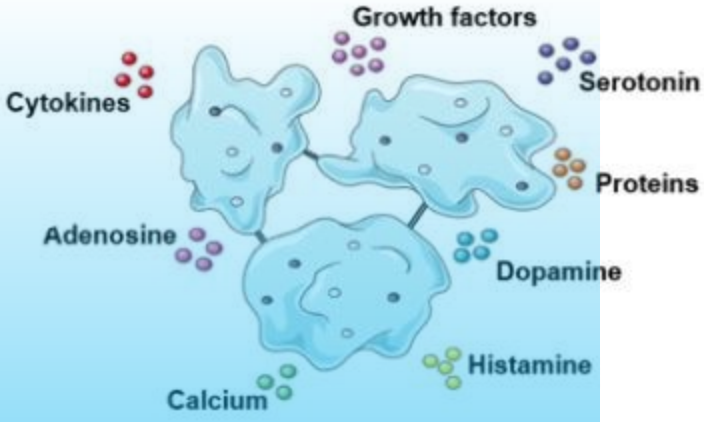

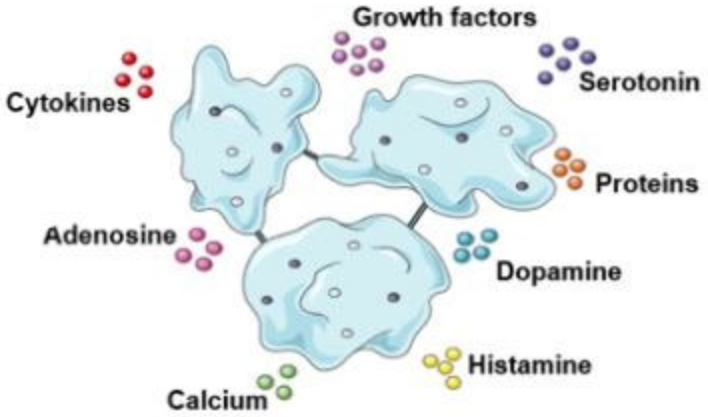

Platelet Lysate

Potential Clinical Advantages and How to Prepare

Financial Disclosures:

None

Who I am

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Medical Director

Center for Pain Management

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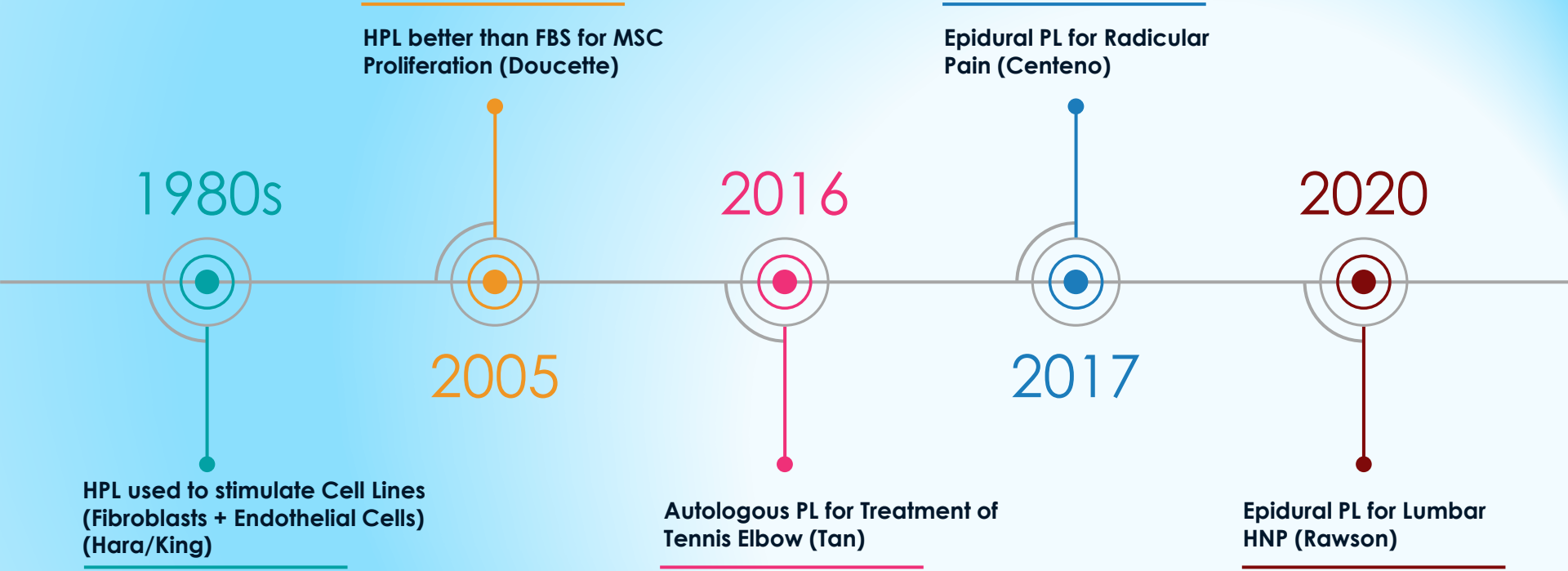
Learning Objectives:

1. History + Why?
2. Releasate vs. Lysate?
3. How to Make It
4. Clinical Applications

1 Platelet Lysate

History

Platelet Lysate: Historical Timeline

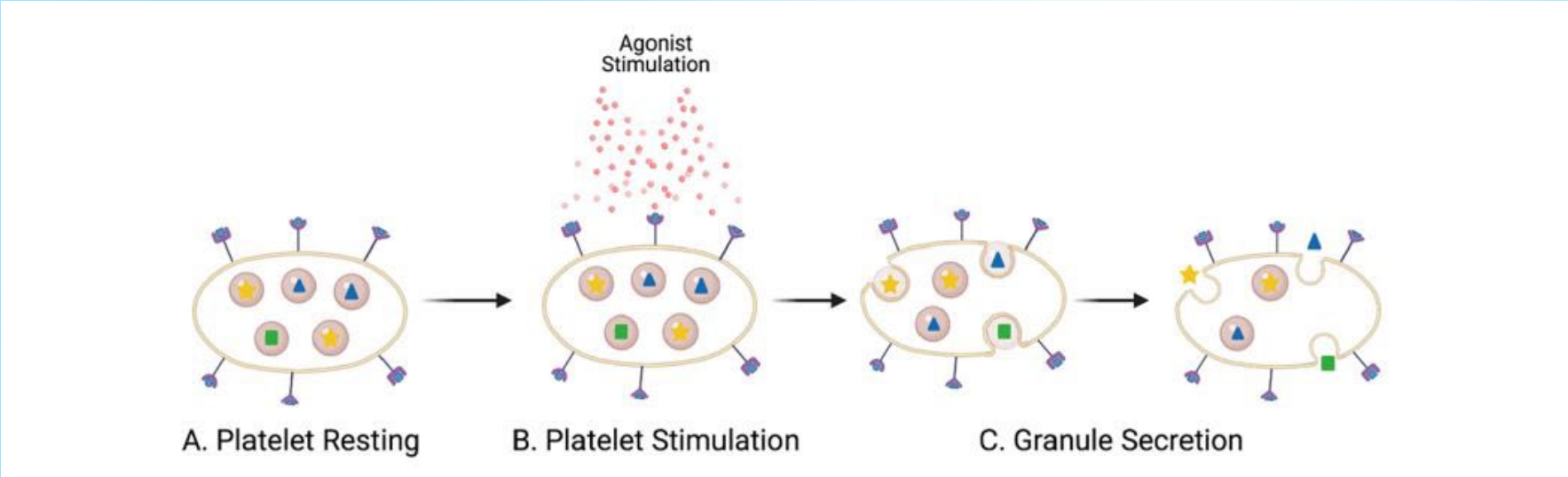


2

Platelet Lysate in Orthobiologics:

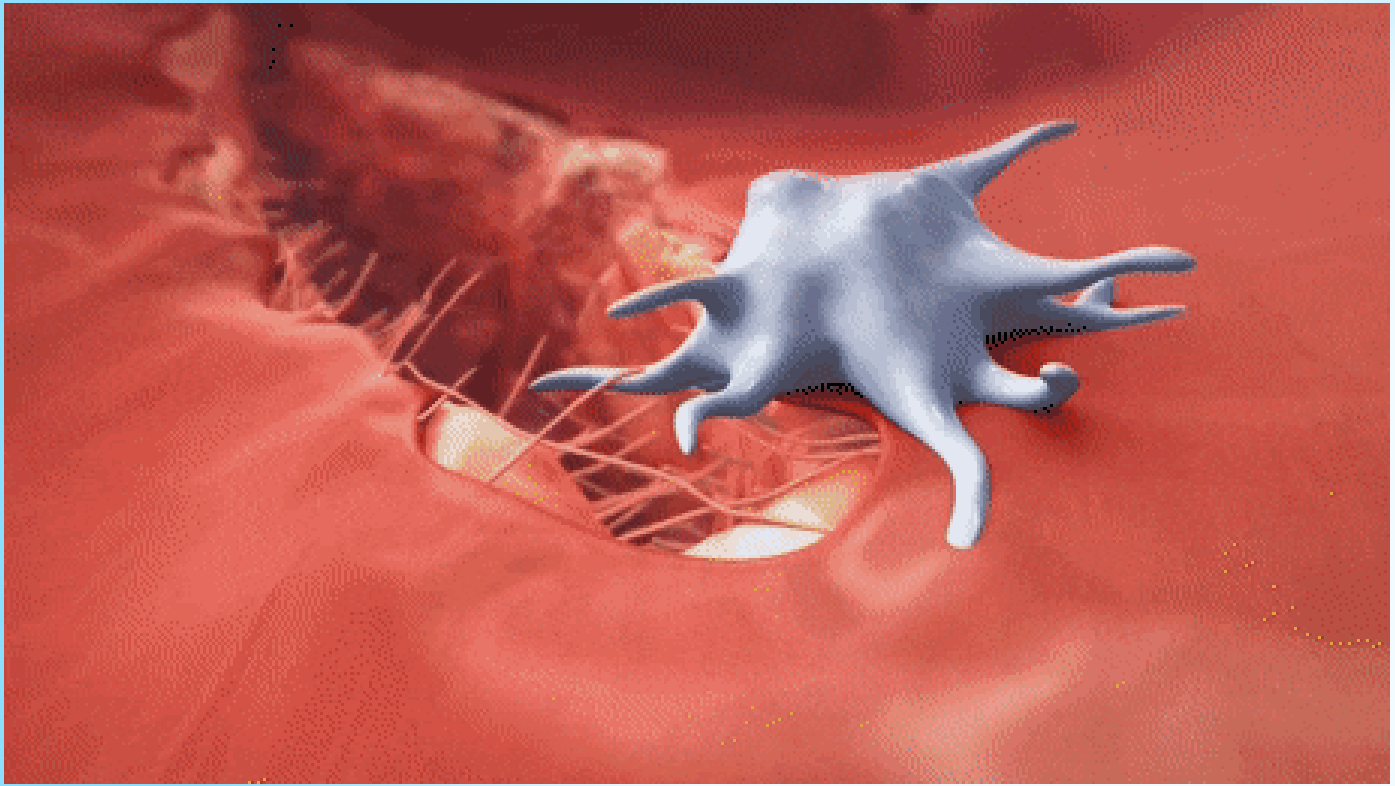
When and Why?

Platelet Therapy in MSK medicine: PRP



Gruba, et al ACS Meas Sci Au 2022

Platelet Degranulation

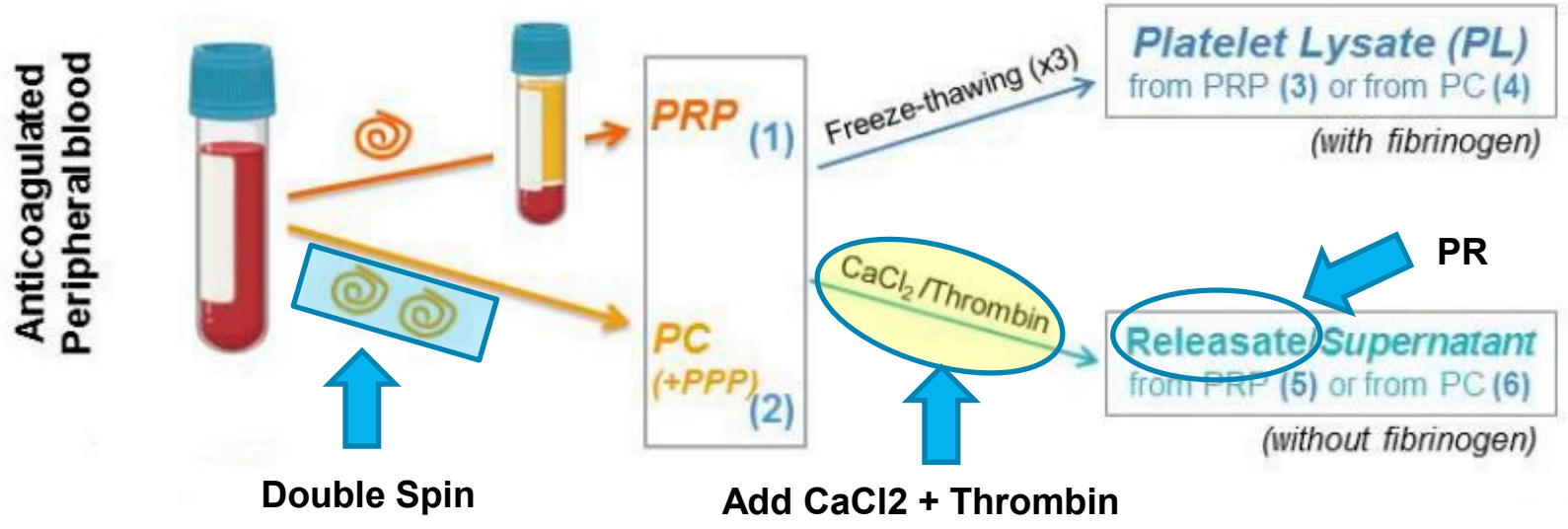


3

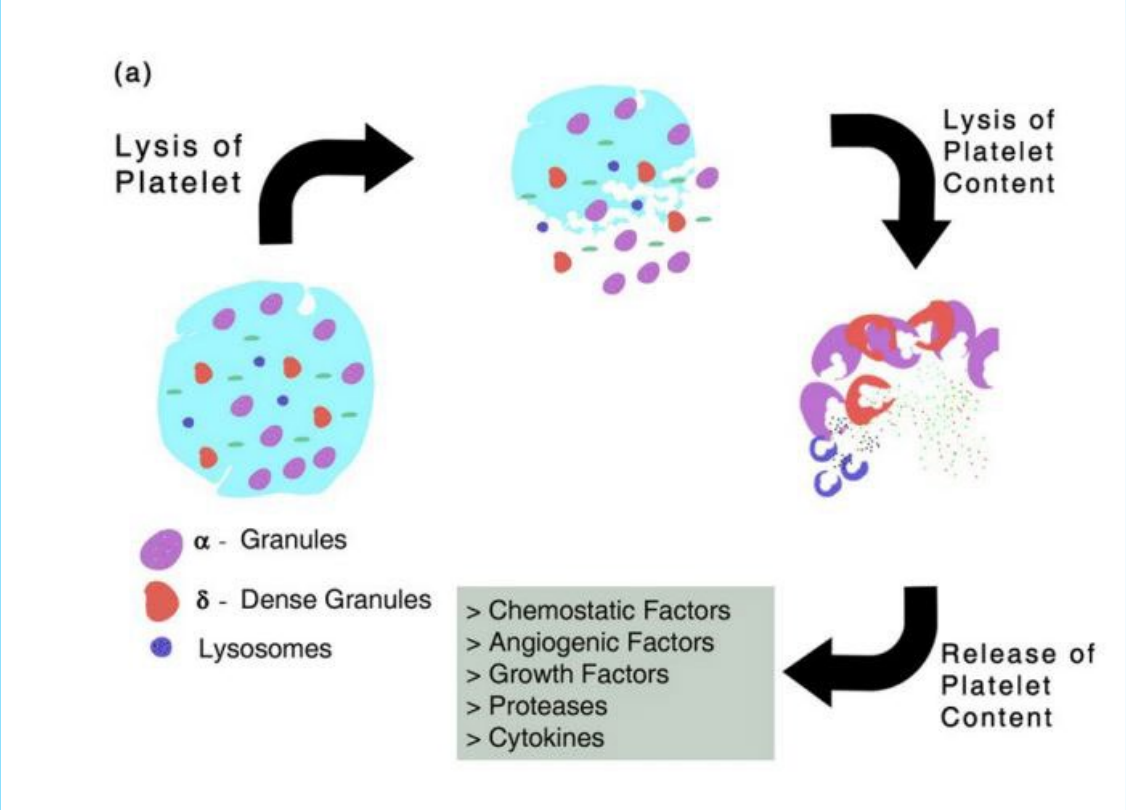
Lysate vs Releasate What's the Difference?

Definition + Common Preparation Techniques

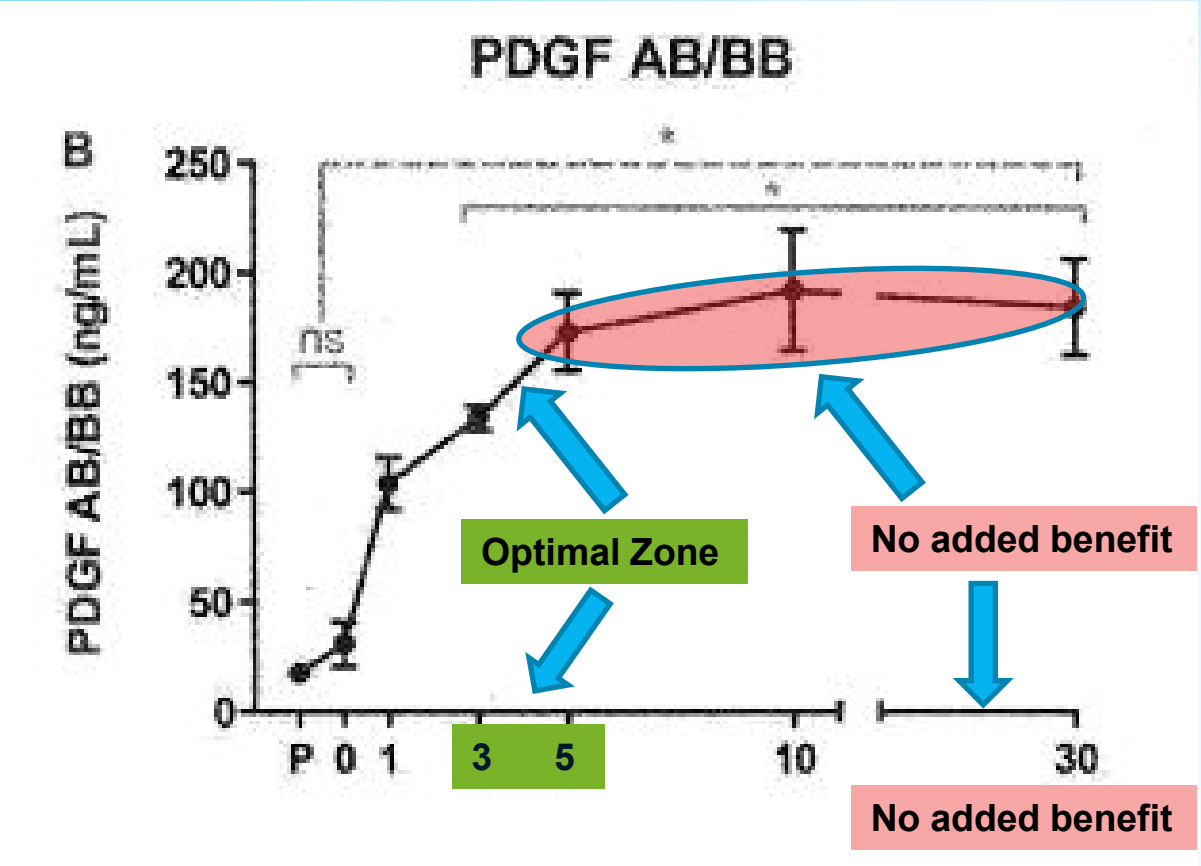
Platelet Releasate



Platelet Lysate: Mechanical Rupture

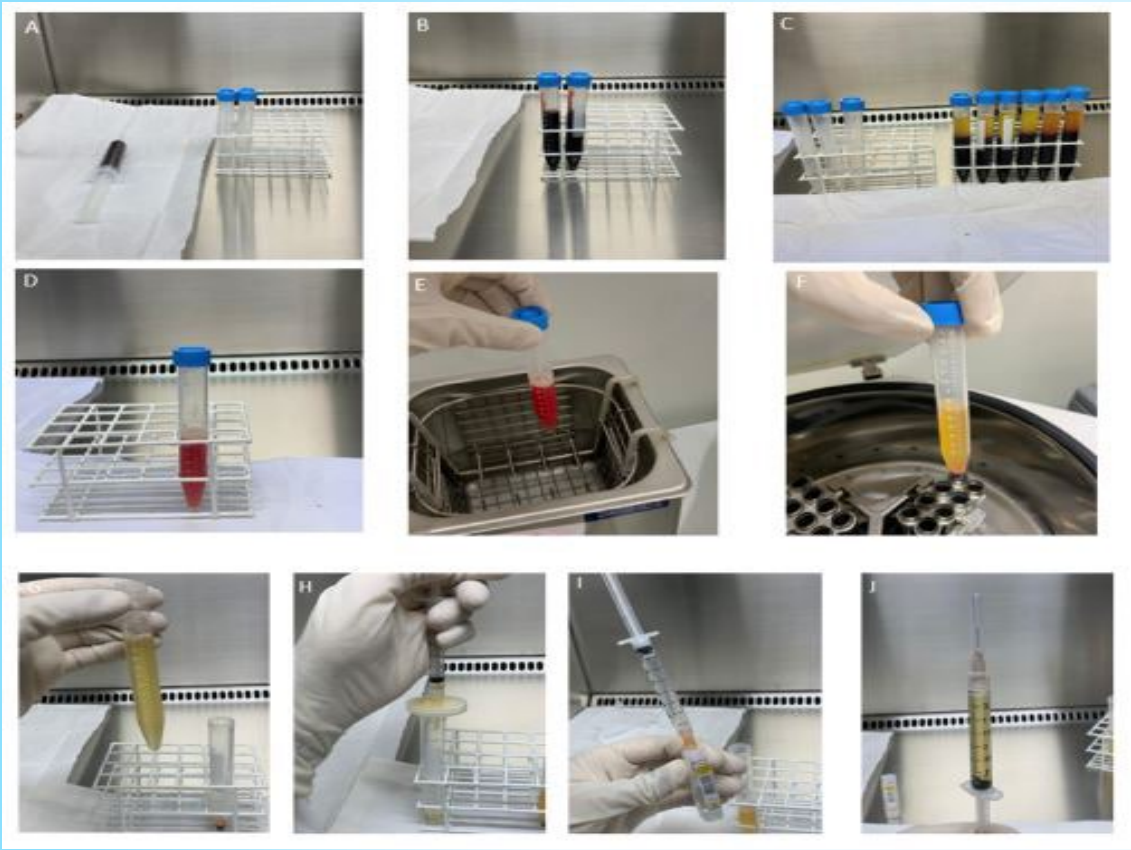


Freeze/Thaw – How Many Cycles?



Strandberg, et al.
Transfusion 2017

Ultrasonication @ > 20 KHz x 30 min



Bernardi et al
Cytotherapy
2013

Da Fonseca et al
J Clin Orth
Traum 2021

Platelet Lysate – How We Make It

Platelet Lysate – Freeze/Thaw x 3

-80ºC ←→ 52ºC

x3 Cycles

Platelet Lysate – Filtration

4

Platelet Lysate Clinical Use

Published Data + Clinical Experiences

Platelet Lysate GF Levels

Figure I. I

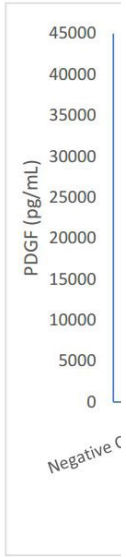


Figure II. Indivi
Method

CONCLUSIONS

The objective of this study was to assess several 'Test' platelet rich plasma (PRP) releasate preparation methods and determine the PDGF concentration of each releasate sample.

The mean platelet recovery was 56% and the mean platelet concentration factor was 5.1 times baseline. These findings met the acceptance criteria outlined by Sponsor for a 4 – 6x concentration factor above baseline.

The Osmotic Lysis (OL) method and the Autologous Thrombin (AT) method yielded the lowest PDGF concentrations of the Test methods, at 15,297 pg/mL and 16,674 pg/mL, respectively. The Freeze-Thaw (FT) and AT + $CaCl_2$ methods were comparable and resulted in higher PDGF concentrations at 20,499 pg/mL and 19,692 pg/mL, respectively (Table II, Figures I – II).

The study data demonstrates that the OL and AT PRP releasate preparation methods were the least effective methods for platelet activation and PDGF release. Both FT and AT + $CaCl_2$ releasate preparation Test methods resulted in substantial PDGF release, which were 53% and 51%, respectively, of that measured for the positive control method.

Lumbar FSU Approach PL @ TF and IL Sites

- Facets
- Muscles
- Ligaments
- ***Nerve roots receive PL
- SI Joint + Ligs
- Bilateral Approach for most!
- Glutes/Hip (sometimes)

Platelet Releasate – Disc (Akeda)

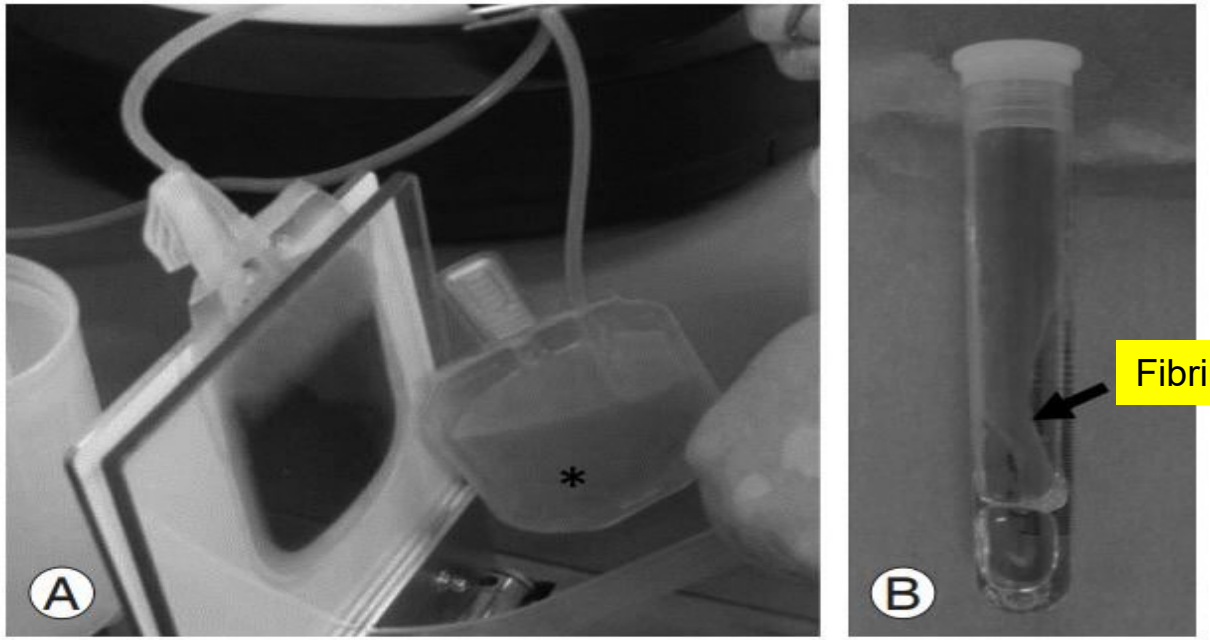
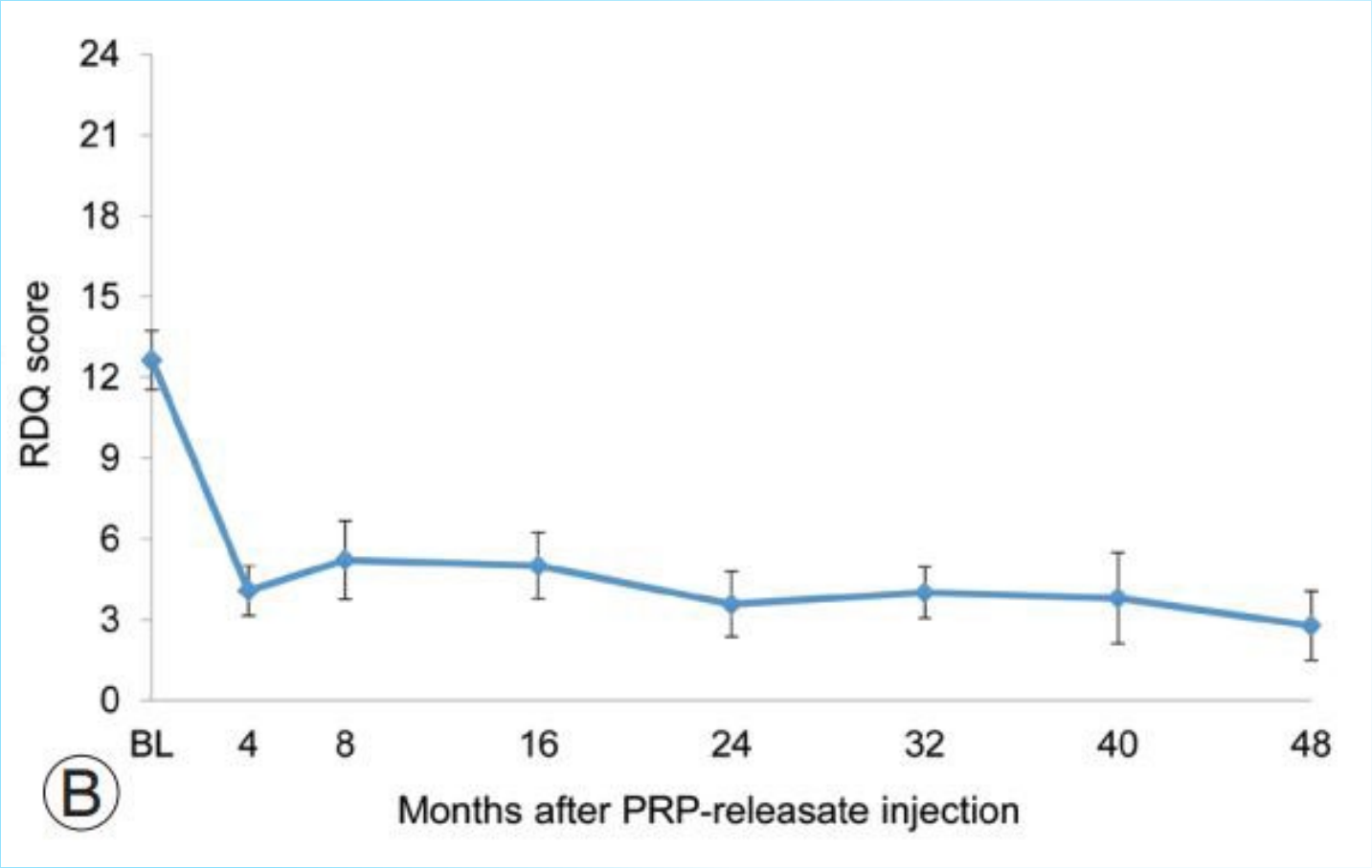


Fig. 1. Preparation of platelet-rich plasma (PRP) releasate. **(A)** Following the two-stage centrifugation of whole blood, PRP (asterisk) was transferred to a storage bag using a sterile blood collection bag system. **(B)** A mixture of autologous serum and 2% $CaCl_2$ was added to PRP for clot (gel) formation (arrow).

Akeda , Asian Sp J 2017

Platelet Releasate – Disc (Akeda)



Platelet Lysate – Elbow (Tan)

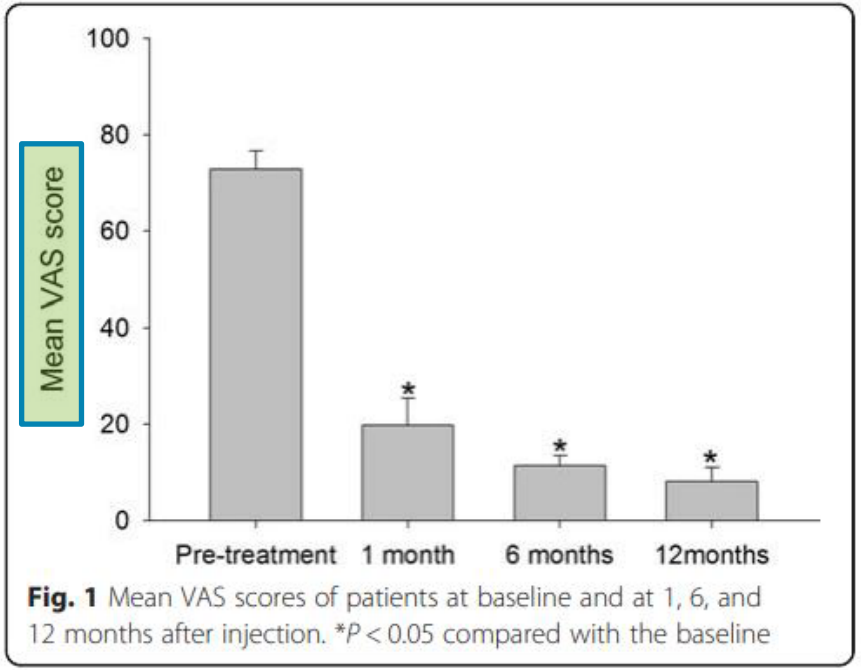


Fig. 1 Mean VAS scores of patients at baseline and at 1, 6, and 12 months after injection. *$P < 0.05$ compared with the baseline

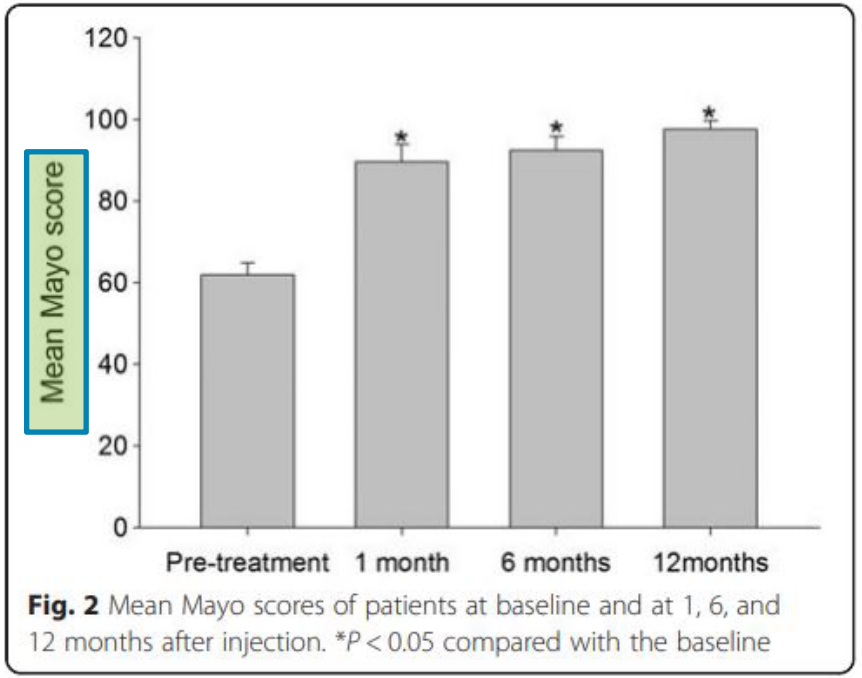


Fig. 2 Mean Mayo scores of patients at baseline and at 1, 6, and 12 months after injection. *$P < 0.05$ compared with the baseline

Tan J Orth Sur Res 2016

Platelet Lysate – Radiculopathy (Centeno)

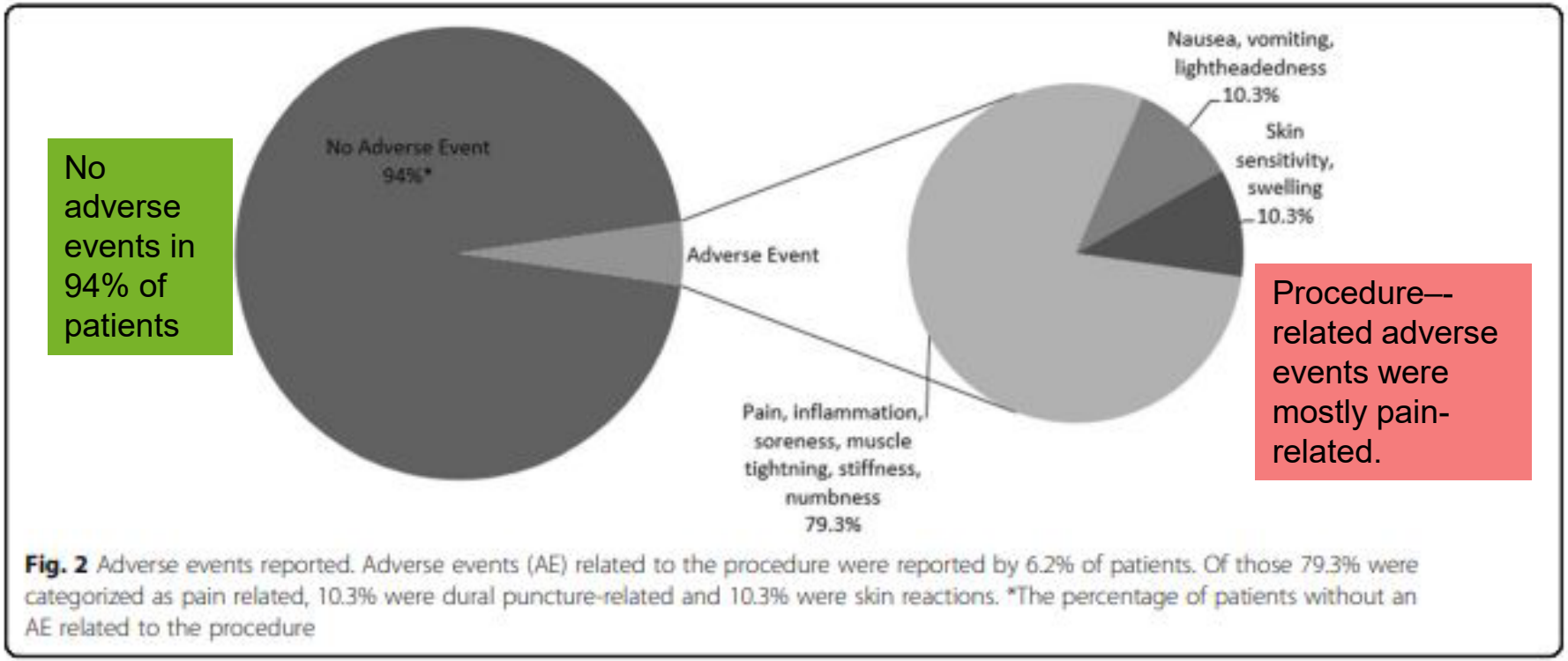


Fig. 2 Adverse events reported. Adverse events (AE) related to the procedure were reported by 6.2% of patients. Of those 79.3% were categorized as pain related, 10.3% were dural puncture-related and 10.3% were skin reactions. *The percentage of patients without an AE related to the procedure

No adverse events in 94% of patients

Procedure–-related adverse events were mostly pain-related.

Centeno, J Exp Orth 2017

Platelet Lysate – Radiculopathy (Centeno)

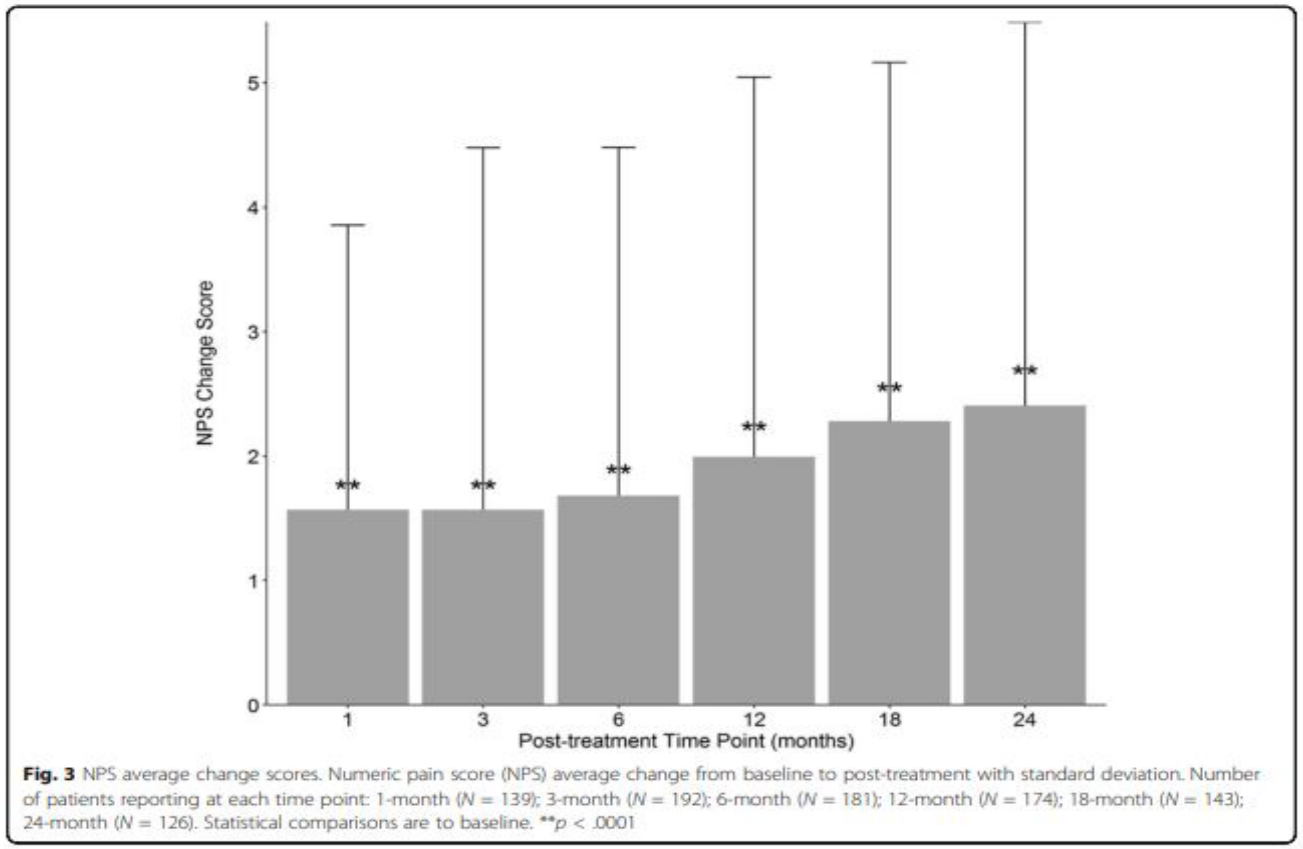


Fig. 3 NPS average change scores. Numeric pain score (NPS) average change from baseline to post-treatment with standard deviation. Number of patients reporting at each time point: 1-month (N = 139); 3-month (N = 192); 6-month (N = 181); 12-month (N = 174); 18-month (N = 143); 24-month (N = 126). Statistical comparisons are to baseline. $^{**}p < .0001$

Improvements in pain scores compared to baseline

Centeno, J Exp Orth 2017

Platelet Lysate – Radiculopathy (Centeno)

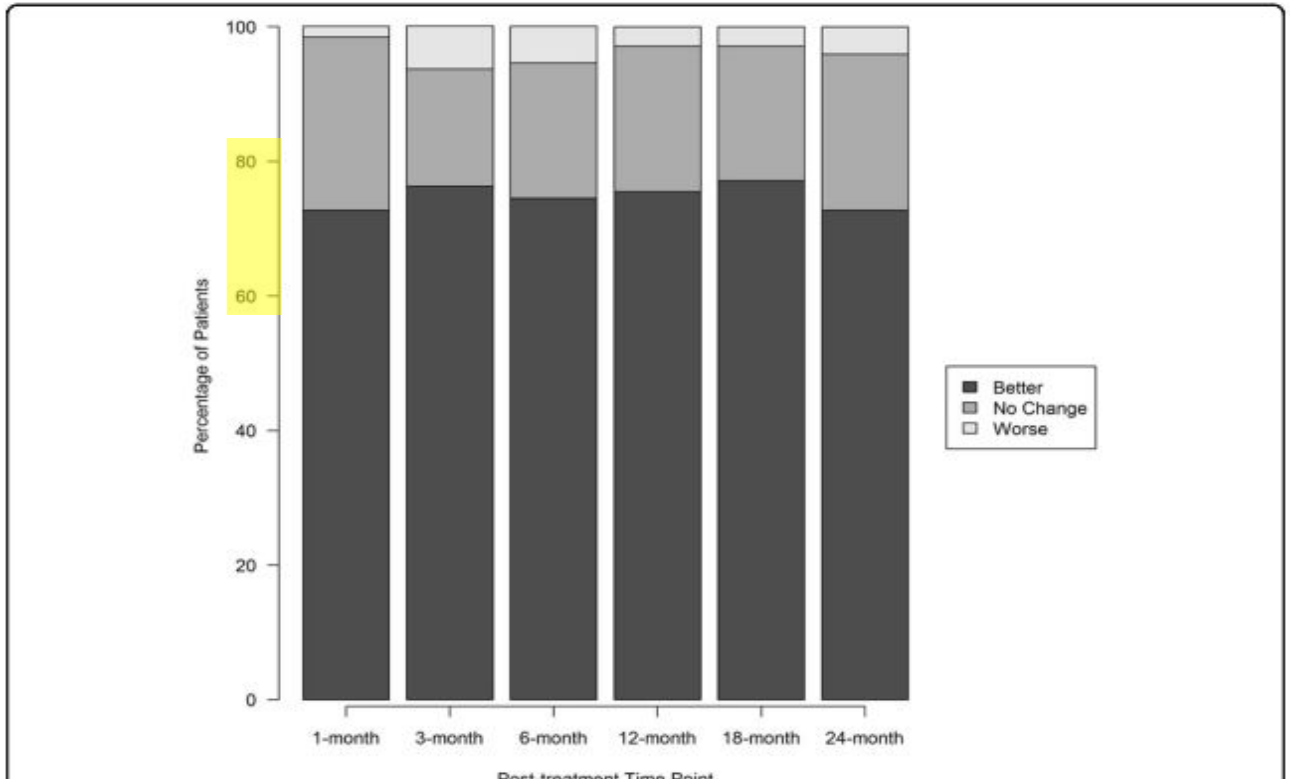


Fig. 4 Modified SANE ratings tier plot. The percent of total patients at each post-treatment time point reporting feeling better (modified SANE > 0), no change (modified SANE = 0), or worse (modified SANE < 0). Patients reporting at each time point: 1- month (*N* = 128); 3-month (*N* = 211), 6-month (*N* = 216), 12-month (*N* = 203), 18-month (*N* = 153), 24-month (*N* = 129)

70+ % of patients reported feeling better at all time points

Centeno, J Exp Orth 2017

Platelet Lysate – Radiculopathy (Centeno)

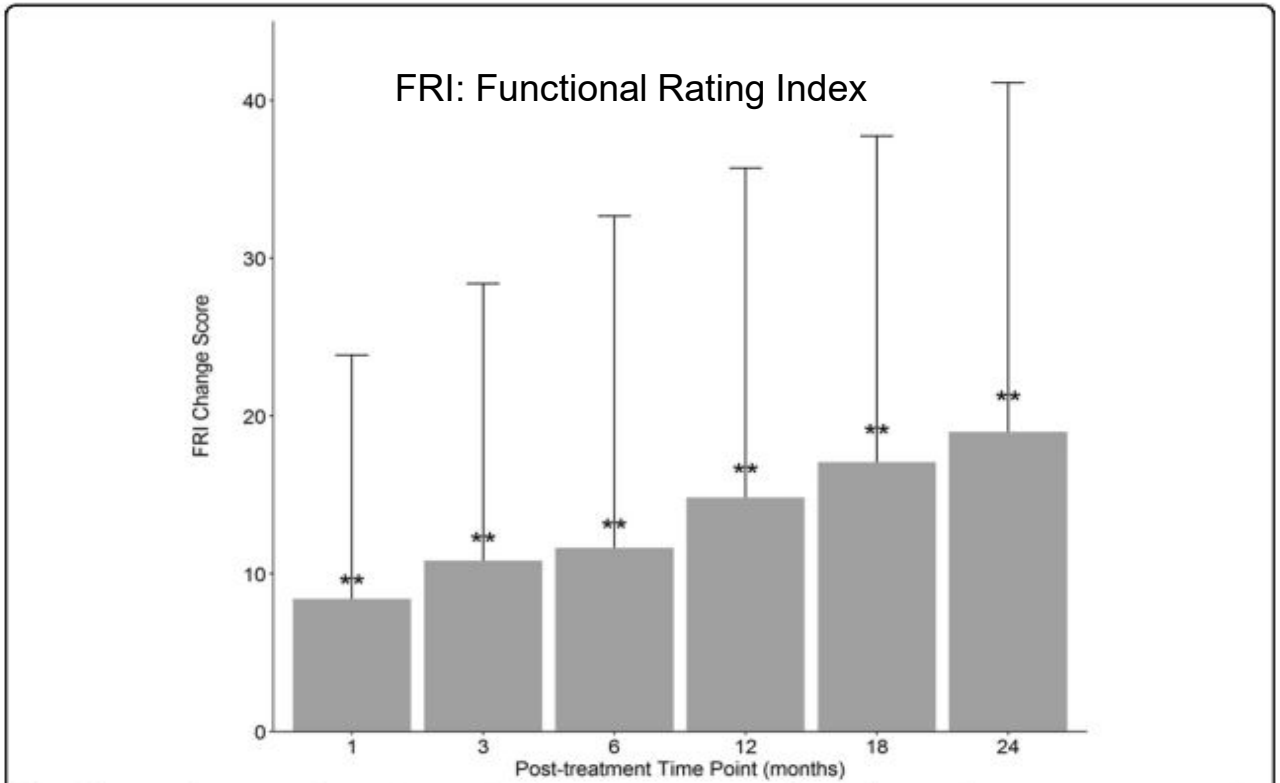
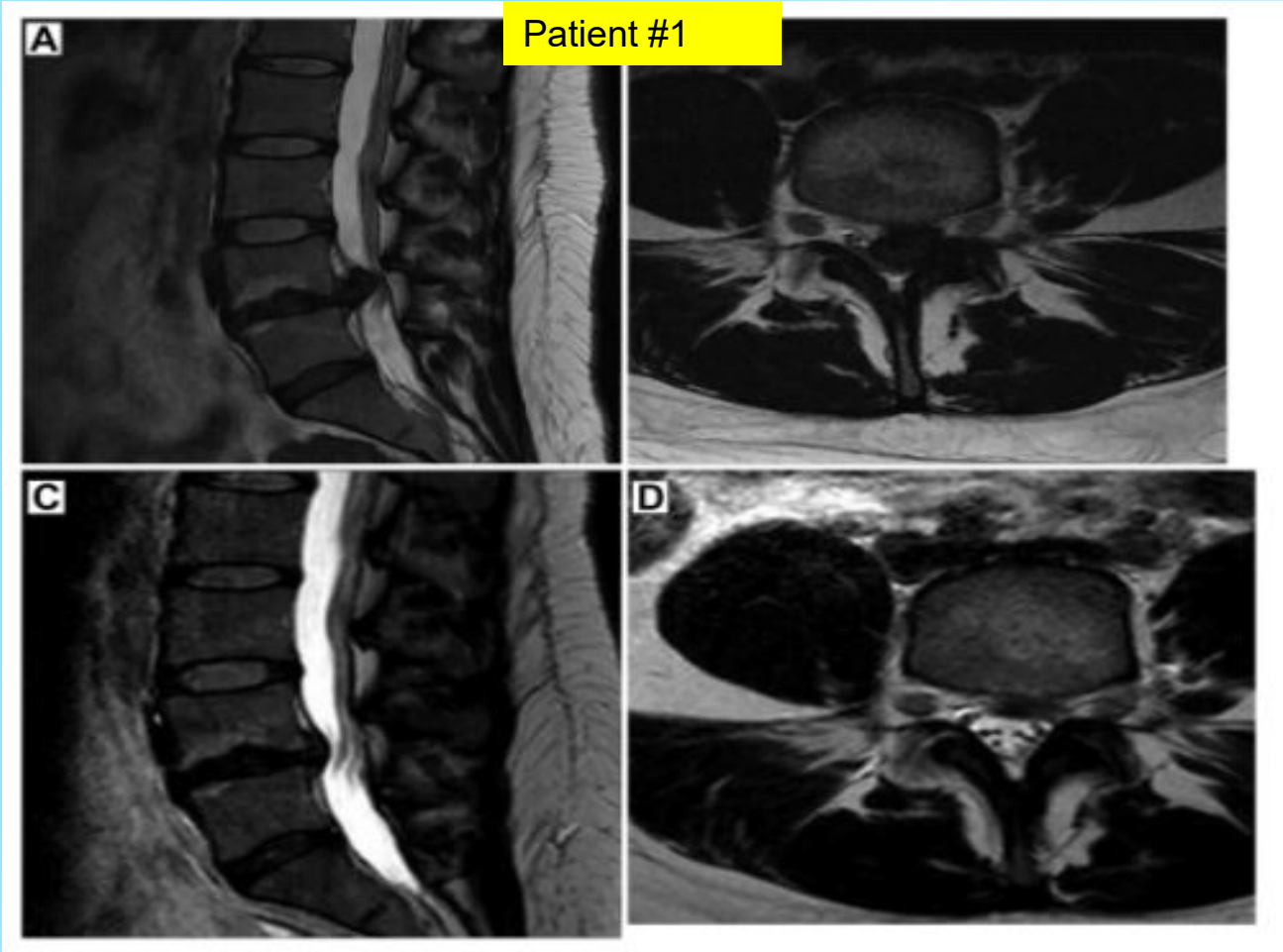


Fig. 5 FRI average change scores. Functional rating index (FRI) averaged change in scores from baseline at each post-treatment time point with standard deviation. The number of patients reporting at each time point: 1-month ($N = 111$); 3-month ($N = 144$), 6-month ($N = 146$), 12-month ($N = 136$), 18-month ($N = 114$), 24-month ($N = 100$). $^{**}p < .0001$

MCID for FRI
(9 Points)
Met or exceeded at all time points beyond 1 month

Centeno, J Exp Orth 2017

Platelet Lysate – HNP (Rawson)

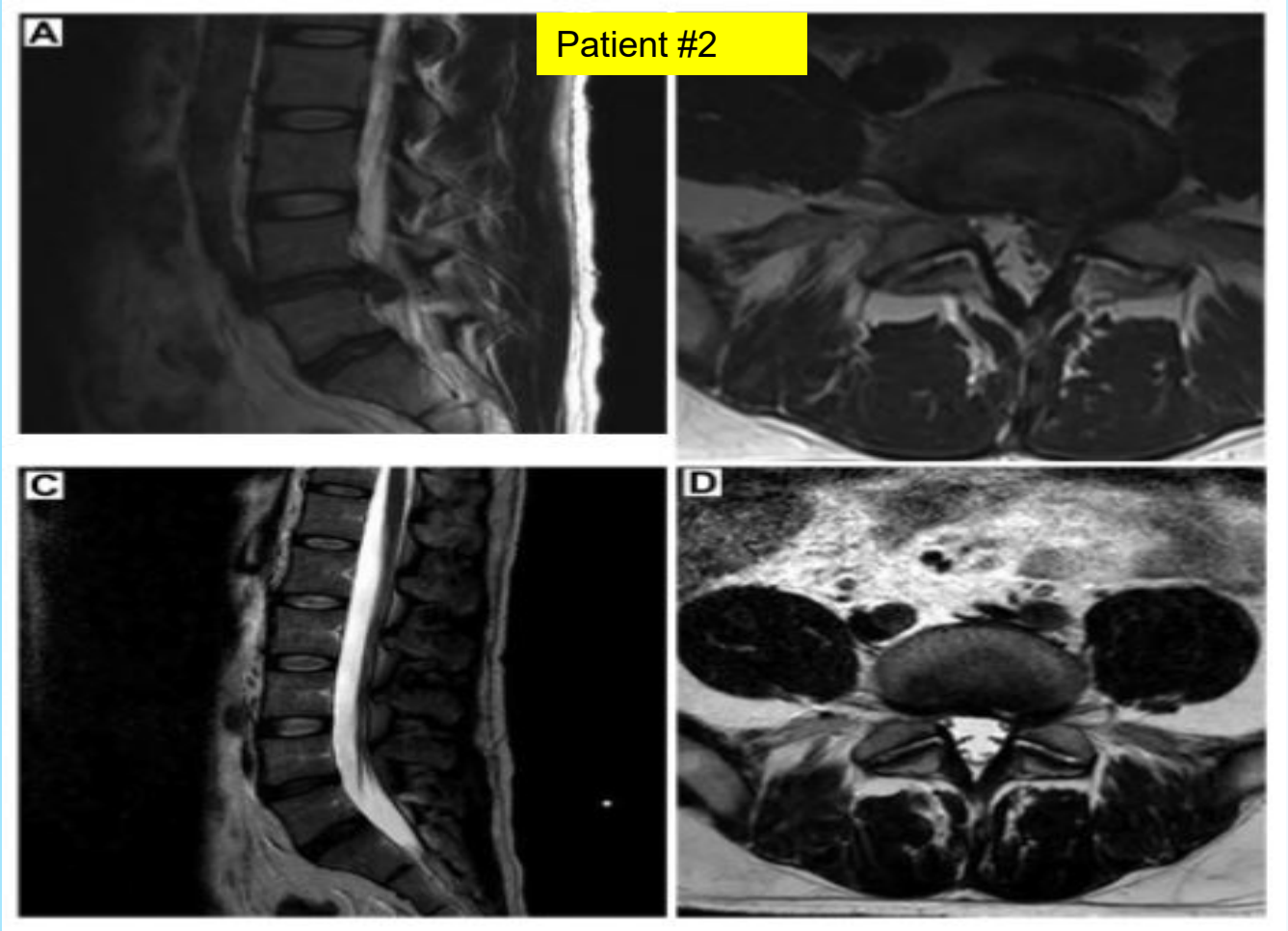


Baseline

8 weeks;
(4 wks s/p
PLE #2)

**Rawson, J
Am Osteo
Assoc 2020**

Platelet Lysate – HNP (Rawson)



Baseline

20 weeks;
(12 wks s/p
PLE #2)

**Rawson, J
Am Osteo
Assoc 2020**


ONFH (Surgeon)
Bilat RCT and KL 2 OA
These freaks need Orthobiologics
Future Split Tear Peroneus Brevis (Too Young/Unaware)
Back, SI Joint

Thank You!

Email: jknab@portcitypain.com

LinkedIn: @John Knab MD
Text/Cell: (910) 352-2515
www.portcitypain.com

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