New Horizons in Hip Preservation

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THE STEADMAN CLINIC
AND
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U.S. OLYMPIC
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Goals of Innovation

I. Improve healing
II. Reduce the need for more than 1 surgery
III. Understand new types of injuries
IV. Improve patient outcomes and satisfaction with treatment

I. Cartilage Healing

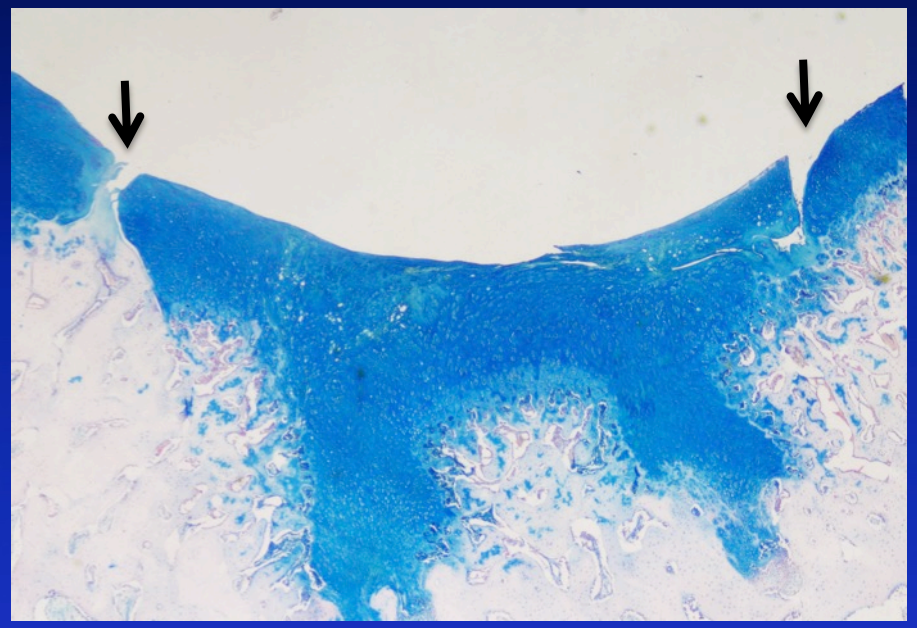
- **Microfracture**
  - **Developed by Dr. Steadman 30 years ago**
  - **Still being used, however:**

  We want to make it better

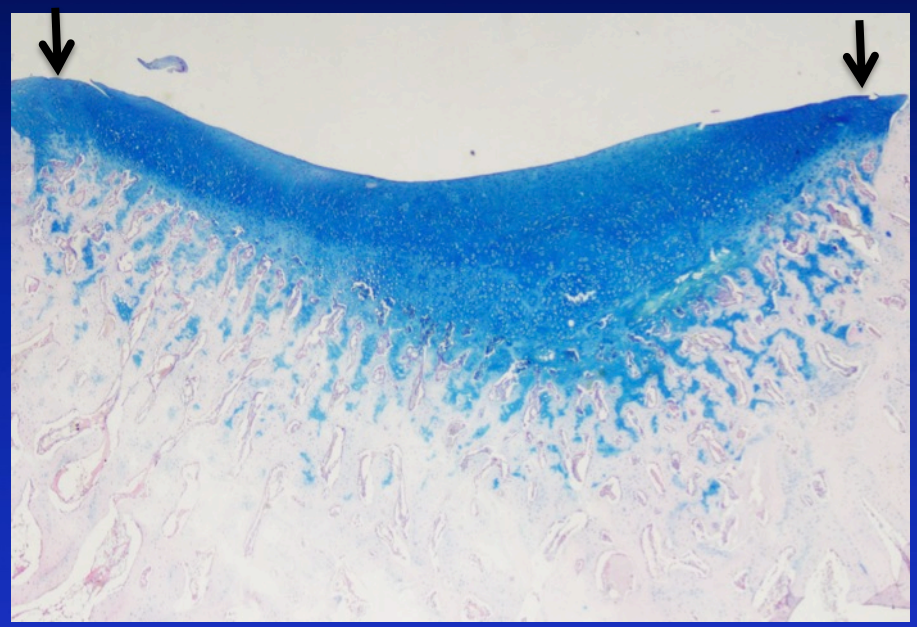
Surgical Approach

Marrow elements released from microfracture holes

Improving Cartilage Repair



Microfracture



Microfracture + Losartan

6 weeks after surgery.

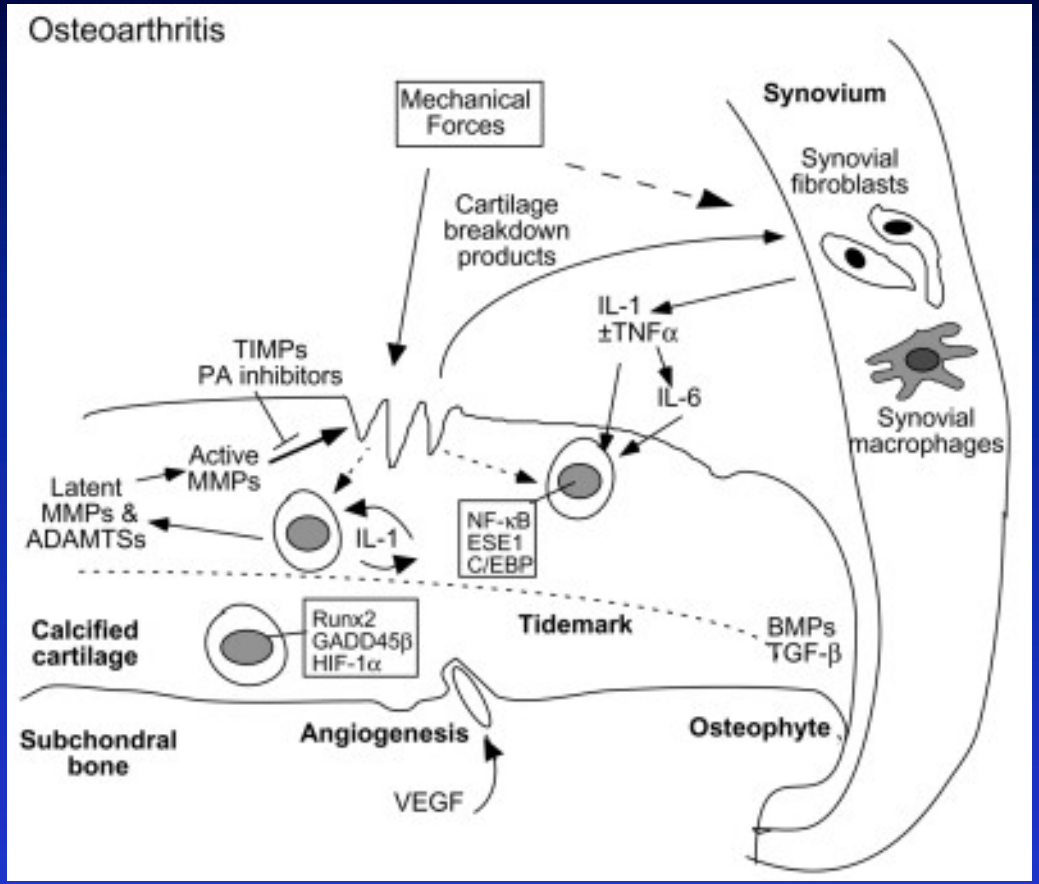
Alcian blue: a stain for chondroitin sulfate.

IMPACT

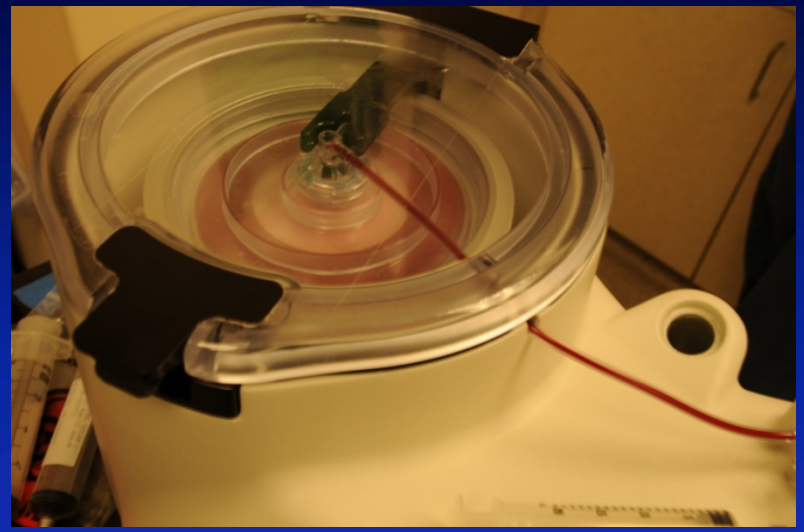
- Better cartilage healing
- Less osteoarthritis
- Less total hip replacements
- Reduced healthcare expenditures

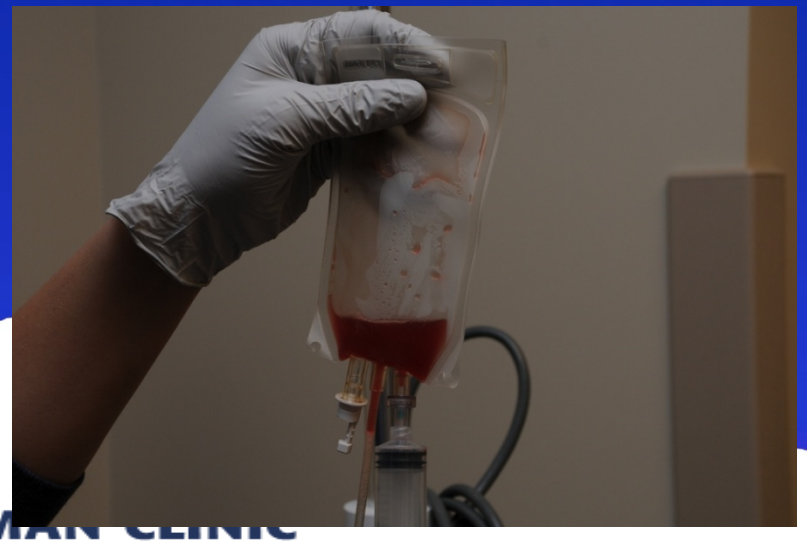
Biologically healing

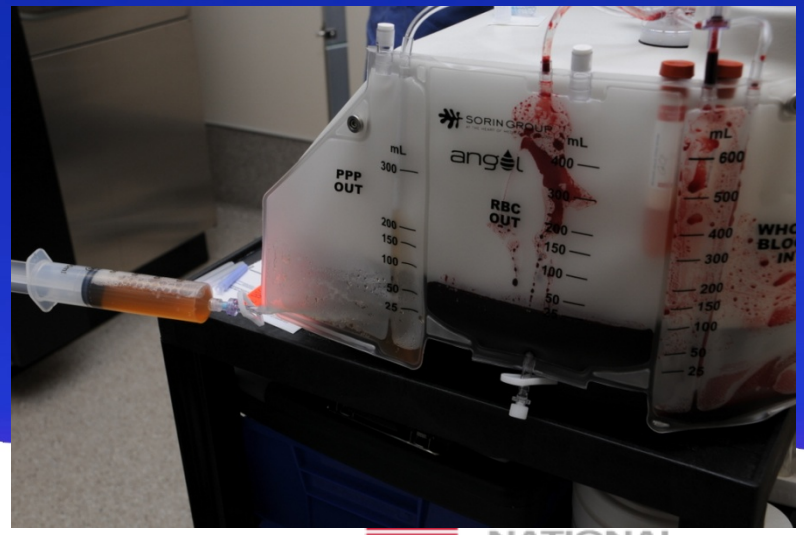
- PRP
- Stem cells
- Nanoparticles
- Manipulation of joint environment



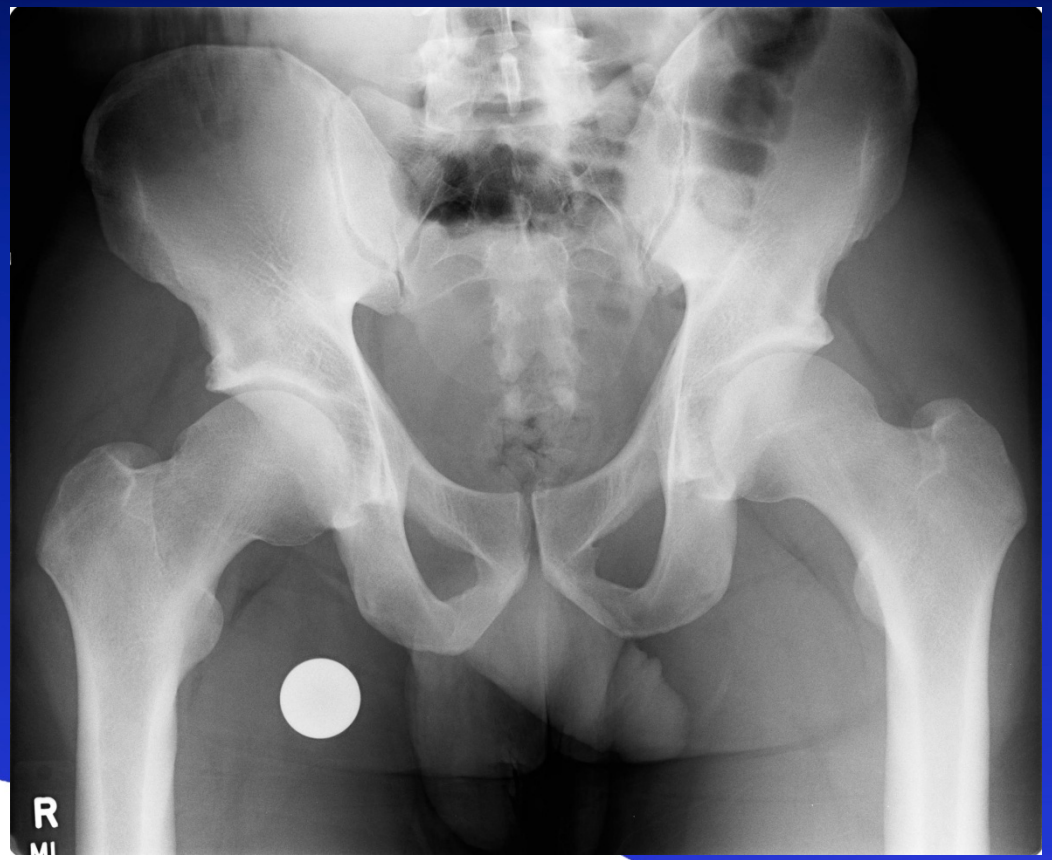
PRP PREPARATION

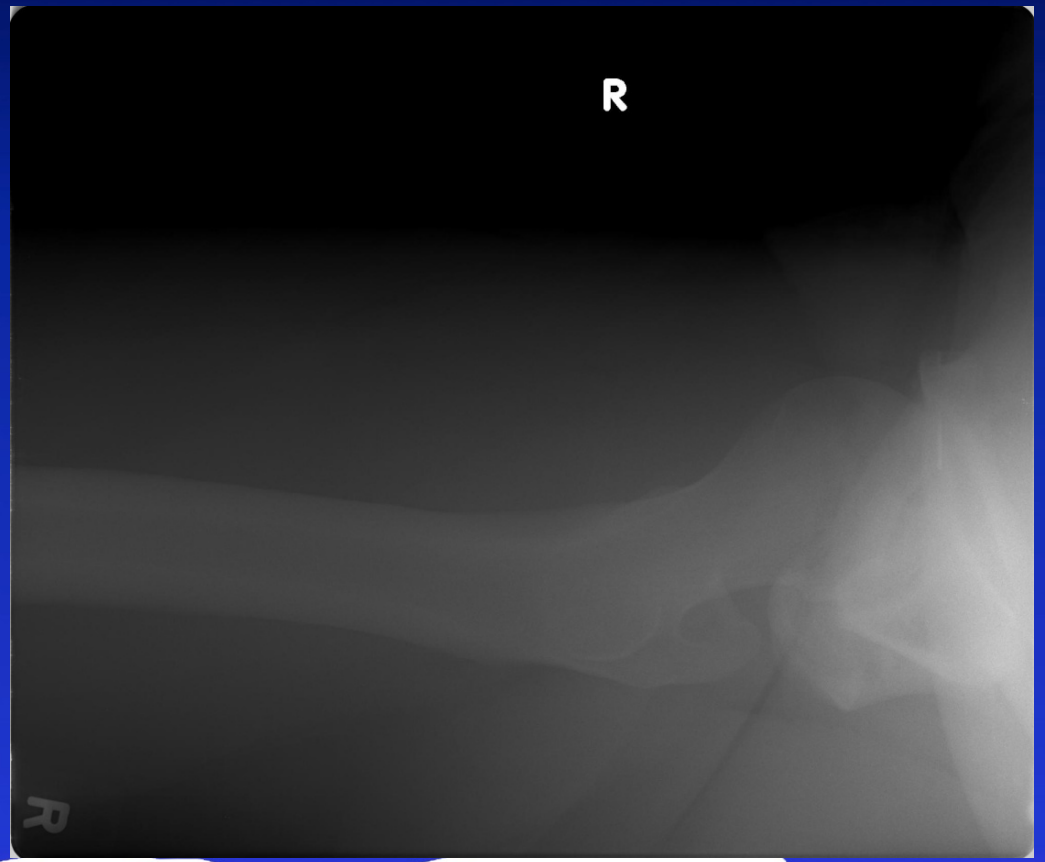




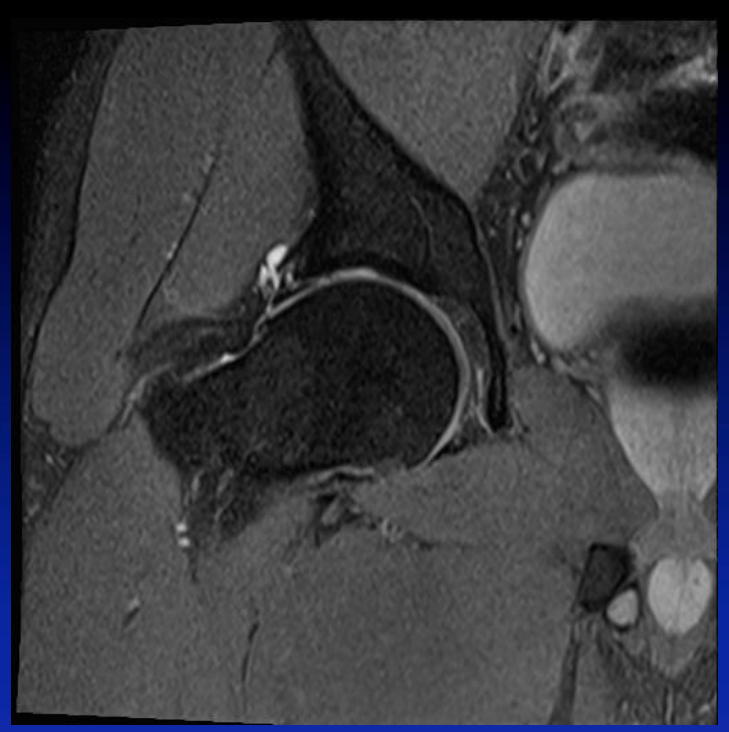


Case #1
Male, Pro Baseball Player
Insidious onset of right hip pain

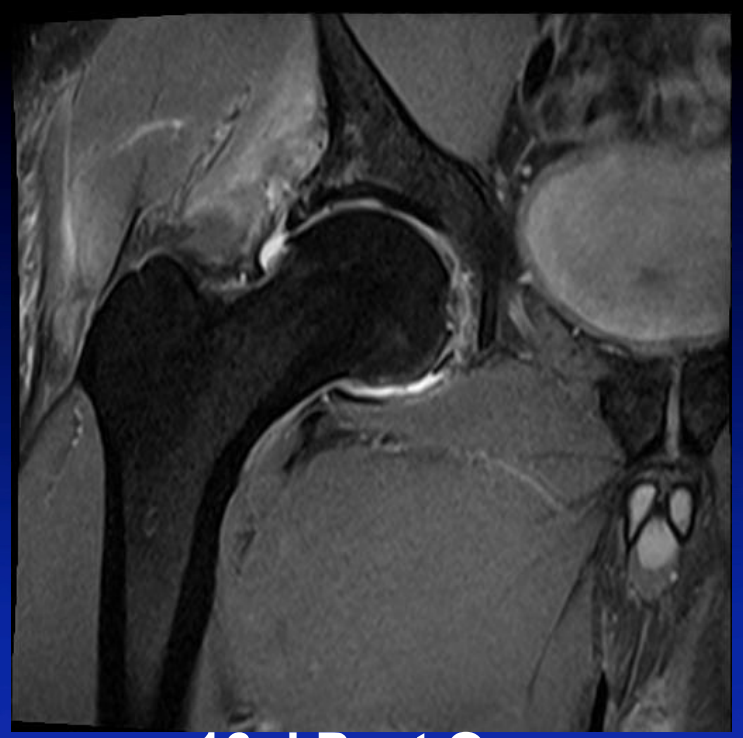




Right Hip Arthroscopy



Pre op



16 d Post Op

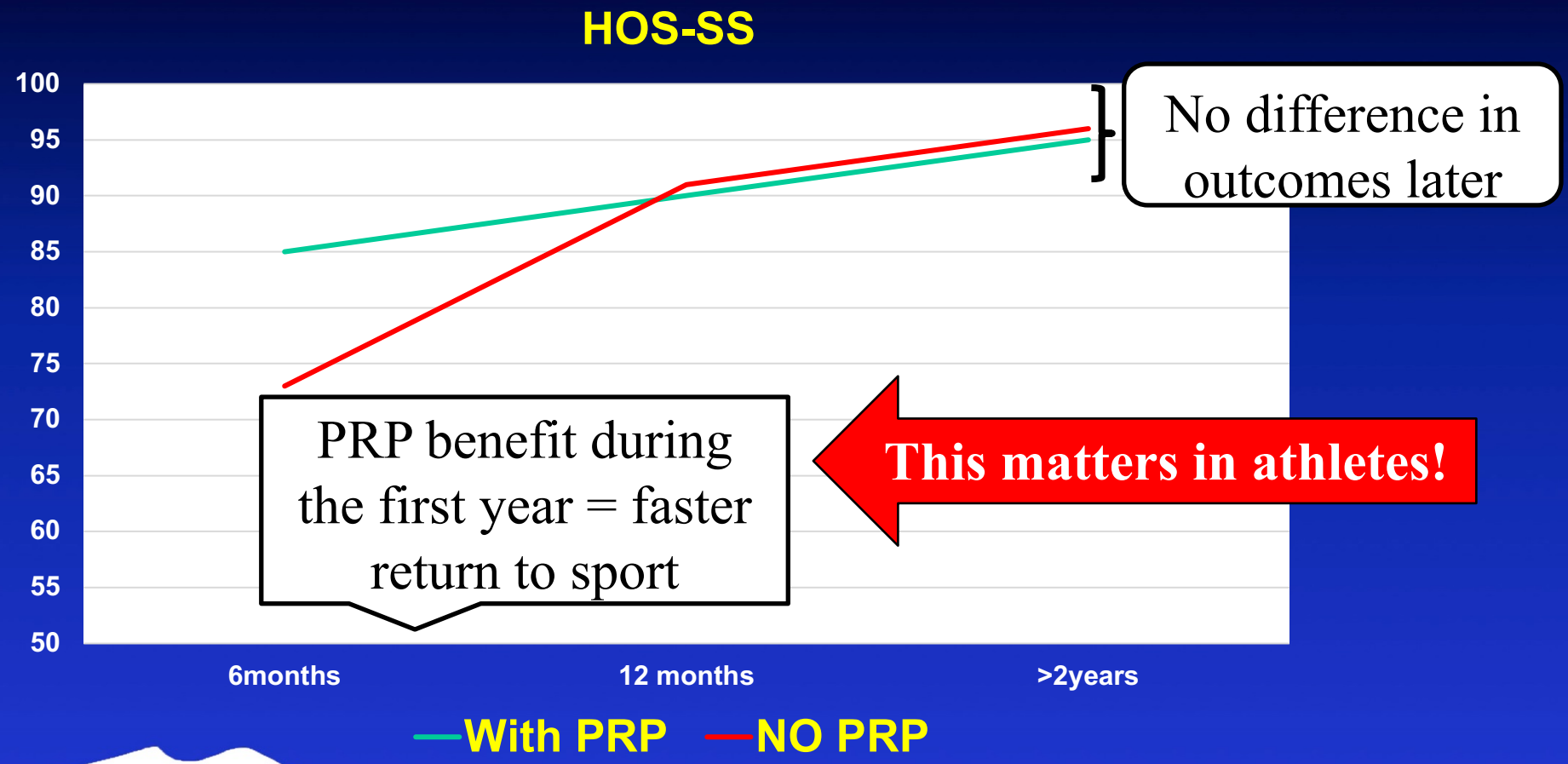
9 m Post Op


1OUT

PRP vs No PRP

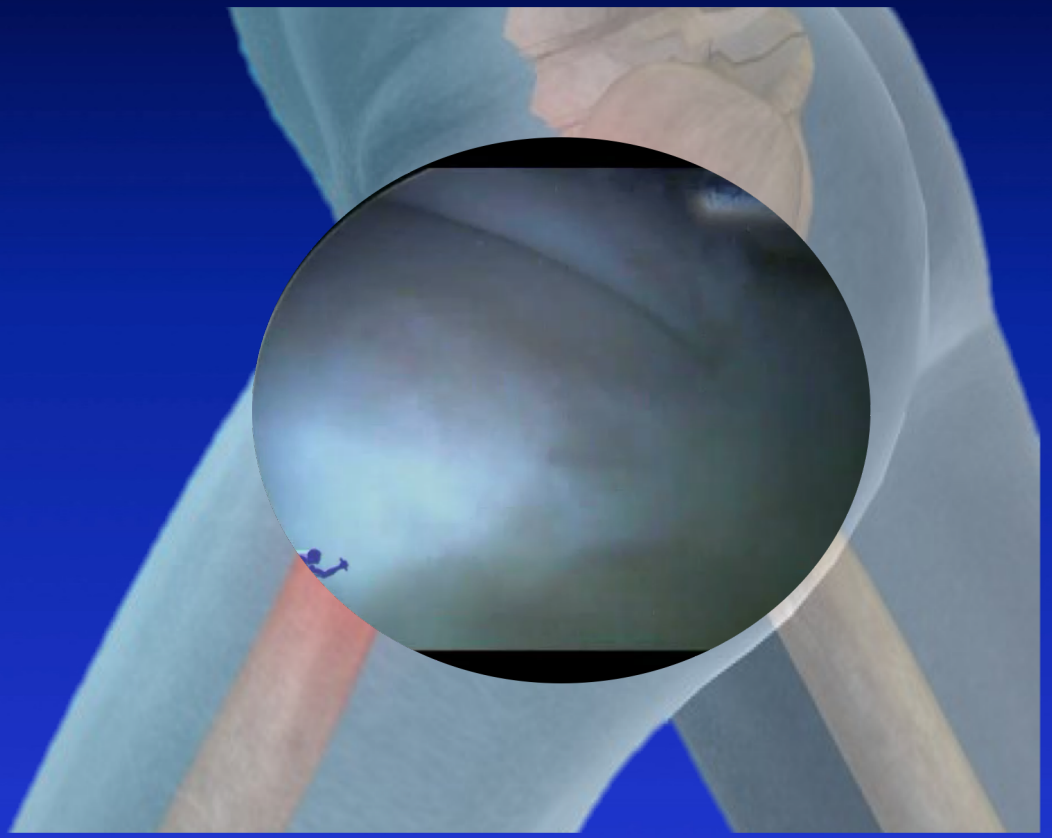
- No PRP group
  - 9 Olympic athletes
  - Prior to IOC approval based on consensus statement
- PRP group
  - 21 pro athletes
  - All had PRP at hip arthroscopy

HOS Sport Scale



II. Reduce need for Repeat Surgery

- Adhesions (scar tissue) is the most common cause for repeat surgery
- Adhesions can cause continued pain and damage to the repaired structures



Modifying the Joint Environment

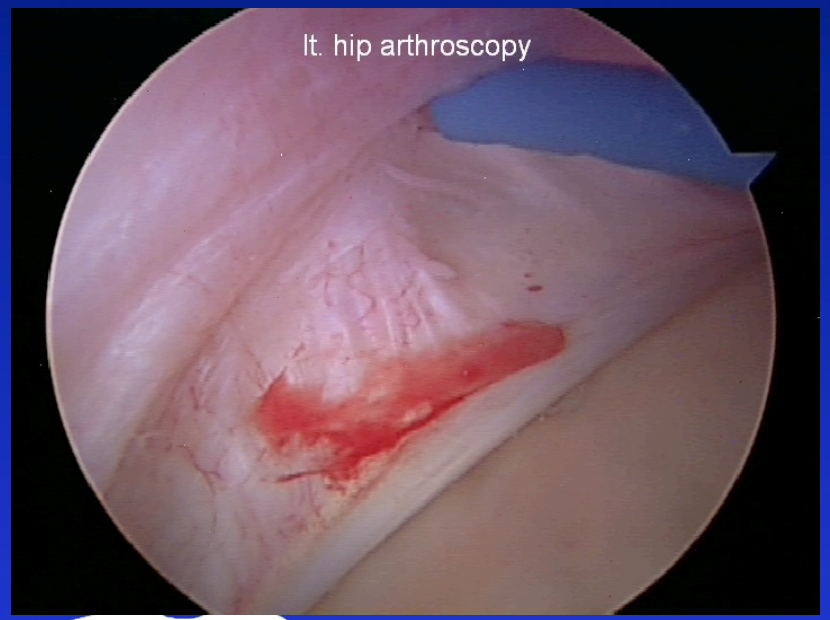
- Losartan
  - FDA approved angiotensin II type 1 receptor blocker
  - Can be useful as an antifibrotic agent in humans
  - Block TGF β1

Potential Usefulness of Losartan as an Antifibrotic Agent and Adjunct to Platelet-Rich Plasma Therapy to Improve Muscle Healing and Cartilage Repair and Prevent Adhesion Formation

Johnny Huard, PhD; Ioanna Bolia, MD, MSc; Karen Briggs, MPH, MBA; Hajime Utsunomiya, MD, PhD; Walter R. Lowe, MD; Marc J. Philippon, MD

Case with Adhesions

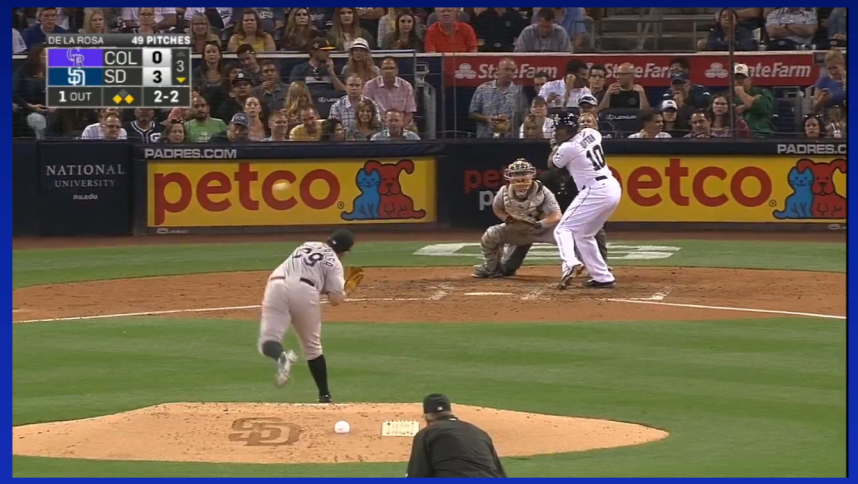
Intra-articular



Rectus Tendon

Clinical Outcomes

- **5 months and 25 days**
  - (-) pain, Hip ROM symmetric, FABER distance (-), anterior impingement (-)
  - Sports test 17/20



Returned Next Season

4TH MOST GAMES EVER PLAYED

2ND MOST AT BATS

70 RBIs

HIT 0.280

GETTING READY TO COMPLETE 14TH SEASON

5 Years Later – No revision – No adhesions

Rate of Revision Hip Arthroscopy

No Losartan

- 277 hips
- No Losartan
- Average age = 32
- 231 primary cases
- 46 revision cases

Losartan

- 133 hips
- Losartan
- Average age = 34
- 104 primary cases
- 29 revision cases

Rate of Revision Hip Arthroscopy at 2 Years

No Losartan

- 10/231 (4%) primary cases required revision
- 7/46 (15%) revision cases required revision

Losartan

- 2/104 (1.9%) primary case required revision
- 1/46 (2%) revision cases required revision

III. Better Understanding of Injuries

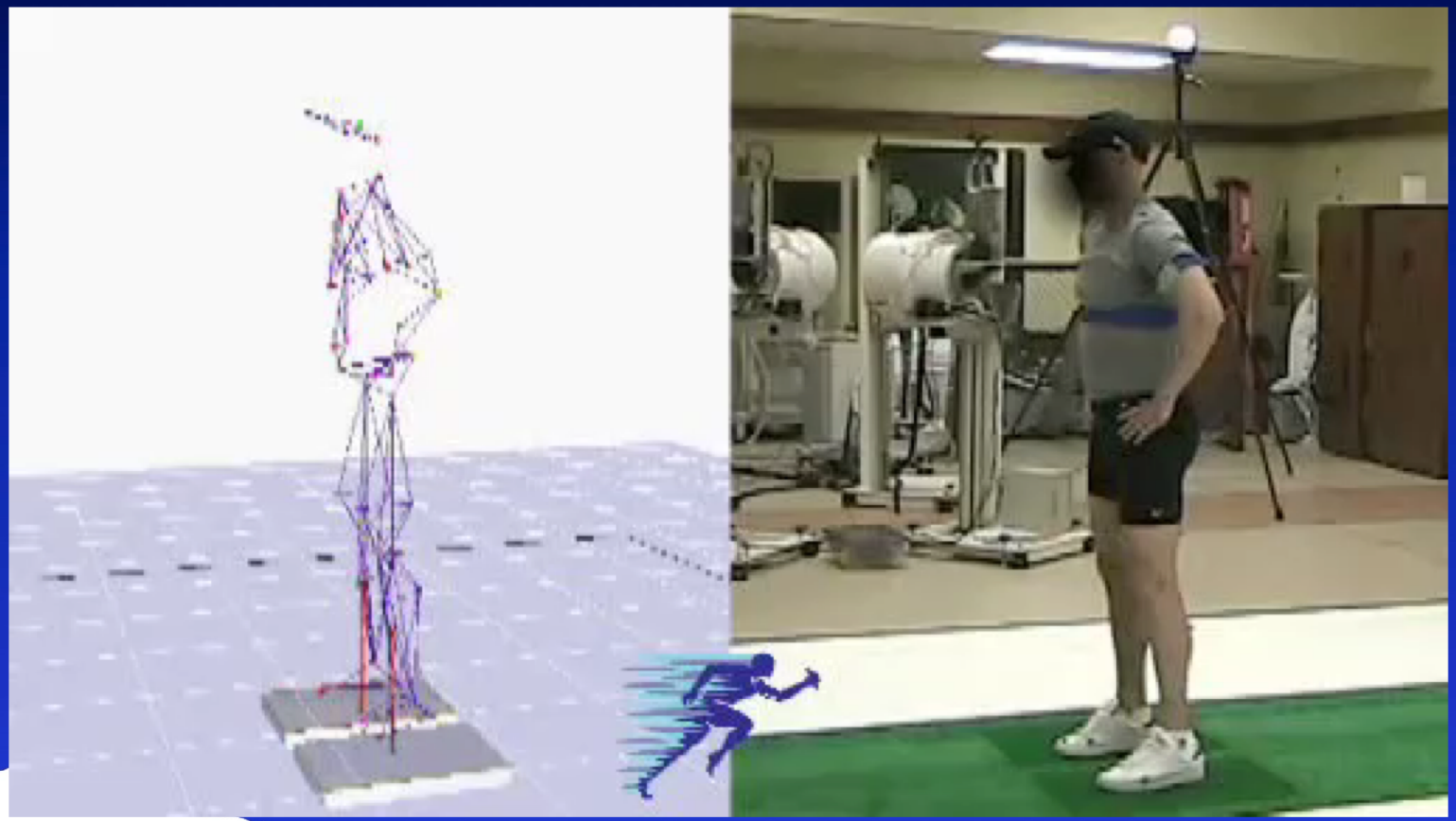
Defining Micro-Instability

Native hip

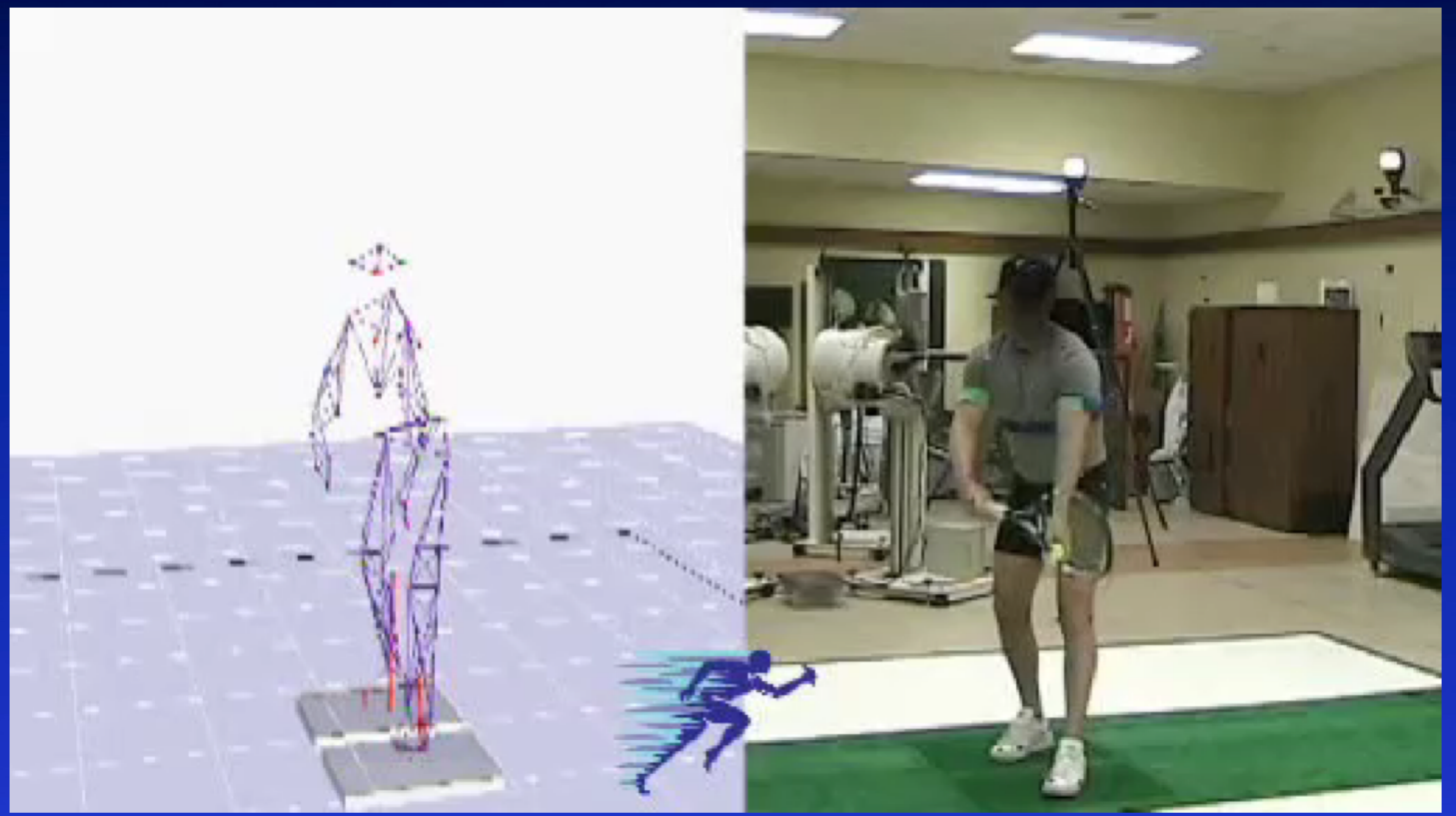
5 cm capsulotomy

Piston test: 50N pull - 200N push

Dynamic Analysis

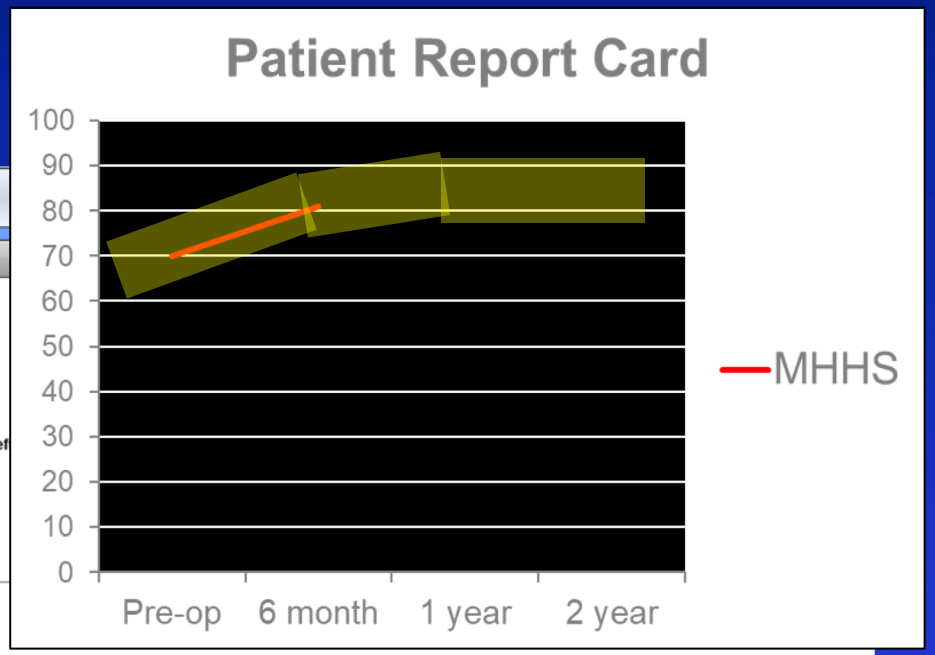


Dynamic Analysis



IV. Improve Patient Outcomes

- **Must minimize poor outcomes**
  - ❖ **Better trained surgeons**
    - ➢ **Fellowships**
    - ➢ **Surgical skills labs**
  - ❖ **Better educated patients**



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Prediction Models

Philippon Hip Cartilage Lesion Prediction | Prediction | Paper | Model | References

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About

This application helps to predict the presence of severe (grade 3 or 4) cartilage lesions on the acetabulum and femoral head before hip arthroscopy using patient specific variables and radiographic measurements.

Probability of having a cartilage lesion, along with 95% confidence interval is reported.

Please explore other tabs to read about the study methods, visualize the model, etc.

The multiple logistic regression model used here is published in Utsunomiya, et al 2017.

All research performed by the **Hip Team** at the Steadman Philippon Research Institute in Vail, Colorado.

Please Enter Patient Details:

Age(years): 45

Gender: (•) Male ( ) Female

BMI: 23.6

Time from Injury to Surgery (months): 15

Center Edge Angle: 33

Sharp Angle: 39

Weight Bearing Surface Angle: 6

Alpha Angle: 71

Minimum Joint Space (mm): 3.2

Submit

Estimated Probability of Severe Acetabular Lesion

Estimate: 52

95% Confidence Interval: 42 63

Estimated Probability of Severe Femoral Head Lesion

Estimate: 7

95% Confidence Interval: 5 9

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Thank You