

Amniotic Stem Cells and What Was Before! Is There Any Value?

Current Solutions in Shoulder and Elbow Surgery
February 7, 2016
Tampa, FL

Kevin D. Plancher, MD, MS
Clinical Professor
Albert Einstein College of Medicine
New York, NY



© Copyright 2016 Plancher Orthopaedics & Sports Medicine PLLC

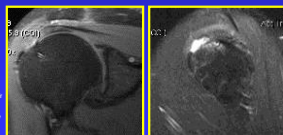
Disclosures February 2016

- Royalties from Publishers
 - Saunders/Mosby-Elsevier; Thieme
- Medical/Orthopaedic Publications Editorial/Governing Board
 - American Journal of Orthopedics; Arthroscopy; The Journal of Arthroscopic and Related Surgery; DT MedSurg; Operative Techniques in Sports Medicine
- Board Member/Committee Appointments for a Society
 - AAOS; ASES; AANA; ISAKOS; EOA; NY Chapter Arthritis Foundation; NY County Medical Society – Government Affairs
- Principal Investigator - Clinical Trials
 - Anika Therapeutics; Oxford Immunotec; Pfizer; Seikagaku
- Funding, Fellowship
 - Arthrex; ConMed Linvatec; Zimmer

© Copyright 2016 Plancher Orthopaedics & Sports Medicine PLLC

Amniotic Stem Cells and What Was Before Is There Any Value? Introduction

- 48% of Common Shoulder and Knee Repairs Fail¹
- 20-94% Recurrence Rate After Rotator Cuff Repair²⁻⁵
 - Due to Inadequate Healing at Injury Site⁴⁻⁵
 - Suture Pulling Through Repaired Tendon
 - Failure to Heal at the Greater Tuberosity



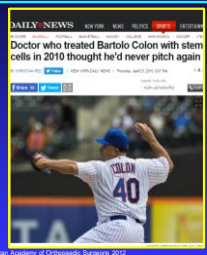
¹ American Academy of Orthopaedic Surgeons 2012
² Boden, P., Bizzarelli, N., Waples, S.J., Corbett, M., Thompson, AM, Washrom, S.G. Arthroscopic repair of rotator cuff tears: does the tendon really heal? JBJS Am. 2005
³ Gellish, S.H., Sica, C.A., Hester, J.A., Mendenhall, W.D., Thompson, K. The outcome and tendon integrity of conservatively, arthroscopically repaired large and massive rotator cuff tears. JBJS Am. 2004
⁴ LaPrade, L., Brozak, R., Toossiari, B., Gribbia, G. The outcome and structural integrity of arthroscopic rotator cuff repair with use of the rotator cuff suture anchor technique. JBJS Am. 2007
⁵ Shoji, M., Matsui, K., Mizuki, K., Mizuki, J. Functional and structural outcome after arthroscopic rotator cuff repair: single-row versus dual-row fixation. Arthroscopy. 2005
 No:21(11):1307-16

© Copyright 2016 Plancher Orthopaedics & Sports Medicine PLLC

Amniotic Stem Cells and What Was Before Is There Any Value? Solution

Optimization of the Healing Environment

- Orthobiologics?
 - Made From Substances Naturally Found in the Body
 - Delivered in Higher Concentrations
 - Speed Up the Healing Process
 - Types
 - Recombinant Growth Factors
 - Enzyme Inhibitors
 - Collagen Scaffolds
 - Marrow Stimulation Techniques
 - Super Clot Formation
 - Platelet Rich Plasma (PRP)
 - Mesenchymal Stem Cells (MSCs)
 - Autologous
 - Bone Marrow Aspirate
 - Allogenic
 - Amniotic
 - Embryonic



1 American Academy of Orthopedic Surgeons 2012
2 Orthopedic Trauma Association 2012
3 Roberts J, Braxton R, Robinson C, Cohen S, Heston R, Alvarado AM, Morrison GG, Roberts J, Braxton R, Robinson C, Cohen S, Heston R, Alvarado AM, Morrison GG. Daily use of PRP for ACL injury: a retrospective study in the United States. *Am J Sports Med*. 2014;42(10):2352-2358.
4 Gault LM, Bart CM, Taylor SA, Hudson WD, Yarnaghi K. The outcome and cost benefit of autologous orthopedically prepared platelet and marrow concentrate. *Am J Sports Med*. 2014;42(10):2352-2358.
5 Lafont J, Givron R, Desfrere S, Goulet R. The outcome and structural status of orthopedic repairs of ligament tears of the shoulder and elbow after treatment with PRP. *Am J Sports Med*. 2013;41(10):2352-2358.
6 Srinivasan S, Goulet R, Desfrere S, Lafont J. Functional and structural outcome after arthroscopic repair of the shoulder and elbow with platelet-rich plasma. *Arthroscopy*. 2013;29(12):2101-2106.

Amniotic Stem Cells and What Was Before Is There Any Value? Platelet Rich Plasma - Basic Science

- Above Baseline Concentrations
 - Platelets
 - Growth Factors
 - Cytokines
- Autologous Blood
- Activated Platelets
 - Release Growth Factors
 - Healing Cascade
 - TGF- β
 - PDGF
 - VEGF
 - EGF
 - Reduce Tendon Inflammation
 - HGF



Hall M, et al. Platelet Rich Plasma: Current Concepts & Application in Sports Medicine. *J Am Acad Orthop Surg*. 2008;17: 822-828
Lopez-Virella E, Coaling KA, Simon DA, Sanchez M, Johnson DH. The use of platelet-rich plasma in orthopedics and sports medicine: optimizing the healing environment. *Arthroscopy*. 2002;26(2):269-78.
Zhang J, et al. HGF mediates the anti-inflammatory effects of PRP on injured tendons. *PLoS One*. 2013; 8(9):e7222.

Amniotic Stem Cells and What Was Before Is There Any Value? Platelet Rich Plasma - Administration

- Sterile Technique
- Ultrasound-Guidance
 - Accurate Localization of Pathology
 - Evaluation of Pathology/Diagnostic
- Pre-Injection Guidelines
 - No Corticosteroids for 2-3 Weeks
 - No NSAIDS 1 Week Prior
 - No Anticoagulation 5 Days Prior
 - Increase Fluid Intake
 - Anti-Anxiety Meds for Specific Patients



Bernuzzi G, et al. Use of platelet-rich plasma in the care of sports injuries: our experience with ultrasound-guided injection. *Blood Transfus*. 2014;10(2sup): 11-229-234.

Amniotic Stem Cells and What Was Before Is There Any Value? Platelet Rich Plasma - Rotator Cuff

- > Rotator Cuff Surgery
 - Prospective, Double-Blind, Randomized Study
 - Platelet-Rich Fibrin Matrix (PRFM) + Surgery Vs. Surgery Alone
 - N=30 Per Group
 - PRFM Group
 - Significantly Younger
 - Significantly Longer Surgery Time
 - No Significant Differences Between Groups
 - VAS Scores
 - Narcotic Use
 - Recovery of Motion
 - Functional Scores
- > Addition of PRP Did Not Improve Clinical Outcomes



Weber SC, et al. Platelet-rich fibrin matrix in the management of arthroscopic repair of the rotator cuff: a prospective, randomized, double-blinded study. *AJSM*. 2013; 41(2):263-70.

© Copyright 2016 Planche Orthopaedics & Sports Medicine, PLLC

Amniotic Stem Cells and What Was Before Is There Any Value? Platelet Rich Plasma - Rotator Cuff

- > Arthroscopic Rotator Cuff Repair
 - Supraspinatus
 - 2 Randomized Controlled Trials^{1,2} (N=85)
 - Arthroscopic Rotator Cuff Repair ± 2 PRP Injections
 - No Improvement with PRP
 - Early Functional Recovery
 - Range of Motion
 - Strength
 - Pain
 - No Difference in Structural Integrity of Supraspinatus Repair¹
 - MRI
 - 16 Weeks Post-Op
- > Weak Evidence



1. Wang A et al. Do postoperative platelet-rich plasma injections accelerate early tendon healing and functional recovery after arthroscopic supraspinatus repair? A randomized controlled trial. *Am J Sports Med*. 2015; 43(6):1430-7.
2. Hak A, Balasubraman K, Ayres CB, Moore J, Peterson D, Sprague S, Bhandari M. A Double Blinded Placebo Randomized Controlled Trial Evaluating Short-Term Efficacy of Platelet-Rich Plasma in Reducing Postoperative Pain After Arthroscopic Rotator Cuff Repair: A Pilot Study. *Sports Health*. 2015 Jan;7(1):58-66.

© Copyright 2016 Planche Orthopaedics & Sports Medicine, PLLC

Amniotic Stem Cells and What Was Before Is There Any Value? Platelet Rich Plasma - Rotator Cuff

- > Arthroscopic RCT Repair ± PRP
 - Meta-Analysis¹
 - 8 Studies Included
 - All Tear Sizes
 - No Statistical Differences
 - Overall Outcome Scores
 - Re-Tear Rates
 - RCT >3cm
 - Lower Re-Tear Rate with PRP
 - Systematic Review²
 - 8 RCTs Included
 - No Statistical Differences
 - Functional Outcome Scores
 - Re-Tear Rates
- > No Difference in Outcomes with PRP



Warth RJ et al. Clinical and structural outcomes after arthroscopic repair of full-thickness rotator cuff tears with and without platelet-rich product supplementation: a meta-analysis and meta-regression. *Arthroscopy*. 2015; 31(2):206-20.

2. Zhao JG et al. Platelet-rich plasma in arthroscopic rotator cuff repair: a meta-analysis of randomized controlled trials. *Arthroscopy*. 2015; 31(1):125-35.

© Copyright 2016 Planche Orthopaedics & Sports Medicine, PLLC

Amniotic Stem Cells and What Was Before

Is There Any Value?

Platelet Rich Plasma - Summary

> Platelet-Rich Plasma

- Mechanism of Action
 - ✓ Induce Healing Cascade
 - ✓ Reduce Tendon Inflammation
 - Growth Factor Secretion
- Efficacy
 - ✓ No Improvement
 - Shoulder



© Copyright 2016 Plancher Orthopaedics & Sports Medicine PLLC

Amniotic Stem Cells and What Was Before

Is There Any Value?

Mesenchymal Stem Cells (MSC)

- > Nucleated Cells
 - 3-8x Concentrated in Aspirate
- > Advantages
 - Chondrogenic (Cartilage) Potential
 - Animal Studies
 - Great Potential
 - Human Studies
 - Good Potential
 - Osteogenic (Bone) Potential
 - Animal Studies
 - Great Potential
 - Human Studies
 - Good Potential
- > Disadvantages
 - Limited Research
 - No Long Term Studies
 - Need for RCTs
 - Cost
 - \$1000-5000 Per Patient



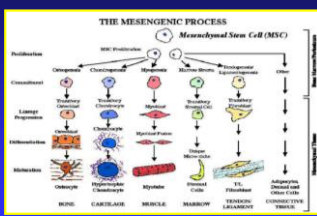
© Copyright 2016 Plancher Orthopaedics & Sports Medicine PLLC

Amniotic Stem Cells and What Was Before

Is There Any Value?

Mesenchymal Stem Cells (MSC)

- > Progenitor Cells
 - Differentiate To:
 - Osteoblasts
 - Chondrocytes
 - Myoblasts
 - Adipocytes
- > Sources
 - Bone Marrow (BMAC)
 - Adipose Tissue
 - Synovial Tissue
 - Peripheral Blood
 - Periosteum
 - Umbilical Cord Blood
 - Infrapatellar Fat Pad
 - Amniotic Fluid




1. Veronesi et al. Clinical Use of Bone Marrow, Bone Marrow Concentrate, and Expanded Bone Marrow Mesenchymal Stem Cells in Cartilage Disease. Stem Cells and Development. 2010; 15(2):225-35. doi:10.1089/scd.2009.18.1213
 2. Fields G, et al. Mesenchymal stem cells for the treatment of cartilage lesions: from preclinical findings to clinical applications in orthopaedics. KOTSA. 2013; 20:1749-1759
 © Copyright 2016 Plancher Orthopaedics & Sports Medicine PLLC

Amniotic Stem Cells and What Was Before

Is There Any Value?

Autologous Stem Cell Sources

- > Iliac Crest
 - ◆ Greatest Concentration
 - Bone-Forming MSCs¹
 - 898.4±1431.5 cells/mL
- > Other Sources
 - ◆ Proximal Humerus²
 - 883.9±577.6 cells/mL
 - ◆ Tibial Metaphysis
 - 32.4±135.4 cells/mL
 - ◆ Calcaneal
 - 7.1±17.4 cells/mL
 - ◆ Distal Femur
 - 551.3±408.1 cells/mL





¹ Hyer CP et al. Quantitative assessment of the yield of osteoblastic connective tissue progenitors in bone marrow aspirates from the iliac crest, tibia, and calcaneus. *JBJS* 2003; 85(1): 132-9.
² Barzilai N et al. Comparison of mesenchymal stem cells (stroma-progenitors) harvested from proximal humerus and distal femur during arthroscopic surgery. *Arthroscopy*. 2013; 29(2): 201-8.
³ Mazzocca AD, McCarthy MB, Chromiec DM, Cole MP, Antero RA, D'Adda H. Rapid isolation of human stem cells (stroma-progenitor cells) from the proximal humerus during arthroscopic rotator cuff surgery. *AJSM*. 2010; 34(30): 1538-47.
 © Copyright 2016 Pioneer Orthopaedics & Sports Medicine, PLLC.

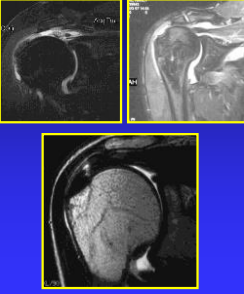
Amniotic Stem Cells and What Was Before

Is There Any Value?

BMAC - Rotator Cuff

- > Arthroscopic RC Repair
 - ◆ 45 Patients
 - Symptomatic Ruptures
 - 1.5-3.5cm
 - Minimum 10 Year Follow-Up
 - ◆ Single Row Rotator Cuff Repair
 - Isolated Repair Vs. Repair + MSCs
 - ◆ Faster Healing Rate - 6 Months
 - 100% RCR+MSC Patients
 - 67% RCR Only Patients
 - ◆ Prevented Further Tears
 - Intact Rotator Cuff at 10 Years
 - 87% RCR+MSC Patients
 - 44% RCR Only Patients
- > Faster Healing & Lower Re-Tear Rates





¹ Henigou P et al. Biologic augmentation of rotator cuff repair with mesenchymal stem cells during arthroscopy improves healing and prevents further tears: a case-controlled study. *Int Orthop*. 2014; 38(8): 1811-6.
 © Copyright 2016 Pioneer Orthopaedics & Sports Medicine, PLLC.


Amniotic Stem Cells and What Was Before

Is There Any Value?

BMAC - Rotator Cuff/OA

- > Symptomatic Glenohumeral Joint OA and/or Rotator Cuff Tears
 - ◆ 102 Patients
 - 115 Shoulders
 - Autologous BMAC Injections
 - ◆ Significant Improvement
 - Pre-Op to Final Follow-Up
 - Both Groups
 - DASH
 - Numeric Pain Scale
 - P<0.001
 - ◆ Average Subjective Improvement
 - 48.8%
 - ◆ No Difference in Outcomes
 - OA vs RCT Shoulders
 - ◆ No Treatment-Related Adverse Events
- > Clinical Improvement in Pain and Function



Cerone CJ et al. A prospective multi-site registry study of a specific protocol of autologous bone marrow concentrate for the treatment of shoulder rotator cuff tears and osteoarthritis. *J Pain Res*. 2015; 8:269-76.
 © Copyright 2016 Pioneer Orthopaedics & Sports Medicine, PLLC.

Amniotic Stem Cells and What Was Before Is There Any Value? BMAC Systems - The Problem

*White Paper Info

	Biomet BioCue	Arteriocyte Magellan MaroMax	Harvest SmartPREP 2 BMAC	Arthrex Angel	Alliance Spine Cyclone	Emcyte Genesis CS
Nucleated Cells	7.9x	5-6x (MSCs)	3-6x	10x	7-8x	11-12x
Platelets	7.2x	7.2x	4-6x	9x	7-8x	6.7x
Hardware Cost (i.e. Centrifuge)	None	None	None	None	None	
Per Use Cost (i.e. Kit)	~\$1300	\$1200-1900	~\$2000	\$1400	\$1095	
Total Processing Time	15 min	15 min	16 min	40ml - 15 min 180ml - 26 min	10 min	12 min
RPM	3200	1 st Spin 2800 2 nd Spin 3800	2500x150 x 1-3 min 2300x140 x 6-9 min		3800	2400

*Excludes International Companies
© Copyright 2016 Planche Orthopaedics & Sports Medicine PLLC

Amniotic Stem Cells and What Was Before Is There Any Value? BMAC - Our Series

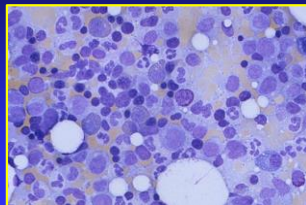
- 21-70 Year Old
 - ◆ Recreational/ Professional Athletes (N=32)
 - Knee (N=21)
 - Hip (N=5)
 - Shoulder (N=3)
 - Elbow (N=1)
 - Achilles (N=2)
 - ◆ Pain Free Return to Sport
 - Tennis
 - Skiing
 - Basketball
 - Running
 - ◆ No Complications
- Great Promise For Restoration Of Anatomic Architecture



© Copyright 2016 Planche Orthopaedics & Sports Medicine PLLC

Amniotic Stem Cells and What Was Before Is There Any Value? BMAC - Disadvantages

- Disadvantage
 - ◆ Limited Ability to Standardize BMAC Content
 - Heterogeneous Nature of Bone Marrow Cellular Population
 - MSC Population
 - Declines with Age
 - ◆ Harvest in the Operating Room
 - Donor Site Morbidity

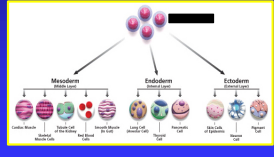
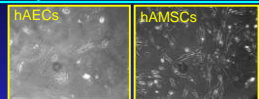


© Copyright 2016 Planche Orthopaedics & Sports Medicine PLLC

Amniotic Stem Cells and What Was Before Is There Any Value? What Are They?

> Amniotic-Derived Stem Cells

- ◆ Can Differentiate Into
 - All 3 Germinal Phenotypes
 - Various Cell Types
 - Osteogenic
 - Myogenic
 - Neurogenic
 - Tenogenic
 - Endothelial



> Types

- ◆ Human Amnion Epithelial Cells (hAECS)
- ◆ Human Amnion Mesenchymal Stromal Cells (hAMSCs)

Courtesy Dr. Steven Amodeo
© Copyright 2016 Planck Orthopaedics & Sports Medicine PLLC

Amniotic Stem Cells and What Was Before Is There Any Value? Amniotic Membrane

> Human Amniotic Membrane

- ◆ Contains
 - Extracellular Matrix Components
 - Collagen Types I, II, IV, V, VII
 - Fibroblasts, Fibronectin, Laminins, Aggrecan, Syndecan-1,4
 - Hyaluronic Acid
 - Growth Factors
 - EGF, FGF-4, bFGF, HGF, IGF-1, TGF-α, TGF-β, VEGF
 - Anti-Microbials
 - Defensins, Calprotectin, Lactoferrin, PGRP-S
 - Tissue Modeling/Repair Molecules
 - Angiogenin, Osteoactivin, Osteopontin, Periostin, MMPs, TIMPs, FAP, FLRG, EMMPIRIN



Mark A. Underwood, Amniotic Fluid: Not Just Fetal Urine Anymore, Journal of Perinatology (2005) 25, 341-346.

© Copyright 2016 Planck Orthopaedics & Sports Medicine PLLC

Amniotic Stem Cells and What Was Before Is There Any Value? Amniotic Membrane

> Human Amniotic Membrane

- ◆ Modulates
 - Cytokine and Growth Factors Levels in Tissue
- ◆ Unique Properties
 - Pain Reduction
 - Anti-Inflammatory
 - Fibrosis Suppression
 - Antibacterial
 - Improved Wound Healing Capability
 - Suppresses Tumorigenesis



Mark A. Underwood, Amniotic Fluid: Not Just Fetal Urine Anymore, Journal of Perinatology (2005) 25, 341-346.

> Potentially Superior Clinical Outcomes

- ◆ More Randomized Control Studies Needed

© Copyright 2016 Planck Orthopaedics & Sports Medicine PLLC

Amniotic Stem Cells and What Was Before Is There Any Value? Animal Studies

> Tendon/Ligament Injuries

- 51 Horses Amniotic Stem Cells vs.
- 44 Horses Autologous Bone Marrow Derived Stem Cells
 - Amniotic Stem Cells
 - Faster Return to Activity
 - 4-5 Months vs. 4-12 Months
 - Lower Rate of Re-Injury
 - 4% vs. 23%
 - Conclusions
 - Amniotic Stem Cells Have
 - Greater Proliferative Capacity



Lange Consiglio A1, Tessa F, Bizzaro D, Cironesi F. Investigating the efficacy of amniotogenic compared with bone marrow-derived mesenchymal stem cells in equine tendon and ligament injuries. *Cytotherapy*. 2013 Aug;15(8):1011-20. © Copyright 2016 Plexier Orthopaedics & Sports Medicine PLLC.

Amniotic Stem Cells and What Was Before Is There Any Value? Summary

> Advantages of Amniotic Stem Cells

- Pluripotent
- Highly Plastic
- Capable of Differentiation into Major Lineages
- Low Immunogenicity
 - HLA Class II Antigens Not Expressed
- Non-Teratogenic
- Easy Procurement After Parturition



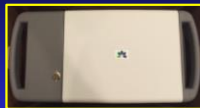
Figure 3. Pardini A. Osteogenic differentiation of amniotic fluid mesenchymal stem cells and their bone regeneration potential. *World J Stem Cells*. 2015 May 26;7(4):681-90

© Copyright 2016 Plexier Orthopaedics & Sports Medicine PLLC.

Amniotic Stem Cells and What Was Before Is There Any Value? Are There Any Products On The Market!

> Products Are Available

- Injectable Mixture
 - Amniotic Fluid
 - Amniotic Stem Cells
 - Chorion-Free Amniotic Membrane
- In-Office Application
- Storage
 - Small Freezer
 - - 80 Degrees F
- Immediate Delivery
 - Thaw 5 Minutes in Hand
 - Inject Within 10 Minutes
 - Longer Than 10 Minutes
 - Loss of Cell Viability
- One Stop Shopping
 - Patient Satisfaction



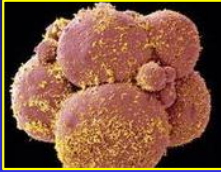
© Copyright 2016 Plexier Orthopaedics & Sports Medicine PLLC.

Amniotic Stem Cells and What Was Before Is There Any Value?

Typical Product On The Market-Even More Molecules

> Found in Typical Product*

- **Growth Factors**
 - EGF, FGF-4, bFGF, HGF, IGF-I, TGF- α , TGF- β , VEGF
- **Tissue Remodeling/Repair Molecules**
 - Angiogenin, Osteoactivin, Osteopontin, Periostin, MMPs, TIMPs, FAP, FLRG, EMMMPININ
- **Connective Tissue Proteins**
 - Multiple Collagen Types, Fibronectin, Laminins, Aggrecan, Syndecan-1,4
- **Amnion-Derived Cells**
 - Amniotic Epithelial, Mesenchymal Cells Capable of Differentiating into Various Cell Types
 - Osteogenic, Myogenic, Neurogenic, Tenogenic, Endothelial
- **Antimicrobials**
 - Defensins, Calprotectin, Lactoferrin, PGRP-S



*Specific molecules found in Product through Protein Quantification Array

© Copyright 2016 Planche Orthopaedics & Sports Medicine PLLC

Amniotic Stem Cells and What Was Before Is There Any Value?

Safety, Effective and Reproducible

> Plus Standardization

• For Each Product Lot

- **Current Product Information**
 - Total Cell Number
 - Percent Cell Viability
- **Future Product Information**
 - Surface Marker Profile
 - Cellular Identity
 - Cytokine Expression Levels
 - Functional Bioassay Performance



> To Assure and Optimize Product Potency

© Copyright 2016 Planche Orthopaedics & Sports Medicine PLLC

Amniotic Stem Cells and What Was Before Is There Any Value?

Business Opportunity - Niche Practice

> Cutting Edge

- **New Patient Referrals From Physicians**
- **Educate Your Patients & Community**
 - Safe
 - Effective
 - In Office
 - No Surgery Required
 - Return to Sport
 - 6-8 Weeks



© Copyright 2016 Planche Orthopaedics & Sports Medicine PLLC

Amniotic Stem Cells and What Was Before Is There Any Value? Business Opportunity - Niche Practice

- **Plancher 2016**
 - ◆ **Began Christmas 2015**
 - 11 Patients
 - Knee & Shoulder
 - ◆ **Huge Revenue Potential**
 - \$999-\$2500/1cc Injection
 - Know Your Market
 - **Insurance Reimbursement**
 - ◆ **All Insurances**
 - Varying Degrees
 - Up to \$1800 Reimbursement
 - Excludes Medicare



© Copyright 2016 Plancher Orthopaedics & Sports Medicine PLLC

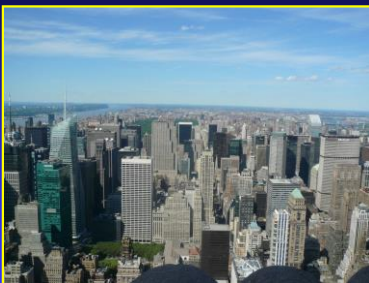
Amniotic Stem Cells and What Was Before Is There Any Value? Overall Conclusions

- **Platelet-Rich Plasma**
 - ◆ **Mixed Clinical Results**
 - No Supporting Evidence
 - Shoulder
 - ◆ **Limited Standardization**
 - **Bone Marrow Aspirate Concentrate**
 - ◆ **Promising Clinical Evidence**
 - Shoulder
 - Limited Standardization
 - **Amniotic Stem Cells Are The Future!**
 - ◆ **Good Preclinical and Clinical Evidence**
 - Safety & Effectiveness
 - Shoulder & Elbow
 - **More Research Needed**
 - ◆ **Optimal Concentration**
 - ◆ **Adjuvant Therapies**
 - Bioactive Factors, Molecular Signaling



© Copyright 2016 Plancher Orthopaedics & Sports Medicine PLLC

Thank You



© Copyright 2016 Plancher Orthopaedics & Sports Medicine PLLC
