Table of Contents

**UNITED STATES SECURITIES AND EXCHANGE COMMISSION**
**Washington, D.C. 20549**

# Form 8-K

**CURRENT REPORT**
**PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

**Date of report (date of earliest event reported):**
**March 22, 2006**

# Aastrom Biosciences, Inc.

(Exact name of registrant as specified in its charter)

| **Michigan** | **0-22025** | **94-3096597** |
|---|---|---|
| (State or other jurisdiction of incorporation) | (Commission File No.) | (I.R.S. Employer Identification No.) |

**24 Frank Lloyd Wright Drive**
**P.O. Box 376**
**Ann Arbor, Michigan 48106**
(Address of principal executive offices)

Registrant's telephone number, including area code:
**(734) 930-5555**

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

o Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)

o Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)

o Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))

o Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))

**TABLE OF CONTENTS**

**Item 8.01 Other Events.**

On March 22, 2006, we issued a press release announcing the presentation at a medical symposium by Matthew L. Jimenez, M.D., the Principal Investigator of Aastrom's U.S. Phase I/II multi-center clinical trial evaluating the use of Aastrom's Tissue Repair Cells in the treatment of severe fractures that have failed prior treatment interventions. Dr. Jimenez' presentation addresses the results from his early clinical experience with the first seven patients he has treated in this trial. A copy of the press release is attached hereto as Exhibit 99.1, and a copy of Dr. Jimenez' presentation is attached hereto as Exhibit 99.2.

**Item 9.01 Financial Statements and Exhibits.**

**(c) Exhibits.**

| Exhibit No. | Description |
|---|---|
| 99.1 | Press Release dated March 22, 2006 |
| 99.2 | Slides used in presentation |

**SIGNATURES**

Pursuant to the requirements of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned hereunto duly authorized.

Date: March 22, 2006

**AASTROM BIOSCIENCES, INC.**

By: /s/ Gerald D. Brennan, Jr.
Gerald D. Brennan, Jr.
Vice President, Administrative and
Financial Operations, CFO

**EXHIBIT 99.1**

Aastrom BIOSCIENCES INC
P.O. Box 376 ● Ann Arbor, Michigan 48106 ● Ph: 734-930-5555 ● Fax: 734-665-0485
Located at: Domino's Farms, Lobby L

**FOR IMMEDIATE RELEASE**

CONTACTS: Kris M. Maly
Investor Relations Department
Aastrom Biosciences, Inc.
Phone: (734) 930-5777

Cameron Associates
Kevin McGrath
Phone: (212) 245-4577

**AASTROM BIOSCIENCES' U.S. CLINICAL INVESTIGATOR TO REPORT ON LONG BONE FRACTURE REPAIR TRIAL**

***— Positive Patient Treatment Results Presented at Combined Orthopaedic Research Society and American Academy of Orthopaedic Surgeons Meetings —***

**Ann Arbor, Michigan, March 22, 2006 —** Aastrom Biosciences, Inc. (Nasdaq: ASTM) announced today that Matthew L. Jimenez, M.D. will present results from his early clinical experience with the first seven patients treated for recalcitrant long bone non-union fractures with Aastrom's Tissue Repair Cells (TRCs). The presentation will be delivered today as part of a symposium at the combined Orthopaedic Research Society and American Academy of Orthopaedic Surgeons meetings in Chicago, IL. Dr. Jimenez, of the Illinois Bone & Joint Institute, Morton Grove, IL, is the Principal Investigator of Aastrom's U.S. Phase I/II multi-center clinical trial evaluating the use of TRCs – a mixture of stem, stromal and progenitor cells derived from the patient's bone marrow – in the treatment of severe fractures that have failed prior treatment interventions.

Dr. Jimenez will present a brief overview of the multi-center trial that is currently underway, as well as the background and progress of the first seven patients that he treated in the trial. The results include data from the first 6 months of observation after TRC grafting that was combined with surgical correction of long-standing non-union fractures. The results noted in this U.S. trial complement observations previously reported in Aastrom's European feasibility study, showing positive bone regeneration with no TRC-related adverse events. A copy of Dr. Jimenez' planned presentation is being filed today on Form 8-K with the SEC. At that time the presentation may be accessed on Aastrom's website using the following link: http://www.aastrom.com/pdf/MLJ-Presentation-032206.pdf.

These seven patients, treated at Lutheran General Hospital in Park Ridge, IL, all had fractures of their tibia bone which had failed to heal after one to three (with a mean of two) prior standard of care bone grafting and surgical treatments. Previous treatment approaches included failures in internal and external fixation to align and immobilize the fractured bone, autologous bone grafting and bone morphogenetic protein (BMP) supplementation. The average period of time from the initial fractures to TRC treatment was 12 months (range 7 to 29 months). The TRC-treated patients, age 30-73 years, underwent open reduction and internal fixation (ORIF) surgery in which TRCs were applied directly at the fracture site, together with an allograft bone matrix graft extender (provided by Aastrom's partner in the study, the Musculoskeletal Transplant Foundation) to promote local bone regeneration.

Bone regeneration, evidenced by callus formation or bone bridging, was observed in radiographs for all seven patients by 6 months. Early healing was seen in four of the patients by 3 months after treatment with TRCs. Post-surgical evaluations of these patients using standard clinical and radiographic evaluations of the healing fracture site will continue over a 12 month period. The multi-center trial is accruing up to a total of 36 patients.

"I am encouraged by the healing of these very difficult to treat fractures in these first few patients. The use of an autologous bone marrow-derived tissue product as an innovative cell therapy has the potential to provide a valuable alternative to some of the most difficult orthopedic challenges in

-more-

trauma," commented Matthew L. Jimenez, M.D. "We, and the other clinical sites in this study, will continue to accrue and treat patients with this novel TRC product."

This multi-center trial protocol is approved at the following treatment centers: Lutheran General Hospital, Park Ridge, IL; the University of Michigan Health System, Ann Arbor, MI; William Beaumont Hospital, Royal Oak, MI; Lutheran Medical Center, Brooklyn, NY; and, University of Nebraska Medical Center, Omaha, NE.

"These early pilot data are most encouraging, especially given the poor prognosis of these patients who had failed standard-of-care treatments. We are adding to our knowledge the use of TRCs with different formulations of bone gap-filling materials. These results in patients using allograft matrix complement our European studies which tested TRCs with synthetic ceramic matrices," stated Janet M. Hock, B.D.S., Ph.D., Vice President Global Research and Chief Scientific Officer of Aastrom. "While these data are very promising, we will maintain caution in interpreting the results of our U.S. trial of non-union fractures until the full set of 36 patients at the five sites is completed."

**About Tissue Repair Cells**

Tissue Repair Cells (TRCs) are Aastrom's proprietary mixture of bone marrow-derived adult stem, stromal and progenitor cells produced using patented single-pass perfusion technology in the AastromReplicell® System. The clinical procedure begins with the collection of a small sample of bone marrow from the patient's hip in an outpatient setting. TRCs are then produced in the automated AastromReplicell System over a 12-day period. It has been demonstrated in the laboratory that TRCs are able to develop into different types of tissue lineages in response to inductive signals, including hematopoietic (blood and immune systems), mesenchymal (connective tissues such as bone), adipose, and endothelial (vascular tubules). In clinical trials, TRCs have been shown to be safe in over 200 patients.

**About Aastrom Biosciences, Inc.**

Aastrom Biosciences, Inc. (Nasdaq: ASTM) is developing products for the repair or regeneration of multiple human tissues, based on its proprietary Tissue Repair Cell (TRC) adult stem cell technology. Aastrom's TRC products contain large numbers of stem, stromal and progenitor cells that are produced from a small amount of bone marrow cells originating from the patient. The AastromReplicell® System, an industry-unique automated cell product manufacturing platform, was developed for the production of standardized, patient-specific TRC products. TRC products have been used safely in humans as a substitute for bone marrow stem cells, and are currently in clinical trials for bone grafting (long bone fractures and spine fusion) and blood vessel regeneration (diabetic limb ischemia) applications. The Company has recently reported positive interim clinical trial results for its TRCs demonstrating both the clinical safety and ability of TRCs to induce healthy new tissue growth (long bone fractures and jaw bone reconstruction).

For more information, visit Aastrom's website at www.aastrom.com.

***This document contains forward-looking statements, including without limitation, statements concerning product development objectives, planned clinical trials, potential advantages of TRCs and the AastromReplicell® System, and potential product applications, which involve certain risks and uncertainties. The forward-looking statements are also identified through use of the words "may," "planned," "potential," and other words of similar meaning. Actual results may differ significantly from the expectations contained in the forward-looking statements. Among the factors that may result in differences are, potential product development difficulties, clinical trial results, potential patient accrual difficulties, the effects of competitive therapies, regulatory approval requirements, the availability of financial and other resources and the allocation of resources among different potential uses. These and other significant factors are discussed in greater detail in Aastrom's Annual Report on Form 10-K and other filings with the Securities and Exchange Commission.***

###

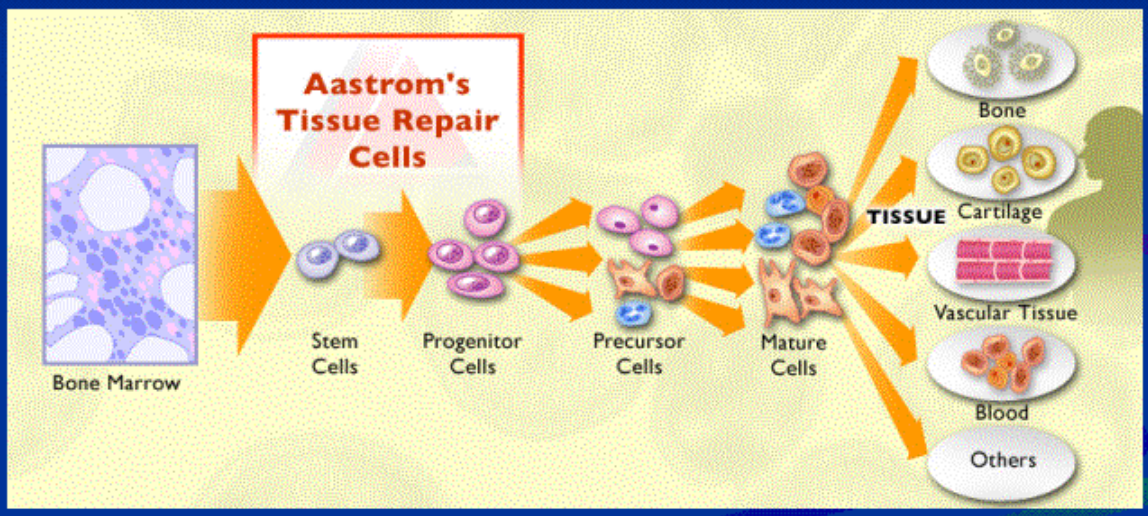
EXHIBIT 99.2


ADULT STEM CELL THERAPY FOR ADULT NONUNIONS
Matthew L. Jimenez, MD
Illinois Bone and Joint Institute
Lutheran General Hospital

# OUTLINE

- Review Study Design
- Review Surgical Technique
- Clinical Case Examples

# TISSUE REPAIR CELLS (TRCs)




Aastrom Biosciences, Inc. Ann Arbor, MI

# THE TRC PRODUCTION PROCESS

| Small aspirate from patient | TRCs produced in AastromReplicell System | | TRCs generate healthy tissues |
|---|---|---|---|
|  | | | |
| Office procedure | Centralized GMP manufacturing facility | Bone marrow stem cell product in 12 days | > 200 patients treated to date |

# STUDY DESIGN

# UNITED STATES PHASE 2 FRACTURE TRIAL

- Objective: Determine Safety of TRC Cell Therapy as an Adjunct for Non-union Fracture Healing
- Multi-site, Prospective, Consecutive Case Series

# UNITED STATES PHASE 2 FRACTURE TRIAL

- Total No. Patients (all sites): 36
- Pilot Phase: 11 Patients
  - 7 Subjects have completed 6 months observation (this report)
- Expanded Phase: 25 Subjects
  - Protocol changes for improved process and data collection

# UNITED STATES PHASE 2 FRACTURE TRIAL

- Primary Endpoint: 6 months *
  - Frequency and Type of Adverse Events
  - Fracture Healing
    - Cortical bone bridging in 2 orthogonal radiographs
- Safety Surveillance: 12 Months

# STUDY INCLUSION CRITERIA

## Inclusion

- Duration of Non-healing: 4 Months Minimum from Original Fracture Reduction
- Fracture Gap 0-6 cm
- Distance > 4cm from Joint
- Atrophic Non-union by Radiographs, CT, Ultrasound

# STUDY INCLUSION CRITERIA

## Inclusion

- Acute Open Tibial Fracture Type IIIA or IIIB
- No Clinical Signs of Infection at Fracture or Operative Site
- At Least 18 years Old
- Normal Bone Marrow and Organ Function to Ensure Good Cell Aspirate

# STUDY EXCLUSION CRITERIA

## Exclusion

- Patients Unable to Discontinue Alcohol Abuse; Smoking Discouraged
- Patients who Need Corticosteroids, NSAIDs, cox-2 Inhibitors or other Anti-inflammatory Therapy after Surgery
- Genetic Metabolic Bone Disease; Chronic Renal Disease; Diabetes Mellitus

# STUDY EXCLUSION CRITERIA

## Exclusion

- Patients on Systemic Antibiotics for Suspected Fracture Site Infection
- Allergies to Specific Cytokines or Animal Proteins
  - Used in *ex vivo* Cell Production Process

# PATIENT HISTORIES FOR NONUNIONS

| | Gender | Age | Smoker | Bone | Cause | No. prior surgeries | Prior treatment for non-union: History |
|---|---|---|---|---|---|---|---|
| 1 | M Caucasian | 55 | | Tibia | Auto accident | 1 | Reamed IM nail, comminuted fracture, bone defects |
| 2 | F Caucasian | 42 | | Tibia | Leg crushed by feed grinder | 1 | Locked plate, comminuted fracture, bone defects |
| 3 | M Caucasian | 51 | √ | Tibia | Auto accident | 2 | Locked plate; BMP x 2, allograft, ORIF, NSAID |
| 4 | M Caucasian | 30 | | Tibia | Struck by car | 1 | Locked plate, bone defects, comminuted fracture |
| 5 | M Caucasian | 73 | | Tibia | Fall | 3 | Combo locking plate, Inadequate immobilization; autograft, bone defects, site infection |
| 6 | F Caucasian | 44 | √ | Tibia | Auto accident | 1 | Reamed IM nail, bone defects, comminuted bone |
| 7 | M Hispanic | 45 | | Tibia | Fall from height | 3 | Repeated failed external fixation, bone defects |

# PILOT STUDY

## Early Results

## 7 Patients

# INTERIM RESULTS: Safety
# Single Surgeon, Single site: 7 patients

- Safety: No TRC-related Adverse Events
- Surgical Adverse Events in 2/7
  - Acute Infections, Resolved, Fractures United
- No Morbidity at Site of Marrow Aspirate
- No Change in Serum Biochemistry or White Cell Counts

# INTERIM RESULTS: Safety
## Single Surgeon, Single site: 7 patients

- Radiographic Evidence of Bony Callus Formation was Present at 12 and 24 Weeks after Surgery in 4/7 and 7/7 Patients Respectively
- Serum Alkaline Phosphatase Increased 24% at 2 Weeks Post-op, Indicative of Stimulated Bone Formation

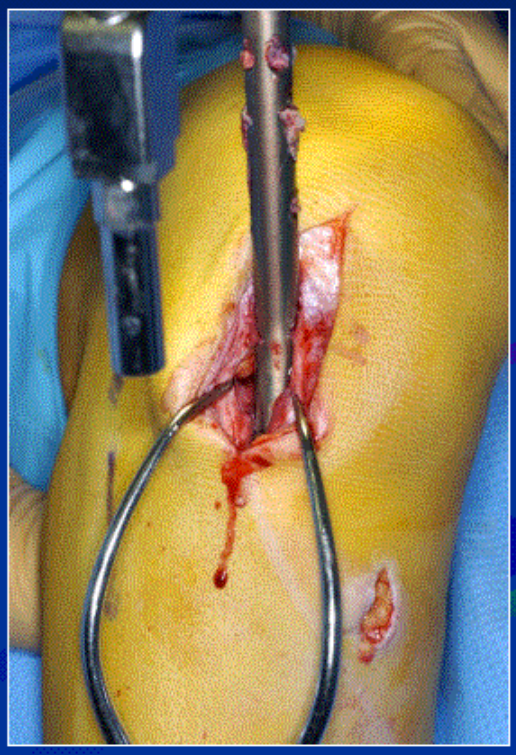
# SURGICAL TECHNIQUE

# GOALS OF SURGERY

- Create a Stable Mechanical Construct
- Enhance the Biological Environment
  - Favorable to Bone and Vascular Regeneration

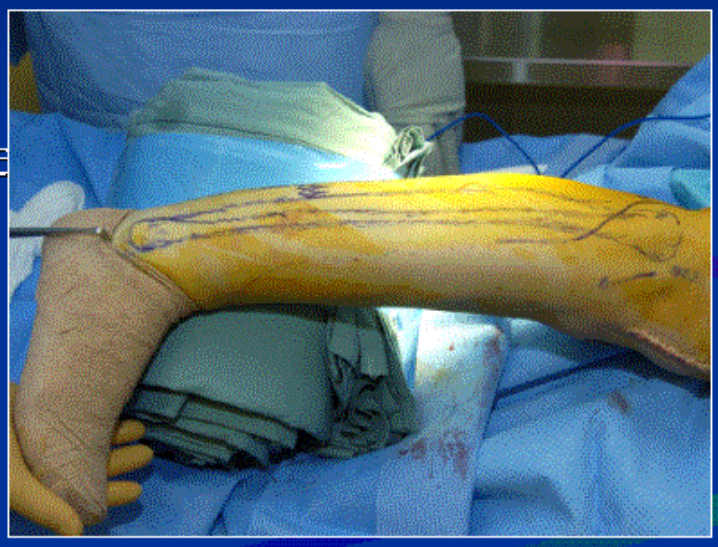
# SURGICAL GOALS

- Safely Remove Previous Fixation Device
- Surgical Exposure
- Prepare Nonunion



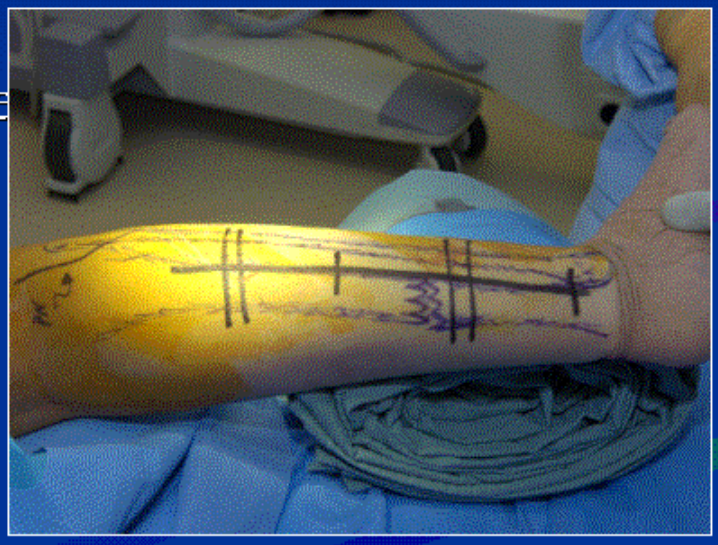
# SURGICAL GOALS

- Safely Remove Previous Fixation Device if Any
- Surgical Exposure
- Prepare Nonunion



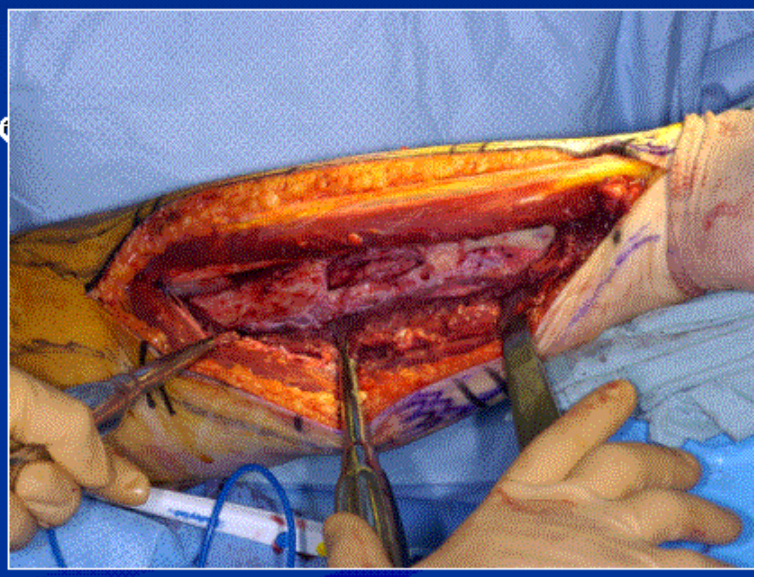
# SURGICAL GOALS

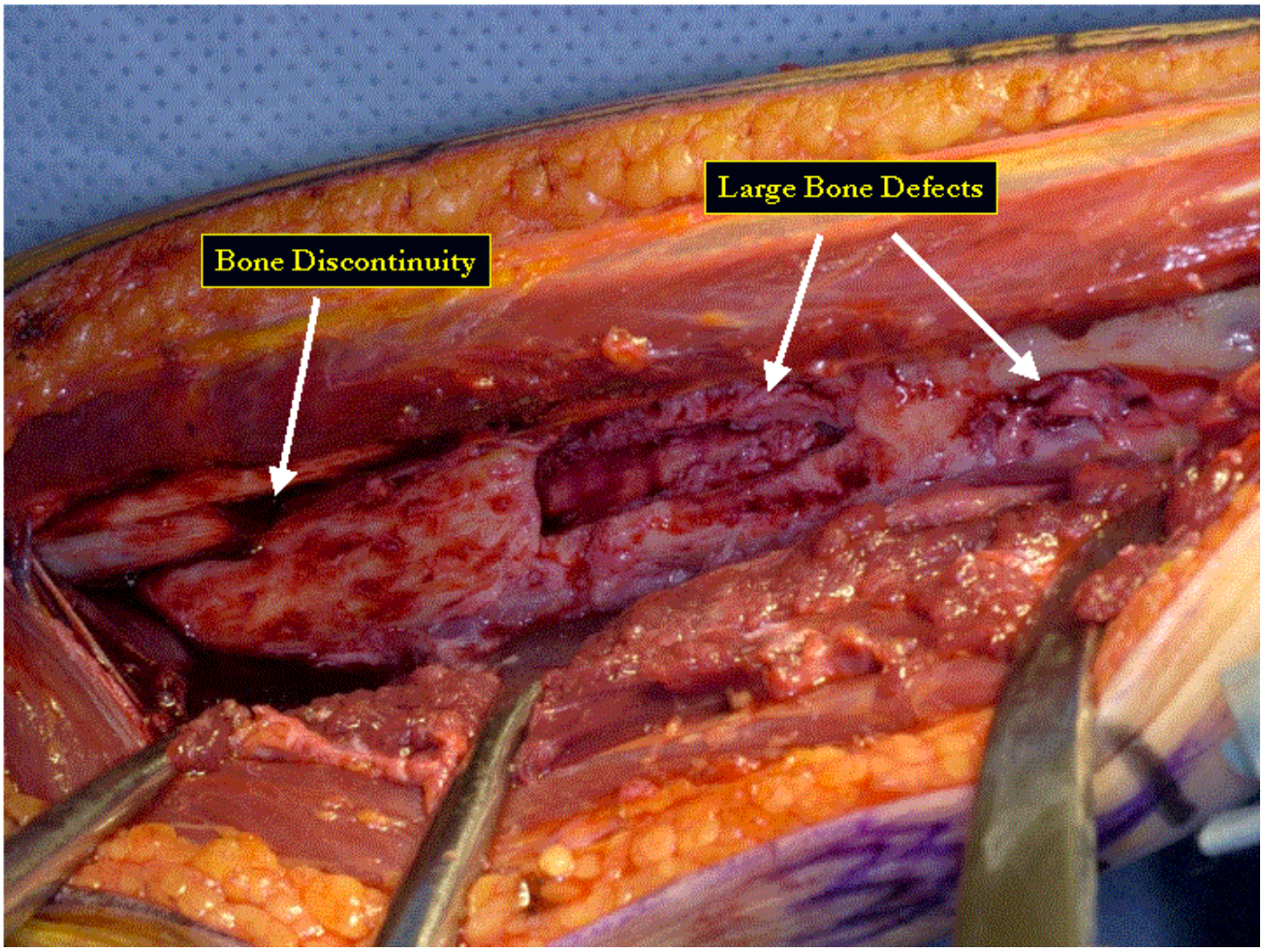
- Safely Remove Previous Fixation Device if Any
- Surgical Exposure
- Prepare Nonunion



# SURGICAL GOALS

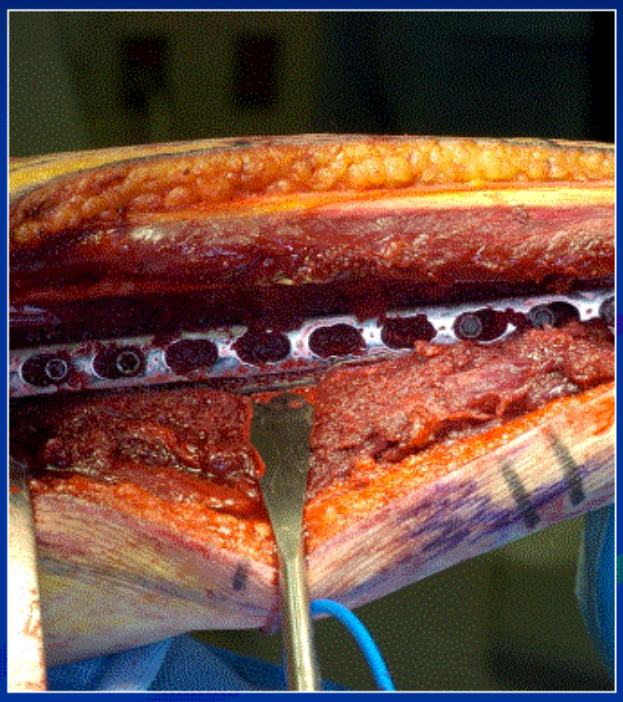
- Safely Remove Previous Fixation Device if Any
- Surgical Exposure
- Prepare Nonunion




Large Bone Defects
Bone Discontinuity

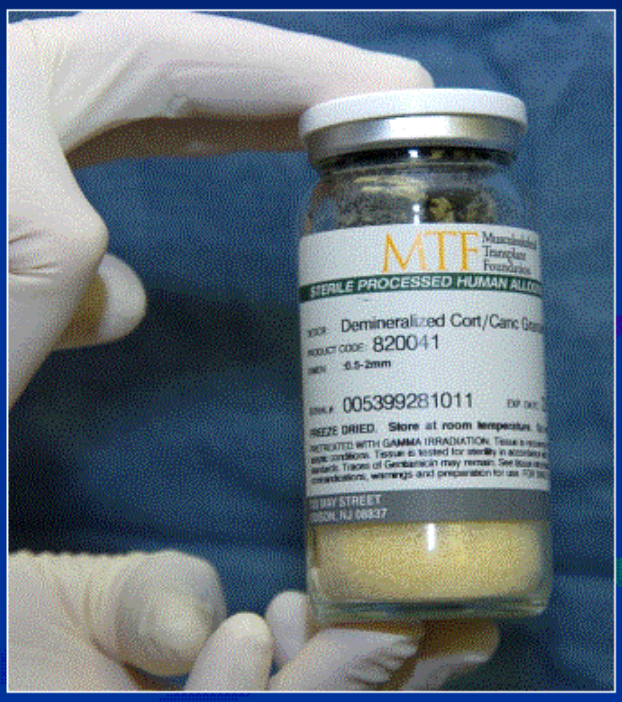
# SURGICAL GOALS

- Provide Fracture Stability
- In this Case, Absolute Stability
- Locked Plate Construct
  - 4.5 Narrow Combi-hole plate



# COMPONENTS FOR MIXING ALLOGRAFT WITH TRCs

- Allograft
  - Partially Demineralized Cortical-cancellous
  - 0.5-2.0mm Particle Size



# COMPONENTS FOR MIXING ALLOGRAFT WITH TRCs

- Stem Cells
  - TRC's Suspended in Electrolyte Solution with .5% Human Serum Albumin
  - Standardized cGMP Product Qualified and Containing approx 175 Million TRCs

# COMBINE CELLS WITH ALLOGRAFT

- 60 cc Syringe and 18 Gauge Needle
- Withdraw Cells Slowly
  - Cells in fluid suspension
- Slowly Drip the Cells onto the Allograft
- Gently Mix the Cells and Allograft

# COMBINE CELLS WITH ALLOGRAFT

- 60 cc Syringe and 18 Gauge Needle
- Withdraw Cells Slowly
  - Cells in fluid suspension
- Slowly Drip the Cells onto the Allograft
- Gently Mix the Cells and Allograft

# COMBINE CELLS WITH ALLOGRAFT

- 60 cc Syringe and 18 Gauge Needle
- Withdraw Cells Slowly
  - Cells in fluid suspension
- Slowly Drip the Cells onto the Allograft
- Gently Mix the Cells and Allograft

# COMBINE CELLS WITH ALLOGRAFT

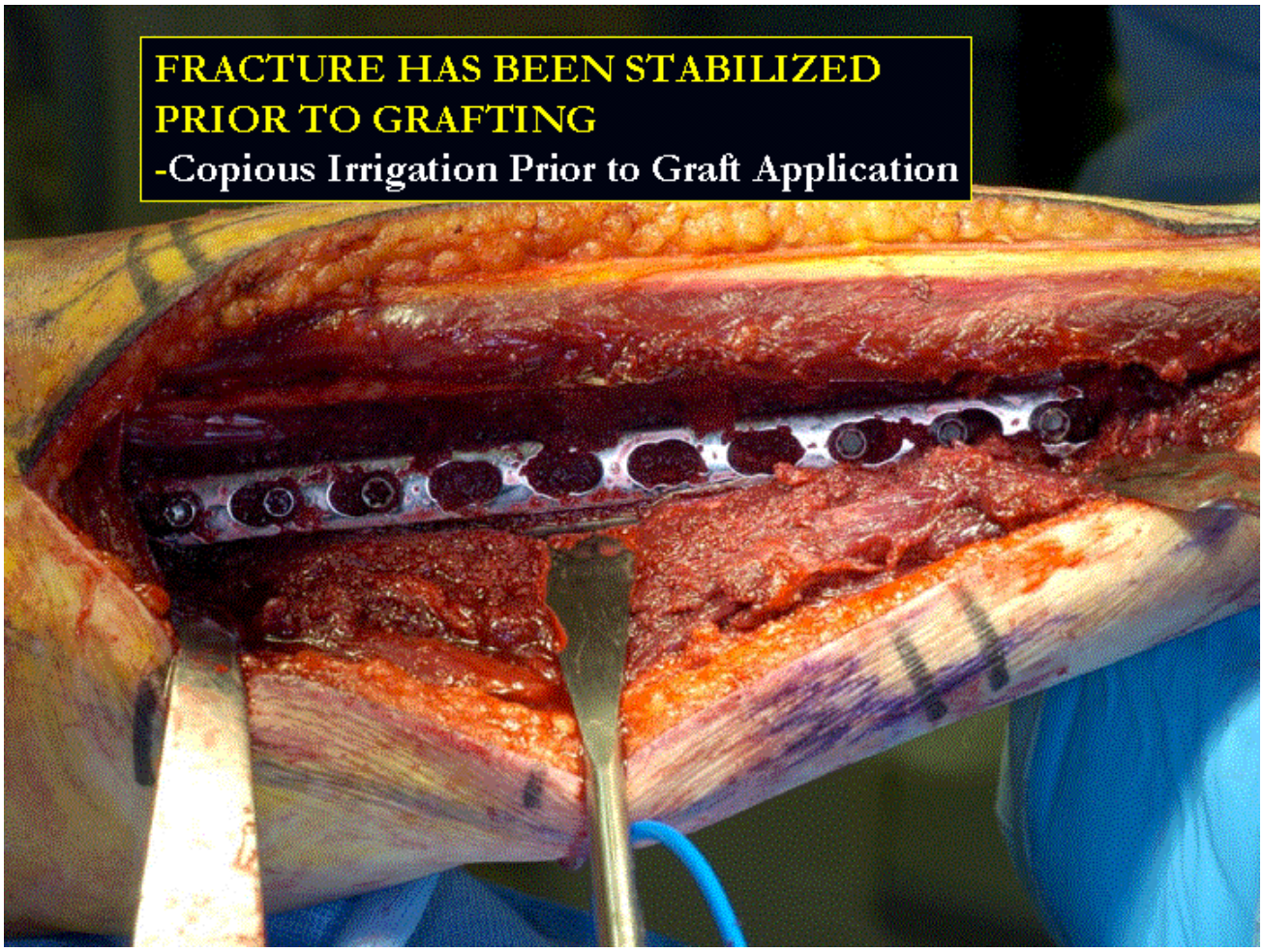
- 60 cc Syringe and 18 Gauge Needle
- Withdraw Cells Slowly
  - Cells in fluid suspension
- Slowly Drip the Cells onto the Allograft
- Gently Mix the Cells and Allograft

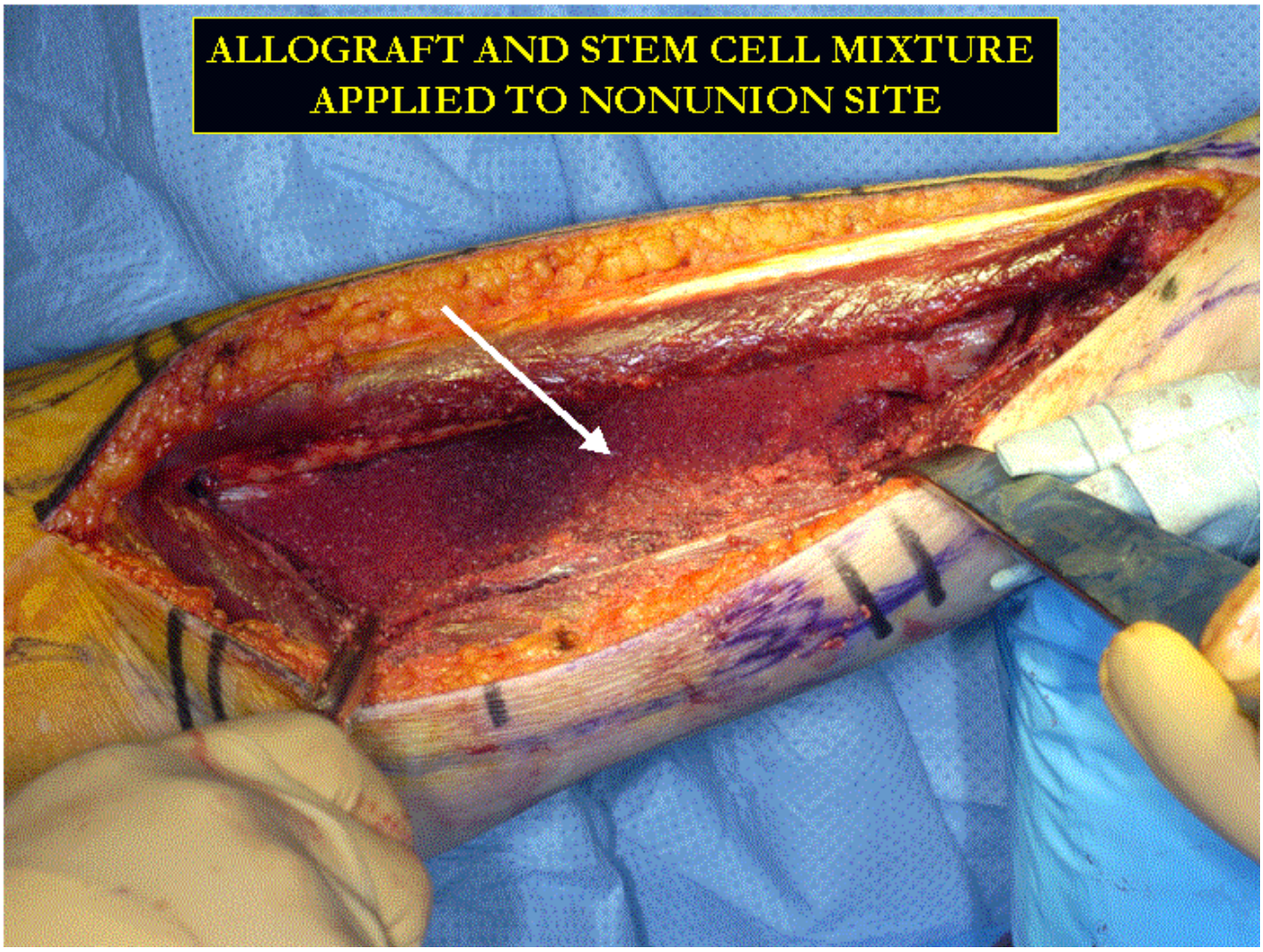
# FINAL COMBINED PRODUCT

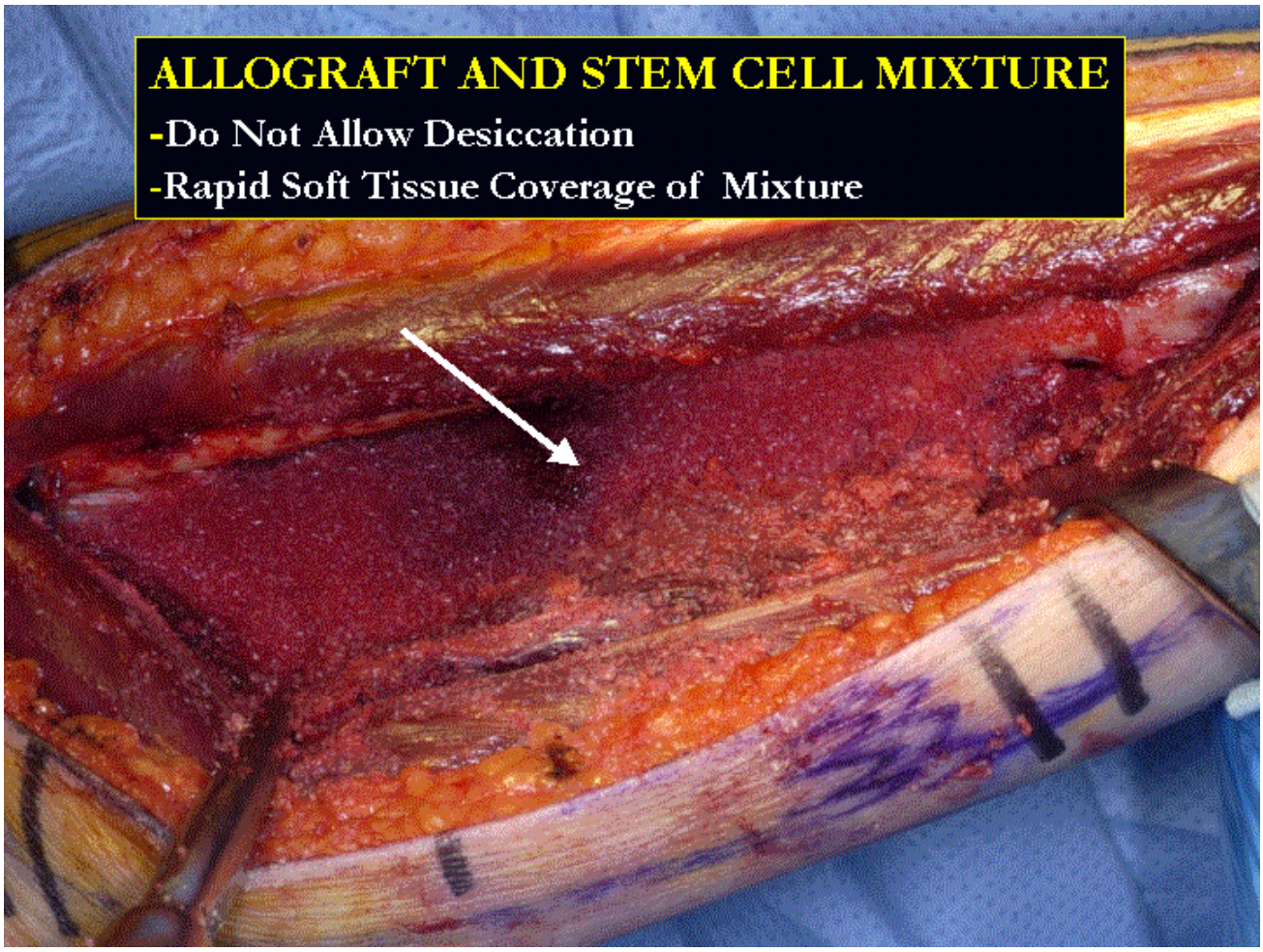
- Apply Vacuum Suction Only After Thorough Mixing has Occurred
- Allograft Should Appear Moist, and Hold together from the Moisture and the Cells

# FINAL COMBINED PRODUCT

- Apply Vacuum Suction Only After Thorough Mixing has Occurred
- Allograft Should Appear Moist, and Hold together from the Moisture and the Cells


FRACTURE HAS BEEN STABILIZED
PRIOR TO GRAFTING
-Copious Irrigation Prior to Graft Application

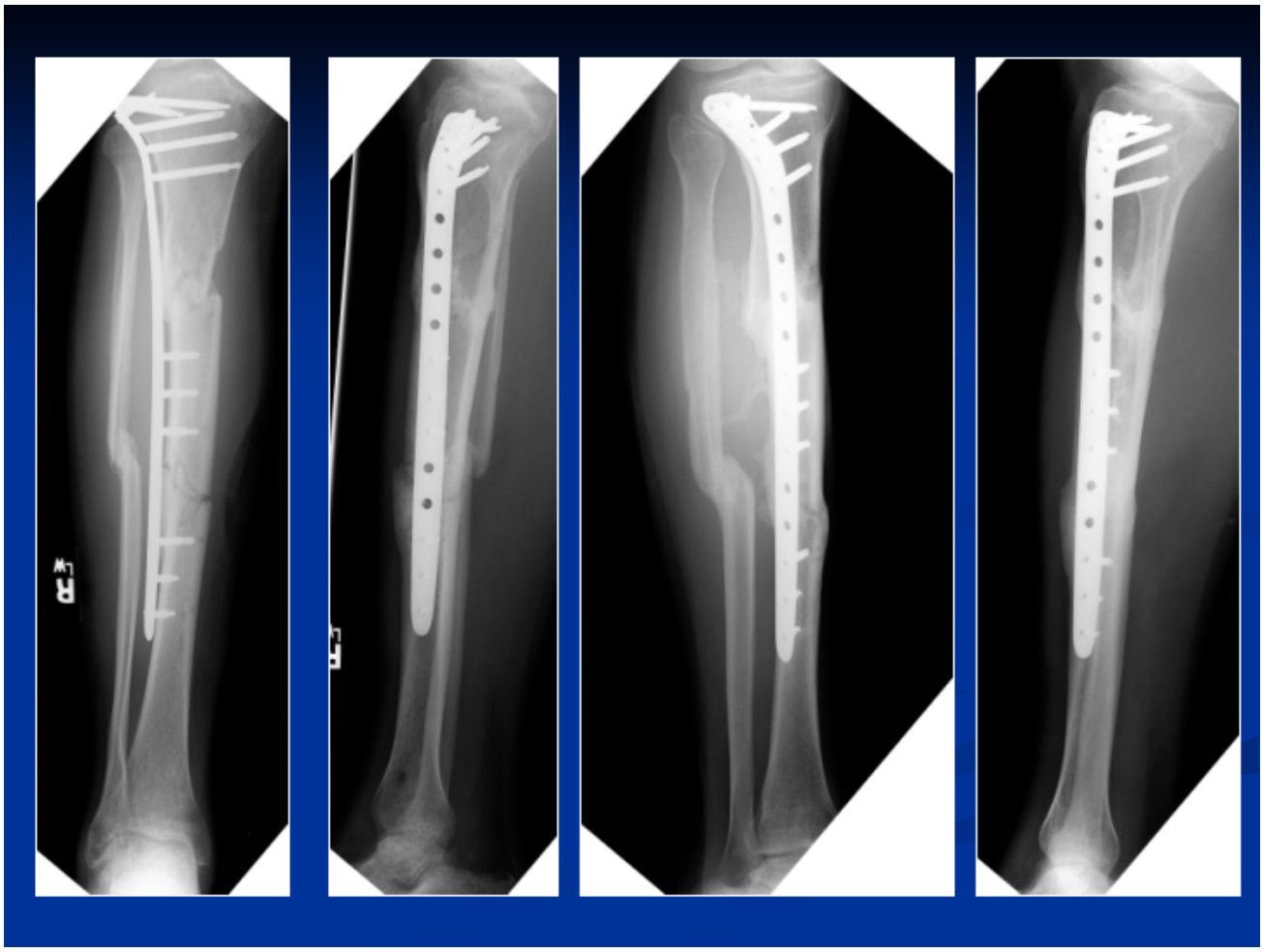

ALLOGRAFT AND STEM CELL MIXTURE
APPLIED TO NONUNION SITE


ALLOGRAFT AND STEM CELL MIXTURE
-Do Not Allow Desiccation
-Rapid Soft Tissue Coverage of Mixture

# CLINICAL CASE REVIEWS

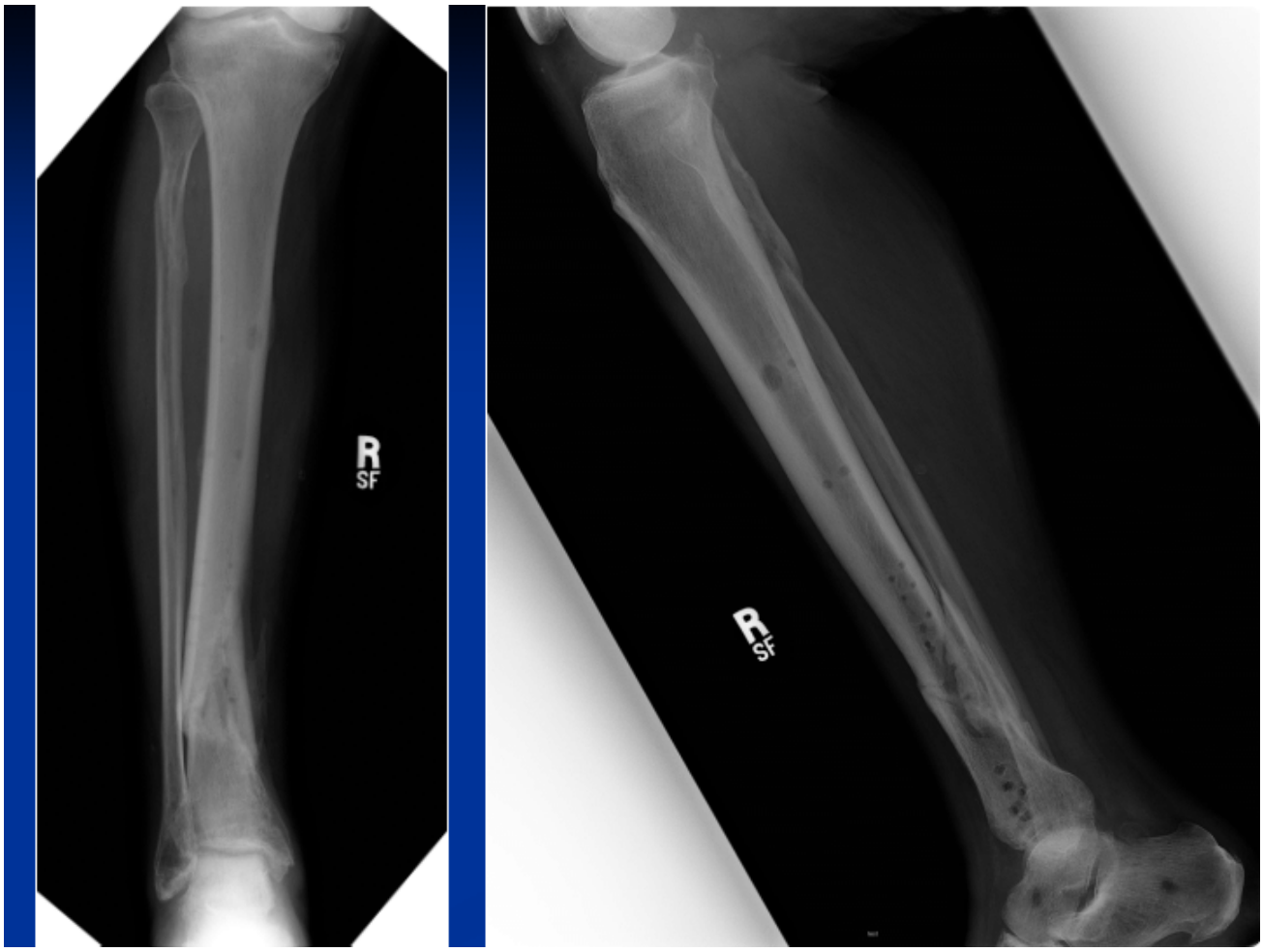
# CASE # 1

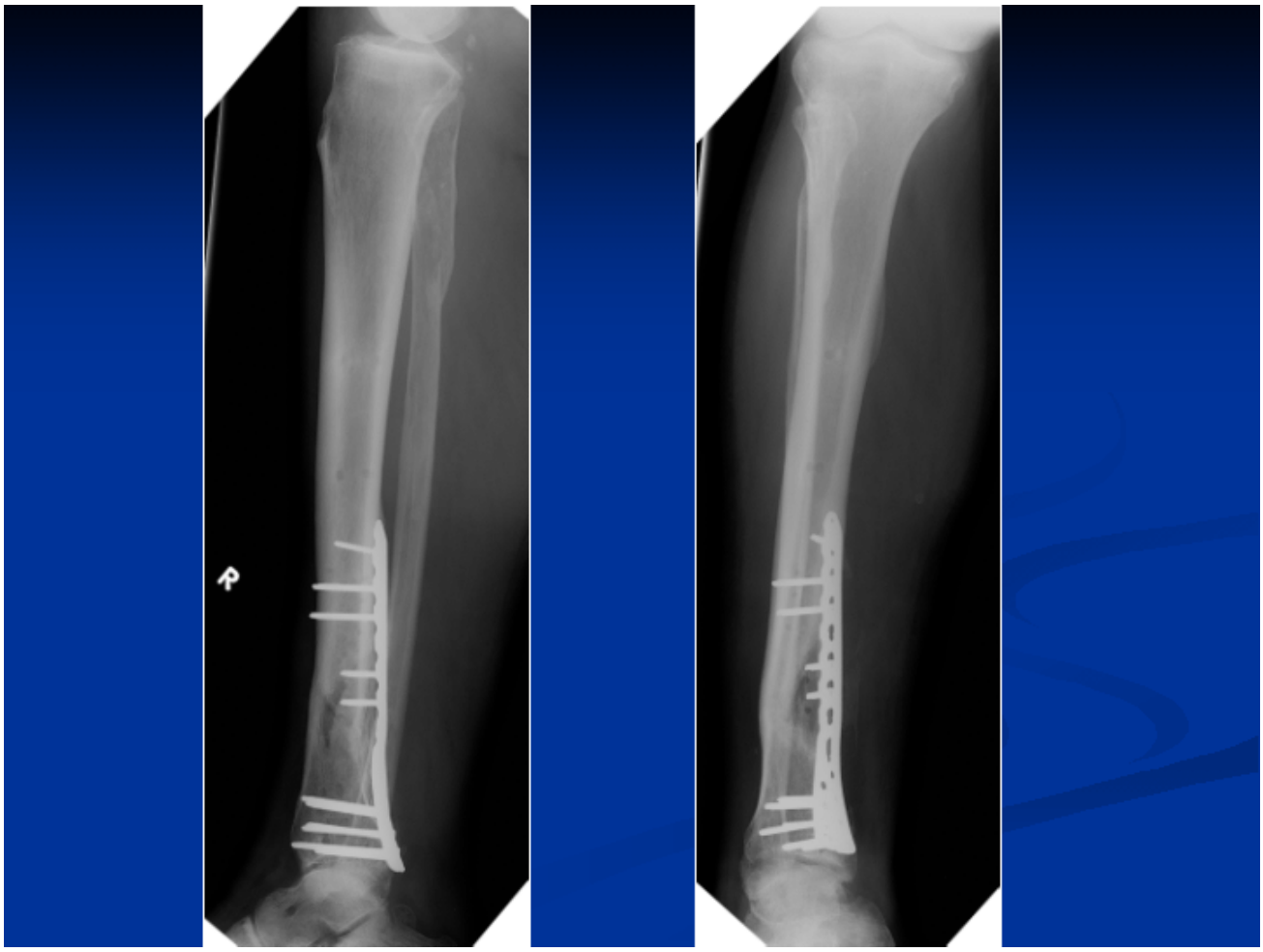
- 51 Year Old Male
- MVA
- Segmental Fracture Pattern
- Previous Locked Plate Construct (Liss)
- BMP X 2
- + NSAIDs
- Smoker



# CASE #2

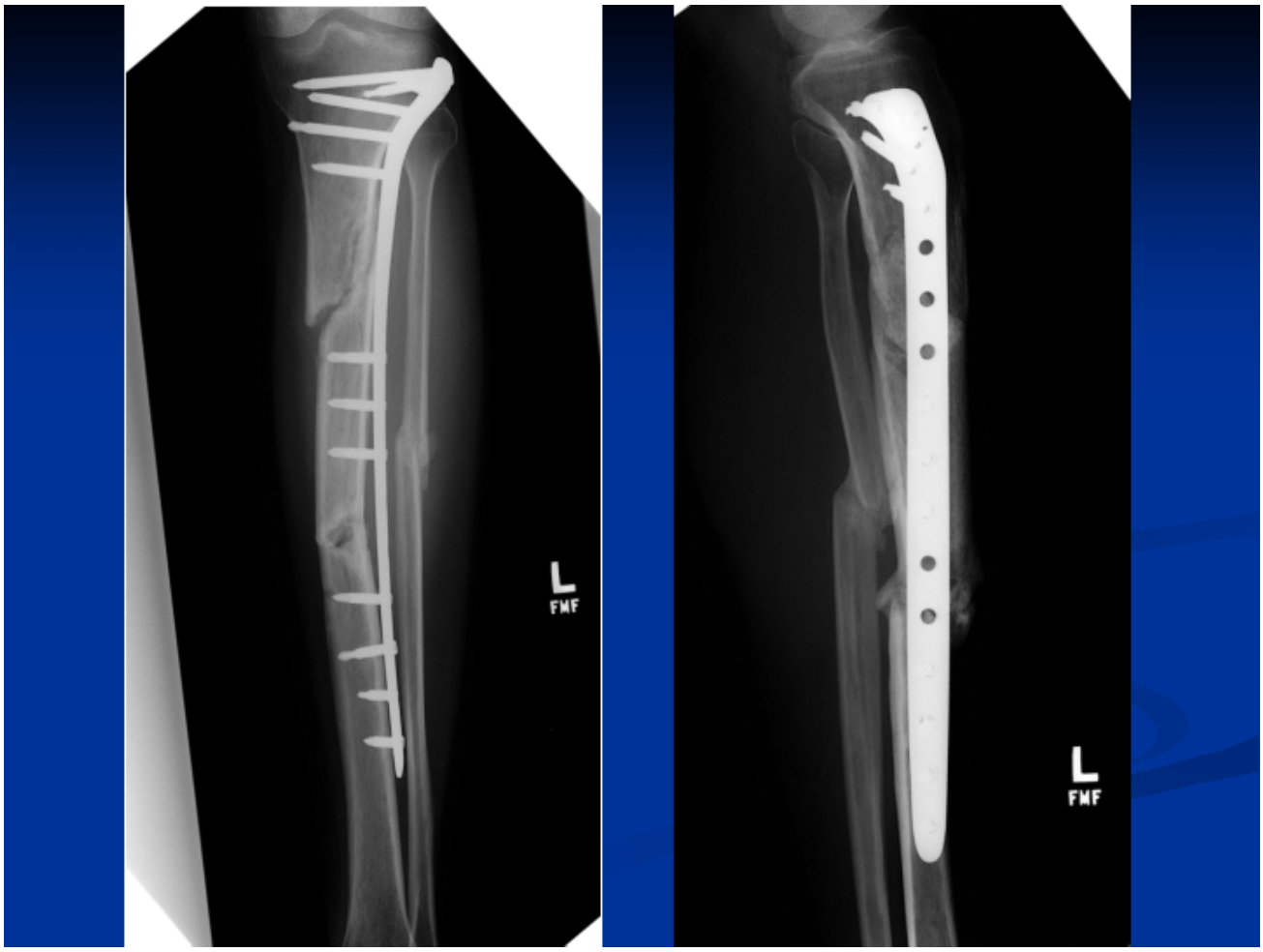
- 73 Year Old Male
- High Energy Fall
- Previous Plate Fixation with Autograft
- Previous Surgical Infection
- Poor Initial Mechanical Stability

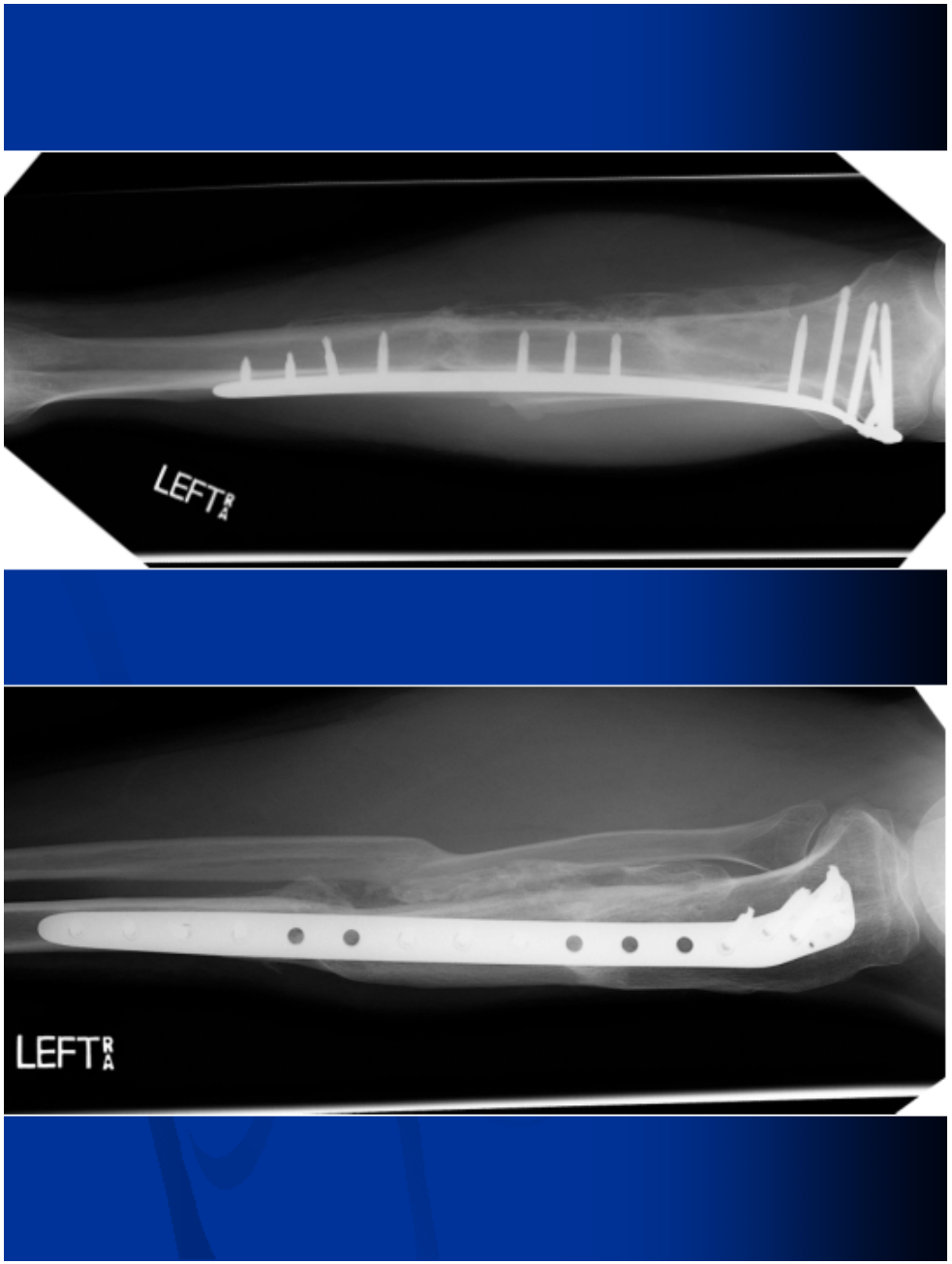

R
SF
R
SF


R

# CASE #3

- 30 Year Old Male
- Motor Vehicle vs. Pedestrian (High Energy)
- Segmental Fracture Pattern
- Previous Locked Plate Construct (Liss)


L
FMF
L
FMF


LEFT
R
A
LEFT
R
A

# CONCLUSIONS

- Our Preliminary Report Shows that TRC's with Allograft is Safe and Efficacious for Recalcitrant Tibial Nonunions
- Further Study is Warranted
- Our Study Enrollment of 36 Patients is Now Nearing Completion


THANK YOU