

**HIGHLIGHTS FROM
AAOM 2019
DENVER, CO MAY 2-4**


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DISCLOSURES

- MEMBER OF THE AMERICAN ASSOCIATION (NOW ALSO ACADEMY) OF ORTHOPAEDIC MEDICINE
- NO FINANCIAL DISCLOSURES

OBJECTIVES

- REVIEW TOPICS/DISCUSSIONS ON REGENERATIVE ORTHOPEDICS FROM AAOM 2019
- DISCUSS IMPORTANCE OF UNDERSTANDING EBM FOR REGENERATIVE TREATMENTS AND NON-REGEN TREATMENTS TO FORM APPROPRIATE INFORMED CONSENT
- UNDERSTAND CURRENT FDA POSITION ON STEM CELL CLAIMS
- REVIEW ADJUNCTIVE TREATMENTS INCLUDING HYDRO-DISSECTION, FASCIA/BIOTENSEGRITY



- FOUNDED IN 1983 BY A GROUP OF PHYSICIANS FROM [N AMERICA] WHO HAD AN INTEREST IN ORTHOPAEDIC MEDICINE AS AN INDEPENDENT DISCIPLINE TO TREAT CHRONIC PAIN AND INJURY WITH NON-SURGICAL METHODS, INCLUDING PROLOTHERAPY AND OTHER INJX
- PROVIDE INFORMATION AND EDUCATIONAL PROGRAMS ON THE DIAGNOSIS AND COMPREHENSIVE NON-SURGICAL TREATMENT OF NMSK DISORDERS
- IROM (INTERVENTIONAL REGENERATIVE ORTHOPEDIC MEDICINE) CERTIFICATION: WRITTEN EXAM AND PRACTICAL TEST; INCLUDES CADAVER AND LIVE PATIENT TRAINING PROGRAMS
- AAOMED.ORG



- PAIN AND SPORTS MEDICINE
- ASSOC PROFESSOR AT UNIFORMED SERVICES UNIVERSITY IN BETHESDA
- ROSM IN ANNAPOLIS
- FACULTY AND SEVERAL AAOM COURSES
- PUBLISHED

INFORMED CONSENT FOR REGEN

- MOST ORTHO REGEN PROCEDURES HAVE LIMITED EVIDENCE TO SUPPORT BMAC (LEVEL 3 OR 4), CONFLICTING STUDIES WITH PRP
- MANY ORTHO SURGERIES HOWEVER ALSO HAVE NO BETTER THAN LEVEL 3 EVIDENCE YET ARE ROUTINELY DONE AN ACCEPTED
- SOME SURGERIES (IE KNEE ARTHROSCOPY) HAVE STUDIES SHOWING NO BENEFIT WHEN COMPARED TO SHAM SURGERY
- COMPLICATION RISKS WITH ORTHO SURGERY, REVISION RATES (IE RETEAR RATES FOR RTC)
- SOME MSK CONDITIONS DO WELL WITH NO SURGERY (CONSERVATIVE CARE WORKS WELL)
- **WE SHOULD FOCUS ON CONDITIONS FOR WHICH "TRADITIONAL" TREATMENTS ARE INEFFECTIVE OR OTHERWISE RISKY**

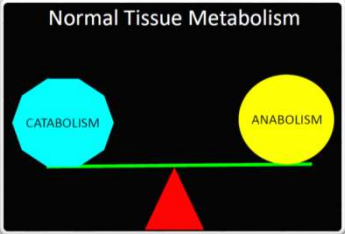
RISK/BENEFITS OF TRADITIONAL TREATMENT

- MULTIPLE STUDIES INDICATE THAT CORTICOSTEROIDS INHIBIT MSC, CHONDROCYTE, FIBROBLAST ACTIVITY: WE ALREADY KNEW THEY "THIN" CARTILAGE, LIGAMENT AND BONE
- NSAIDS - 2013 COCHRANE REVIEW: CONFLICTING EVIDENCE OF BENEFIT OF NSAIDS, GI RISK; SOME PAIN BENEFIT OUT TO 4 WEEKS, NO DATA TO SUGGEST IMPROVED HEALING
- OTHER STUDIES ALSO REVEAL INCREASED RISKS WITH LIMITED DURABLE BENEFIT OF NSAIDS
- LOCAL ANESTHETICS ALSO CHONDROTOXIC, PROBABLY MSC TOXIC; DOSE DEPENDENT
- ESI - 2009 COCHRANE REVIEW: INSUFFICIENT EVIDENCE TO SUPPORT THE USE OF INJX TX IN SUBACUTE AND CHRONIC LBP; A 2011 STUDY SHOWED NO DIFF WITH SALINE VS STEROID
- CONFLICTING RESULTS FROM PT AND CHIRO STUDIES

INFORMED CONSENT FOR REGEN

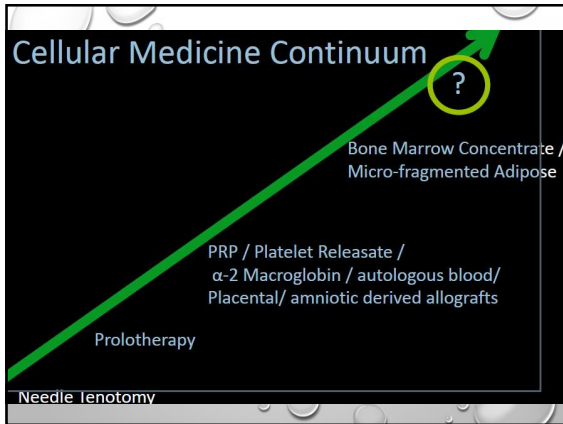
- INFORMED CONSENT IS A PROCESS, NOT JUST A FORM THAT A PATIENT SIGNS
- SHOULD INCLUDE EDUCATION ON RISK AND BENEFITS OF THE PROPOSED PROCEDURE AS WELL AS THOUGHTFUL DISCUSSION OF THE RISK AND BENEFITS OF ALTERNATIVE TREATMENTS
- CONSIDER REGEN FOR CONDITIONS THAT DON'T HAVE GREAT EVIDENCE-BASED ALTERNATIVES, SURGERY IS NOT STELLAR AND REGEN TREATMENTS HAVE AT LEAST BEEN SHOWN TO BE SAFE
- MY TAKE AWAY- CONSIDER "PRE PROCEDURE" TEACHING (SIMILAR TO SURGEONS) THAT INCLUDES COMPREHENSIVE EDUCATION ON ALL TREATMENT OPTIONS FOR EACH CONDITION

Normal Tissue Metabolism



CHANGE THE PARADIGM

- CHANGE FROM ANTI-INFLAMMATORY (CATABOLIC) TO ANABOLIC/HEALTHY INFLAMMATION (ANTI-CATABOLIC)



- ### Our Practice Guidelines
- Comprehensive diagnosis
 - Stabilize the painful region
 - Favorably alter the healing milieu
 - **Regenerative therapies instead of destructive or palliative therapies**
 - Local, Regional, Sympathetics
 - Non-structural sources of pain
 - Effective rehabilitation = optimal recovery
 - Pass on what you learned

ULTRASOUND GUIDANCE

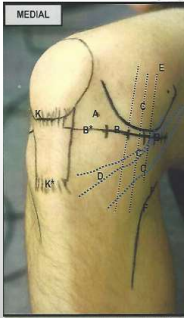
- EXPERT MASTERY OF SONO-ANATOMY CRUCIAL FOR DIAGNOSTIC VALUE AND APPROPRIATE, TARGETED INJX ESPECIALLY FOR SOFT TISSUE STRUCTURES LIKE LIGAMENTS, NERVES; AVOID VASCULAR STRUCTURE, AVOID HARMING CARTILAGE

NEEDLE IN TRANSVERSE
SURAL N
RIVE TRANSVERSE NEUROPLASTY

The image shows an ultrasound scan with a needle inserted. Labels indicate 'NEEDLE IN TRANSVERSE', 'SURAL N' (sural nerve), and 'RIVE TRANSVERSE NEUROPLASTY'.

PROLOTHERAPY

- AAOM HAS BEEN A LEADER IN PROLOTHERAPY TRAINING FOR DECADES
- LEVEL 1 EVIDENCE FOR KNEE OA (RABAGO ET AL 2013)
- HIGH LEVEL STUDIES FOR OTHER OA, SPINAL/PELVIC PAIN DUE TO LIGAMENT DYSFXN, SIJ
- BASED ON BIOTENSEGRITY- THE BODY IS CONNECTED BY FASCIA WHICH PROVIDED MECHANICAL (AND PROBABLY NEURAL) FEEDBACK DURING MOVEMENT



AUTOLOGOUS TREATMENTS

PRP

- CONFLICTING EVIDENCE DUE TO SEVERAL FACTORS: STUDY DESIGNS INCLUDING DURATION; VARIATIONS IN PRP (NOT ALWAYS DESCRIBED IN EACH STUDY, IE LEUK RICH VS POOR ETC)
- SEVERAL HIGH LEVEL STUDIES DEMONSTRATE SUPERIORITY TO STEROID INJX: T GOSENS ET AL 2008 (LEVEL 1 FOR TENNIS ELBOW), SYSTEMATIC REVIEW BY LAVER ET AL 2017 FOR KNEE AND HIP OA, RR MONTO 2014 (LEVEL 1 FOR PF), F CERZA ET AL 2012 (LEVEL 1 FOR KNEE OA, COMPARO WITH HA), PROMISING STUDIES ON INTRADISCAL PRP

BMAC


- Many studies confirm safety
- Several level 3 and 4 studies demonstrate positive effect, patient satisfaction, etc- knee and shoulder OA, RTC

OTHER TREATMENTS

- PLATELET LYSATE, RELEASATE AND A NEW ENPLAF "ENRICHED PLATELET FACTORS" ARE AUTOLOGOUS "PRP ALTERNATIVES"
- ALPHA 2 MACROGLOBULIN- ALSO AUTOLOGOUS, EFFECTIVELY SHUTS DOWN METALLOPROTEINASES IN FAC + JOINTS/DISCS; MOSTLY ANIMAL STUDIES TO DATE
- BIRTH TISSUES- ALLOGRAFTS, NOT STEM CELLS!; LITTLE EBM EXCEPT FOR CULTURED CELLS
- EXOSOMES, LIPOSOMES, LIPOGEMS- WAVE OF THE FUTURE OR FLASH IN THE PAN??

INTRAOSSUEOUS TREATMENT

- BMAC AND/OR PLATELET TREATMENTS TO TARGET SUBCHONDRAL T2 "HOT SPOTS" IN BONE MARROW
- CASE SERIES EVIDENCE BUT EXPERIENCED PRACTITIONERS REPORTING BETTER RESULTS VS INTRA-ARTICULAR TREATMENTS ONLY



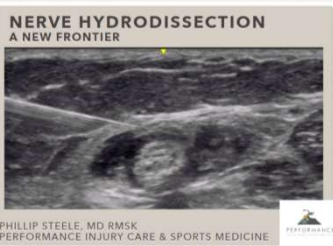
Panel a: Clinical photo of a patient's abdomen. Panel b: Clinical photo of a patient's abdomen with a needle inserted. Panel c: Clinical photo of a patient's abdomen. Panel d: MRI scan of a knee joint.

"WATCH WHAT YOU SAY"

- MICHAEL SCARPONE DO- ASSOCIATE PROFESSOR SPORTS MEDICINE AND PERFORMANCE PROGRAM AT TRINITY HEALTH SYSTEM (PENNSYLVANIA)
- HAS ATTENDED FDA STAKEHOLDERS' MEETING ON STEM CELL/REGEN THERAPIES
- FDA HAS INDICATED NOVEMBER 2020 AS COMPLIANCE DEADLINE FOR THEIR CURRENT RULES
- AT THAT TIME, "GLOVES ARE LIKELY TO COME OFF" REGARDING "STEM CELL" CLINICS AND FALSE CLAIMS- DON'T CALL BIRTH TISSUE ALLOGRAFTS "STEM CELL" TREATMENTS (ESPECIALLY IF THEY'RE DEAD!), DON'T HAVE VIDEOS OR OTHER CLAIMS THAT IMPLY JOINTS OR OTHER STRUCTURES REJUVENATE
- THINK EVIDENCED BASED MEDICINE, DON'T OVER PROMISE OR OVER-HYPE, DEMONSTRATE THOUGHTFUL BALANCE IN DISCUSSIONS AND ADVERTISEMENTS

NERVE HYDRODISSECTION

A NEW FRONTIER



PHILLIP STEELE, MD RMSK
PERFORMANCE INJURY CARE & SPORTS MEDICINE

NERVE HYDRODISSECTION

- LOTS OF DISCUSSION ON ADDING PERINEURAL (LYFTOGY) INJECTIONS AND PERIPHERAL NERVE HYDRODISSECTION TO TREATMENTS AND FOR DX
- CLUNEAL, SUPRACLAVICULAR, SUPRASCAP, SPINAL ACCESS, DORSAL SCAP, RADIAL SCIATIC, PUDENDAL, PERONEAL, TIBIAL ETC

A NEW PARADIGM SHIFT

NERVE HYDRODISSECTION DOESN'T ALWAYS WORK?

THE PROBLEM IS IDENTIFYING THE WHY?

NERVES FREQUENTLY TRAVEL THROUGH FASCIAL PLANES.....


SHOULD WE THINKING OF A NEURO-FASCIOPATHY?

DO WE NEED TO HYDRO-DISSECT THE FASCIA AS WELL?

An image of an iceberg floating in the ocean. The tip of the iceberg is visible above the water surface, while the much larger, jagged base is submerged below the surface, illustrating the concept of hidden or underlying issues.

WHAT ABOUT THE FASCIA?

- Nerves traverse through the fascia on their pathway to their muscular innervation
- Repetitive stretch or compression not only creates a neuro-inflammatory response but also fascial adhesions and constrictions.
- Identifying a swollen or compressed nerve with MSKUS or EMG/NCT may not help us to understand anchoring of the smaller nerve fibers in the fascia?
- Smaller branches act like roots of a tree anchored in the fascia?

A diagram showing a network of nerve roots branching out from a central point, resembling the roots of a tree. The roots are shown extending downwards and outwards, illustrating how nerves are anchored into the fascia.

- FASCIA AND MECHANICAL ANALYSIS (ESPECIALLY FOR "SICK SCAPULA" WERE DISCUSSED ALSO BY DR. BRAD FULLERTON (PM&R AT PROLO AUSTIN)- "FASCIA GURU"
- DRS. FULLERTON AND STEELE ALSO TAUGHT A PRECONFERENCE COURSE ON FASCIA AND NERVE HYDRODISSECTION WITH U/S

THE FUTURE

- What is the best hydro-dissection fluid?
- PRP, PRGF, platelet releasate/lysate?
- Intraneural injections?
- Placental tissue matrix injections to prevent scarring?
- Bone marrow, adipose graft, exosomes?
- Hyaluronic acid injections versus recombinant hyaluronidase?
- Newer imaging techniques?
- Higher resolution probes?

A collage of images related to laboratory work. It includes a person in a lab coat using a pipette to transfer liquid into small vials, a test tube in a rack, and other laboratory glassware.

ADJUNCTIVE TREATMENT

- NO SPECIFIC LITERATURE SUPPORT BUT HOLISTIC/PERSONALIZED MEDICINE APPROACH MAKES SENSE
- DISCUSSED BASIC SCIENCE AND LIMITED CLINICAL EVIDENCE TO SUPPORT CURRENT CONSENSUS REHAB PROTOCOLS POST-TREATMENT (BRIAN SHIPLE MD)
- FUNCTIONAL/LIFESTYLE MEDICINE ADJUNCTS- NUTRITION, EXERCISE, SLEEP, STRESS MANAGEMENT, IDENTIFY HORMONE PROBLEMS, CHRONIC INFLAMMATORY CONDITIONS, ETC
- SUPPLEMENTS, IV NUTRITION SUPPORT
- OFFERED PRE-CONF COURSES ON PHYSICAL THERAPY, "FITNESS, HORMONES, NUTRITION AND REGENERATION", INTEGRATIVE MEDICINE PROTOCOLS IN REGEN MED

PRE-CONFERENCE COURSES

- BASIC ULTRASOUND FOR REGEN MED; BASIC C-ARM FOR REGEN MED
- INTRO TO PROLOTHERAPY, PRP, STEM CELLS; PROLO 101
- AMNIOTIC SCAFFOLDS
- PREPARING AND CELL COUNTING PRP
- ADVANCED MSK U/S AND U/S GUIDED FASCIAL, HYDRODISSECTION, NEURAL THERAPY
- INTRAOSSEOUS BONE MARROW TECHNIQUES
- FASCIAL PERSPECTIVES ON SCAPULAR DYSFXN: BIOTENSEGURITY & HYDRODISSECTION
- ADMIN/ASSIT. CONFERENCE; "GETTING STARTED" IN REGEN MED

FUTURE COURSES

- 2019 AAOM ANNUAL WORKSHOP - **AUGUST 1 - 3** - DENVER, COLORADO - ANATOMICAL BASICS OF REGENERATIVE MEDICINE FOR THE UPPER EXTREMITY AND SPINE
- 2019 AAOM BASIC SKILLS WORKSHOP - **OCTOBER 4-6** - CANCUN, MEXICO - BASIC PROLOTHERAPY AND PRP WITH IROM LIVE HANDS-ON TRAINING
- 2019 ADVANCED PRP, STEM CELLS AND INTRADISCAL SPINE WITH IROM - **TBD NOVEMBER** - GUADALAJARA, MEXICO
- 2020 AAOM ANNUAL CONFERENCE & SCIENTIFIC SEMINAR - **APRIL 1-4** - HYATT REGENCY WASHINGTON ON CAPITOL HILL, WASHINGTON, DC
- **LEARN MORE AT AAOMED.ORG**
