An Integrative Approach to Cure Chronic Soft Tissue Injury in Masseter muscle

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ALD 2012 Conference
Scottsdale, Arizona
March 31st, 2012
Chronic Pain

• *The Wall Street Journal (May 11, 2010)* reports there are 76.5 million Americans suffer from chronic pain, equal to 26% of all American adults

• Many are of soft tissue injury origin

• Most chronic soft tissue pain are managed by NSAIDs - Non-steroidal anti-inflammatory drugs, the largest selling class of drugs in the world
What is soft tissue injury?

- Musculoskeletal disorders due to trauma from direct forces, or strains and sprains due to indirect forces from sports activities
- Involving soft tissues like tendons, ligaments, muscles, and fascia
- Damages not visible on the X-ray or easily seen on the MRI
- Modern medications such as antibiotics, (Levaquin as one example) may also be the cause
Muscle, Tendon, and Ligament

**Muscle**

- Composed of well-directed fibers bound together by connective tissues (fascia)
- They are well-vascularized and relatively elastic
Muscle, Tendon, and Ligament

**Tendon**

• Composed fibrous connective tissues that attach muscles to bones

• Highly collagenous fibers. Arranged regularly, relatively avascular (poor blood supply), and slightly stretchable (less elastin fibers)
Muscle, Tendon, and Ligament

**Ligament**

- Bands or sheets of strong and fibrous connective tissues that connect bones together at a joint
- Structurally similar to tendons but more uneven arranged
- Frequently a source of pain due to innervated richly by pain receptors
Soft Tissues in MASSETER

masseter muscle
Masseter Muscle

• Powerful, thick muscle stretching from the zygomatic arch to under the mandible

• It’s the principle muscle for jaw closure

• One possible cause of injury may be contributed by prolong opening of the jaw from dental works
Common sites of injury

• The injury sites can be anywhere from the insertion site at the zygomatic arch to the belly of the muscle itself to the insertion site at the mandible

• The lesion site closes to zygomatic arch is most common and can be more difficult to heal due to the tendon-like connective tissues, which are avascular, in the area
Common sites of injury

- **Temporalis**
  Fan-shaped muscle connecting the frontal bone to the mandible; lifts and retracts the jaw and keeps it in place when at rest.

- **Zygomatic arch**
  Horizontal arch of bone under which the temporalis muscle passes; origin of the masseter muscle.

- **Mandible**
  Jaw bone.

- **Masseter**
  Powerful, thick muscle stretching from the zygomatic arch to under the mandible; the principal muscle for jaw closure.
Phases of Pain: acute and chronic

**Acute Pain**

- Result from noxious stimulation produced by injury or disease
- Function to warn body something is wrong and cause proper action
- Often activate innate healing mechanism and resolve the disorder in a relatively short period of time
Phases of Pain: acute and chronic

**Chronic Pain**

- Mechanism relatively lesser understood
- “unhealed” disorders longer than 3 months
- Stimulation of pain receptors can be ongoing and continuous even the healing mechanism has stopped
- Often involves nervous system and psychological changes
- Unresolved chronic soft tissue injury often also involves scar tissues
Three Stages of Soft Tissue healing

Phase I - Inflammation

- This phase lasts three to five days.
- Prostaglandins (one of a group of fatty acids made naturally in the body that act much like hormones) initiate multiple tasks: to stimulate the immune system, to build up platelets around the lesion, and to attract white blood cells that protect against infections, and clean up the damaged tissue.
- The prostaglandins protect the damaged tissue by delivering a pain message and by sensitizing the injured area to keep from further injury.
- Specialized cells called fibroblasts begin to produce disorganized fibrous (scar) tissue.
Phase II – Cell Proliferation

• The fibroblastic phase begins and lasts six to eight weeks
• Cells proliferate and granulate to replace the damaged cells
• Granulated tissues become more organized
• Physical activity eliminates unnecessary scar tissues that may have inadvertently adhered to neighboring tissue
Phase III - Remodeling

• The matrix formation or remodeling maturation phase may last six months or more
• The repaired tissue remodels itself by restoring damaged tissue, making it stronger than it was before the injury
• If the remodeling doesn’t occur, it leads to weakened tissue prone to future re-injury
• Also granulation tissue develops into scar tissue. This leads to chronic pain when the remodeling is poor or stops and the scar tissue remains
Complete Healing requirements

• Western medical science identifies these three healing stages for injuries great and small. When these three stages of healing proceed naturally, healing progresses quickly.

• When healing is disrupted, problems arise: specifically, poor circulation of blood and lymph, as well as chronic pain and its associated disability.

• During tissue repair, fresh blood brings nutrients and oxygen to provide materials for healing and the lymph removes the byproducts of tissue repair.
“Raice” - Formula for Failure

• RAICE (RICE + NSAIDs) treatment, commonly prescribed by physicians, athletic trainers, and physical therapists

• RAICE – The treatment consists of Rest, Anti-inflammatory, Ice, Compression, and Elevation in order to immobilize the joint and decrease the swelling

• The RAICE goal = short term pain relief

• Short term pain relief ≠ long term healing
Why “RAICE” Fails?

- It decreases blood flow and prevents immune cells from getting to the injured area.
- It impairs the healing process, which causes incomplete healing of the injured soft tissues – making acute pain chronic.
- Non-steroidal anti-inflammatory drugs (NSAIDS), ice, and cortisone injection treatments decrease the blood flow even further, eventually state of chronic pain develops.
“RAICE” gives rise to Chronic Pain

• Anything decreases inflammation is detrimental to the healing process of soft tissue injury

• Anti-inflammatory should only be prescribed when inflammation is the cause of the disorder like acute joint swelling

• In soft tissue injury, inflammation is part of the cure for the disorder
“RAICE” gives rise to Chronic Pain

• RAICE places patients in a chronic cycle of phases of the inflammation and scar tissue forming, and never reaches the completion of remodeling where scar tissue turns into normal healthy tissue.

• The vicious cycle creates more and more scar tissues. Accumulation of scar tissues give rise to chronic pain when contracting.
Soft Tissue Injury Summary

- Acute Inflammation: Good
- Chronic Inflammation: Bad
- Acute Inflammation is NOT a disease but a normal response of soft tissue to injury
- Acute Inflammation is an essential part of soft tissue healing
- Acceleration of acute Inflammation accelerates healing
- “RAICE” method delays and inhibits healing
Introduction of An Integrative Approach – FAST™ Method

A clinically proven method that cures chronic soft tissue injury in five to ten treatments spaced twice a week for 3 to 5 weeks for a total of 6 to 10 treatment sessions:

1. Friction Massage
2. Acupuncture
3. Stimulation with electricity, heat, and light
4. Technique
## FAST™ versus RAICE

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<th>FAST™</th>
<th>RAICE</th>
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<tbody>
<tr>
<td>Immune System Response</td>
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<td>⬇️</td>
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<td>Blood Flow to Injured Area</td>
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<td>⬇️</td>
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<tr>
<td>Collagen Formation</td>
<td>⬆️</td>
<td>⬇️</td>
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<tr>
<td>Speed of Recovery</td>
<td>⬆️</td>
<td>⬇️</td>
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<tr>
<td>Joint Range of Motion</td>
<td>⬆️</td>
<td>⬇️</td>
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<tr>
<td>Complete Healing</td>
<td>⬆️</td>
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FAST™ Method protocol REVIEW

- Key Components – Friction massage, acupuncture, and Low-level laser therapy (LLLT)

- Friction massage breaks up the scar tissues and brings back the inflammation that is required to the activation of the built-in healing mechanism
Acupuncture creates an “Adaptive Micro-trauma” environment and further promotes the healing and reduce pain by triggering the release of adenosine (Nature Neuroscience, May 30, 2010), a neurotransmitter, and endorphin.

- Low-level laser therapy enhances and speeds up the healing.
FAST™ Method protocol REVIEW

• Friction (transverse, cross-fiber) massage on the lesion (scar tissue) for 10 to 15 minutes

• Acupuncture the lesion site with dry needling technique. May add distal acu-points
FAST™ Method protocol REVIEW

• Apply electricity on the needles and far-infrared heat to the injury sites. Treatment time usually is 25 – 30 minutes.

• Apply low-level laser treatment on the injury sites after needles are removed. Generally this procedure takes 1 to 10 minutes depending on the laser equipment used.
1. Schedule patient twice a week for up to 5 weeks as a course of treatment

2. Re-assess for release after 4 weeks of treatments. Significant pain reduction should take place after 5-6 treatments and be ready to release after 8-10

3. Ask patient to slowly get back to chewing with larger bites since the final phase of healing, the remodeling, may take up to 1 additional month to complete
Thank you

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