Stages of Tissue Healing Results of Macrotrauma:
Rapid Swelling, Acute Pain, Muscle Spasm, Loss of Motion, Loss of Function

Stage 1: Active swelling; 0-72 hours: *Inflammation due to release of chemical mediators *Edema restricts motion, ↑ pain, fibrosis *Restriction of motion due to pain, spasm, edema. 1. Pain Spasm reflex (Nocifensive): pain causes reflex muscle spasm *Causes of pain: ischemia, chemical mediators, acidosis, noxious mechanical deformation *Ice: vasoconstrictor, analgesic, anesthetic, muscle relaxer, lowers metabolic rate of cells

Stage 1 Goal: ↓ pain, ↓ swelling. Care: 1. Rest & support. 2. Ice to ↓ swelling, pain & spasm. 3. Adjust when safe.


Stage 3 Goal: Restore normal motion & sensation, promote healing & ↓ pain. Care: Adjust, soft tissue work & motion exercises.

Stage 4: Remodeling: begins at 3-6 wks, usually takes 3-14 wks but may last up to 1 yr with severe injury. A. Body attempts to re-align scar tissue along directions of stress. B. Body attempts to restore crimp (regular undulations in connective tissue) which permits it to elongate & recover its original length.

Stage 4 Goal: Improve & maintain normal motion/flexibility, restore & maintain function, ↓ chronic pain, ↓ risk of re-injury & degeneration. Care: Adjust, soft tissue work & motion exercises. Malik Slosberg, DC

Goals of Care:
1. Pain Relief
2. Promotion of Full Healing
3. Restoration of full function
4. Reduction of the risk of re-injury
5. Prevention of accelerated degeneration.

These goals involve 3 separate time frames: 1. How long does it take for pain relief? 2. How long does it take for tissues to heal? 3. How long does it take to restore function?