

CONTUSIONS

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A close-up photograph of a person's arm showing a large, dark purple and black bruise. The skin around the bruise is slightly red and swollen. The background is a blurred green wall.

CONTUSIONS

- ▶ Contusion is a crush injury to a muscle.
- ▶ Hematoma is a large area of local hemorrhage following a trauma. Pooling blood causes swelling and P as it compresses near by nerve endings. Blood is being continuously supplied by the arterial system, swelling of a hematoma is more rapid than swelling of edema. Hematomas may be contained within a fascial compartment. P will increase with movement or if pressure is applied.



MYOSITIS OSSIFICANS

- ▶ Is an occasional complication following a hematoma, where the **blood within the muscle calcifies**. Spasms and inflammation may occurs in a ,muscle containing myositis ossificans. Strength will decrease, and the more severe the contusion, the higher risk of MO.

CAUSES OF A DIRECT BLOW TO THE MUSCLE

- ▶ Contact sports
- ▶ MVA
- ▶ A fall
- ▶ Contusions are classified as 3 levels of severity
- ▶ Mild, moderate and severe



MILD, MODERATE & SEVERE

- ▶ **Mild:** Minor crush to the mm with minimal bleeding, minimal loss of strength and ROM, the person can continue activity with mild discomfort.
- ▶ **Moderate:** Moderate crushing of the muscle with bleeding and swelling, the person has difficulty to continue the activity due to P and mm weakness.
- ▶ **Severe:** Severe crushing of the tissue with rapid bleeding and swelling, the person cannot continue the activity due to P and mm weakness.

SYMPTOM PICTURE ACUTE

- ▶ **Mild:** minor crush to the mm, minimal local edema, heat and bruising.
- ▶ Tenderness at the lesion site
- ▶ Minor discomfort local to the injury site
- ▶ **5-20%** loss of ROM, minimal or no loss of strength
- ▶ Client can usually continue ADL's

SYMPTOM PICTURE

- ▶ **Moderate:** Crushing of several or many fibres
- ▶ Moderate local swelling due to hematoma, heat and bruising
- ▶ Moderate tenderness at lesion site
- ▶ 20-50% loss of ROM and moderate loss of strength
- ▶ P is moderate with activities that contract or stretch the mm affected
- ▶ Client has difficulty in continuing ADL's due to P

SYMPTOM PICTURE

- ▶ **Severe:** Crushing of many of the mm fibres
- ▶ Rapid local swelling due to hematoma, edema, heat and bruising
- ▶ Severe P at the lesion site
- ▶ > 50% loss of ROM and functional loss of strength
- ▶ Client cannot continue ADL's
- ▶ Swelling and hematoma formation
- ▶ There is risk of re bleeding within the first 10 days
- ▶ Contusion may have bandaging to prevent further swelling

- ▶ All contusions will be red, black and blue

SYMPTOM PICTURE EARLY SUB-ACUTE

- ▶ **Mild:** Little or no P and decrease in strength
- ▶ **Moderate:** P has moderately reduced strength
- ▶ **Severe:** P and reduced strength with AROM and hematoma still present
- ▶ Bruising is black and blue
- ▶ P, edema, inflammation are present
- ▶ Adhesions developing, protective mm spasms, TP's
- ▶ Injury may still be bandaged
- ▶ Client may be using crutches, cane or sling depending on where the contusion is
- ▶ ROM is reduced

SYMPTOM PICTURE LATE SUB-ACUTE

- ▶ Bruising is yellow, green and brown
- ▶ Tp's, P, edema, heat are diminishing
- ▶ ROM and strength are reduced
- ▶ Adhesions are maturing around the injury site
- ▶ Protective mm spasms are replaced with increased mm tone

SYMPTOM PICTURE CHRONIC

- ▶ Bruising is gone
- ▶ Adhesions have matured
- ▶ H+ and TP's present in affected mm
- ▶ Tissue may be cool due to ischemia
- ▶ Moderate/Severe: Discomfort local to the lesion site, full ROM and strength may be reduced.
- ▶ Myositis Ossificans can calcify 3-6 weeks after the injury

- ▶ **Please read OBSERVATIONS & PALPATION, write down in point form what you will see in each stage.

TESTING

ACUTE

- ▶ AF ROM; Mild contusion there will be local P, range is reduced
- ▶ Moderate/Severe: All other testing is CI'd
- ▶ Refer out to Physician
- ▶ PR ROM: Testing all ranges, most painful last
- ▶ AR Isometric testing: minor to no loss of strength, some discomfort

Early and Late Sub-Acute

- ▶ AF ROM of the joints crossed by affected muscle will be reduced
- ▶ Range is limited due to P
- ▶ PR ROM testing the painful range last, painful tissue stretch end feel is present
- ▶ AR Isometric testing will reveal P depending on severity at injury site
- ▶ Mild: minor loss of strength
- ▶ Moderate: moderate loss of strength and P
- ▶ Severe: Significant loss of strength and P

TESTING CHRONIC

- ▶ AF ROM if jts crossed by the affected muscle may be limited by any remaining P at the end ROM
- ▶ PR ROM may reveal mildly painful, tissue stretch end feel on fully stretching the affected mm
- ▶ AR Testing of the affected muscle may reveal decreased muscle strength, especially with severe contusions.

CONTRAINDICATIONS

- ▶ **Acute stage:** testing of a moderate or severe contusion other than PF AFROM, to prevent further tissue damage
- ▶ Acute stage: On site work is CI'd
- ▶ Acute & early sub-acute of a moderate-severe contusion, local on site Swedish massage is CI'd, proximal lymphatic drainage is indicated.
- ▶ Moderate and severe contusions: applications of heat or contrast hydro are CI'd
- ▶ Distal circulation are CI'd in Acute or early sub-acute to avoid increasing congestion through the injury site
- ▶ Moderate and severe contusions in acute or early subacute stages is CI'd to take ROM beyond onset of P
- ▶ Frictions are CI'd with anti-inflammatories or blood thinners

TREATMENT PLAN

ACUTE

- ▶ **Positioning:** Depends on the location of the contusion and clients comfort
- ▶ Muscle is treated with RICE; Rest, Ice, compression, and elevation
- ▶ **Hydro:** Ice pack, Cold compress
- ▶ **TX GOALS:** Reduce P, decrease SNS firing, reduced edema
- ▶ Starting TX with compensatory structures and DDB
- ▶ Lymphatic drainage techniques proximal to the injury site
- ▶ Effleurage, repetitive petrissage
- ▶ O & I, CAREFUL mm squeezing and light stroking distally
- ▶ Do not remove any protective mm spasms
- ▶ On site work is CI'd

TREATMENT PLAN EARLY SUB-ACUTE

- ▶ **Positioning:** Limb is elevated if the contusion is in a limb
- ▶ **Hydro:** Cold/Cool compress
- ▶ Treat compensatory structures
- ▶ DDB
- ▶ Proximal lymphatic drainage
- ▶ Proximal limb is tx'd for H+, effleurage, petrissage
- ▶ GTO release is used for proximal tendons of the affected mm
- ▶ TP treated in proximal mm's
- ▶ On site work is now indicated with a MILD contusion only, vibrations and stroking are used onsite
- ▶ Distal stroking and muscle squeezing are allowed

TREATMENT PLAN LATE SUB-ACUTE

- ▶ **Positioning:** Prone, supine, side lying, depends on location, limb is elevated.
- ▶ **Hydro:** Cold/warm.
- ▶ Treat compensatory structures
- ▶ Edema potentially has decreased, proximal limb is tx'd to reduced H+ and increase drainage.
- ▶ DDB, effleurage, petrissage all proximal to the injury site.
- ▶ Tx TP's with mm stripping and ischemic compressions.
- ▶ On site work techniques include vibrations, stroking, and finger tip kneading working from the periphery to centre and back to periphery.

TREATMENT PLAN

LATE SUB-ACUTE

- ▶ The goal is to work on adhesions that are developing and realign the connective tissue, slow skin rolling, mm stripping and short cross fibre frictions.
- ▶ Post frictions: Stretch 30 secs and apply ice up to 5-20 mins.
- ▶ Joint play to proximal and distal joints are introduced.
- ▶ Effleurage and petrissage are now introduced distally.

TREATMENT PLAN CHRONIC

- ▶ **Positioning:** Chosen for comfort, prone, supine and side lying all indicated.
- ▶ **Hydro:** Deep moist heat proximal to the contusion.
- ▶ Treat compensatory structures, rhythmic techniques to the trunk and unaffected limb are indicated.
- ▶ DDB, proximal to the site, fascial work such as skin rolling is indicated
- ▶ Effleurage, petrissage, mm stripping.
- ▶ Cross-fibre frictions on any remaining adhesions, stretch for 30 sec, Ice up to 5 mins.
- ▶ Joint play techniques to proximal and distal joints.
- ▶ PR ROM to full range on proximal and distal joints.
- ▶ Distal limb is treated with effleurage and petrissage to increase local venous return.

SELF-CARE PLAN

- ▶ **Hydro:** Chosen for the appropriate stage of healing
- ▶ Self massage in late sub-acute and chronic such as skin rolling, mm stripping and gentle frictions
- ▶ **Remex:** depends on stage of healing
- ▶ Acute stage: PF AROM of the distal and proximal joints with a mild contusion
- ▶ **Early sub acute:** PF AROM slowly increasing ROM to onset of P, slowly progressed with isometric contractions. Isotonic concentric and eccentric exercises all P free.
- ▶ **Late Sub acute:** all stretching and strengthening are gradually increased
- ▶ **Chronic:** Active resisted isotonic concentric and eccentric exercises to strengthen the affected muscle

TREATMENT PLAN

- ▶ Shorter more frequent treatments will address acute and sub acute stages
- ▶ Treatment may progress 1x/week for chronic stages than re-assess
- ▶ Return to activity following the guidelines
- ▶ Mild: Client can return to the activity after 2-3 days with support
- ▶ Moderate and severe: Client can return to activity 1 week and several weeks once activity is P free
- ▶ See Pg.281 for sample treatment