Acute Lumbar Sprain
Acute lumbar sprain refers to acute injury of lumbar muscles, fascia, ligaments, intervertebral articular and lumbosacral joints when working or doing exercise.

“commonly seen in young adults and laborers. Including those working with improper posture.”

Occurs more often among males than females.
6.4.1: Acute Lumbar Sprain
-Factors

【Common activities factors】

1. Improper posture of the waist
   • bends the waist to lift heavy objects

2. Tumbling over while walking on uneven road or tipping over while going downstairs

3. Imbalance of action while lifting objects

4. Underestimation of a movement
   • Pouring water
   • Bending body
   • Sudden standing
   • Sneezing
6.4.2: Acute Lumbar Sprain - Clinical classification

【Classification】

- Acute injury of fascia of lumbar muscles
- Acute injury of lumbar ligaments
- Acute synovial incarceration of posterior lumbar joint
6.4.2.1: Acute Lumbar Sprain
-Acute injury of fascia lumbar muscles

Fascia is the connective tissue fibres, primarily collagen, that form sheets or bands beneath the skin to attach, stabilize, enclose, and separate muscles and other internal organs.

Fasciae are similar to ligaments and tendons as they have collagen as their major component. They differ in their location and function:
- **ligaments** join one bone to another bone,
- **tendons** join muscle to bone and
- **fasciae** surround muscles or other structures.
Connective Tissue Framework of Body

Superficial Fascia
- Between skin and underlying organs
- Areolar tissue and adipose tissue
- Also known as subcutaneous layer or hypodermis

Deep Fascia
- Forms a strong, fibrous internal framework
- Dense connective tissue
- Bound to capsules, tendons, ligaments, etc.

Subserous Fascia
- Between serous membranes and deep fascia
- Areolar tissue
Is Your body fascia network is alike like an orange tangerine pith?

Tangerine pith “橘络”
6.4.2.1: Acute Lumbar Sprain
-Acute injury of fascia lumbar muscles

【1. Pathological factors】

Lumbar muscles or fascia contract, twist, lacerate

- Laceration of sacrospinalis muscle (starting point of sacrum)
- Laceration of fascia at the attachment point

Blood stagnation/obstruction of Qi

Swelling, pain and restricted movement
6.4.2.1: Acute Lumbar Sprain
-Acute injury of fascia lumbar muscles

【2. Clinical manifestation】

1. Strong feeling of tissue laceration, lumbar snap.
2. Lateral or bilateral lumbar pain. (in lumbosacral region, buttock, posterior of thigh)
3. Inability to straighten, bend or extend the waist, stiffness of the waist.
4. Aggravation of pain when turning body or sitting up, getting up from bed, exerting force, coughing or sneezing.
5. Patient normally holds his waist with both hands.
6.4.2.1: Acute Lumbar Sprain
-Acute injury of fascia lumbar muscles

【2.1 Physical examination】

1. Reduction in physiological lordosis in early stage.

2. Physiological scoliosis.

3. Local tenderness in lumbosacral joint, the tip of the third lumbar transverse process, post laminar part of iliac crest.
6.4.2.1: Acute Lumbar Sprain
-Acute injury of fascia lumbar muscles

【3. Essential for Diagnosis】


2. Severe lower back pain, restricted movement, cough, aggravated pain when sneezing.


4. Aggravation pain after performing percussion test.

5. Spasm of sacrospinalis and gluteus maximus are evident when patient stands up and bends slightly forward.

6. No signs in lower limb pain.

7. X-ray shows no abnormal change or only straightened flexion or lateral curvature of lumbar vertebrae
Sacropinalis
6.4.2.2: Acute Lumbar Sprain
-Acute injury of lumbar ligaments

【Anatomy Composition of Lumbar ligaments】

- Anterior longitudinal ligaments
- Posterior longitudinal ligaments
- Ligament flava
- Interspinous ligaments
- Supraspinous ligaments
- Intertransverse ligaments
- Vertebral articular capsules
6.4.2.2: Acute Lumbar Sprain
-Acute injury of lumbar ligaments

Commonly seen ligaments injuries:

- Supraspinal ligaments
- Interspinal ligaments
- Iliolumbar ligaments
6.4.2.2: Acute Lumbar Sprain
Acute injury of lumbar ligaments

【1. Pathological factors】

- Bending and lifting Sacrospinalis in loosen state
- Muscles of buttock/posterior of thigh contract
- Injury of supraspinal/interspinal ligaments
6.4.2.2: Acute Lumbar Sprain
-Acute injury of lumbar ligaments

【2. Clinical manifestation】
1. Injury takes place when working with bending posture.
2. Patient usually hears a clear snap and feels lacerating pain.
3. A sudden local pain appearing like lacerating, stabbing or cutting with symptoms of local ecchymosis, swelling, tenderness.
4. Radiating pain in the lower limbs, lumbar spasm.
5. Limited movement and aggravated pain when bending forward (difficult in sitting and lying)
6. Widened interspinous distance can be diagnosed by palpation.
7. X-ray shows no abnormal changes in injury ligaments.
6.4.2.2: Acute Lumbar Sprain
-Acute injury of lumbar ligaments

【3. Essential for Diagnosis】

1. Evident history of injury.

2. Patient feels laceration in the injured lumbosacral area, acute pain, restriction of motion, aggravated pain when bending.

3. Evident supraspinous, interspinous tenderness and widened interspinous distance.

4. Pain can be relieved by local blocking with procaine (can be used to define location and nature of pain)

5. For severe cases, X-ray examination should be taken to examine fracture or dislocation
6.4.2.3: Acute Lumbar Sprain  
-Acute synovial incarceration of posterior lumbar joint

【Lumbar vertebrae structure】

• The post lumbar joint is composed of the inferior articular process of upper vertebrae and superior articular process of lower vertebrae.

• Each articular process has two surfaces at right angles each other with one surface in coronal view and the other in sagittal view resulting in wide range of side bends and front-back flexion-extension movement.

• When it comes to the lumbosacral joint, the small articular surface will be in a oblique position between coronal view and sagittal view and then gradually turns from upright position to almost horizontal position,
As the result, the upper and lower joint capsule are more relaxed to make it possible for doing flexion-extension and all other rotary movements with even wider movement ranges.

Hence the relaxation of the joint capsule and relative wide movement range of joint become the basis of the morphology of synovial incarceration.

The congenital lumbosacral articular process asymmetry or articular process dislocation, etc, will bring oblique movement of one side of the articular process, which is also one of the reasons for easy synovial incarceration from the perspective of anatomical structure.
6.4.2.3: Acute Lumbar Sprain
-Acute synovial incarceration of posterior lumbar joint

【1. Lumbar vertebrae structure/ Pathogenesis】

- The sudden lumbar twisting or unprepared sudden anteflexion and rotation will make the gap at the tail skirt of the post lumbar joint open so that the negative pressure will be produced within the joint to suck the synovium inside;

- At this time, in case of any sudden rear flexion, the synovium will not be possibly have time to move out and then sandwiched between the articular surfaces, which may possibly result in the synovial incarceration at post lumbar joint

- or cartilage mutual dislocation at zygapophyseal joint surface causing severe pain at the lumbar part
Body Planes

Sagittal Plane

Coronal Plane

Transverse Plane

Vertèbre cervicale

Vertèbre dorsale

Vertèbre lombaire
lumbosacral articular process asymmetry  articular process dislocation
6.4.2.3: Acute Lumbar Sprain
-Acute synovial incarceration of posterior lumbar joint

【2. Clinical manifestation】

1. History of acute lumbar sprain.
2. Severe pain appears right after injury of the waist.
3. Stiffness in waist, functional activity is lost.
4. Evident restricted back stretching movement without nerve root irritation sign.
5. Palpation will not find spinal deviation of the affected vertebra. No sign change of spinous process intervals.
6.4.2.3: Acute Lumbar Sprain
-Acute synovial incarceration of posterior lumbar joint

6. There is evident tenderness in L4-5 or L5-S1 interspinal spaces and para vertebral body.

7. X-ray shows asymmetrical rank of posterior joints in some cases, or posterior process and lateral curvature of lumbar vertebra and inequality in width of intervertebral spaces.
6.4.2.3: Acute Lumbar Sprain
-Acute synovial incarceration of posterior lumbar joint

【3. Essential for Diagnosis】

1. History of acute lumbar sprain, or chronic lumbar strain.

2. Severe lumbar pain, aggravation when moving, standing, sitting and extending.

3. Abnormal change of physiological curve after occurrence of transposition of lumbar posterior joints or synovial incarceration.

4. Tenderness in the spinous process or articular process gradually disappears when the symptoms of lumbar stiffness and tension are relieved.

5. Pain may become worsened when turning in bed. Difficulty in lifting leg up.

6. Pain in lumbar area can be relieved after reduction or removal of incarceration.
6.4.3: Acute Lumbar Sprain
-Treatment

【4. Treatment】

[ Therapeutic principles ]

Soothing tendons and activating blood 舒筋活血
6.4.3: Acute Lumbar Sprain - Treatment

【4. Treatment】

[ Locations of Acupoints ]

Dorsolumbar areas

- Shenshu
- Dachangshu
- Huantiao
- Weizhong
- Chengshan
- Kunlun

肾俞(BL23)
大肠俞(BL25)
环跳(GB30)
委中(BL40)
承山(BL57)
昆仑(BL60)
**Shenshu (BL23)**

**Dachangshu (BL25)**
Huantiao (GB30)

Weizhong (BL40)
Chengshan (BL57)

Kunlun (BL60)
6.4.3: Acute Lumbar Sprain
-Treatment

【4.1 Basic Manipulations】

Acute injury of fascia lumbar muscles

1) The patient is in a prone position. The doctor uses **rolling method** to press around the tenderness, then rolling along the direction of sacrospinal muscle fibers for 3-4 times, accompanied by passive movement of the waist. Gradually increase the force from light to heavy.

2) The doctor uses **rolling and kneading methods** to press Shenshu (BL23), Dachangshu (BL25), Huantiao (GB30), Yinmen (BL37), Chengshan (BL57), Yinglingquan (GB34), Kunlun (BL60) and Ashi points. Grasp Weizhong (BL40) till distention is felt, then uses **plucking method** on the upper and lower part of the tenderness point for 5 minutes. (manipulation should be mild and deep)
3) The doctor **rubs** along the sacrospinal muscle fibers vertically on the affected side for 3 minutes till it becomes warm.

4) Obliquely pulling the waist.
6.4.3: Acute Lumbar Sprain
-Treatment-

Acute injury of lumbar muscles

1) Based on the treatment of acute injury of fascia of lumbar muscles, trials are taken to release the adherence.

2) The patient is in a sitting position, the doctor stands behind, asking the patient to bend forward, using two thumbs to feel and dissect the affected supraspinal ligaments.

3) The patient is in a prone position, the doctor using pressing and kneading methods to press along both sides of the spinal cord, plucking and kneading vertically on the affected supraspinal ligament with one thumb, and rubbing the governor vessel on the back for 5 minutes till it becomes warm.
6.4.3: Acute Lumbar Sprain
-Treatment

Acute synovial incarceration of posterior lumbar joint

1) Based on the treatment of acute injury of fascia of lumbar muscles, trials are taken to release the adherence.

2) Manipulations for bending, turning and pulling the waist are used
6.4.3: Acute Lumbar Sprain
-Treatment-

【Cautions】

1. The patient is advised to take a rest after the treatment, avoiding bending and rotating the waist within a short period of time.

2. Acute symptoms can be relieved right after the treatment, but the pain and lumbar stiffness are not yet disappeared. Therapy for local conduction should be used to eliminate the symptoms.

3. Functional exercise of dorsolumbar extensor is useful for therapeutic effect and prevention.

4. Keep the waist warm.
Chronic Lumbar Muscle Strain
6.5: Chronic Lumbar Muscle Strain

Chronic lumbar muscle strain is accumulated chronic injury of the muscles, fascia, ligaments, bones and joints in the waist.

- Easily caused by working with bowing or squatting position for a long time, frequently over exhaustion of the waist, delay or improper treatment of acute lumbar injury.
6.5.1: Chronic Lumbar Muscle Strain
-Factors-

【1. Pathological factors】

- Bowing & Squatting
- Improper postures
- Over exhaustion of the waist

- Fascia strain of lumbar muscles
- Fascia loosen
- Chronic laceration

- Delayed or incomplete treatment of acute contusion
- Repeated mild injury

Increase conglutination of fascia

Chronic lumbar pain

Backache
6.5.1: Chronic Lumbar Muscle Strain - Factors

【1.1 “TCM” Pathological factors】

- Congenital weakness, deficiency of kidney Qi
- Invasion of pathogenic wind
- Cold and dampness in the soft tissues
- Obstruction of meridians and collaterals
- Stagnation of Qi and blood

Chronic waist pain
6.5.2: Chronic Lumbar Muscle Strain
- Clinical manifestation

【2. Clinical manifestation】

1. Pain in the waist (vague, repeated, fluctuating).
2. Pain alleviated after rest and aggravated after exhaustion.
3. Difficult in bending over.
4. Frequently pats the waist with both hands to relieve pain.
5. Fatigue level worsen with weather change.
6. Evident of tenderness in the sacrospinal muscle, lumbodorsal muscles.
7. X-ray shows: physiological change in lumbar lateral curvature, disappearance of lordosis, fifth and first lumbar sacralization.
6.5.3: Chronic Lumbar Muscle Strain - Diagnosis

【3. Essential for Diagnosis】

1. Long history of pain in the back and repeated onset.

2. Pain and ache of the waist, especially after heavy work or during rainy days.

3. Leg lifting test in normal and waist movement limitation is not evident.

4. X-ray test only shows congenital anomalies of lumbosacral spine or hyperosteoegeny.
6.5.4: Chronic Lumbar Muscle Strain - Treatment

【4. Treatment】

[ Therapeutic principles ]

1. Soothing tendons and activating blood
   舒筋活血

2. Warming meridians and dredging collateral
   温经通络
6.5.4: Chronic Lumbar Muscle Strain
-Treatment

【4. Treatment】

[ Locations of Acupoints ]

Waist, back and lumbosacral region

• Shenshu 肾俞(BL23)
• Dachangshu 大肠俞(BL25)
• Huantiao 环跳(GB30)
• Zhibian 秩边(BL54)
• Weizhong 委中(BL40)
Zhibian (BL52)
6.5.4: Chronic Lumbar Muscle Strain
-Treatment

【4.1 Basic Manipulations】

1. The patient takes a supine position. The doctor pushes, presses and kneads the sacropinal muscles on both sides of the spine.

2. Then the doctor knocks sacrospinal muscles with fingers of both hands for several times, then mainly presses the tenderness with the tip of the finger for 5 minutes.

3. The doctor presses, kneads, vibrates the Acupoints of Shenshu (BL23), Dachangshu (BL25), Guanyuanshu (BL26), Zhibian (BL 52), Huantiao (GB 30), Weizhong (BL 40) with the tips or bellies of both hands for a half a minute each.

4. The patients takes a supine position and the doctor rubs the Belt Vessel horizontally for 3 to 5 minutes.
6.5.4: Chronic Lumbar Muscle Strain - Treatment

【Cautions】

1. Keep proper posture, and correct habitual wrong posture in order to maintain normal physical arc of the spine.

2. Take more exercise to train the waist muscles.

3. Keep the lumbar region warm at all time.