

## FACET JOINT SYNDROME

In spine the joints connecting each of vertebrae are known as facet joints. Other names for facet joints are zygapophyseal or apophyseal joints. Facet joint syndrome is an arthritis-like condition of the spine that can be a significant source of back and neck pain. It is caused by degenerative changes to the joints between the spine bones. The facet joints of the lumbar spine bear a large amount of stress and weight, making them vulnerable to degeneration and injury. These joints are richly innervated with many spinal nerves, which make them susceptible to developing pain that is often felt in the lower back and leg (sciatica).

### ANATOMY:

A facet joint is formed by the articulation between paired bony projections called articular processes. These processes are located at the back of each vertebra and connect adjacent vertebrae. For each disc space, there are two facet joints and a disc, which together form a tripod which allow the spine to bend and twist. The spinal nerves exit just above the upper facet at each level. Facets are synovial joints that are lined with cartilage, lubricated in synovial fluid and covered by a joint capsule.

### CAUSES:

**DEGENERATIVE CONDITIONS:** Degeneration due to aging and tissue wear-and-tear is the most common cause of facet joint disorders in the lower back.

**Facet joint osteoarthritis:** The wear-and-tear of the facets due to aging (osteoarthritis or spinal arthritis) typically causes;

- Damage to the protective cartilage that covers the joint surfaces
- A reduction of the lubricating fluid inside the synovial membrane
- Excess bone growth at the joint surface of a facet (due to repetitive friction between these surfaces) called bone spurs or osteophytes

### Degenerative spondylolisthesis:

The displacement of a vertebra over the one below it (spondylolisthesis) may occur due to arthritic facet joints that become weak and fail to provide enough support for the spinal motion segment.

### Synovial facet joint cyst:

Arthritis may lead to the development of a cyst (fluid-filled sac) within the facet joint's synovial membrane. Synovial facet joint cysts can cause pressure over spinal nerve roots or the spinal cord causing additional pain and dysfunction.

### TRAUMATIC INJURIES:

Acute or repetitive trauma can cause breakage or displacement of the facets, resulting in instability of the motion segment. These injuries cause inflammation of the facet and its surrounding tissues, which is perceived as back pain or leg pain (sciatica).

- **Facet dislocation:** An external force on the spine may cause the facets to drift away from their normal position (facet dislocation).
- **Articular process fracture:** Injuries involving combined flexion and rotation of the spine may cause movement of the facets beyond their physiologic limit. This force can cause the articular process fracture. The fracture may include one or both articular processes of a vertebra.
- **Facet capsule strain:** The outer covering of a facet consists of a tough and resilient capsule, made of connective tissue and spinal ligament. Exertion beyond physiologic limits can cause the capsule to overstretch, causing pain.
- **Posture-induced facet injury:** Facet joints can become painful due to the repetitive and continuous habit of wrong postures. Repeated use of poor posture may cause chronic pain and inflammation in the facets.

## **SYMPTOMS:**

Depending on the number of facets affected, the severity of the condition and the possible involvement of a nearby nerve root following signs and symptoms may occur:

**Localized pain:** A dull ache is typically present in the lower back.

**Referred pain:** The pain may be referred to the buttocks, hips, thighs or knees, rarely extending below the knee. Pain may also be referred to the abdomen and pelvis.

**Radiating pain:** If a spinal nerve is irritated or compressed at the facet joint (such as from a facet bone spur), a sharp, shooting pain (sciatica) may radiate into the buttock, thigh, leg or foot. Muscle weakness and fatigue may also occur in the affected leg.

**Tenderness on palpation:** The pain may become more pronounced when the area over the affected facet in the lower back is gently pressed.

**Effect of posture and activity:** The pain is usually worse in the morning after long periods of inactivity, after heavy exercise and while rotating or bending the spine backward. Prolonged sitting such as driving a car may also worsen the pain.

**Stiffness:** If the lumbar facet pain is due to arthritic conditions stiffness may be present in the joint, typically felt more in the mornings or after a period of long rest and is usually relieved after resuming physical activity.

**Crepitus:** Arthritic changes in the facets may cause a feeling of grinding or grating in the joints upon movement.

## **DIAGNOSIS:**

### **Patient history**

The doctor reviews the patient's main complaints and asks about the onset of pain, duration and types of signs and symptoms.

**Examination:** It may include the following tests:

- Visual inspection of the overall posture and skin overlying the affected area
- Hands-on inspection by palpating for tender areas and muscle spasm
- Range of motion tests to check mobility and alignment of the involved joints
- Segmental examination to check each spinal segment for proper motion
- Neurological examination including tests of muscle strength, skin sensation and reflexes

### **Imaging tests:**

Standard radiographs, magnetic resonance imaging (MRI), computed tomography (CT) scans, and other specialized tests may be used to check the facet joint and adjacent structures.

- **X-ray** may show bony changes and bone spurs within a facet joint. Plain anterior-posterior, lateral, and oblique (off-angle) x-ray films are typically used.
- **MRI scans** may be used for assessing the spine and its soft tissues such as the discs and nerve roots. These scans may also help distinguish a chronic condition from an acute problem in certain situations.
- **CT scans** are helpful in viewing hard tissue, such as bone.

## **TREATMENT:**

### **CONSERVATIVE TREATMENT:**

- **Medication:** Both prescription and over-the-counter medications may be used for facet joint pain relief. Common oral medications include: Acetaminophen, Nonsteroidal anti-inflammatory drugs (NSAIDs) and Muscle relaxants.
- **Injection therapy:** Common injection techniques that help target facet joint pain include:

- **Facet joint injections:** These injections treat pain arising from a specific facet joint. The injection is typically delivered into the capsule that surrounds the facet.
- **Medial branch blocks:** These nerve block injections deposit medication around the medial branches (pain transmitting branches) of spinal nerves.
- **Radiofrequency ablation (RFA):** This injection treatment relieves pain by inducing a heat lesion on the pain-transmitting nerve near the facet. The lesion prevents the nerve from sending pain signals to the brain.

**SURGICAL TREATMENT:** Surgical procedures typically include:

- **Lumbar decompression:** A laminectomy surgery may be done in facet disorders that lead to spondylolisthesis. This surgery restores space for the neural tissues and relieves compression.
- **Reduction:** A reduction surgery involves fixing of fractured facets and is usually performed in facet dislocation or fracture caused by trauma.
- **Facetectomy:** A facetectomy involves trimming the parts of a facet joint to remove excess bone (bone spurs) that may impinge on spinal nerves or the spinal cord.

**PHYSICAL THERAPY:** It includes:

- **Superficial heat therapy:** Heat therapy can help relax the muscles and open up blood vessels to allow blood flow and oxygen to reach the painful tissues providing nourishment. Using a hot water bag in the morning after waking may help ease the morning pain and stiffness.
- **Cold pack:** Cold therapy may be used when the pain is acute or during a pain flare-up, such as after strenuous physical activity.
- **Postural awareness:** It is important to maintain the natural spinal alignment by using correct sitting, standing, and lying down posture. A good posture helps keep stresses off the facet joints and helps in healing process.
- **Avoiding activities that worsen the pain:** In general, activities that include spinal twisting, repeated bending and extending, and sitting for long periods of time must be avoided. Bending the spine backward may cause more strain on the affected joints and must be avoided to prevent further damage.
- **Staying active:** It is also necessary to stay active in moderation and avoid complete bed rest which may decondition the lumbar tissues and increase the pain.
- **Low impact exercises:** Following an exercise routine that involves simple, low-impact exercises, such as walking, may be beneficial when done within tolerable limits for short distances.
- **Strengthening exercises** for the back muscles.
- **Stretching** or flexibility exercises of hamstrings, quadriceps, hip abductors, gluteal and abdominals.
- **Modalities:** TENS, IFT, UST, SWD etc. can be used to relieve pain and promote healing process.

References:

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