

## Congenital Muscular Torticollis

Congenital Muscular Torticollis generally is caused by contracture of the Sternocleidomastoid muscle and usually occurs in infants. The cause of CMT is unknown. It may be caused from pressure on the muscle or compartment syndrome of the muscle.

The child holds the head towards the affected side with the chin rotation towards the opposite side. There is difficulty in turning the head due to a tight and shortened sternocleidomastoid muscle. It is a common neck problem in childhood and the condition usually resolves itself spontaneously over a period of several months.

### ASSOCIATED CONDITIONS

- Molding disorder or packaging deformity such as hip dysplasia (DDH) and Metatarsus adductus (up to 20%). Usually, delivery is traumatic and probably breach.
- The child will have a firm palpable mass within the first four weeks of life.
- The child will also have a head tilt.

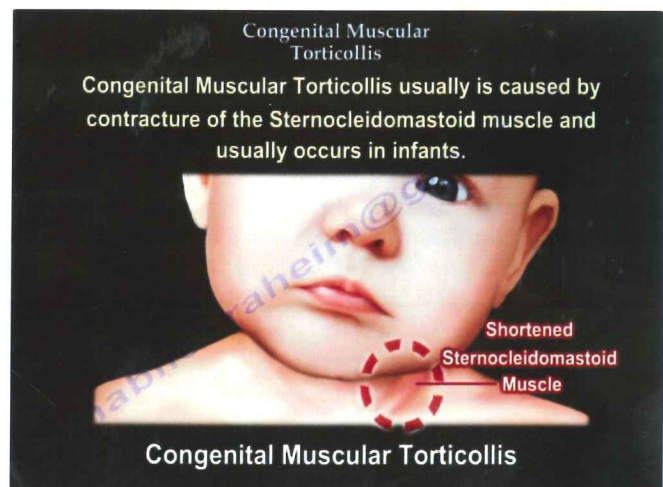
### IMAGING STUDIES

- X-rays of the cervical spine are needed to exclude other conditions such as rotatory C1 – C2 instability and Klippel-Feil Syndrome.
- Ultrasound is important – it can differentiate between mild cases and severe fibrosis.

### DIFFERENTIAL DIAGNOSIS

- Rotatory atlanto-axial instability/Grisel's syndrome
- Klippel-Feil syndrome

These conditions are serious!



**TREATMENT** - The condition of Congenital Muscular Torticollis usually resolves spontaneously in about 90% of infants by passive stretching in the first year. Passive stretching techniques should include lateral head tilt away from the affected side and chin rotation towards the affected side (opposite of the deformity). Treatment may be guided by the findings in ultrasound examination of the muscle.

### SURGERY:

- Z plasty if the child is older than 1 year with severe limitation or rotation.
- Ocular examination in older children.

## Femoral Triangle

The femoral triangle is a superficial triangular space located on the anterior aspect of the thigh just inferior to the inguinal ligament. Here are the basic parts to the femoral triangle: Boundaries, Floor, Roof and Contents. The boundaries of the femoral triangle include 3 borders: 1) The lateral border is formed by the medial border of the Sartorius Muscle. 2) The medial border is formed by the medial

border of the Adductor Longus Muscle. 3) The base of the border is formed by the inguinal ligament. The floor of the triangle is formed by four muscles: the Iliacus Muscle; the Psoas Major Muscle; the Pectineus Muscle, and the Adductor Longus Muscle.



### Femoral Triangle continued

The roof of the femoral triangle is covered by skin, superficial and deep fascia. The content of the femoral triangle contains three important structures. Going from lateral to medial, these structures are the femoral nerve, femoral artery, and the femoral vein, which contains deep inguinal lymph nodes.

A simple mnemonic that could be used to easily memorize the contents of the femoral triangle is to navigate the femoral triangle from lateral to medial where the first 4 letters of NAVIgate correspond to the Nerve, Artery, Vein and Inguinal lymph nodes.

The femoral triangle also contains the femoral sheath which is a funnel-shaped sleeve of fascia enclosing the upper 4 cm of the femoral vessels.

The femoral nerve is the most important nerve within the femoral triangle. However, it is not the only nerve located there. The femoral nerve lies within the groove between the Iliacus and Psoas Major muscles.

The two other nerves located within the femoral triangle are: 1) the Lateral Cutaneous nerve of the thigh, which crosses the lateral corner of the femoral triangle and supplies the skin on the lateral part of the thigh. 2) the Femoral Branch of the Genitofemoral nerve, which runs in the lateral compartment of the femoral sheath and supplies the majority of the skin over the femoral triangle.

The neurovascular bundle in the femoral triangle is located medial to the sartorius muscle. Therefore, when performing the anterior approach to the hip, it is always safe to go lateral to the sartorius muscle in order to avoid the important structures within the femoral triangle. It is important to remember when performing this approach to avoid the lateral cutaneous nerve of the thigh.

Also found within the femoral triangle is the Femoral Sheath. The femoral sheath is a fascial sheath that contains the femoral artery, vein and femoral canal. The anterior portion of the femoral sheath is formed by a downward extension of the fascia transversalis; while the posterior portion of the femoral sheath is formed by the iliac fascia. The femoral sheath is divided into three compartments. The Lateral compartment contains the femoral artery. The Intermediate compartment contains the femoral vein. The Medial compartment, also known as the femoral canal, contains lymphatic tissue.

The base of the femoral canal is formed by the femoral ring. A femoral hernia occurs when parts of the intestine protrude through a weak femoral ring into the femoral canal.

Please see Dr. Ebraheim's YouTube video:

<https://www.youtube.com/watch?v=q-vwk7xN2gA>

## Anatomy of the Psoas & Iliacus Muscles

**PSOAS MAJOR ORIGIN** - The psoas major muscle arises from the transverse processes and the lateral aspects of the vertebral bodies T12 – L5.

**PSOAS MAJOR INSERTION** -The psoas runs downward across the pelvic brim and then passes deep to the ilioinguinal ligament where it then forms a tendon past the hip joint capsule which inserts into the lesser trochanter of the femur.

**PSOAS MAJOR INNERVATION** -Innervation of the psoas major occurs from L1 to L3 of the lumbar plexus (L1, L2, L3).

**PSOAS MAJOR FUNCTION** - Hip Flexion

**ILIACUS ORIGIN** - The iliacus arises from the iliac fossa on the interior side of the hip bone, and also from the region of the anterior inferior iliac spine (AIIS).

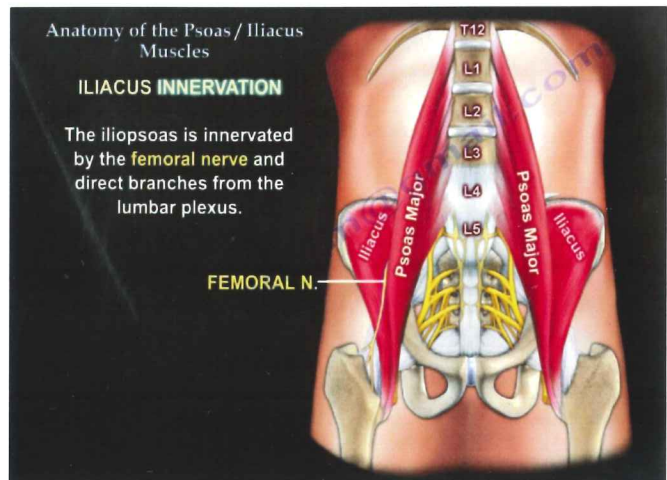
**ILIACUS INSERTION** - The iliacus inserts into the base of the lesser trochanter of femur.

**ILIACUS INNERVATION** - The iliopsoas is innervated by the femoral nerve and direct branches from the lumbar plexus.

**ILIACUS FUNCTION** - As part of the iliopsoas, the iliacus contributes to flexion in the hip joint. The iliacus flexes the torso and thigh with respect to each other. The iliopsoas tendon is separated from the hip joint capsule by the iliopsoas bursa

**PSOAS & ILIACUS MUSCLE ASSESSMENT** - Testing the hip flexion strength

As the patient lifts the knee straight up off the examination table, the examiner then applies downward pressure onto the knee in order to assess the hip flexion strength.



**ILIOPSOAS COMPARTMENT SYNDROME** - Both muscles (Iliacus M. and Psoas Major M.) are in the extraperitoneal space, or referred to as the iliopsoas compartment. Muscles within the compartment: ILIACUS, PSOAS MAJOR, PSOAS MINOR (when present). Causes of Compartment Syndrome in the pelvis: The pelvis is an extremely rare area for compartment syndrome to develop. However, hemorrhage in the pelvis and iliopsoas hematoma may usually be caused by severe trauma, anti-coagulation therapy; hemophilia or other blood diseases.

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*Anatomy of the Psoas & Iliacus continued*

**CLINICAL PRESENTATION** - Flexion attitude of the involved hip. Pain with passive extension of the involved hip; Tenderness along the inguinal ligament. Paresthesia around the medial side of the knee in the distribution of the saphenous nerve.

**DIAGNOSIS and TREATMENT OF ILIOPSOAS HEMATOMA**

- Measurement of pressure is difficult.
- MRI or CT scan for diagnosis.
- Conservative treatment with observation.
- Correction of coagulation deficit if applicable.
- Surgical intervention is rarely required.

**ILIOPSOAS ABSCESS** - A primary abscess is caused by hematogenous spread of infection. The infection starts in the muscle itself. In a secondary abscess, the infection spreads from another area to the psoas muscle. For example, the infection may travel from the spine when it is infected by tuberculosis (Pott's disease). Historically, this is the cause of the psoas abscess. It can also spread from the SI joint, kidneys, or bowels.

The iliopsoas abscess may initially present with signs and symptoms in the buttock, hip, or thigh. Such signs and symptoms may be obscure, non-specific and misleading. Abscess of the iliopsoas muscle is a diagnostic dilemma with a difficult diagnosis that is often delayed. The patient may be lying supine with the hip flexed and refuses to move, resisting any attempt for examination.

With psoas involvement, the hip appears to be flexed, with limited and painful range of motion. This diverts attention away from the abdomen or pelvic source of the abscess. The patient may have a low grade fever and cannot straighten the leg. A high index of suspicion is necessary and diagnosis is aided by performing the Psoas Sign.

**PSOAS SIGN** - The Psoas sign is helpful in diagnosing a psoas

abscess. The patient is positioned on the side and the hip is extended to see if there is pain present in the iliopsoas region.

**Iliopsoas Abscess**

**Summary of Clinical Manifestation:** Pain in the abdomen, flank, or groin; Low back pain; Flexion posture of the hip. These abscesses are rare and present with vague clinical features.

**SNAPPING HIP SYNDROME** - Snapping hip syndrome is a condition involving the iliopsoas bursa in which an audible snap or click of the iliopsoas tendon occurs over the iliopectineal eminence.

**What is Snapping Hip Syndrome?**

- An audible clicking or snapping sensation with hip movement.
- May or may not be painful.

**SUBTROCHANTERIC FRACTURE** -The iliopsoas flexes the proximal fragment.

**Other Important Clinical Conditions:**

- Iliac vessels are 1 cm away from the iliopsoas at the level of the pelvic brim and 3 cm from the iliopsoas at the level of the lesser trochanter.
- Tenotomy of the iliopsoas during the anteromedial approach for reduction of congenitally dislocated hip risks injury to the medial femoral circumflex artery.
- In total hip replacement, leaving the anterior rim of the acetabular component proud above the acetabulum may result in impingement of the iliopsoas tendon.
- Evaluate the patient with an x-ray cross table lateral or CT and give the patient an injection into the tendon sheath.
- Patient will have groin pain, snapping pain or pain with passive hip extension.

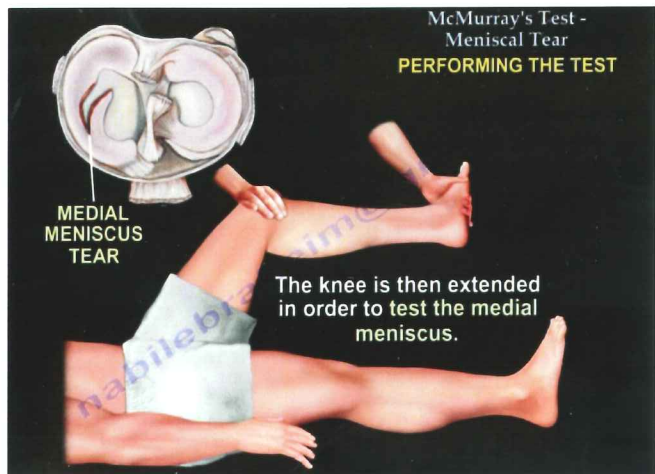
## McMurray's Test - Meniscal Tear

The McMurray's Test is a rotational maneuver of the knee that is frequently used to aid in the diagnosis of meniscal tears. When experiencing a meniscal tear, the patient usually complains of knee pain localized to the lateral or medial side of the knee joint. The patient will have locking, clicking, pain or effusion.

**UPON EXAMINATION:**

- Joint line tenderness is the most sensitive finding.
- Swelling of the knee.
- Possible extension lag (locked knee).

On the joint line, you have the meniscal tear. Pain at a higher level is usually associated with the medial collateral ligament. Pain at a lower level is usually associated with the pes anserine bursa.



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*McMurray's Test continued*

What is the McMurray's Test?

McMurray's Test is a knee examination test that shows pain or a painful click as the knee is brought from flexion to extension with either internal or external rotation.

Performing the Test - The McMurray's test uses the tibia to trap the meniscus between the femoral condyles of the femur and the tibia.

**HOW DO YOU PERFORM THE TEST** - When performing the McMurray's test, the patient should be lying supine with the knee hyperflexed. The examiner then grasps the patient's heel with one hand and places the other hand over the knee joint. To test the medial meniscus, the knee is fully flexed, and the examiner then passively externally rotates the tibia and places a valgus force. The knee is then extended in order to test the medial meniscus. To test the lateral meniscus, the examiner passively internally rotates the tibia and places a varus force. The knee is then extended in order to test the lateral meniscus. A positive test is indicated by pain, clicking or popping within the joint and may signal a tear of either the medial or lateral meniscus when the knee is brought from flexion to extension.

How reliable is the McMurray's Test?

- There are mixed reviews for the validity of this test.
- MRI is making the diagnosis of a meniscal tear easier.
- MRI is very sensitive and it also excludes other associated injuries.

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## ORTHOPAEDIC MONTHLY

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