THE UNIVERSITY OF TOLEDO MEDICAL CENTER

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Can a Patient Self-Diagnose Carpal Tunnel Syndrome?

Carpal Tunnel syndrome is the most common type of nerve compression and may affect up to 1-10% of the population in some studies. Repetitive motion, vibrations, certain athletic activities, and certain conditions can predispose individuals to carpal tunnel syndrome. The most common associated conditions of carpal tunnel syndrome include: diabetes, rheumatoid arthritis, pregnancy, hypothyroidism, and advanced age. In patients who have a clinical diagnosis of carpal tunnel syndrome based on the history and the physical exam, the electrodiagnostic test does not change the probability of diagnosing this condition.

So, the question is, can you self-diagnose Carpal Tunnel Syndrome?

To begin, we must look at the most common clinical presentations for carpal tunnel syndrome.

1. Symptoms in the Distribution of the Median Nerve

The individual will feel a pain and burning sensation as well as numbness and tingling in the thumb, index, and middle fingers. The small finger should not be affected (asymptomatic). Any symptoms in the small finger are NOT associated with carpal tunnel syndrome. The little finger sensation is part of the ulnar nerve distribution. The self-administered hand diagram is extremely helpful—most specific test for carpal tunnel syndrome. The patient should highlight the areas where they are experiencing the symptoms.

2. Night Symptoms

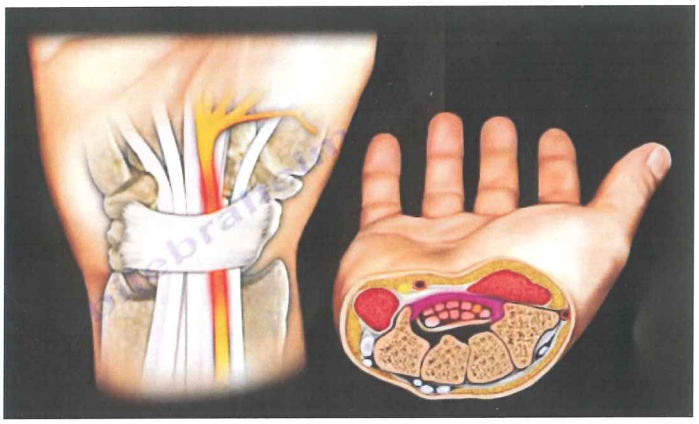
Night symptoms are considered to be a good prognosis for effectiveness of treatment. During sleep, the patient will experience numbness, pain, and paresthesia that is more prominent. This discomfort is so severe that it will wake the patient from sleep and cause the patient to shake the hand to try and relieve the symptoms.

3. Thenar Atrohpy

The patient may experience weakness, clumsiness, or thenar atrophy. Thenar atrophy indicates a long standing problem. You will want to compare the affected hand to the other nonaffected hand or the hand of a friend or relative in order to detect the differences.

4. Positive Phalen Test

The Phalen's maneuver is performed by flexing the wrist for 60 seconds. This will increase the carpal tunnel pressure temporarily and produce the symptoms. If the test is positive, the patient will have numbness and tingling in the hand and wrist.



5. Positive Tinel's Sign

This is a common provocative test for median nerve entrapment (indicates irritation of the nerve). Light tapping over the nerve at the carpal tunnel will cause radiating paresthesia distally into the median nerve's innervated digit, this indicates carpal tunnel syndrome.

6. Positive Compression Test (Durkan's Test)

This is the most sensitive test in diagnosing Carpal Tunnel Syndrome. The examiner places equal pressure with two thumbs directly over the patient's median nerve in the carpal tunnel for about 30 seconds. Reproduction of symptoms such as pain, paresthesia, and numbness in the distribution of the median nerve distal to the carpal tunnel means that the test is positive for carpal tunnel syndrome.

If the patient has at least three of these six clinical findings, then the probability of the patient having Carpal Tunnel Syndrome is high.

Although the patient can probably self-diagnose carpal tunnel syndrome, it is critical for the patient to see their doctor to get a formal and accurate diagnosis in order to begin treatment.

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Can a Patient Self-Diagnose Carpal Tunnel? continued

Additionally, other conditions may mimic carpal tunnel syndrome, and the patient will want to have an accurate diagnosis. Another scenario may be that the patient could have double crush syndrome.

A patient with carpal tunnel syndrome may also have a second problem elsewhere in the course of the median nerve. Symptoms of cervical disc herniation can also mimic carpal tunnel syndrome, C5-C6 is the most common level that is affected in the neck. The affected area in sensation is almost the same as in Carpal Tunnel Syndrome; however, the clinical examination by the doctor will reveal a herniated disc rather than carpal tunnel syndrome. Proximal median nerve entrapment such as pronator teres syndrome can mimic carpal tunnel syndrome. In the case of pronator teres syndrome, the palmar cutaneous branch of the median nerve is also involved. This nerve supplies sensation to the thenar eminence. In carpal tunnel syndrome, the patient does not lose the sensation on the radial aspect of the palm; however, in pronator teres syndrome, the patient will lose sensation on the radial aspect of the palm. Martin-Gruber Anastomosis is median to ulnar nerve communication in the proximal forearm. The patient may present with atypical (not usual) examination findings.

In my opinion, self-diagnosing Carpal Tunnel Syndrome is possible but, not advisable.

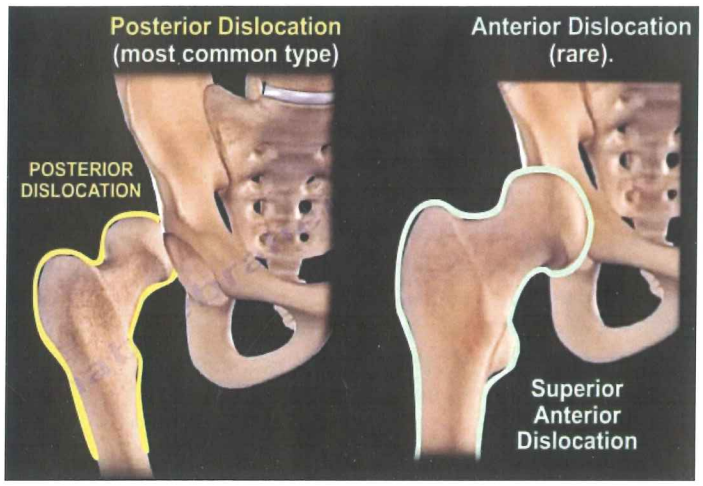
Dislocations of the Hip

Hip dislocations can be either a simple or fracture dislocation. Fracture dislocations involve the posterior wall of the acetabulum or the femoral head. Posterior dislocations are the most common type. Anterior dislocations are rare. The position of the hip during the impact decides the injury. In posterior dislocations of the hip, which is the most common type, the lower limb will be flexed, adducted, and internally rotated. Anterior hip dislocation is rare and can occur superior-anteriorly. The limb will be extended, abducted, and externally rotated. Hip fractures are different than hip dislocations. The affected extremity will be shortened and externally rotated with a hip fracture.

A hip dislocation of any type is an emergency! It must be reduced in less than 6 hours of injury. After the reduction has been completed, the physician will want to have a CT scan performed. Although an x-ray is helpful, a CT scan will clearly outline the bony injury. The physician will want to check the CT scan for congruous reduction for absence of fracture, and absence of marginal impaction in the acetabulum (with posterior wall fracture, check for marginal impaction). Marginal impaction is more common in posterior acetabular wall fractures and could lead to instability. Displaced or comminuted posterior wall fractures can lead to arthritis. The physician will want to make sure that there is a good congruous reduction with no loose bodies or important fractures present. It is important to check for fractures of the acetabulum and the size of the fragment. The size of the posterior wall fracture has an effect on the stability of the hip joint. If congruous reduction of the hip is not obtained, an open reduction will need to be performed immediately. Open reduction can be done through an anterior approach or a posterior approach.

A hip dislocation with or without an associated fracture can cause complications. The risk of avascular necrosis depends on the interval between the injury and the reduction of the dislocation. Urgent reduction of a hip dislocation is mandatory to avoid AVN and interruption of the blood supply which leads to a collapse of the femoral head. The surgeon will need to reduce the hip and recheck the sciatic nerve function. The reduction should be done as early as possible; in less than six hours.

When injury occurs to the sciatic nerve due to posterior hip



dislocation, the common peroneal nerve is usually affected, causing weakness in dorsiflexion of the ankle and loss of toe extension. Injury can occur in varying degrees of severity and can be missed. Movement of the toes may be misleading! Movement of the toes may appear as dorsiflexion; however, this is really a result of plantar flexion. Documenting the injury is important in order to avoid medical-legal problems. Injury to the sciatic nerve usually occurs from the dislocation and not from the reduction of the hip. The longer the wait for a reduction of the dislocation, the more the patient is predisposed to sciatic nerve injury. The length of time a hip remains dislocated influences the incidence and the severity of a major sciatic nerve injury.

Partial recovery of the sciatic nerve occurs in 60-70% of patients. The patient usually requires an anti-foot drop splint to prevent equinox of the ankle. There is approximately 10% incidence of sciatic nerve palsy from posterior hip dislocation. A neurological examination at the time of injury is usually difficult, however, it is extremely necessary. The physician will want to check for sensation on the top of the foot.

In posterior dislocation of the hip, always look for injuries in the knee, such as with a dashboard injury!

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The force of the injury is usually transmitted from the knee to the hip. There also may be an associated posterior cruciate ligament (PCL) injury or a meniscal tear. The physician will need to examine the knee for injuries and possibly obtain an MRI. In cases of high energy trauma, always look at the chest. There might be a tear of the aorta. The physician will want to check for widening of the mediastinum on chest x-rays. Additionally, there is a concern of a deceleration injury involving the aorta. The physician may need to apply the Advanced Trauma Life Support protocol.

More flexion, internal rotation, and adduction favors pure dislocation of the hip. Less flexion, internal rotation, and adduction favors fracture dislocation of the hip. Hip joint dislocation may be associated with an acetabular fracture or fracture of the femoral head (Pipkin fracture). With Pipkin fractures, as the femoral head dislocates, it hits the posterior wall of the acetabulum and the femoral head fractures. This may be different from an anterior hip dislocation, as an anterior hip dislocation will cause impaction of the femoral head or indentation fractures. Classically, a Pipkin fracture is a posterior dislocation of the hip and fracture of the femoral head.

An emergency closed reduction of the hip will need to be done within 6 hours. A closed reduction is done to avoid avascular necrosis (AVN) of the hip. The surgeon will want to perform a reduction of the hip joint and mobilize the patient with protected weight-bearing crutches for 4-6 weeks. After a closed reduction, when the patient has an associated fracture, assess the hip stability, especially if the fragment is not too large. The hip is usually stable if the fragment size of the acetabulum is less than 20%. If the fragment size is more than 40%, the hip is unstable. If the fragment is between 20-40%, the hip stability is classified as undetermined.

When there is an associated acetabular fracture, the best method to assess the stability of the hip is by examination of the patient under general anesthesia utilizing fluoroscopy. The physician will need to assess the posterior wall stability with the obturator oblique view. The hip will be in flexion and adduction, to which the physician will add axial load. Then the physician will check the medial clear space for opening. An opening of the medial clear space suggests instability of the posterior wall fracture. An irreducible isolated posterior dislocation will require an emergency surgical treatment in order to reduce the hip. If there is an associated acetabular fracture or femoral head fracture, perform an urgent closed reduction of the hip dislocation, followed by the stabilization of the fracture according to the appropriate protocol for the fracture type.

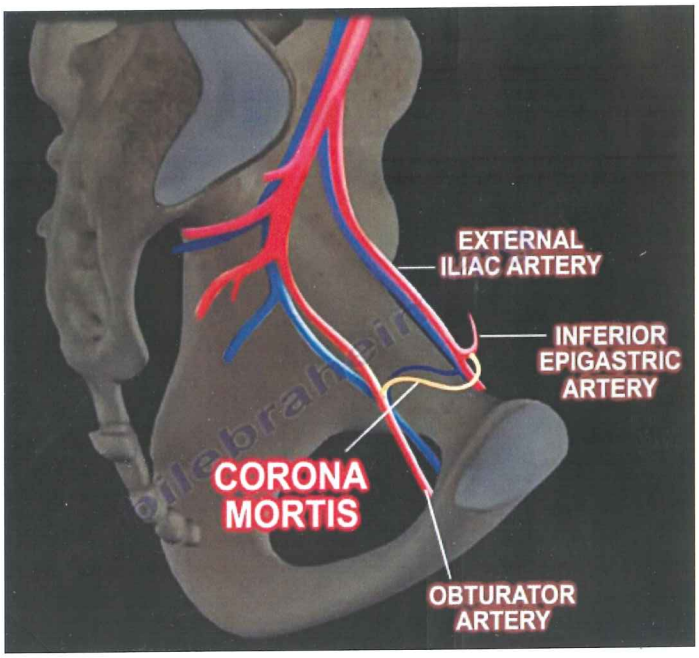
If the patient has a posterior hip dislocation with a posterior acetabular wall fracture, the physician must assess the stability of the hip joint by examination under anesthesia after a closed reduction. After a closed reduction, if the dislocation is not congruent, complete an open reduction and fixation immediately.

Corona Mortis

Corona Mortis is a popular topic. The Corona Mortis is a common vascular variant between the external iliac or its branch, which is the inferior epigastric and the obturator. The obturator artery comes from the internal iliac. The Corona Mortis is a collateral circulation between the internal iliac and the external iliac. Keep in mind that the majority of bleeding in pelvic fractures is from the internal iliac artery. The Corona Mortis is a connection between the internal iliac branch (obturator) and the external iliac or its branch, the inferior epigastric.

Cadaveric studies show that the incidence of the Corona Mortis is about 84%; however, in clinical practice, the incidence of Corona Mortis is not that high. It is present more in females and the venus connection is about 70% and the arterial connection is much less. Its location on the superior pubic ramus is variable. It is about 3-7cm from the symphysis pubis. It is located behind the superior pubic ramus and one should be careful with the lateral dissection of the superior pubic ramus. The size of this artery is between 2-4mm and a lot of them are more than 3mm in size.

The name Corona Mortis literally translates to the "Crown of Death". This is due to the Corona Mortis being susceptible to injury in pelvic trauma and in pelvic surgery. An injury to the Corona Mortis may lead to significant hemorrhage, which may be difficult to control. This hemorrhage present a challenge to the surgeon and a hazard to the patient during anterior approaches to the pelvis such as with the ilioinguinal approach or intrapelvic approach. The surgeon will want to be cautious because the retractors may avulse these anomalous vessels.



If you find this branch, then ligate the vessel to prevent bleeding from this vessel which retracts into the pelvis and is difficult to control because it is located behind the superior pubic ramus in the retropubic area. It will be difficult to reach and to control the bleeding! The technology of intraoperative ultrasound may improve and may be able to detect this artery during surgery.

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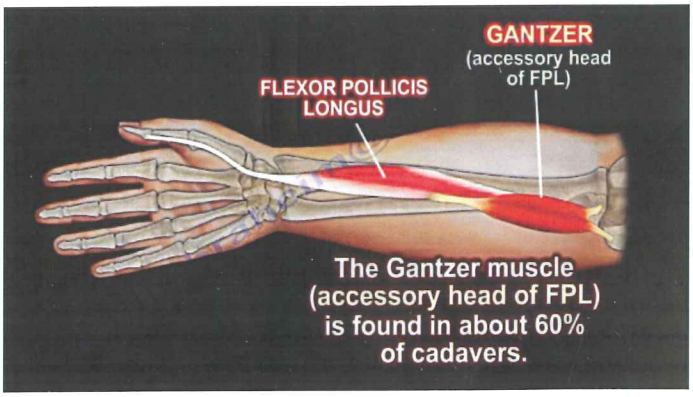
The Gantzer Muscle

The Gantzer muscle (accessory head of the FPL) is found in about 60% of cadavers. Accessory muscles have been described in different literature. The majority of these accessory muscles are asymptomatic, however it may result in symptoms or compression neuropathy in some patients. The Gantzer muscle can be involved in compression neuropathy of either the median nerve or the anterior interosseous nerve. The origin of this accessory head of the FPL is variable. The location of the muscle in relationship to the anterior interosseous nerve or the median nerve is variable. The muscle inserts distally into the ulnar border of the FPL in about 100% of cases. The Gantzer muscle is innervated by the anterior interosseous nerve. In summary, the Gantzer muscle is an accessory head of the Flexor Pollicis Longus (FPL) muscle that can cause compression of either the median nerve or the anterior interosseous nerve.



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Dr. Ebraheim, Amanda Critton and Lauren Corba do not have any relationships with industry to disclose.

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