What is the Carpal Tunnel?
Carpal Tunnel means quite literally “wrist tunnel”. It is a naturally occurring tunnel that lies deep within your wrist/palm. Through this tunnel pass the tendons to all your fingers as well as the Median Nerve - a large nerve that runs from your neck to your hand to supply feeling to your thumb, index, middle & half of your ring finger. (Your baby finger & the other half of your ring finger are supplied by the Ulna nerve that does not travel through the Carpal Tunnel.)

What is Carpal Tunnel Syndrome?
Carpal Tunnel Syndrome is the collection of symptoms that people feel when their Median Nerve is compressed or irritated as it passes through the Carpal Tunnel. Most people notice numbness or tingling in the thumb and fingers (not usually the baby finger). The tingling or stinging is often made worse by strenuous use of the hand but especially with activities such as driving or holding a newspaper or magazine to read. Many people wake from sleep with their hands feeling numb or tingly and having to shake their hands to get the feeling to return. Others notice that their hands are weak, cramp up or feel clumsy when they are sewing, writing or performing crafts and hobbies with their hands. Pain is very variable and sometimes may "radiate" up the front of the forearm and rarely as far as the shoulder or neck.

What Causes Carpal Tunnel Syndrome?
The Carpal Tunnel is lined on 3 sides by the bones of the wrist which create a U-shape. On the 4th side, the tunnel is covered by the Transverse Carpal Ligament which stretches across the mouth of the U from the wrist to the mid palm. The Median Nerve shares the Carpal Tunnel with the tendons that run through your palm to your fingers. These tendons are covered by a Tendon Sheath that allows the tendons to slide & glide easily.
Since the Carpal Bones cannot stretch and the ligament doesn’t stretch either, anything that swells within the Carpal Tunnel will increase the pressure locally within the Carpal Tunnel. It turns out that the tendons are not really affected by this pressure increase - they will still slide & glide painlessly but the Median Nerve is exquisitely sensitive to pressure - hence the symptoms of numbness, tingling & weakness.
Carpal Tunnel Syndrome is caused by swelling of the tendons and their coverings as they pass through the Carpal Tunnel. Common causes of this tendon sheath swelling are: Diabetes, pregnancy, sprains & fractures, low (hypo) thyroid, inflammatory arthritis (Rheumatoid Arthritis & Lupus) as well as unusually vigorous/repetitive use of the hands in a susceptible individual.

What is the Treatment for Carpal Tunnel Syndrome?
Since in most cases, Carpal Tunnel Syndrome was caused by swelling of the tendon sheaths within the Carpal Tunnel, initial treatment is directed towards the cause of this swelling. Obviously pregnancy, sprains & fractures are self limiting, but other more chronic conditions (especially Diabetes) should be carefully controlled by your medical doctor. If your Carpel Tunnel Syndrome was brought on by a new activity, avoiding, reducing or performing that activity in a different way should help reduce your symptoms. The swelling within the Carpal Tunnel can also be reduced by taking over the counter anti-inflammatory medicines (NSAIDS) such as Aspirin (ASA), Aleve (Naproxen) or Advil/Motrin (Ibuprofen). Do not take these if you are already takings prescription NSAIDS or if you have asthma, GERD, kidney failure or bleeding ulcers. A Cortisone injection into the Carpal Tunnel will help shrink the swollen tissues directly. A night splint may be very helpful if you are having trouble sleeping at night due to your Carpal Tunnel Syndrome. These work by preventing you from sleeping with your wrist bent over. By preventing extra pressure on the nerve & by resting the nerve in a comfortable position, you may see a dramatic improvement. Be sure not to tighten the straps more than is necessary! I do not recommend use of the splints during daytime activities.

How Can I Be sure I Have Carpal Tunnel Syndrome?
Usually the diagnosis is confirmed from your symptoms & examination of your neck, upper extremity & wrists. If surgery is being considered, you should see a neurologist for an independent medical opinion to confirm the diagnosis. Most neurologists will accurately measure the electrical impulses as they cross the carpal tunnel (Nerve Conduction Tests). Your neurologist may also measure other nerves in your arms or legs with EMG (Electromyography) to look for associated nerve conditions such as Peripheral Neuropathy or Cervical Nerve Entrapment that may mimic or worsen Carpal Tunnel Syndrome. A surprising number of patients may have more than 1 condition. When it is unclear which condition causes the majority of your present symptoms, we may release the carpal tunnel first since it is a small and safe procedure.
What Happens During Carpal Tunnel Surgery?
Surgery is usually recommended for patients who have moderate or severe Carpal Tunnel Syndrome upon nerve conduction testing. It may also be recommended for some patients with mild nerve slowing whose symptoms have not responded to aggressive non-operative treatment.
The procedure divides the Transverse Carpal Ligament surgically which allows the tendons & Median Nerve to expand outside the Carpal Tunnel. The pressure on the Median nerve is reduced immediately and, (if the nerve has no permanent damage) the symptoms are relieved almost immediately too. Over the ensuing 4-8 weeks, the Transverse Carpal Ligament heals back resulting in a permanently enlarged Carpal Tunnel.
Currently I perform Carpal Tunnel Release in the Outpatient Surgery Department at Coastal Carolina Hospital rather than the main Operating Room As a result, most patients find Carpal Tunnel Release comparable to having a tooth filled. I inject local anesthetic at the surgical site so you will not feel the surgery itself. You will feel a tight band (tourniquet) on your upper forearm as this gives me a clear view of your ligament & nerve during your surgery. The actual procedure usually takes about 10 minutes but plan on being in the Outpatient area for approximately 1 hour. My surgical team will maintain sterility throughout the procedure but you will not need to change your clothes (please wear short sleeves!). No IV or sedation is used and you can eat normally before and after the surgery (we recommend a light meal or snack only). You may drive yourself to & from the surgical appointment, but most patients prefer to have a friend or relative drive them rather than have to wait for the feeling to return to their fingers before driving home.
Arthroscopic Carpal Tunnel Release divides the Transverse Carpal Tunnel Ligament through 1 or 2 very small incisions in the wrist (possibly the palm). This generally is performed in an Ambulatory Surgery Operating Room and requires a short General Anesthetic or a regional anesthetic whereby your affected arm is made numb for the 30-50 minutes required for the procedure. I do not perform the arthroscopic procedure but will certainly refer you to another surgical colleague if you prefer to explore this option.

When Can I Return to Work After Carpal Tunnel Release?
Most patients may return to modified work within a few days of surgery. You will need to switch tasks frequently and take frequent breaks from repetitive activities for the first month. Those patients whose jobs involve high volume word processing or constant repetitive hand motions will usually need 3 weeks off work. Patients with extremely work situations may well need 6 weeks before they can return to unrestricted heavy repetitive work.
**What About After Surgery?**
A padded bandage is worn for the first few hours only. The underlying Band-Aid is left on for 2 days then changed daily. I do not routinely use a cast or splint although you may use your night splint if you prefer. You may use your hand for light work & self care until your sutures are removed at your clinic visit 8 days after your surgery.

Avoid strenuous use of your hand while the sutures are in place to reduce the risk of infection!
You will notice discomfort around the incision for several weeks after surgery and you should avoid heavy lifting or repetitive gripping & grasping for a month after surgery. You will also find actions like taking the tops off soda bottles and jars difficult if not impossible for at least a month or 2 after Carpal Tunnel Release.

**What are the Risks of Carpal Tunnel Surgery?**
An infrequent, but annoying complication is damage to the small branch of the Median Nerve that crosses the Transverse Ligament just beneath the skin of the palm. It may be cut or stretched by retractors inadvertently during Carpal Tunnel surgery. A more frequent problem is increased swelling & bruising in the hand, wrist or palm after surgery due to localized bleeding within the Carpal Tunnel. This may occasionally make the numbness worse for a few days and may slow the return of normal feeling in the fingers. My staff will be pleased to give you a copy of the complete list of complications on the surgical consent form.

**Will Carpal Tunnel Surgery Work For Me?**
While most patients under the age of 60 see complete relief of their symptoms, I always caution my older patients that incomplete & certainly slower recovery (up to 6 months) should be expected. My experience is that these patients probably had some ongoing mild to moderate compression of the Median Nerve (although they have few symptoms from this) for many years. This chronic but mild compression causes some permanent ultra structural changes (scarring) within the Nerve so that it recovers slowly and incompletely. Nevertheless, Carpal Tunnel Release usually eliminates pain and restores at least some of the feeling in older patients. They are usually quite pleased with the result despite having residual numbness in their fingers.

**Why Can't I Just Have an Injection?**
If you have only mild electrical slowing and symptoms of short duration, an injection may be truly curative. For patients with moderate or severe nerve slowing, I use cortisone injections mainly to defer surgery until we can find a mutually convenient time to schedule your surgery. Injections may relieve your symptoms for up to 3 months but they usually recur with the same severity as before. There is very little science to guide us through non-operative treatment of moderate or severely affected nerves. Most neurologists & surgeons are concerned that if even moderate pressure is applied to the Median Nerve for months or years, the nerve may become permanently damaged (at which point surgical release no longer relieves all the symptoms). We just don’t know how much pressure the nerve can tolerate or for how long?

**Will my Carpal Tunnel Syndrome return after Surgery?**
Since we have permanently enlarged the Carpal Tunnel with surgery, recurrence of your Carpal Tunnel Syndrome is uncommon. It would require a new injury or other cause of inflammation of the tendon sheath to cause recurrence of symptoms. Patients with associated neurological problems such as Diabetic Peripheral Neuropathy, Cervical Disc Disease are definitely at risk for recurrence of symptoms (although they may not be due to pressure within the Carpal Tunnel itself).