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Chapter Eight

Phantom Pain

“My toes are curling,
and I have cramps in the
bottom of my foot.
Am I crazy?
Doctor, you know,
I no longer have a foot!”

Phantom Pain

“It is driving me crazy,” said Ted, a 32 year leg amputee.

“My toes are curling, and I have cramps in the bottom of my foot,” he continued. “Am I crazy? Doctor, you know, I no longer have a foot!”

That is the essence of phantom pain. The body part is missing. The missing body part hurts. Is the pain real or imagined. To me, if you imagine the pain, you are in pain. And yet, how can the toes hurt and the foot cramp, when there are no toes and no foot.

“Doctor Dellon, if I could only stretch my toes, scratch my foot...” his voice trailed off in frustration, desperately seeking answers. And relief of his phantom pain.

“Ted, I can help you,” I said. “I can’t get you to scratch your toes again, but I know where that Phantom lives, and you and I can visit the place together,” I said.

“Where does the Phantom live, Doctor Dellon?”

“Ted, we have to take a trip to what the old time surgeons called the Operating Theater. I am going to get you a front row seat.”

Historical Pain Approaches

These complaints have perplexed doctors since before the days of the Gladiators. The Gladiators, however, probably did not complain. Galen, the most famous doctor of his time (200 years AD), began his work as a physician to the Gladiators. He became famous for his anatomy dissections!

Pain Management for much of history was death. Consider this quote from Ambroise Paré (1510-1590). He was the Surgeon to Napoleon. Paré wrote a book, *Journeys in Diverse Places*, which was translated and published in the Harvard Classics. Battle of Turin in 1537: Paré wrote,

“I entered into a stable, thinking to lodge my own and my man’s horse, and found four dead soldiers, and three propped against the wall, their features all changed, and they neither saw, heard, nor spake, and their clothes were still smouldering where the gun-powder had burned them. As I was looking at them with pity, there came an old soldier who asked me if

there were any way to cure them . I said no. And then he went up to them and cut their throats, gently and without ill will toward them. Seeing this great cruelty, I told him he was a villain; he answered he prayed God, when he should be in such a plight, he might find someone to do the same for him, that he should not linger in misery.”

Paré was most famous for the treatment of wounds. For example he introduced the use of sutures (ligatures) to tie of blood vessels instead of pouring boiling oil or water on to the arteries. With regard to amputation, consider his words from his notes at the Battle of Saint Quentin in 1557:

“The King begged me to stop at La Fere with him to dress a very great number of wounded who had retreated there after the battle. Their wounds were very putrid, and full of worms, with gangrene, and corruption; and I had to make free play with the knife to cut off what was corrupt, which was not done without amputation of arms and legs...and did all I could for them; but in spite for all my care many of them died.”

Amputation and Anesthesia



Figure 8-1. Amputation without anesthesia; “Picture of an amputation in the operating theatre of old Saint Thomas Hospital, London, around 1775”. (<http://www.general-anaesthesia.com/images/leg-amputation.jpg&imgrefurl=http://www.general-anaesthesia.com/images/amputation.html&h=302&w=216&sz=12&tbnid=y7ZatRabmtYJ:&tbnh=112&tbnw=80&hl=en&start=14&prev=/images%3Fq%3DAMPUTATION%2BLEG%26svnum%3D10%26hl%3Den%26lr%3D%26sa%3DG>)

In the absence of anesthesia, swiftness was the mark of the best surgeon. Tourniquets were placed about the leg to minimize blood loss. The best surgeons could remove a leg in less than 30 seconds.



Figure 8-2. Left: Another example of amputation without anesthesia, with the patient having fainted half-way through the surgeon, who is here shown with a saw going through the bone. (from website noted in legend of Figure 8-1). Right: Artists drawing of method of amputation, here using a “chain saw” to cut the bone. (medicalantique.com)

Anesthesia was first documented for surgery in Boston, at the Massachusetts General Hospital in what is now known as the “Ether Dome.” The date was October 16, 1846.



Figure 8-3. Left: Anesthesia at the time of the Civil War was given as either chloroform or ether. A canister of ether is shown here. Right: The ether was “dropped” on to a gauze sponge in the ether “cone.” As the liquid evaporated, the patient breathed it in and went to sleep.

The Phantom and the Civil War

During the Civil War in America, 1861-1865, saving the injured leg during the time of the musket and cannon ball meant certain death from infection and gangrene. Amputation was the alternative to death.



Figure 8-4. A Confederate soldier after a leg amputation during the Civil War. (From: Otis, George A. A Report on Amputations of the Hip-Joint, in *Military Surgery*. Washington:Govt. Printing Office, 1867)



Figure 8-5. Amputation in a Field Tent at Battle of Gettysburg, July 1863. (http://images.google.com/imgres?imgurl=http://antiquescientifica.com/photo_stereoview_Gettysburg_amputation_saw_detail.jpg&imgrefurl=http://antiquescientifica.com/archivve43.htm&h=417&w=576&sz=109&tbnid=Tq36L2LyS6UJ:&tbnh=95&tbnw=132&hl=en&start=27&prev=/images%3Fq%3DAMPUTATION%2BLEG%26start%3D20%26svnum%3D10%26hl%3Den%26lr%3D%26sa%3DN)

Eighty thousand (80,000) legs were amputated in the Civil War. About 24,000 of these men died afterwards from infection. Penicillin, the antibiotic, came into use about 1942, World War II. (We measure surgical progress by lessons learned in warfare. Even today!)

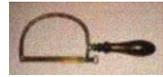
Amputation bone saw by Tiemann, ivory handle c. 1850



Amputation bone saw by Tiemann, gutta percha handle, c. 1880, pitting on the blade. Priced accordingly.



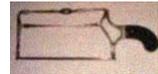
Metacarpal bone saw, after Benjamin Bell, c.1780



Capital bone saw and metacarpal saw by V.W. Brinkerhoff, NY



Dr. Butcher's bone saw, c. 1851



Chain saw, c. 1860, ebony handles, one detachable for attachment to a carrier needle (shown below) which would be used to thread the chain around the bone to be cut or resected. The carrier needle (dia. 2") has an "eye" in the tip for inserting a thread used to draw the chain around the bone.



Figure 8-6. The amputation saw was a major part of any amputation set. Without one, the set was seriously compromised. Saws from the Civil War era are distinctive in that the handles were non-metallic and many had a pistol grip shape. (medicalantiques.com)

The soldiers were lined up on cots awaiting leg amputation. The operating room was a tent on the farm turned battlefield. **The phantom of the opera(rating theater) was well-known in the 1860's.**

While many Generals of the Civil War are household names in America today, Robert E. Lee, Ulysses S. Grant, for example, one general rapidly became the most famous in battle: *General Anesthesia*. There had always been alcohol and morphine for Pain Management. Of course, we still use

those methods today. General Stonewall Jackson described the use of *General Anesthesia* as an “infinite blessing” for his troops (see Figure 8-3)

The Phantom was first described by the Neurologist, Silas Weir Mitchell, MD (read more about him related to RSD in Chapter 7). In his writings after the American Civil War, in his book *Injuries of Nerves and Their Consequences* (published in 1872), Mitchell wrote his observations on injured soldiers after they had an amputation:

“*Sensory hallucination.* No history of the physiology of stumps would be complete without some account of the sensorial delusions to which persons are subject in connection with their lost limbs . . . Nearly every man who loses a limb carries about with him a constant or inconstant **phantom** of the missing member, a sensory ghost of that much of himself, and sometimes a most inconvenient presence, faintly felt at time, but ready to be called up to his perception by a blow, a touch, or a change of wind.”

Early Attempts to Remove the Phantom

After the Civil War, surgeons tried to use local anesthesia and then amputation to treat Phantom Pain. They were largely not successful in this approach.

During World War I, a French Surgeon, Rene Leriche, MD, became interested in pain and the role of the sympathetic nervous system. He thought the purplish color and coldness that he would see in painful hands and legs was related to the sympathetic nerves constricting blood vessels in response to pain. In 1937 he published his book, *La Chirurgie de la Douleur, The Surgery of Pain*.

He wrote, “re-amputation should be avoided . . . and there should be no resection of the neuroma. I have had under my care more than thirty cases of amputation in which neurectomies had been done: none of them had been cured.”

In contrast to that view, my research has shown, and as you have learned from Chapter 1 and 3, it is “ok to lose your nerve,” providing one selects the correct nerve and buries it in a muscle.



Figure 8-7. Modern Warfare. Land Mines. The Phantom lives on.
(http://www.istockphoto.com/file_thumbview_approve/139747/2/istockphoto_139747_foot_amputated.jpg)

Where does the Phantom Live?

The location of the pain signal after amputation must be located within the amputation site, within the endings of the amputated nerves. Those nerves are within the scar, next to bone, and next to the arteries in the amputation stump. And that is where the Phantom lives.



Figure 8-8. Amputation stumps are where the phantom lives. From left to right: fingers, a left forearm, knee stumps.

“How can you help me Doctor Dellon?” Ted continued.

Help for Phantom Pain is just not that complicated to understand:

1. An amputation cuts the nerve to the part that has been amputated.
2. The nerve end that has been cut, tries to grow back to that part.
3. Since the part is missing, the nerve attaches to something.
4. If that nerve attaches to the skin or the bone or a joint, then when the skin, the bone, or the joint move, the nerve is pulled, a message from the missing part is sent to the brain and **THE PHANTOM APPEARS.**
5. If the nerve attaches next to an artery, and the large nerves are usually next to important arteries, then every time the heart beats, the nerve is stimulated, and this can make **THE PHANTOM APPEAR.**
6. If the nerve is located next to where the artificial limb (prosthesis) fits, then, this too will make **THE PHANTOM APPEAR.**

“Ted,” I said, “to help you, I just have to move the end of the nerve! Give the nerve a new home, and the phantom pain will disappear.”

Diabetic Amputees

There were about 90,000 amputations in diabetics in 2005 in the USA.

Diabetics get neuropathy. Diabetics lose the feeling in the toes and feet. Then they get infections, ulcers, and amputations.

This problem has been considered progressive and irreversible.

(To learn how I have changed the natural history of diabetic neuropathy , read about nerve decompression and restoration of sensation, relief of pain, and prevention of ulcers and amputations, in Chapter 2 of *Pain Solutions*.)

Diabetic amputations at the leg or thigh level can have Phantoms.



Figure 8-9. The left foot had two toes amputated in this diabetic 60 year old man. There is no feeling in the left foot, which is why it became ulcerated. He will not get phantom pain. No sensation, no phantom. An ulceration and infection are still present and can be seen next to the remaining 3rd toe. In contrast, the right foot had nerve decompression with the Dellon approach 7 years earlier. This right foot recovered sensation, and did not develop an ulceration. (See Chapter 2 to learn about this.)

Sports After Amputation

Belinda R. (not her real name), from New Jersey, loved sports. Her favorites were golf in the summer and skiing in the winter.

When Belinda was 30 years old she was in a car accident. Her left leg was crushed and broken in many places. She was told she needed an amputation. Belinda is a fighter. She refused. “Save my leg,” she said.

Three years and 13 operations later she reluctantly agreed. “Amputate,” she told her surgeon.

Belinda is a fighter. She wanted to play and teach golf and skiing again. She went through rehabilitation and learned to use an artificial leg, a prosthesis. She did return to golf and skiing, but the prosthesis hurt when she put it on, and hurt when she took it off. The pain was in her amputation stump. **She had stump neuroma!** Sometimes it hurt when she did nothing to it. Sometimes it felt like her calf hurt, sometimes like her toes hurt. The Phantom lives in stump neuromas.

Belinda went to many different Rehabilitation Centers. Saw many different men who make artificial legs (prosthetists). She tried many different types of artificial legs. Her stump continued to hurt. (also read about Dorothy, and see Figures 11-8 and 11-9).

Five years later, a Physiatrist (a doctor who specializes in rehabilitation) referred her to me. He knew of my interest in neuroma pain and my technique of placing the end of the injured nerve into muscle to make it stop sending a pain message. (see Chapter 1 of *Pain Solutions*. Learn more about neuromas and muscle.)

“That’s it! That is exactly where the pain is. When you touch that part of my stump, it feels as if it is the spot of my foot that hurts,” said Belinda when I examined her.

“I can fix that,” I said. “We need to give that neuroma a new home.”

The surgery took about one and one half hours. When Belinda awoke, she knew the phantom was gone from her stump.

“Stumped” now longer, Belinda returned to sports and sent me these:

A handwritten note on a piece of paper. The text reads: "DEAR Dr. A. Lee Dellon, my life is changed in so many ways because of the surgery. The Pain is gone I did not realize how much Pain I was in. Now I'm sleeping again, enjoying eating again and smiling again. Thank you for everything you did for me. Words can not express. I have my life back I'll be skiing & golfing again very soon. THANKS TO YOU Sincerely".

Figure 8-10. One month after the surgery, Belinda wrote me this note.



Figure 8-11. Belinda is back golfing and skiing again after removing the phantom from her left leg amputation stump. The painful neuromas were removed, and the nerves placed into muscle away from the bone and the blood vessels.

“My Nipple is Erect!”

“Is that a problem?” I asked Angela. She is 44, a school teacher, and a mother of three. Her husband is in the examining room with Angela and me.

“Doctor Dellon,” she said. “I have survived breast cancer now for five years. I had my right breast reconstructed with a flap of muscle and skin from my abdomen. I have had a small bump created to look like the nipple that was cut off with my breast. I have had a tattoo placed to look like I have an areola. The Plastic Surgeon did a great job with the pigment and reconstructive surgery. My husband is very happy. I like how I look in clothes. **But I do not have a nipple, Doctor Dellon. How can I feel it?**”



Figure 8-12. The right breast has been reconstructed by Plastic Surgery from skin and muscle from the lower abdomen (a tram flap). The nipple is created from surrounding skin. The color of the nipple and areolar is created by tattooing. But there is no sensation in this areolar/nipple complex. This patient feels as if her nipple gets erect when she walks in the freezer section of the supermarket, the same way her nipple used to do this before her breast cancer surgery. Where does this phantom of the nipple/areola complex live? Note the blue asterisk mark. This the painful divided end of the 4th intercostal nerve, the nerve that normally goes to the nipple/areola complex. It was divided during the breast cancer surgery, and is now the source of her Phantom Breast experiences.

“Angela,” I said, is there a place that causes you pain when I press here, near your armpit?”

“Ouch! Yes,” she said. “That spot you touched feels like it goes right out to my nipple!. How did you do that?”

“Angela,” I answered, “The nerve to your original nipple and the skin around it, your areola, was cut during the removal of your breast. That nerve, called the 4th intercostal nerve, is always between these two ribs, where I touched you. When that nerve end, called a neuroma is touched, or exposed to cold, the nerve sends a message to your brain, your brain still receives the message, even though you do not have your original breast. Your brain, after a mastectomy, reacts the same way as it does to when a person has either the leg or arm amputated. The brain no longer receives messages from the breast skin or nipple. So when the end of the nerve is stimulated by something, your brain creates the image of a phantom nipple. Your brain matches that pattern of impulses to existing patterns, and matches it with the impulse profile it remembers from when you used to go shopping in the freezer aisle.”

“Well that makes sense. So I am not crazy.”

“No Angela,” I said, “You have what is called a *phantom*.”

“Doctor Dellon, what should I do?”

“Angela, unless this phantom sensation is really painful to you, you do not really have to do anything. Sometimes, just understanding the basis of this phenomenon is sufficient.”

“Yes, Doctor Dellon, I do feel better just understanding it. But if it continues to bother me, and I don’t like my husband touching that spot, what can you do to help me?”

“Angela, if you ever want that painful spot removed, I can fix it for you.. Just let me know.”

“Thank you for your hope and reassurance, Doctor Dellon.”

A New Grip on Life

He was 42 when the drilling machine, the one that dug fence posts, caught the sleeve of his right shirt.

The drill, or auger as it is called, twisted violently around.

The shirt sleeve was torn off. So was Ben's hand and arm.

That was 4 years ago. Ben has been working hard in rehab. He wants to use that right arm and hand again.

Ben has tried to learn to use his left hand better, but he is now 46.

The really fancy new biomechanical, computer-driven arms cost about \$25,000 or more. Ben cannot even wear the traditional, wire, shoulder-powered, harness *hook*. What is left of his forearm, the part near the elbow hurts too much to even wear the prosthesis the insurance company has provided for him.

Ben's Physiatrist, his rehab doctor in Philadelphia knows of Doctor Dellon's work with painful neuromas. Ben was referred to the Dellon Institute for Peripheral Nerve Surgery in Baltimore for help.

"Hello, Ben, I am Doctor Dellon," I introduced myself. "What can I do to help you?"

"Doctor Dellon, I am *stumped*," Ben joked about his condition.

"What do you mean Ben?" I asked.

Doctor Dellon, I want to wear my prosthesis, the one with the hook, but it just hurts so much when I put it on that I cannot wear it for long.”

“Ben, I can fix that for you,” I told him. “Each of these tender spots, the ones that hurt when you put on your prosthesis (see Figure 8-13), have a painful nerve. The nerve was probably stretched and torn in the original injury. I need to find those hurt nerve ends, called neuromas, and remove them, and then relocate each nerve into a muscle. When the nerve is in the muscle, it is away from denervated skin and movement, and will stop sending pain signals.”



Figure 8-13. Left: The inside of Ben’s right elbow. Right: The outside or back of Ben’s right elbow. The little blue stars are the places where his prosthesis, his artificial arm with the hook on the end, rub and create pain. The arrows are the direction the pain goes and the letters are initials for the nerves to the skin that were cut during the amputation. They still send pain messages back to the brain when they are stimulated.

“I am ready for the surgery, Doctor Dellon. Let’s go.”

At surgery, I opened the skin at the site of his pain, found the neuromas (see Figures 8-14 LEFT and 8-15 LEFT), removed each neuroma, and then buried each new end of the nerve, so that when it healed, it would do so in an environment of normal muscle (Figures 8-14 RIGHT, 8-15 RIGHT).



Figure 8-14. Left: The inside of the right elbow. The three nerves are all part of the medial antebrachial cutaneous nerve that was causing the pain when the prosthesis touched the spot in 8-13 (left) on the inside of the elbow, labeled MABC. Right: Note the nerve, crossing the green marker, is implanted into the red triceps muscle.



Figure 8-15. Left: is the outside or back of the right elbow. The nerve encircled with the blue loop is the posterior cutaneous nerve of the forearm. This is the nerve causing the pain when the prosthesis touched the spot in 8-13 (right) labeled PCN. Right: Note the nerve, crossing the green marker, is implanted into the red brachioradialis muscle.

The surgery took about one and one-half hours. Ben awoke without the phantom pain that was caused by the neuromas I had removed.



Figure 8-16. Ben, one month after his surgery. Shown wearing the shoulder harness prosthesis, with the “dress hand” attachment, instead of the hook.

Pain Solutions Summary

If an amputation occurs, either from an injury or for the treatment of a tumor, the nerves to the missing part do not die.

The nerves to the missing part try to grow back to that part.

If these nerves grow into scar, or come up against a moving bone or joint or tendon, the nerve end will form a painful neuroma.

Messages from that painful neuroma are received in your brain as if they are still coming from the amputated part.

This creates the Phantom. Phantoms are not always painful, but they all have the same cause. Stimulation of a nerve.

The treatment is to identify the nerve that is sending the signal, and remove the painful scar (neuroma) at the end of the nerve.

That nerve must be relocated into a muscle. A technique I have proven to work successfully.

There is hope for you.

Visit Dellon.com or call +1 877 DELLON-1 (+1 877 335-5661).

