
11

Chapter Eleven

Doctor Dellon

“Plastic Surgery
is problem solving.
I apply Plastic Surgical
approaches to pain.”

Doctor Dellon

“Doctor Dellon,” one of my patients asked, “You are a Plastic Surgeon. Why do you work on these difficult pain problems? Were you always interested in nerves?”

Often, I find myself explaining how, as a Plastic Surgeon, I am interested in Peripheral Nerve problems. For example, when I teach the First Year Medical Students in their Anatomy Course, at Johns Hopkins University School of Medicine, I begin my lecture on Clinical Correlations with this question:

“Good morning. My name is Lee Dellon (my real name). I am a Plastic Surgeon. What type of surgery does a Plastic Surgeon do?”

Not surprisingly, these young future doctors, among the smartest in the world (I know first hand, having had the honor to serve on the Johns Hopkins Medical School Admissions Committee for three years) rapidly spew out the popular answers: “Face lift.” “Breast Augmentation.” “Liposuction.” “Nose Jobs.” “Extreme Makeovers!” Yes these future doctors are the product of TV shows, magazines, and of how the American Society of Plastic Surgery, INC. markets my surgical subspecialty.

I am a Plastic Surgeon. It took me 8 more years of training after completing medical school at Johns Hopkins University School of Medicine (in 1970, and 4TH in my class). Two of those 8 years were spent in research at the Surgery Branch of the National Cancer Institute, at the National Institutes of Health, in Bethesda, Maryland (only five surgeons were chosen from the USA for these spots in the 1970’s). In addition to General Surgery training, and a Plastic Surgery Residency, I completed a Hand Surgery Fellowship (I was the first Hand Fellow at the Raymond M. Curtis MD National Hand Center in Baltimore). I was 34 years old when I finished training.

I am now 105! (not my real age.) I have lived several life times already. Actually, four. The first, of course, is my personal life time. The remaining three life times are best understood in relationship to the Johns Hopkins University three pillars of Patient Care, Research, and Teaching. Each of these three pillars requires one dedicated lifetime. Continuing now in my life as a teacher, I would then ask medical students,

“Why am I called a PLASTIC Surgeon?”

The lecture hall became quiet. There was no obvious answer.

I hold out my hand to a student seated in front of me in the first row. “Is a Plastic Surgeon made of Plastic?” The student declines to touch my hand, as if unsure what the answer will be. “Is it because Plastic Surgeons put plastic into their patients?” Some heads nod now, perhaps seeing where this line of questions is going.

“The earliest Plastic Surgery procedures were recorded about 600 years before the birth of Christ,” I tell them, “and 2000 years before polymer chemists found out that certain chemicals would take on the shape of whatever they were poured or molded into. They called those chemicals ‘plastics.’ The word ‘plastic’ comes from the Greek word ‘plasticos’ for shape or form. **A Plastic Surgeon is one who restores the body to its original or desired shape or form.**” The lecture hall is again quiet.

I now show the first slide (see Figure 11-1). “What do you see?” I ask.



Figure 11-1. On the left hand is a thumb. What is on the right hand?

“Anthony was 40 years old when his right thumb was torn off by a machine at work. He was right handed. How can you restore the shape and function of the right hand? How would you solve this problem?” I asked the quiet group.

“To me, Plastic Surgery is problem solving. How do I as a teacher train you as a student to solve this medical problem? What do you have to know?”

How creative do you have to be to solve a problem for the first time? Or to solve it correctly the second time? Or to find a better solution to the problem in the future?” And now they were beginning to see why I became interested in Plastic Surgery and Hand Surgery.



Figure 11-2. Left: The big toe has been “harvested” from the right foot and transplanted using microvascular surgery techniques to the right hand. A Toe-to-Thumb transfer. What would you call this new digit? Can it move? Does it have sensibility? Is there pain created in the foot at the big toe donor site? What toe would you transfer if this were a woman instead of a man, or if this occurred in China instead of the USA?

“We have now created a language problem. What do you call this transferred digit from the toe to the thumb position? You have a choice. You can either call it a “Thoe or a Tumb”” I joked with the medical students. Some laughed. Most were still trying to grasp what they were just seeing. Even though the first toe to thumb transfer was done in the late 1970’s when I was finishing my Plastic Surgery and Hand Surgery training, the American Society for Plastic Surgery, continues to market Plastic Surgeons as Cosmetic Surgeons. Of course Plastic Surgeons do Cosmetic Surgery. Plastic Surgeons invented Cosmetic Surgery. That was problem solving too. How can you make a long nose shorter? How can you make small breasts bigger, or large breasts smaller, or create breasts for the woman who has had a breast amputation. “Plastic” and “Reconstructive” must be words that remain connected to describe what a Plastic and Reconstructive Surgeon

does. The American Society for Plastic Surgery, Inc. has become focused on Cosmetic Surgery. I am also a member of the American Society for Reconstructive Microsurgery. This society is making the public more aware of what Reconstructive surgery can do to help people (*indeed, that is one of the reasons for my writing this book, now, at this time.*)

“The Plastic Surgeon and the Hand Surgeon that helped this patient, four years before the patient was referred to me, did a great job of restoring form to the hand, and movement to the newly reconstructed thumb,” I said as I began to explore this subject further for the medical students, “but the new thumb has **no feeling** in it, and the foot donor site is so **painful** that this worker remains disabled and out of work still.”

“Doctor Dellon, Can you help me?” Anthony, the toe-to-thumb patient, asks.

“Yes, Anthony, I can help you. Let me get rid of the pain in the top of your foot first, by removing the hurt nerve endings that used to go to the top of your big toe. They are stuck in the scar. If I am successful, then at a second operation, I will remove the pain from the nerves that used to go to the end of your big toe. They are stuck to the end of the bone. And then, if you are happy with what I have done, let me get feeling into the tip of your new thumb. The nerves that used to go to the thumb, are still there, waiting to be redirected. I can do that for you,” I said.

“Next slide please,” I said, continuing my lecture (Figure 11-3).



Figure 11-3. Three operations later, Anthony (not his real name), touches his new toe to the place it came from. He is smiling. His new thumb has feeling. His foot donor site no longer hurts when he touches it or when he walks.

“Three operations later, Anthony has feeling in his thumb. He can touch his foot again. He is smiling. He walks without a limp. What exactly did I do at surgery? The operations to solve these problems had not been described before.”

One medical student asked, “How did you figure out what to do? When did you begin to get interested in peripheral nerve problems?”

While I was in medical school at Johns Hopkins University, Doctor Raymond M. Curtis ran the Hand Surgery Clinic and taught the Plastic Surgery Residents. My first research was in Plastic Surgery. My research involved why people who are born with a cleft palate or without a cleft palate speak they way they do. Why are they unable to lift the soft palate to block air from escaping through the nose? Well clearly if the palate were cleft, or split, there was escape of air. But there was this little muscle that lifted the soft palate, and that muscle was innervated by what nerve? (But that is another story). I loved to watch Doctor Curtis examine the hand. The hand has such complicated anatomy required to move the fingers. There were also nerves that gave the fingers the ability to sense or receive information from the world outside the body, similar to the way the eye and ears and nose permit sensations to enter the brain. And there were nerves to make the muscles work that made the fingers move and the hand function. This was the beginning of my love affair with peripheral nerves.

In the summer of 1968, Doctor Curtis gave me permission to observe him operate at Children’s Hospital in Baltimore. I saw surgery on nerves for the first time. The nerves were delicate, and beautiful.

“Doctor Curtis,” I asked, do you get good results from nerve surgery?”

“No, Lee, I don’t. No one does,” Doctor Curtis answered.

His answer was just too hard for me to accept. When I then watched him examine a hand again, I realized that the classic tests used by Hand Surgeons did not relate at all to what I had just learned in my Hopkins Neurophysiology course, taught by Vernon Mountcastle, MD. His research involved measuring the electrical activity of individual nerve fibers after stimulating

the skin. I decided then to translate his teaching into practical tests a Hand Surgeon could use to determine if a nerve were regenerating after it was repaired. I also decided to develop a way to rehabilitate the injured nerve, the way muscles are strengthened through exercises or joints are stretched and splinted in therapy. And these two goals were completed by the time I graduated from medical school. These concepts are described in my first book *Evaluation of Sensibility and Re-Education of Sensation in the Hand*, published in 1981. It had three printings and is translated into Japanese.

Dr. Dellon, How do You Measure Success?

I measure success one patient at a time.

“Doctor Dellon, I am going to have to give up figure skating,” Adriana said. “I have made it all the way to the Nationals. I have been training at the National Training Center in Colorado. I have seen all the famous Sports Medicine Doctors. I have tried every type of skate. **But I still have pain on the top of my right foot whenever I try to jump or land one of my jumps. Can you help me?**” The time frame is the year 2001.

I examined Adriana’s foot. She was in college now. She was strong. She was determined. Her x-rays were normal. She did not have a stress fracture. Was she just expressing performance anxiety? Maybe she was just ready to stop competing. But if she truly had pain on the top of her foot, could I figure out which nerve was sending the pain message? And if so, could I solve her problem? *Plastic Surgery is problem solving.*

When I tapped the top of her foot, where the first and second toes joined the ankle bones, the region that is usually prominent if you have a good arch (and she did), Adriana’s facial expression changed. She winced. “Did that hurt, Adriana?” I asked apologetically.

“Yes. It went down into my toes and into the bones. That is the pain I feel when I take off or land my jumps,” she said.

“I can help you” I said. “There is a small sensory nerve that can be compressed against the bone by a tendon. This area clearly gets compressed

by your tight shoes and laces. But that tendon can be removed. It is an operation that I described in 1990.* I cannot promise the surgery will help you skate competitively again, but the surgery should relieve your pain.”

“Will there be a big scar? Do I go to sleep?” she asked.

“The scar is about one inch long. You can have twilight sleep. You can walk right after surgery. You will not need to rehab. The scar might be tender for awhile when you first lace up your skates. Then you should be fine,” I reassured her.

“Okay, let’s go for it!” she bravely said.

Adrianna’s surgery went without any problems. She healed perfectly. And in time, resumed competitive skating (see Figure 11-4).

I consider Adriana’s surgery to be a success. She is skating competitively today. The results of the surgery have been long lasting. It is four years after her surgery. Even if she were just skating for her own enjoyment, without any further pain, she would be measured a success.



Figure 11-4. Adriana skating competitively again after nerve decompression.

*Dellon AL: Entrapment of the deep peroneal nerve on the dorsum of the foot. Foot and Ankle 11:73-80, 1990.

Keys to Success

When Adriana came to see me, she was the first figure skater that I ever examined for any nerve problem in the foot. How would I know what to do for her? I am Plastic Surgeon and trained to solve problems. Furthermore, I understood the problems that a compressed nerve could cause, because as a Hand Surgeon I had treated many people with compressed nerves.

The key to success in making a diagnosis, when so many famous Sports Medicine doctors, many of whom were Orthopedic Surgeons, had failed to make the correct diagnosis is:

1. **THINK NERVE: imagine that pain can come from a nerve**
2. **THINK BEYOND MUSCLE, LIGAMENT AND BONE: Musculoskeletal problems have usually been solved by the time people come to see me.**
3. **APPLY PRINCIPLES DEVELOPED TO TREAT UPPER EXTREMITY PAIN TO LOWER EXTREMITY.**
4. **IF THERE IS NOT AN EXISTING OPERATION TO TREAT THIS PROBLEM, CREATE THE OPERATION.**

Plastic Surgery is problem solving.

If a known site of entrapment has not been described, then go to the laboratory and learn if one exists.

If a nerve that might carry that pain message is not known, then go to the laboratory and learn if one exists.

5. **BE A PATIENT ADVOCATE. BELIEVE THE PATIENT.**

If you do not know the answer, find out the answer. As they say on the *X Files*, “The Truth is out there.”

Problem solving for Adriana required only the simple realization that the top of the foot is like the back of the hand.

In the mid 1980’s, I had become interested in a pain problem related to nerves that go to the back of the hand. In order to solve this puzzle, more than 90 dissections were done in the hands and forearms of cadavers (dead people) and in patients having surgery in this part of their arm. It became clear that one nerve, the radial sensory nerve, could become entrapped between two tendons. Indeed, there was a description of an inflammation of

this nerve in the German scientific literature of 1932.* In 1986, I described a nerve entrapment that gives pain to the back of the hand, and called it radial sensory nerve entrapment in the forearm.** This can occur when something is tight about the wrist, like a wrist watch, or hand cuffs, a crush injury, or just from keeping the forearm pronated (the position I am using to type this book!). Is there a site on the top of the foot where this same thing occurs?

Remember Anthony, and the toe-to-thumb transfer? When I would do that operation myself, there was always one tendon that crossed the nerves that I need to find, the nerves that gave feeling to the back of the big toe. Why could not this same tendon cause compression in this spot? Wouldn't a tight shoe do this? Wouldn't this cause pain when figure skating? Why not!



Figure 11-6. Think nerve. Problem solve. If handcuffs can entrap a nerve on the back of the forearm and cause pain, why couldn't tight skates entrap a nerve on the back of the foot and cause pain? [Plastic Surgery is problem solving. That is what I do.](#)

*Ehrlich W, Dellon AL, Mackinnon SE: Cheiralgia Paresthetica (entrapment of the radial sensory nerve). J Hand Surg 11A:196-198, 1986.

**Dellon AL, Mackinnon SE: Radial sensory nerve entrapment in the forearm. J Hand Surg 11A:199-205, 1986.

Why is this Man Smiling?



Figure 11-7. Four weeks ago, this man came to see me to avoid amputation. He had 12 operations on this right leg in the past 5 years after a leg injury. His Pain Management Specialist and his Orthopedic Surgeon both recommended amputation. He refused amputation. He was addicted to drugs, sweating, and shaking. He is shown here just 8 days after my surgery to denervate the top of his foot. His wife touches him now for the first time in five years. He is smiling. I measure success one patient at a time. He had the same operation as I did for Anthony in Figure 11-2, and 11-3. Operations designed for the hand, applied to the foot.

Pain After Amputation

It has been learned painfully that amputation is not the treatment for chronic pain (see Chapter 8, Phantom Pain). You will learn when you read Chapter 8, amputation itself, because it must cut nerves, can be a cause of chronic pain.

Remember Anthony? His toe-2-thumb transfer was an elective amputation of his big toe. Disabling foot pain resulted.

Sometimes, however, doctors must amputate to save a life. This was the situation for Dorothy (not her real name)

“Dorothy,” the Orthopedic Surgeon said to Dorothy’s mother, “is having pain in her legs because the x-rays have shown she has a very rare condition. She has a bone cancer in each of her legs. We have to biopsy these

tumors to be sure, but by the way they look on the x-ray they are aggressive and have destroyed her bones. In the near future, she will fracture both legs just from running or if she has a slight fall.”

The biopsies came back. Rare bone cancers. Osteogenic Sarcoma.

“What can we do to save her?” her mother and father said at the same time. “She is only ten years old.”

“This is a deadly cancer,” the Orthopedic Surgeon explained. “Most patients are dead in about 18 months because the cancer spreads to the lungs.” It was 1985. They lived in the mid-west (not their real location).

“There are no cancer drugs to fight this, he continued.” The tumor has already eaten through her bone in spots. It may already be too late. Amputation is her only chance to live. It is all we know to do now for her.”

Both of her legs were amputated above the level of the knee.

“Doctor Dellon, can you help me?” Dorothy asked. It was 20 years after her amputations. “Over the past few years I have been having pain in my right thigh, and in my left shorter leg. I can touch the spots that hurt. My Ortho-



Figure 11-8. Dorothy had stump pain in her left stump and front of her hips. It is 20 years after her bilateral amputations for bilateral bone cancer of the legs. **This radical surgery saved her life. Now she sought a treatment for the pain in the left stump that was disrupting her work and personal life.**

pedic Surgeon thinks it is ‘sciatica’ from the bone pressing on the sciatic nerve related to how I sit. He though you might be able to reshape that bone,” she explained clearly. She taught computer programming at a nearby college.

From my Hand Surgery work with amputation stumps in the upper extremity, and from my Plastic Surgery work with paraplegics who get “bed sores or ulcers” where they sit, I felt that I had proper training to figure out Dorothy’s problem. Her examination showed a pinched nerve in her left groin (see Chapter 4) and painful neuromas related to her sciatic nerve in her stump (see Chapter 8). After examining Dorothy, I said “I can fix this for you. There is a nerve near the front of your hip that is pinched from the years of sitting with your hip flexed, and there are two painful neuromas in the stump that I can remove.”

At surgery, The pain in the hip was found to be related to a pinched nerved, which could be decompressed and saved, and the stump was found to have two neuromas at the sites of her pain. One of these was attached to her sciatic nerves (see Figure 11-9). It was giving her referred sciatic pain.



Figure 11-9. Arrows point to two neuromas that have been identified in the left leg amputation stump. These were the cause of her pain. They were removed and the nerve repositioned to lie inside muscles, so that the stump would not hurt anymore.

The approach to the nerve compression at the hip for Dorothy is an operation I described first in 1995, and then described in detail with success in most of the patients in that report. I published that paper in the Journal of the American College of Surgeons.* General Surgeons see those patients first with groin pain, usually related to hernias. Actually, this condition, described in 1874 with the Latin name, *meralgia paresthetica* (thigh pain), still remains rarely diagnosed. It is a cause of much pain from the thigh to the knee, often misdiagnosed as hip pain or back pain (an L3 disc).

PLASTIC SURGERY IS PROBLEM SOLVING.

I APPLY PLASTIC SURGICAL APPROACHES TO PAIN.

The approach to the painful neuromas, implanting them in muscle, is an approach that I worked out in the research lab in the early 1980's (read about it in Chapter 1, under Neuromas).

Dorothy healed well and went back to her fiancé and to teaching. She did not need the bone she sat on (ischial tuberosity) recontoured.

Plastic Surgery and Johns Hopkins

Plastic Surgery is not a technique. Plastic Surgery is not a set of operations. Plastic Surgery is not Cosmetic Surgery.

Plastic Surgery is an approach to solving patient problems related to form and function of the human body.

The Plastic Surgeon must be trained to operate all over the body, and therefore must be skilled in anatomy of the entire body. The textbook for that learning must be the human body itself.

When the Johns Hopkins Hospital began in 1889, there were no Plastic Surgeons on the staff. In fact, there were no Plastic Surgeons in the world. Johns Hopkins, the man, died in 1876. A business man, he donated half his estate to establish a graduate school, because, as stated in his will, to the best

*Lee CH, Dellon AL: Surgical management for groin pain of neural origin. J Amer Col Surg, 191:137-142, 2000

that he could determine, there would always be people who needed a higher education, an education beyond university training. He left the other half of his estate to establish a hospital, because, as stated in his will, to the best that he could determine there would always be people who were suffering. It was understood that the University would include a School of Medicine. Johns Hopkins, the man, recognized the need to relieve pain. He began to provide *Pain Solutions* in his own way.

William Stewart Halsted, MD, the first Professor of Surgery and Chief of Surgery at the new Johns Hopkins Hospital, introduced the concepts of gentle handling of tissues to prevent infection (antibiotics did not come into use until World War II). This concept is employed by all Plastic Surgeons. Being gentle to tissues causes less pain. Halsted introduced the concept of local anesthesia to surgery. He used cocaine. His research led him to experiment on himself, and he became addicted to cocaine for a period of time. Plastic Surgeons use local anesthesia in the wound edges after surgery today, and patients awake without pain. When I operate, I put the local anesthetic into the nerve before it is cut, and this prevents the spinal cord from experiencing pain from the surgery I do on peripheral nerves.

Halsted, at Johns Hopkins Hospital, introduced the first surgery residency program as we know it today. In 1910, that model of surgical training became the way all doctors would be trained.



Figure 11-10. Left: William Osler, MD, the first Chief of Medicine at the Johns Hopkins Hospital (center from around 1915). Right: William Stewart Halsted, MD, the first Chief of Surgery at the Johns Hopkins Hospital.

In the Department of Medicine at the new Johns Hopkins Hospital in 1889, William Osler, MD, the first Professor and Chief of Medicine, introduced bedside teaching. All doctors today go to the bedside to learn. Osler would take medical mysteries to the laboratory to answer the questions. Halsted would take this same approach to surgical questions. For Halsted, not only the far away building with test tubes was the laboratory, but the anatomy dissecting room, and the operating room were “laboratories of the highest order”. Research solved the questions raised by patient care, and research results were brought back to improve patient care.

John Staige Davis graduated in the first class from the new Johns Hopkins School of Medicine. Being among the top 12 in his class, he was chosen for the residency program at Johns Hopkins Hospital. Halsted and Osler were his teachers. Davis became interested in techniques to solve difficult wound healing problems. In 1919, Davis wrote what is considered to be the first textbook of Plastic Surgery in the United States, *Plastic Surgery: Its Principles and Practice*. The book was 770 pages long, and contained 864 illustrations and 1634 figures. This book established the specialty of Plastic Surgery in America. His wonderful biography was written by his son Bowdoin Davis, MD, who became a Plastic Surgeon.*

For the past 15 years (1993-2007) the Johns Hopkins Hospital has been ranked by U.S. World & News Reports as the number ONE hospital in the United States of America.

The first full Professor of Plastic Surgery at Johns Hopkins University and Hospital was Milton T. Edgerton, MD. He was there when I began my research at Hopkins in medical school. John E. Hoopes, MD was the second full Professor of Plastic Surgery at Johns Hopkins, and it was with him that I did my Plastic Surgery training and first research on cleft palate speech. Paul N. Manson, MD and I were Chief Residents together at Hopkins in 1978.

*Davis, B.W., *The Life of John Staige Davis, MD, Plastic & Reconstructive Surgery*, 62:368-378, 1978.

Today Dr. Manson is the Chief of Plastic Surgery at Johns Hopkins and its third full Professor of Plastic Surgery. I am just the fourth person to be a full Professor of Plastic Surgery at Johns Hopkins.

As a doctor, I am in private practice. I do not receive a salary from Johns Hopkins Hospital or University. In 1994, I had the unique honor of being the first surgeon in private practice to be promoted to Full Professor at Johns Hopkins University and the Johns Hopkins Hospital. This promotion was based upon my contributions to understanding and treatment of peripheral nerve problems. My primary appointment is in Plastic Surgery with a secondary appointment in Neurosurgery. It is my privilege to continue the tradition of research, teaching, and patient care, the three pillars, the three life times, pioneered at Johns Hopkins Hospital and Johns Hopkins University.

In the 1993, the American Society for Peripheral Nerve was begun by a small group of Plastic Surgeons interested in establishing Peripheral Nerve Surgery as a specialty. Julia K. Terzis, MD, PhD, from Norfolk, Virginia became the first President. I became the third President of this society. In January of 2008 the American Society for Peripheral Nerve will meet again. There are now about 220 members. The membership includes Orthopedic and Neurosurgeons interested in Peripheral Nerve Surgery, and two Podiatric Foot & Ankle Surgeons, but most members are Plastic Surgeons.

In the year 2002, I introduced the first Peripheral Nerve Fellowship in the World. Ivica Ducic, MD, PhD was my first Peripheral Nerve Fellow in Baltimore. Ivan's PhD was in neuroscience, and he did his Plastic Surgery training at Georgetown. He is now on the faculty at Georgetown University. Gedge D. Rosson, MD was my second Peripheral Nerve Fellow. Gedge did his Plastic Surgery training at Johns Hopkins University, and is now on the faculty at Johns Hopkins University and continues to do his Peripheral Nerve Surgery with me. Eric H. Williams, MD was the next Peripheral Nerve Fellow. Eric went to medical school at Johns Hopkins and did his Plastic Surgery training at the University of Alabama. Dr Williams has stayed on to work with me full time in Baltimore. He also has a part-time appointment at Johns Hopkins. Ziv M. Peled, MD was the next Peripheral Nerve Fellow, and the first one to

train with us in Tucson, at the Dellon Institute for Peripheral Nerve Surgery: Southwest. The Dellon Institute in Tucson opened in 2003, and is directed by Christopher T. Maloney Jr, MD. Dr Peled did his Plastic Surgery training at the Harvard Combined Plastic Surgery program. Dr. Peled will begin with me the Dellon Institute for Peripheral Nerve Surgery: Northern California, located in San Francisco in July of 2007. The Dellon Institute opened in Boston in 2004, and is directed by Virginia Hung, MD. The Dellon Institute opened in St. Louis in 2006 and is directed by Robert Hagan, MD. The locations of the Dellon Institutes and the biographies of the surgeons who work there are available on line at WWW.DELLON.COM. With my commitment to research and education, the motto for the Dellon Institutes for Peripheral Nerve Surgery® is “BEING ACADEMIC IN PRIVATE PRACTICE™”

The logo for the Dellon Institutes for Peripheral Nerve Surgery® is illustrated in Figure 11-11. It was designed in the year 1999 for the opening of the first Dellon Institute which opened at Union Memorial Hospital in Baltimore in 2000, the same hospital in which I did my Hand Surgery Fellowship in 1977.

The center of the Dellon Institutes’ logo in Figure 11-11 is a large myelinated nerve fiber, the type that transmits the information about touch and



Figure 11-11. The Dellon Institutes for Peripheral Nerve Surgery® is represented by this logo.

pressure perception to the brain. The dark blue “PSSD” at the top is the Pressure-Specified Sensory Device™ (which I invented with an aerospace engineer) shown measuring a fingertip’s pressure threshold, representing evaluation and documentation of peripheral nerve problems. The footprint represents our basic science and clinical research. The book represents the publication of our research to inform doctors and the public about our results. The glasses are the microsurgical loupes worn in surgery to best identify and protect the nerves.

Pain is Universal and Timeless

“It is easier to find men who will volunteer to die, than to find those who are willing to endure pain with patience.”



Figure 11-12. Gaius Julius Caesar, of Rome, 100 BCE.

“The greatest evil is physical pain.”



Figure 11-13. St. Augustine of Hippo (became island city of Tyre, coast of Palestine), 375 AD.

Why Me, and Why Now?

“Why me? Why now?” The Hopkins medical students at my lecture wanted to know. My patients want to know. I admit it seems unusual for a Plastic Surgeon to be interested in pain solutions. So where did I chose the “path less traveled”?

As I continued to investigate peripheral nerve function as a Plastic Surgeon and Hand Surgeon, I began to take care of more and more patients with pain. While most people think of neuropathy as a disease that results in numbness, ulceration and amputation of feet, about half of people with neuropathy have hand problems. For example, after I had helped a diabetic with hand problems, they would ask me if I could help their painful feet. My initial response was “no”, because painful foot problems were supposedly part of a hopeless, progressive irreversible problem. **Plastic Surgery is problem solving. Maybe what I did for the hands of diabetics would work for their feet. Maybe besides getting sensation back I could also get rid of chronic pain. And so I did!** (See Chapter 2.)



Figure 11-14. **Success: one nerve, one patient at a time!** A patient with diabetes who has had both legs, and then both hands operated on by me (right), decompressing multiple nerves in each extremity over the period of one year. **He now has pain relief in all four extremities. His risk of developing a foot infection or having an amputation is almost gone now. His balance returns as his sensation returns.**

There were other areas of pain waiting for me. As was the case with Dorothy above, my experience with cosmetic surgery (abdominoplasty) resulted in patients being referred to me to solve the groin pain puzzle.

I MEASURE SUCCESS ONE PATIENT AT A TIME. The patient in Figure 11-15 is an example of this for the topic of groin pain (see Chapter 4).



Figure 11-15. Left: Abdominal wall with direction of head noted by arrow. Sutures, Clips, Staples lie on skin after I removed them from causing nerve pain. Right: Patient with her husband, relaxing at beach 3 months after surgery. **Pain relieved.**

Remember that my first research in medical school involved a muscle related to speech? I began to think about nerves in the face and how they might cause pain. My newest area of work involves treatment of facial pain. This is detailed in Chapter 9. One aspect of pain is the effect it has on your daily life. I often ask patients who are troubled by pain, and especially when the recovery process from my surgery may take many months, to keep a pain diary. I ask the patient to write in blue when they are having a good day.

Pain diaries are a method of tracking improvement following surgery.



Figure 11-16. Pain diaries of patient in Figure 11-17. Her story is told in Chapter 9. The month of the left is November of 2005. There are just 4 blue dots among 30 days. The month on the right, December of 2005, has 5 blue dots among the first 11 days. She returned to see me with these diaries on December 12 to tell me she knew her pain was headed in the right direction now. **For each patient, success over pain is one day at a time.**



Figure 11-17. Six months since neurolysis of the right infra-orbital nerve to relieve pain in her right upper lip, cheek, and right side of her nose. She relates how she has just come back from a trip to the Southwestern U.S.A., where she was able to climb a mountain and play golf again without **distracting facial pain.**

I MEASURE SUCCESS ONE PATIENT AT A TIME. To achieve success for this patient meant identifying a particular sensory nerve in the face using a computer that I developed, the Pressure-Specified Sensory Device™ (more in Chapter 1 on neurosensory testing), and, borrowing from surgical techniques developed for compressed nerves in the hand, applying the technique of neurolysis to this sensory nerve in the face. There are many patients out there, and you might be one, with facial pain after cosmetic surgery, facial trauma, or removal of a tumor, who might benefit from the approach that was developed to help this woman.

Pain Relief: A Joint Decision

Plastic Surgery is problem solving.

“Why you, Doctor Dellon? Why now?” It is the same question.

I guess the reason that it is me is that I have been willing to make the effort to begin new investigations into the sources of pain related to peripheral nerve problems. In the year 2005, I received the Plastic Surgery Educational Foundation Prize for my work on using the Pressure-Specified Sensory Device™ (PSSD) to identify early nerve involvement in patients with Leprosy. In this new research, I applied the operations I developed to restore sensation and prevent amputation in patients with diabetes to patients with Leprosy (see Chapter 2). There are still millions of people disabled world-wide with Leprosy despite the use of antibiotics, which kill the bacteria but do not reverse the nerve damage caused by the bacteria living within the nerve. Patients with Leprosy (now called Hansen’s disease) do not have joint pain, because the nerves to their joints have died, and not send pain signals. What does that suggest about the treatment of joint pain today?

In 1979, I identified the nerve to the back of the wrist joint. This occurred during removal of what I thought was a recurrent cyst, but proved to be a painful neuroma on the back of the wrist joint. This was a surprise, since no anatomy book showed a nerve to the back of the wrist joint. In fact, anatomy books do not show any nerves to joints. If there are no nerves to

joints, why do so many elderly patients, so many athletes, and so many people with injuries have joint pain? (See chapter 3.) Plastic Surgery is problem solving!



Figure 11-18. Left: Dr. Dellon with Dr. Yong Yao, a Neurosurgeon from Beijing, China standing in front of the Johns Hopkins Hospital in 2004. Right: Dr. Dellon with portrait of Mr. Johns Hopkins, the benefactor of the Johns Hopkins Hospital.



Figure 11-19. My Christmas present to this woman was denervation of her left shoulder so she could lift her arm without pain again (left) and to denervate the back of her hand so she could touch it again without pain (right). She was injured 4 years previously. She is back at work teaching handicapped children. She is off all her pain medications. **I MEASURE SUCCESS ONE PATIENT AT A TIME.**

Following the Johns Hopkins tradition of identifying a clinical problem and taking it to the laboratory, I began what has turned out to be a new field of peripheral nerve surgery: **PARTIAL JOINT DENERVATION**. In 2004, I received the Plastic Surgery Educational Foundation Senior Research Award for this concept and this body of work. Specific joint pain problems are covered in Chapter 3. Here is just one example of a patient whose crushed left hand resulted in a painful wrist and a painful shoulder (see Figure 11-19).

My training at Johns Hopkins School of Medicine taught me the approach to problem solving that I have been able to apply to the treatment of pain problems. My Plastic Surgery training at Johns Hopkins Hospital gave me the surgical skills to identify and correct pain related to the peripheral nerve. In March, 2007, the University of Utrecht in Holland, awarded me a PhD (see Figure 11-20) for my work related to treating the symptoms of diabetic neuropathy. This book, *Pain Solutions*, is my current approach to the diagnosis and treatment of the most common pain problems.



Figure 11-20. In March, 2007, Dr Dellon received a PhD for his work related to relieving the symptoms of diabetic neuropathy. On the left, he is the ancient hall of the University of Utrecht, where his Thesis Defense was held, and flanked by Luiann Greer Dellon, and Henk Coert, MD, PhD, each holding a copy of the thesis. On the right, Dr Moshe Kon, MD, PhD, Chief of Plastic Surgery at the University of Utrecht, stands with Dr Dellon.

