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Anne J. Krush

Johns Hopkins Hospital

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GUILLAUME DUPUYTREN AND HIS CONTRIBUTIONS TO KNOWLEDGE ABOUT TUMORS

Anne J. Krush

The Johns Hopkins Hospital
600 North Wolfe Street
Baltimore, Maryland 21205

Guillaume Dupuytren was born in the village of Pierrebuffière, on 5 October 1777. Though his father was a lawyer and parliamentarian, many of Dupuytren's other ancestors had been physicians, mostly surgeons. Guillaume entered the College of Magnac-Laval at age seven. From age 12 to 17 he attended the Marche School in Paris. Upon completion of these studies, he wished to join the army, but his father insisted that he become a surgeon. At age 18 he became a prosector at Charity Hospital in Paris under the tutelage of Dr. Boyer and studied under Pinel, Corvisart, Cuvier, and others. His peers were Bichat, Lesclerc, Ailbert, and Laennec. Dupuytren became Surgeon-in-chief at l'Hôtel Dieu Hospital in 1815 at age 38, and later was Surgeon to Louis XVIII.

Ill at age 57 of a stroke, Dupuytren died on 8 February 1835. His contributions to knowledge of cancer included observations and lectures concerning malignant cysts, lacrimal tumors, hydatid tumors of muscle and viscera, fibro-cellular tumors, polyps, hydrosarcocele, hemorrhoidal tumors, and cartilaginous tumors.

† † †

Guillaume Dupuytren, the oldest of nine children, was born in the village of Pierrebuffière, about four miles from Limoges, France, on 5 October 1777. His parents were Jean-Baptiste Dupuytrein, a lawyer in Parliament, and Marguérite Faure (Bourjot Saint-Hilaire, 1835; Tonnet, 1835). As an infant he was placed with a nurse who lived several miles from the Dupuytren household. At the age of seven he was sent off to school, the College of Magnac-Laval, as a boarder. Unhappy at this school, he soon returned home. His father was furious and took him back to school immediately. Later, Dupuytren ascribed his love of studying to the lack of love and feeling from his home. This may also have caused his aloof and disdainful attitude toward some of his peers.

Dupuytren completed his studies at Magnac-Laval in 1794. He then wanted to join the army and the Revolutionary movement in Paris, but again his father intervened, and since many generations of Dupuytreins had included surgeons, he

gave the order, "You will be a surgeon!" Dupuytren was enrolled in the medical-surgical school of the Saint Alexis Hospital in Limoges. However, his family was unwilling to support him; so he returned to Paris, received a meager scholarship and entered the College of La Marche. He led a miserable existence in an unheated and unlighted garret, with hardly enough money for food, and very little help from his family.

In December 1794, national schools of medicine were opened in Paris, Strasbourg, and Montpellier. Guillaume was enrolled in the Paris school. "At his first entrance into the anatomy room, the sight of dissected cadavers, the disorder of human waste products so putrid, made him feel faint and sick" (Mondor, 1945). This feeling lasted two weeks, at the end of which Dupuytren "announced to his parents that his resolution to become an anatomist and surgeon was irrevocable" (Mondor, 1945). His father was elated and told him to go quickly to see Dr. Boyer who was Second Surgeon at Charity Hospital in Paris.

As Prosector in the Department of Anatomy at Charity Hospital, to which he was elected at age 18, Dupuytren was greatly influenced by such physicians as Pinel at Salpêtrière and Corvisart at Charity Hospital, and by Cuvier at the Jardin des Plantes. He eschewed mediocrity, and his secret ambition was to become the best surgeon in Paris.

In 1802 Dupuytren was elected Second Surgeon at the Hôtel Dieu Hospital, winning the position over Dr. Roux, who was a friend and student of Dr. Bichat. But Dupuytren did not care for a subordinate position, and Pinel once said of him, "A person with his character could not remain long under the direction of others" (Mondor, 1945). He became Chief of the Practice of Surgery at the School of Medicine where he worked hard, was a perfectionist, and could not stand laziness, ignorance, or mediocrity in others. He believed the use

of cadavers afforded the best instruction for his students, no matter how the bodies were obtained. In fact, he said that "when the time comes, I shall give my own body for study."

Upon completion of his medical studies at the University, Dupuytren dedicated his doctoral thesis to his first instructor, Dr. Boyer. The thesis was entitled "Propositions concerning several matters in anatomy, physiology, and pathological anatomy" (Mondor, 1945). He felt that pathological anatomy should be considered a separate science, and thus a new era of medicine evolved. Cuvier said of him, "He was the equal of his teachers and the teacher of his equals (or peers)" (Mondor, 1945).

With Bayle and Laennec, Dupuytren founded the Anatomical Society of France in 1803. Not long after this, Laennec accused Dupuytren of plagiarizing some of the work of his friend, Dr. Bichat. Letters on both sides were published in the *French Journal of Medicine* until the editors, feeling that the debate did not serve science or medicine, refused to publish additional letters.

In about 1813 Dupuytren was appointed Surgeon-in-chief at the Hôtel Dieu Hospital, a position he had hoped to fill for many years. This was a huge hospital in Paris where many kinds of serious medical and surgical conditions were treated. Dupuytren worked long hours, beginning his day by visiting patients, followed by lectures and discussions with colleagues and students concerning the interesting cases of that day. Then he went to surgery for several hours. In the afternoon he returned to his home where he saw private patients for several more hours. He amassed a fortune from his private practice.

After treating (but unsuccessfully) a nephew of Louis XVIII, the Duke of Berry, a Bourbon prince, who had been mortally wounded in the chest in an assassination attempt by a Bonapartist fanatic, the King made Dupuytren a Baron of France, and gave him the position of First Surgeon to the King. The death of the Duke of Berry marked a turning point in the restoration of the Bourbon monarchy in France and gave Dupuytren political support for his continuing professional endeavors.

Dupuytren continued his rigorous schedule at the Hôtel Dieu Hospital, performing surgery fearlessly, brilliantly, and innovatively. He also became involved in a number of arguments and altercations with his colleagues, until at age 56 a stroke occurred. He recuperated for a short while in Italy, then tried to return to work, but his enlarged heart failed and he died at 3 a.m. on 8 February 1835, holding the hand of his daughter.

In his lifetime Dupuytren never had time to prepare his

surgical clinical lectures for publication. His students, however, took copious notes, and beginning even before his death, in 1832, under the aegis of the Niort Society of Medicine, they consolidated his lectures. For each condition of the patient, the known principles about the condition, its variations, the suggested treatment, and surgical procedure were combined (Dupuytren, 1832, 1833, and 1834) though they had been presented at different times during Dupuytren's 25 yrs of work as First Surgeon at the Hôtel Dieu Hospital.

In the four volumes of oral lectures, a number were concerned with tumors and cancers. The very first lecture, however, was Dupuytren's study of the contraction of the palmar aponeurosis causing permanent contraction of the fingers, and his method of treating this condition. This was a "first" and is known in medicine as "Dupuytren's contracture" (Dupuytren, 1832). Dupuytren (1832) described what is called a hydro-sarcocele. A 32-yr-old Navy physician came to him with a complaint of an undescended, left testis. It behaved like a hernia and at times like a hydrocele, and it was necessary for the patient to contain it with a tight bandage most of the time. Part of the "tumor" was fluid, part was hard, on examination. After much deliberation, Dupuytren decided to operate and remove the testis. The liquid resembled that found in a hydrocele. The testis, itself, was hard. It was removed and found to be an early carcinoma and the physician was cured. We now know that if an undescended testicle is left in the body, a great risk for cancer ensues. Dupuytren's observations and surgery may have been the first to demonstrate this risk.

Dupuytren (1832) described encysted fibrocellular tumors (also called ganglions and nervous tubercles). Until this time these cysts had been considered only an affection of nerves. Dupuytren divided cysts into three kinds: one "was organized around a foreign liquid or solid" such as a kidney stone; the second type included those "which are formed spontaneously and pre-exist the material which they contain," such as serous cysts and hydatidiform tumors; the third he characterized as "fibrous, dense, white, not extensible, and disposed linearly." They are round, the size of a pea, and situated nearly always under the skin, and become soft, but a very serious cancer. Dupuytren found that these cysts did not arise in nerves but were quite separate from them. He found them in subcutaneous and subaponeurotic tissue and in the breast. They present as "grains of wheat, coffee grains, peas, sometimes oblong, also lenticular, never becoming larger than a small marsh bean; the exterior is smooth, opaque and hard; they rebound like an elastic body; the tissue is homogenous without cavities, but fibrous and cartilaginous" (Dupuytren, 1833). Dupuytren distinguished between benign and cancerous cysts as follows: the benign cyst is mobile; the color of the skin above it does not change; it is situated not near an organ such as a blood vessel or nerve, but it is subcutaneous. The cancerous cyst is immobile, adherent to the skin which becomes a violet

color, and it becomes soft; it reproduces itself in neighboring lymphatic ganglions and a cancer diathesis ensues. Extirpation does not cure these cysts as it does the first kind.

Dupuytren (1833) described cysts which developed within bones. He described one in the maxilla of a seven-yr-old child who told of having been hit on the cheek. It was a fibro-cellular cyst and was removed because Dupuytren felt that otherwise it would "degenerate into a carcinoma." Remembering that these were the days before anesthesia, the operation proceeded as follows: "At the bedside of the child, Dupuytren first made a light incision; the lancet was plunged as for making a puncture and blackish blood flowed; when the bleeding stopped, he inserted his finger into the tumor and instead of its being fibro-cellular, it was a soft substance which tore easily" (Dupuytren, 1833). It had caused distension of the bone but was not part of the bone—an osseous-walled cyst, hard in some parts, thin in others. The next day the child was taken to the operating room; an incision was made into the deepest part of the tumor; two ounces of blood oozed. With his finger, Dupuytren detached part of the substance which filled the cyst. To offset infection, he ordered injections of "Quinquina" and prescribed a gargle. Ten days after the operation, the tumor was reduced in size and Dupuytren hoped that the child had been cured (Dupuytren, 1833).

Other maxillary tumors and cysts described by Dupuytren were thought to be caused by incomplete extraction of teeth. Other cysts were found in the long bones of the extremities (these may have been what is now known as the hereditary exostoses), on the vertebrae, but most often in the bones of the face. Dupuytren thought that it was most important to be able to distinguish these benign bony cysts from osteosarcoma, and he continued by giving a very careful description of the differences between them. Again, this was amazing since he did not have the benefit of the microscope or microscopic pathology.

Finally, there is a description of the first operation of its kind—the amputation of the lower jaw of a 40-yr-old man with an osteosarcoma which had "devoured a lip and invaded the jaw, almost destroying it so that the patient knew that death was inevitable. He had such a grotesque appearance that he withdrew from the world, but was angry because death was slow in coming. At the sight of such a terrible illness, a doctor would feel his heart wince. . . . It was to the Glory of French Surgery; it was in France, in Paris, that our famous Professor, M. Dupuytren conceived and executed for the first time in 1812, an admirable operation" (Dupuytren, 1834). A taxicab driver, M. Lesier, had a dull pain in his lower jaw 15 yrs before coming to see Dupuytren about his problem. A lower left tooth became loose, fell out, and was replaced by a fungus growth which arose from the bottom of the alveolus. This tumor was cauterized a number of times by physicians, but

always recurred, larger and more painful each time; it degenerated finally into a carcinoma (most likely sarcoma). After much hesitation, the patient came to Dupuytren in 1812, and permitted him to operate. By that time he could only eat out of one side of his mouth and could not use his teeth to chew. The tumor extended from the second large molar on the right to a branch of the maxillary bone on the left. The lower jaw had tripled in size. The reddish and white tumor had obliterated and projected from the mouth. Breathing was difficult and the patient could hardly speak. However, he lost neither his appetite nor his vitality, and cervical nodes were not engorged. The only other sign was a constant low fever.

A purgative was given the night before the surgery, and the morning of the surgery the patient drank 1 1/2 liters of wine in order to give himself strength. At surgery a 3/4 kg tumor was removed along with the lower jaw. During the operation it was necessary for several assistants and Dupuytren, himself, to press on the lingual and submental arteries with their fingers before cauterization. A few hemorrhages occurred and arteries were repaired. The patient recovered; on the 17th day after surgery he returned to cab driving, and 45 days after surgery, he was pronounced cured. Twenty-one yrs after surgery, the patient continued in good health. His photograph, before surgery, can be seen at the Museum of the School of Medicine in Paris. He must have had a strong constitution to survive such an operation!

Thus we note that not only did Guillaume Dupuytren attempt a classification of tumors, but he also performed frequently successful surgery without benefit of anesthesia.

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