HISTORY

DENYS MONTANDON, MD – SWITZERLAND

JOSEPH-FRANÇOIS MALGAIGNE: SURGEON, HISTORIAN, JOURNALIST, POLITICIAN AND POLEMIST (1806-1865)

For orthopedic surgeons, the name of Malgaigne is generally associated with a special type of forearm fracture (also named the Monteggia fracture), to a vertical fracture of the pelvis, to shoulder fracture and to a method of foot amputation. For anatomists, the *line of Malgaigne*, also called the Poupart's ligament, is the ligament joining the iliac crest to the pubis; the *triangle of Malgaigne* is the space containing the bifurcation of the common carotid artery. For plastic surgeons, Malgaigne may be recalled for his method of cleft lip repair. For historians of medicine, the name of Malgaigne is praised for his outstanding contributions to the history of surgery from the most ancient times. However, for his colleague, Jules Guérin, Malgaigne was the man who attacked him publicly and undermined his controversial theory on the cause of congenital deformation of the skeleton. Who was in fact this polyvalent surgeon of the 19th century?

The Surgeon

Son and grandson of provincial surgeons, JF Malgaigne completed his medical studies in Paris, where he succeeded so well that he remained there, became a hospital surgeon, then a professor at the faculty and president of the Academy of Medicine **(Figure 1)**. At the age of 25, Malgaigne had been the head of a military ambulance on the front lines of the Polish uprising against Russia. He witnessed the assault on Warsaw and left the country only with its last defenders. In the same year, he published a *Manual of Operative Medicine* (1834) based on his experience and readings. Throughout his career, he continued to present and publish articles on anatomy and various surgical procedures such as hernias, bladder stones and clefts. He also wrote a few papers on vision and, strangely enough, on "auricular acupuncture".

Figure 1

Medicine and surgery during the first half of the 19th century was still relying on ancient concepts. One had to wait for the discoveries of Pasteur and Lister concerning the management of infections, and the advent of scientific medicine initiated by Claude Bernard during the second half of the century, for a renewed approach to surgical practice. In spite of the fact that he did not participate in these discoveries, Malgaigne can be considered a pioneer for his time and should be acknowledged for his precise anatomic studies, his systematic use of statistics, the longtime follow up of his patients, the use of ether for general anesthesia as soon as it entered in the practice of surgery, and the avoidance of veno-sections which were still commonly practiced during his time. His *Manual of Operative Medicine* had seven editions and was translated in seven languages. In the field of orthopedic surgery, he invented several instruments and operative methods which he described in his *Treaty on Fractures and Dislocations* (1847).

Of interest for the plastic surgeon, he developed a new method for the harelip operation that he published in 1844, emphasizing the need of a careful longtime follow up of the

patients (1). As an introduction to his publication, Malgaigne declares: "I have had occasion to remark how operative medicine, so rich in procedures and maneuvers, becomes poor and miserly when it is a question of reporting results." He had noticed that with a straight-line closure, a whistling deformity was the almost inevitable sequel due to the linear contracture of the scar, and he thought of something to prevent it. His method later inspired Germanicus Mirault (1796-1879), who duly recognized his debt to the "ingenious discovery" of Malgaigne (2) **(Figure 2)**. The idea is to consider the cleft as a loss of substance and in consequence to add little flaps at the vermillon border in order to recreate the median lobule of the lip and prevent a notch on the vermilion border. For Malgaigne, closing a cleft lip is not only a cheilorrhaphy, but should be a *cheiloplasty*.

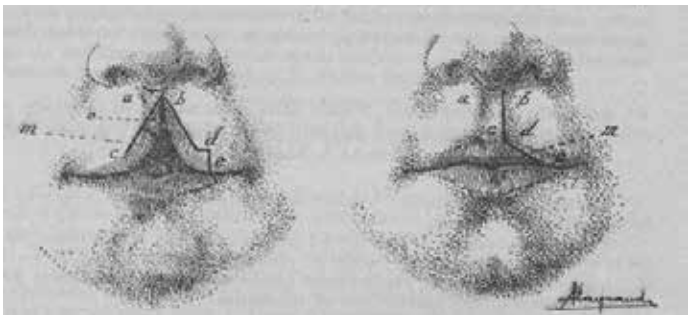

Figure 2

The Historian

Malgaigne had two of the historian's essential qualities: a curiosity about details and a taste for explanations and generalizations. He wrote biographies of surgeons such as Astley Cooper, Alexis Boyer and Dupuytren, but his main publications concern surgery in ancient times in Egypt, Greece or as described in the Bible. To understand the original texts, he learned Hebrew and, as several doctors of his time, he had a thorough knowledge of ancient Greek. In his "Studies on Anatomy and Physiology of Homer" (3), he singled out all the terms used by the poet to describe the various organs of the body, particularly those involved in injuries. Considering that the Iliad and the Odyssey were composed 800 BC, that is a long time before the Hippocratic treatises. Malgaigne noted that the first physicians borrowed some of their anatomical and physiological terminology from the Homeric poems. These terms have sometimes remained up to our present days. For example:

ἔντερα	(entéra)	enteric
στῆθος	(stethos)	stethoscope
στέρνον	(stérnon)	sternum
κεφαλὴ	(kefalè)	encephale
στόμαχος	(stomachos)	stomach
ὦμος	(omos)	omoplat
πλευρά	(pleura)	pleura
θέναρ	(thénar)	thenar
καρπός	(karpos)	carpus

Another important task of Malgaigne was to collect and publish the entire surgical writing of Ambroise Paré, the famous surgeon of the 16th century, often called the father of surgery. In his long introduction, he also relates in detail the history of surgery from the 5th to the 16th century (4), recalling the work of another 16th century surgeon, Pierre Franco, who surpassed Paré in the description of several new operations and inventions, in particular for the operations of cleft lips (5). As a professor, Malgaigne fought to introduce the history of medicine in the Faculty of Medicine and himself gave a course on the philosophy of surgery.

The Journalist and the Politician

Figure 3

FJ Malgaigne was a born journalist. At the age of 19, he was already writing articles in several newspapers. At his return from Poland, most French journals published one or the other of his articles. He then wrote several papers on various and often polemical subjects, gaining a vindictive reputation **(Figure 3)**. Later, he became the editor and the owner of the *Journal de Chirurgie de Paris*, which insured him a substantial revenue. In 1847, he was elected deputy to the Parliament of Seine during the monarchy and participated to several commissions on medicine, hygiene and education.

The Defamation Trial

Born 5 years before Malgaigne, Jules-René Guérin (1801-1886) was the director of a private orthopedic establishment and oversaw the orthopedic clinic at the *Hôpital des enfants malades*. He prided himself for being a great innovator in surgical concepts that he described in lengthy articles. One of his theories was that, to avoid infections and wound suppuration, one had to operate subcutaneously, by performing small incisions and reach blindly muscles and articulations

Continued on page 58

– procedures premonitory of today's endoscopic surgery? His experiments on dogs led to multiple hematomas, but apparently a reduced rate of infection. Another theory of Guérin was that all congenital deformations of the skeleton were due to a unique cause: muscular retraction. Therefore, the unique remedy was to divide the muscles and the tendons at the origin of these abnormal curvatures of the rachis or the limbs. Using his subcutaneous method and dividing in each case several muscles and tendons, he operated a series of children who suffered of congenital deformations of the limbs and spine, praising himself for the good results he obtained. Most surgeons questioned this method, but only Malgaigne took the initiative to search for and examine the patients operated by Guérin. He was able to show the crippling effects of these procedures and published his observations under the title: "On the abuse and danger of tendon and muscle sections in the treatment of certain deformities," disclosing the mediocre results obtained by this method. Guérin, furious, sued Malgaigne for defamation, which was pleaded on 14 November 1843 and partially lost by Guérin. He appealed and lost again in 1844. Malgaigne triumphed, and the Paris Surgical Society gave a large banquet in his honor, praising his courage and his talent as a defender. This trial could be considered anecdotal, but it is certainly a turning point in the history of surgery. Up to the mid- nineteenth century, operations described by the most famous surgeons and professors were never questioned, whatever the results obtained. In case of complications or lack of success, the blame was put on the operator or sometimes on the patient himself.

Malgaigne's Philosophy

Full of respect for his teachers and the traditions in medicine and surgery, Malgaigne did not take for granted operative protocols based on the notoriety of their creators. He always wanted to confront the methods with the end results. As a founding member of the Société de Chirurgie de Paris, he used its motto: "Probity in science, morality in art." He was remembered by his pupils as a great teacher and contributed to the development of modern surgery. At his funeral, one of his pupils said: "Joseph-François Malgaigne was one of the greatest intelligences to serve surgery. He had this undeniable merit of having fought all his life to replace dogma with free examination and experience. It was Bacon's experimental method[1] that he had rejuvenated and modernized at a time when authority tended to replace reason. The only authority he recognized was the authority of the facts, and so he developed his historical method. Criticism being a form of judgment, it must be based on facts, it is not by discussing or fighting reasoning, that it can achieve its purpose, it is only in the light of the facts that it must ask for the revelation of the truth."

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[1]Francis Bacon (1561 –1626) was an English philosopher and statesman. His works argued for the possibility of scientific knowledge based only upon inductive reasoning and careful observation of events in nature. The general idea of the importance and possibility of a skeptical methodology makes Bacon one of the initiators of the scientific method.