Early Canadian surgery

A shorebird's-eye view

Louisa Blair

When Champlain arrived in Canada in 1608, the state of surgery was at least as advanced among the First Nations as it was in France. However, the Hurons managed to convince at least one Jesuit priest that they were already doing complex and serial trans-species transplants.

In 1642 the Jesuit Superior reported solemnly back to France that they had met a Huron man who had lost his eye. The first replacement was with an eagle's eye—surely anyone's first choice for new eyes—but it didn't fit well, so it was replaced with a turtle's eyeball. This confused his vision, so a shorebird's eye was tried, which he found very useful for spotting fish at a distance from his canoe. But it also frightened him to see so far into the deeps of the water, so this time they replaced it with a dog's eye. This finally did the trick and "served him very well until the end of his days."

Serial transplants aside, the First Nations had their own surgeons, and the new settlers frequently made use of them. They treated cuts and bruises with cold poultices from running streams and springs, infected wounds with slippery elm or basswood, ulcers with tamarack resin or juniper juice. The newcomers made ready use of some of these remedies—for example, the cure for scurvy, which saved Jacques Cartier's crew in the nick of time. Dislocated limbs were fixed with a combination of brute force and a rotary movement, and bonesetters skillfully reduced and set fractures with cedar or broom splints, padded with leaves and grass, and tied solidly to the broken limb with flexible birch twigs. Amputations were performed at the joints with flint or quartz knives, spouting vessels were seared, and hemorrhage arrested with red-hot stones.

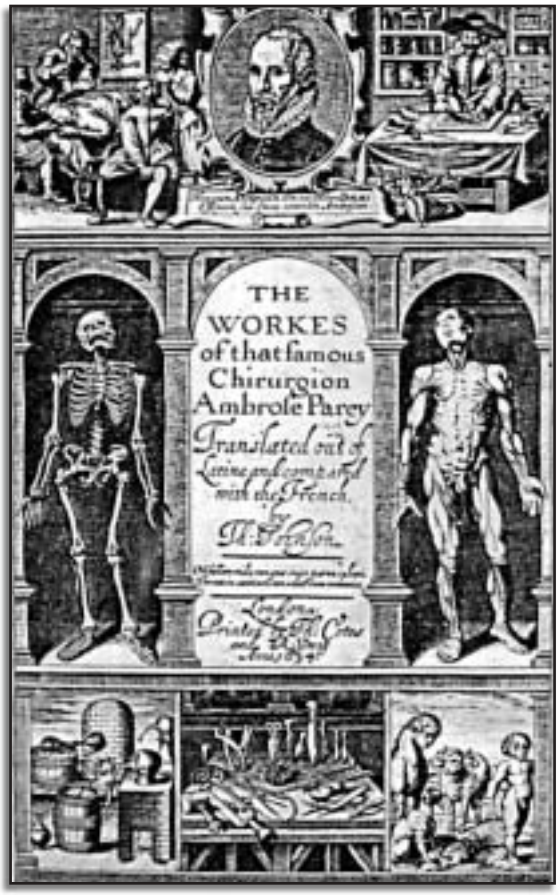

Figure 1. First English edition of the works of Ambroise Paré: *The French surgeon Paré introduced ligatures for tying veins after amputations.*

But in using internal medicine, the First Nations were more advanced than the French. They had expectorants, emetics, purgatives, astringents, emmenagogues, and abortifacients.

In any case there were so few French doctors that they had little competition. For the first 50 years of New France's existence, there were no physicians at all, and with Moliere's contemporary indictments of the medical profession, many felt that everyone was the better for it.

But there were surgeons, and plenty of them.

Surgeons and shoemakers

Surgery was considered a manual trade, as the origins of the word itself testify: a combination of *cheiros*, Greek for "hand," with *ergon*, Greek for "work." Surgery in Europe was regulated through trade guilds rather than professional associations, and in New France surgeons were also barbers until 1743, when Louis XV dissolved the barber-surgeon link. Surgery was learned through apprenticeship, like masonry or shoemaking, and not, God forbid, at a university, until the Enlightenment brought people around to thinking that perhaps practical learning was as worthwhile as the bookish kind. Surgery emerged from this era as a very respectable

profession, as it was seen as the most experimental, and therefore the most progressive, of the sciences.

Many surgeons arrived in Canada as military or ship's surgeons, as it was the law that every ship should have one. An unprecedented colonial and naval expansion had created an insatiable demand for junior surgeons willing to serve abroad or aboard ship, and this experience gave them a leg up in the trade. Even fishing ships had their surgeons. Surgeon Charles Prieur, in 1716, agreed with the captain of a fishing vessel that, in addition to his surgical duties, he would also work at fishing to the best of his abilities, for which he received 25 livres a month.

Some of the early surgeons of Quebec are surprising. There was a monk called Jean l'Ancien, who was completely untrained but such a competent surgeon that he was consulted by the most renowned surgeons of his day (d. 1744). Similarly unschooled was Sister Angélique Viger de Saint-Martin (d. 1832), who was an excellent surgeon and would undertake operations that other surgeons had botched. Then there was Robert Nelson, the first to perform a laparotomy and the first to attribute peritonitis to the appendix. He also happened to be a revolutionary, and in 1838 organized an invasion, proclaimed independence for what was to become Quebec, and declared himself President of the Republic.

Many barber-surgeons clearly practised with little regard for their souls. An episcopal edict passed in Quebec telling priests which sins could be forgiven and which could not advised that "surgeons and barbers who cut hair and shave on Sundays and holy days should not be absolved unless they promise to do so no longer without permission, and never during Divine Service."

The swiftest hand, the sharpest knife

Few of the first Canadian surgeons were university educated. Most of them had learned their trade in a very different school: the battlefield. The only novelties in the practice of surgery were the ideas of the French surgeon Ambroise Paré, who introduced salves instead of boiling oil for cauterizing open wounds, and ligatures for tying veins after amputations (**Figure 1**). Many military surgeons took up residence in Canada. There were still plenty of occasions in that first century of Canadian settlement to make use of their wartime experience dealing with gunshot and cannonball wounds.

On the battlefield one learned speed, if nothing else. Dominique-Jean Larrey, Napoleon's surgeon, who participated in 60 big battles, once performed 200 amputations in a single day (**Figure 2**). No one knew anything about infection yet, however, and many of the newly amputated must have died. Nor did anyone know about sanitation: armies traditionally lost more soldiers to typhus and dysentery than they did on the battlefield.

With no painkillers yet, the best surgeon was the one with the swiftest hand, the sharpest knife, and the coolest nerve. One minute was considered ample time for an amputation, and the surgeon's skill was judged largely by his speed and the amount of blood on his frock coat.

Bedside manner was not yet on the list of desirable attainments for a surgeon. The notorious Dupuytren of Paris saw 10 000 patients a year (an early reason for preferring capitation to fee-for-service), but apparently had no friends at all, and was known as "the best of surgeons and the worst of men."

In the 1830s a man arrived at the Marine and Emigrant Hospital in Quebec with such bad frostbite that both his legs had to be removed just above the knee. "It was decided to have the double event come off at the same time: two legs, two operators with the object of saving the patient as much as possible," recalled a surgical student at the time. "From the instant the knife entered, until the leg was on the floor, was *one minute and forty-two seconds*.... The vessels were tied and the wound dressed inside of three minutes."

Patients had several unfortunate handicaps to recovery: before they were operated on, they were likely to have fasted and been bled and purged into a state of exhaustion. If they were in a hospital, their chances of surviving were worse than at home, where infections were less likely to be rampant. The surgeon might wash his hands after the operation but, until the late 1800s, not likely before. (The Hotel-Dieu hospital in Quebec provided a sink in its first operating room, in 1895, for the surgeons to wash up *after* the operation.) Until the 19th century the original dressing would have been left on.

However, surgeons also knew their limits. Very few operations were done on the thorax or abdomen, as everyone knew the patient would die. Cesarean sections were performed only on dead women, and were recommended by the church so that babies could be extracted and baptized. Only two cesarean sections on living women are known to have been performed in Canada before 1800, and they were both to save the child rather than the mother.

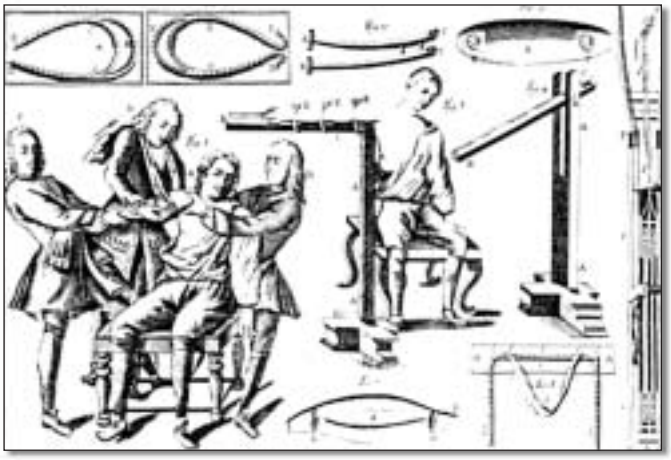

Figure 2. Few physicians, many surgeons: *The best surgeons had swift hands, sharp knives, and steady nerves.*

The first mastectomy

The first recorded breast cancer operation in Canada was performed at Hôtel-Dieu Hospital in Quebec by Michel Sarrazin, the greatest doctor of New France.

His patient was Marie Barbier de l'Assomption, the daughter of a carpenter and one of the first colonists to become a nun, and a Mother Superior at that. She had already been sent from Montreal to Quebec city for 4 months to be treated by Sarrazin, but his ministrations had not worked, and were doubtless not helped by her wearing of hair shirts, spiked corsets, and other constricting outfits of self-mortification. Sarrazin was very loathe to attempt the operation as, although she was dying before their very eyes, "to attempt the operation is almost certainly to deal her a mortal blow—having almost no hope that she would survive it, let alone be healed."

Sarrazin had studied in Paris under Dionis, the first surgeon ever to have been made a professor at the prestigious Royal Botanical Gardens medical school. Dionis had described breast cancer minutely, as well has how to perform mastectomies, so we have a fair idea of how Sarrazin went about it (**Figure 3**).

Before the operation the sisters accompanied Sister Marie in a novena, and the morning of the operation she went to Mass at 4:30 AM and made a general confession. She and Sarrazin both took communion, "to reinforce what little chance of success he had with such an exceptional and dangerous operation." Sister Marie prayed without ceasing throughout the operation, which she offered up in expiation of her sins. The only painkiller she might have had was some cognac.

Sarrazin would have been dressed in ordinary clothes, with his sleeves rolled up, and probably would not have

Figure 3. Abandon hope: *The first recorded breast cancer operation was performed with almost no hope that the patient would survive it, let alone be healed.*

washed his hands first. He marked the area with ink, then passed a curved needle through the tumour, using a cord to pull the tumour away from the chest. He then used a large knife to cut off the breast, and stopped the initial bleeding with his hand. Then he treated the wound with an astringent powder mixed with egg white. The patient's whole torso was then bound up with a towel.

Some idea of the pain was described by novelist Fanny Burney in 1810 when Dominique-Jean Larrey (of 200 amputations per day fame) performed the same operation on her.

> When the dreadful steel was plunged into the breast—cutting through veins—arteries—flesh—nerves—I needed no injunctions not to restrain my cries. I began a scream that lasted unintermittingly during the whole time of the incision—& I almost marvel that it rings not in my Ears still! so excruciating was the agony. When the wound was made, & the instrument was withdrawn, the pain seemed undiminished, for the air that suddenly rushed into those delicate parts felt like a mass of minute but sharp & forked poniards, that were tearing the edge of the wound.

The sisters would have been instructed to care for Sister Marie by applying salves and watching her closely. She was advised to eat simply, breathe lightly, wear loose clothes, be peaceful and joyful, and try not to get angry or sad—postoperative advice that is relevant to this day.

Sister Marie Barbier de l'Assomption healed well and lived for another 19 years.

Breathing a vein

Normal procedures for surgeons would have been less traumatic. Managing whitlows, trussing ruptures, treating leg ulcers, patching up fistulae, and medicating venereal infections would have been the order of the day.

In spite of Harvey's discovery, published in 1628, that blood circulated rather than ebbed and flowed like the tides, the humoural theory of disease persisted, and it was another couple of centuries before the idea that illness was the cause of symptoms, not their result, began to filter through to common practice. The surgeons and their patients were very reluctant, for example, to give up their favourite cure-all, phlebotomy, better known as bloodletting.

Bloodletting involved tying a bandage around the arm to make the veins in the forearm stand out, and then opening one up. This was known as "breathing a vein," and patients often demanded this procedure of surgeons, whether they recommended it or not—yesterday's version of antibiotic treatment. Leeches were also fashionable: in 1833 Canada was importing 40 million of them from France for the purpose, and Hôtel-Dieu Hospital in Quebec was still buying them in 1864.

Edward Dagge Worthington, a medical student in Quebec in the 1830s, recalled that it was considered to be the correct thing to be bled at least every spring:

> No-one considered it necessary to consult as to the propriety of a bleeding.... A man walked in as a man would now walk into a barber shop to be shaved, saying as he did so: "I want to be bled, please." Bandages and basins were always at hand; and when a good quart crockery bowl was nearly full, if the operator showed signs of stopping the flow, very commonly the man would say "Oh don't be afraid; let it run, sir. I haven't been bled for a good while."

Women, Worthington recalled, liked to be bled in the foot to avoid unsightly scarring, and in his office the more religious would ask for the nearly 1-m high crucifix that stood in a convenient corner, so they could hold on to it with their free hand while they were shedding blood.

Mesmeric blandishments

Hospitals provided lots of practice for apprentice surgeons like Worthington. Every surgeon had three or four apprentices and taught anatomy in his own private dissecting room. Many of Quebec's early surgeons had studied in Scotland, where all the great strides forward in medicine were being made, and were outstanding practitioners. Long before it had a medical school, Quebec was an excellent place to learn surgery. When Dr Joseph Morrin opened the first medical school on May 15, 1848, he declared to its first students that they were getting the best education available in North America. Their teachers were excellent, the busy shipyards provided plenty of accident victims, and the port was visited by 1200 boats every year. Medical education in Quebec, he added, had another unique advantage: it was bilingual.

Anesthetics burst onto the scene about 1842, but not before Canada had had a brief but feverish flirtation with mesmerism. This was sparked by the arrival of one Edmund Gibbon Wakefield, who, according to Worthington, "had used his mesmeric blandishments upon the tender affections of a youthful boarding-school heiress in England as to make a residence in Canada rather desirable." Worthington was present at a successful operation performed under mesmerism, but "in a short time the profession got tired of it, and no further experiments were made."

Worthington himself was the first in Canada to perform a major operation using anesthetic in 1847, when he amputated a leg below the knee using diethyl ether. The patient, he recounts, "during the whole time of the operation, retained his consciousness, talked rationally, and made some witty replies to questions put to him, converting the scene from one of a painful to a most ludicrous character."

With the discovery of painkillers and then antiseptics, surgery lengthened its reach, and now, with new discoveries in biotechnology and genetic manipulation, people are getting kitted out with animal parts, just as the Hurons were doing in 1642.

Ms Blair *is a freelance writer based in Quebec city, Que.*