

John Stephenson, founder of McGill Medical College – The first cleft palate patient of Dr Philibert Roux

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On the coldest day in January of 1797, a small child was born to Mrs Stephenson in St Paul Street, Montreal. She already had four boys, and this baby, also a boy and born after an uneventful pregnancy, did not seem in any way unusual. The midwife who delivered the child was pleased with the relatively straightforward delivery. The boy's cry was not robust, but his colour and general appearance were satisfactory. After attending to the mucus in the boy's mouth to make sure that there was no obstruction to the breathing, the midwife left the mother and child.

It was not until the next morning, when Mrs Stephenson attempted to breastfeed the child, that she first noticed that something was wrong. The milk kept on welting up through the boy's nostrils with each suckling movement, and this welting persisted every time Mrs Stephenson attempted to suckle her son. The baby's clothing and bedding were wet with milk (1).

An old army doctor was summoned the next morning. After a careful examination, he found that the infant had been born with a large hole in his soft palate. The doctor attributed it to the extreme cold temperature that prevailed the weeks preceding the delivery.

The boy did not thrive; in fact, he lost weight. Mrs Stephenson tried to make her son's feeding easier. She soon found that if she held her son upright while nursing, the milk would not gravitate through the nostril. This position of feeding the child did not feel natural, but it did allow her son to receive adequate nourishment, and he started gaining weight.

The condition with which young Stephenson was afflicted was a congenital defect in the soft palate not commonly seen. Usually perforation of the soft palate was considered to be caused by syphilis; however, Stephenson's congenital anomaly of the soft palate resulted in a vertical split along the

median junction. The two halves of the split palate were retracted sideways by the muscular action. When the boy was examined, the triangular defect in the soft palate was readily apparent; the hole opened directly into his posterior pharynx.

Stephenson was not robust during childhood but he gained enough weight to remain healthy. He did not begin to speak until quite late. When he pronounced words, they were indistinct and difficult to understand. Words containing letters like *p*, *b*, and *d* were extremely difficult for him to utter because he was not able to close off the mouth cavity from his nasal

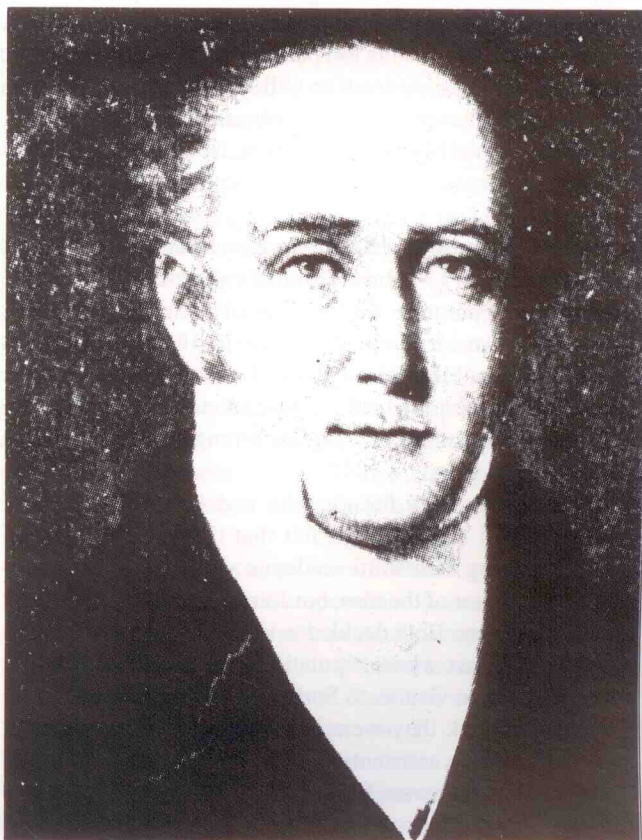


Figure 1) John Stephenson, MD

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cavity, an action which was necessary to pronounce these sounds. Moreover, he pronounced *th* like *s*; his *s*'s were slurred. He could never round his *r* and there was a nasal quality to his speech. Because of this nasal quality, Stephenson preferred to speak French. Later on he found that if he spoke slowly and contracted the strong muscles of the palate his speech was somewhat more distinct (2).

Because Stephenson was more comfortable speaking French than English, his parents enrolled him into Collège de Montréal of the St Sulpice Order (3). Stephenson liked the all-French environment and showed a great deal of diligence and application to his studies. His enthusiasm for work attracted the attention of the Reverend Fathers and of his teachers. Reverend Monsignor Leroux, the Superior of the seminary, noticed that nature had compensated for the boy's palatal handicap with his intelligence and ambition, and he tried to encourage him in every way.

Stephenson was fortunate to have been placed in the Sulpician Seminary. The institution permitted him to perform at best advantage while communicating with his peers and teachers, and it built his self-confidence during a period in his life when patients with defects usually have difficulty in establishing their place in society.

Of course, Stephenson was always aware of his speech problems, but the constant support of his parents, friends, and schoolmates helped him to overcome the obstacle of speech. His mother, in particular, was very encouraging when things became difficult.

There were occasions in the Collège de Montréal when Stephenson's classmates would make fun of his peculiar way of speaking. However, he was always in good humour and tried not to take the insults too personally. He was able to get along well with less aggressive children and engaged in the usual play. His intimate friends learned to understand him well and respected his good judgement. No one was surprised when he expressed the desire to become a doctor when he was older.

Andrew Holmes was Stephenson's childhood friend and neighbour. In 1811 Andrew Holmes's parents had arranged to have him apprentice with Dr Daniel Arnoldi, who had a large practice in Montreal. However, in 1816, the decision was made to send Holmes to medical school in Edinburgh in order to obtain a formal medical education. Since Stephenson had the same ambition, his parents arranged for him to join Holmes in Edinburgh in 1817.

The two Canadian friends who had been attending the medical school at Edinburgh felt that they needed a bit of diversion during their third academic year. Andrew Holmes was the originator of the idea, but John Stephenson was ready for any adventure. Both decided to visit the renowned Professor Philibert Roux whose reputation and surgical skills were attracting foreign visitors to Sorbonne in Paris.

Within a week they were being introduced to Professor Roux by one of his assistants. Holmes was the spokesman and explained that they were final year medical students at Edinburgh and would appreciate the opportunity to study with Professor Roux. The course extended over six months and

they both found it extremely profitable as it dealt with the latest advances in surgery. Stephenson, being conscious of his speech defect, rarely asked any questions, so the master was not aware of Stephenson's condition. Toward the end of the period of study and shortly before he was due to return to Edinburgh, Stephenson spoke to Dr Roux. The master was taken aback by the manner of Stephenson's speech: it was nasal, muffled, and indistinct due to the cleft of the soft palate with which he was born.

"Is the perforation in your palate due to syphilis?" Dr Roux inquired.

Stephenson shook his head vehemently, "*Non, Non! J'étais né comme ça.*"

Holmes was standing by ready to rescue his classmate but before he was able to make a move, Dr Roux asked Stephenson to open his mouth. Roux contemplated the two cleft halves of the palate. They resembled half-drawn drapes exposing the nasopharynx.

"How I wish I could repair your defect!" declared Professor Roux. "I have not seen such a congenital anomaly before."

"Do you mean to say that something can be done!" exclaimed Stephenson.

"It could, if you would permit me."

It didn't take very long for Stephenson to consult Holmes who encouraged him to go ahead. Arrangements were made to have the palate repaired the next day (4).

Stephenson did not sleep much that night. He had always considered that his affliction was permanent, and the thought of attaining near normal speech had never occurred to him as a practical possibility. Yet now he suddenly faced the prospect of being free of the impediment, one which had been an almost insurmountable obstacle since the earliest days of his life.

REPAIR OF THE SOFT PALATE

The tradition at the University of Edinburgh was that students in medical school were required to produce a graduation thesis, written in Latin and printed, before graduation. Stephenson decided to write his dissertation on the operation he had undergone for the repair of his cleft soft palate. The thesis described his experiences throughout childhood and adolescence, and the operation performed by Dr Roux. Stephenson had done a considerable amount of research in preparation for his thesis, much of which was incorporated into the text: he discussed the incidence of the cleft of soft palate in Canada and Scotland; he gave an account of different degrees of the defect (his brother, for example, only had a split uvula and had normal speech); he gave fairly detailed accounts of the handicap that the cleft soft palate presents at various stages of development. In infancy there is always difficulty in feeding the child in a lying position. There is usually a delay in the beginning of speech; the afflicted children have difficulty in pronouncing certain sounds and combinations of sounds; peculiar patterns of speech develop while the patient is trying to attain normal pronunciation (2).

Stephenson described the circumstances of his birth, his

difficulty in feeding, the nasality of his speech, his preference to speak French, and a detailed analysis of the difficulty he had with speech.

Stephenson told how Holmes and he made an impulsive decision to visit Professor Roux in Sorbonne. Stephenson described the operative procedures; he was tied to a chair in a sitting position because Dr Roux felt it would be more comfortable for himself and for the Stephenson. Stephenson gives a very objective account of what followed:

Three interrupted *sutures*, stout enough to avoid laceration of the tissues, as far as possible, were introduced with two surgical needles alternately from behind forwards, each suture being thus drawn three times. Since fingers are too short to do the work at such depth, and the needles were rendered slippery by the constant flow of saliva, use was made of a stylus-like instrument (*porte-aiguille* in French) with what we call in English a slider, to grasp the needles.

Before the edges were freshened the sutures were put in place in order to see whether the fissure could be closed. It would have been unfortunate to do the cutting to no purpose, for then the defect would only have been enlarged. The edges were thereupon cut with forceps and a guarded scalpel. The sutures were separately tied and severed (2).

Dr Roux placed three ligatures into the soft palate before he freshened the edges to make sure that the sides of the soft palate could be approximated. He subsequently decided to leave the ligatures, anticipating the difficulties that would be encountered after the edges of the soft palate were freshened. This was a wise decision because it would have made the handling of the wet needles in presence of blood and saliva much more difficult. The edges of the soft palate were freshened and the ligatures were tightened bringing the raw edges of the soft palate into intimate contact (5).

Stephenson bore the operation procedure with a great deal of stoicism and in fact tried to say a few words immediately afterwards. Stephenson reports that everyone agreed that there was a great change in his voice. For the next four days he was not allowed to talk or take anything but clear fluids. At the end of 72 hours the first suture was removed. Holmes persuaded Dr Roux to delay taking out the others until the following day. Stephenson felt an immediate relief because the sutures imposed a tension on the tight palate. After that he was permitted to take some solid food.

Stephenson reports that his speech improved rather rapidly and he sounded almost normal to others. At the end of the second week, Dr Roux persuaded him to address the Academy of Science in Paris reporting his own case (6). Stephenson himself felt that his speech was more distinct and more 'normal'. This was confirmed by all his classmates when he returned to Edinburgh.

Of course, nasality and the old habits of speech, which he had acquired by contracting his pharyngeal muscles, still persisted. It is well known that after repairing a cleft palate,

the persistent patterns of speech have to be controlled. Today, patients would have the help of speech therapists using various mechanical devices, but of course none of these were available in 1819. Stephenson, being an intelligent patient, developed his own methods to rid himself of the acquired patterns of speech that now interfered with normal pronunciation. Stephenson describes the situation as follows:

Old habit and the above-mentioned muscular contractions were too much for me. The repaired instrument (the soft palate) is not yet fulfilling its proper duties nor giving the help it should to my vocal faculty. Who can deny the all importance of habit?... (2)

His progress was slow but he got rid of many previous handicaps: he could now drink in a horizontal position; he could play a wind instrument. Even his experience of illness was improved: now, when he had to expel the contents of his stomach, the vomitus no longer came out through his nostrils. Subsequently, for the first time in his life he was able to experience the joy of drinking from a brook in a lying down position, or blowing up a balloon.

Having gone through the experience of having his own palate operated upon, Stephenson felt that he was justified in making certain suggestions regarding the operative procedure.

First he thought the needle driver could be improved and be made more efficient. Secondly, because Dr Roux had difficulty in removing the deeply buried sutures, Stephenson suggested using a button-like device between the knot and the tissue to prevent it from being buried. He thought that 'gum elastic' would be a helpful material. Thirdly, he suggested that the sutures should be as fine as possible so as to avoid infection. Moreover, he advised that the patient should not be allowed to take any food or drink. He thought that a device suggested by John Hunter, using a tube made out of skin of an eel, might be helpful. Regarding the application of this operation for children, Stephenson felt it was best to delay it to an age when the crying could be controlled, by four or six years old, and certainly before puberty (6).

Stephenson's description of his operation preceded his surgeon's report by six years (1825). Stephenson called his procedure *velosynthesis*, the first half being from Latin (soft palate) and the last half from Greek (repair). Roux's own account preferred the term *staphyloraphie*, which was entirely Greek. Stephenson took the opportunity to express his appreciation to his alma mater as follows:

A stranger, now about to leave Scotland and the most learned University in Europe which has taught me so much, I should be seriously neglecting my duty to you if I fail to describe this case hitherto unreported in surgical or medical literature. I offer it therefore, as a small token of my gratitude to you. (6)

It is interesting to note that Stephenson's Latin doctorate thesis, *Velosynthesis*, eventually arrived at McGill University and remained resting on the shelves of the McGill Library for

130 years. Its unusual content did not become public knowledge until Dr WW Francis decided to translate it into English as the last thing he did before he passed away.

JOHN STEPHENSON'S OPERATION

The present day objectives in the repair of cleft palates in young children is to attain normal speech as early as possible in order to permit normal development of the maxilla, which makes up the middle third of the face. Stephenson did not have his palate repaired until he was almost 22. In his earlier years, he used to think that there might possibly be a way to repair the damage to his palate, but he never dreamed that any operation would be so successful in restoring normal speech. It is a reflection on Stephenson's strength of character that, having decided that his problem was permanent, he bore the affliction patiently and without rancour.

Another important reason to have the palatal repair carried out in early childhood is to avoid the undesirable patterns of speech which inevitably develop as a child tries to use all the auxiliary muscular power to produce better sounds. When the palate is repaired and normal speech is potentially possible, it takes some time to get rid of the previously learned patterns which often impede normal speech (6).

Stephenson was an adult when he was operated on and the patterns of his cleft palate speech were well established. It is a great tribute to his perseverance that he was able to achieve almost 'normal' speech in time. Apparently, apart from the high pitch of Stephenson's voice, there were no complaints about his lectures (6) (Figure 1).

RETURN TO MONTREAL

John Stephenson had finally completed his doctoral thesis on the repair of his own palate, titled *Velosynthesis*. He felt pleased with his thesis, especially because it gave him an opportunity to express some of his ideas about this rare congenital condition, about which he had learned a great deal through his reading. He felt that it also gave him a chance to express some teaching skills which he was trying to cultivate for the future.

The faculty at Edinburgh vied with each other to excel in teaching their medical students. Excellence in teaching was a high priority – skilled teachers became popular among the students, and this popularity, in turn, led to large numbers signing up for the courses of those professors. The obligation to teach and to pass on information to the medical students was inculcated in all graduates of the medical school.

Stephenson returned to Montreal in the spring of 1820. He was aware that there were no significant English hospitals in Montreal; consequently the training of future doctors would be extremely difficult. When he arrived in Montreal, Stephenson found that the Hotel Dieu hospital could accommodate only 30 patients and that they did not admit cases with fever. The 'House of Recovery' on the English side was also inadequate for the city's needs.

A new building on Craig Street was rented by the English community to serve as a hospital until funds could be collected to build a proper hospital. John persuaded three of his

colleagues, Andrew Holmes, his mentor William Robertson and the former army doctor William Caldwell, all Edinburgh graduates, to serve on the staff of this new hospital. To provide continuity of patient care, John Stephenson acted as a house surgeon (7).

Donations were collected from the citizens of Montreal for the erection of a new hospital. By the time the hospital was completed in May 1822, at the cost of five thousand pounds, only half of the money was collected. The new hospital, which was able to accommodate over 100 patients, was situated on Dorchester Street East. The English population was particularly proud of this new structure dedicated to "the relief of the diseased poor". Although the money was donated primarily by the Protestant portion of Montreal citizens, the hospital functioned as a public institution, serving both Protestants and Catholics alike.

The hospital was named the Montreal General Hospital. Its first medical board was composed of the four Edinburgh graduates who had staffed the old hospital on Craig Street. In the Edinburgh tradition, the medical board proposed that the hospital was to be used for the treatment of patients but must serve also as a medical school for the instruction of future doctors, who were to be admitted "freely to the wards for the clinical teaching and study". (8)

The dual role of the hospital for treating patients and for teaching medical students was welcomed by the population of Montreal. Dr Charles Perreault, speaking in the House of Assembly for the support of the establishment of the public hospital in 1819, said that an "important object is obtained by establishing in such an institution a school for teaching the healing art in all its branches" (9).

Stephenson was eager to get on with teaching medical students. Within three months of the opening of the new hospital, he placed a notice in the *Gazette* that he would begin lectures in anatomy and physiology on October 1, 1822, and in surgery on March 1, 1823. The Montreal General Hospital medical staff appointed Holmes and Stephenson to draw up a document justifying the establishment of a medical school, including the curriculum; this memorandum was approved by the medical board on October 27, 1822, and read in part as follows:

...They are further encouraged to attempt the formation of a medical seminary when they reflect that the medical school of Edinburgh, the basis of which they would adopt for the present institution, now justly considered the first in Europe is of comparatively recent formation, it being little more than one hundred years since the medical lectures were first delivered in that city – and the early history of the Royal Infirmary of Edinburgh is not dissimilar to that of the Montreal General Hospital. (9)

This memorandum was forwarded to the Governor in Chief, Lord Dalhousie, in order to obtain the incorporation of the Montreal Medical Institution, as their teaching organization was called.

Delay in granting the charter was due to the fact that the Montreal Medical Institution was not associated with a university and that it had no endowment. The four Edinburgh graduates continued giving their lectures at the Medical Institution for several years while waiting to obtain the charter for a medical school (Figure 2).

The irony of the situation was that McGill University was given its Royal Charter on March 21, 1824 but could not function because it did not have a qualified faculty. To complicate matters, according to the condition of James McGill's will, unless there was a functioning college by 1829, the inheritance was to be returned to the heirs (2). Some quick action was needed. After some preliminary correspondence, a compromise was worked out whereby the Montreal medical institution, which had a functioning medical faculty of five, was 'engrafted' onto the McGill University as McGill's medical college.

The result was that the two participants obtained what they needed: the Montreal Medical Institution acquired a charter and foundation; McGill University received a prestigious functioning medical faculty. William Robertson was appointed as Professor of Medicine, and the other four members were listed as lecturers of the new McGill Medical Faculty.

This historic symbiosis took place on June 29, 1829. Survival of McGill University was now assured. The medical faculty continued as the first medical school in Canada, and it remained the country's only operating medical school for the next 25 years. In 1832, Stephenson was appointed the McGill Professor of Anatomy, Physiology and Surgery, an

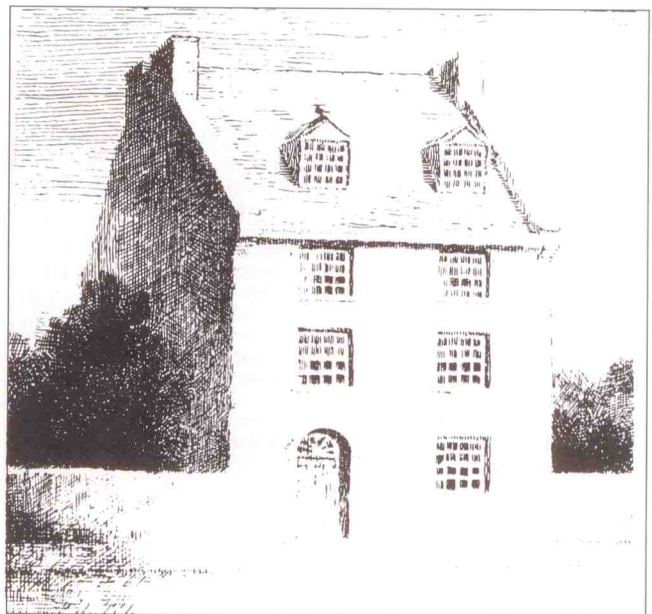


Figure 2) Montreal Medical Institution, 20 St James Street, Montreal

award for his outstanding medical lecturing. The Edinburgh medical teaching tradition which was based on bedside instruction was thus transplanted to Montreal.

The operation which Dr Roux performed in 1819 bore fruit beyond all expectations.

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