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# THE ORTHOPAEDIC FORUM

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## Orthopaedics in Haiti

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On January 12, 2010, an earthquake with a magnitude of 7.3 on the Richter scale struck the island nation of Haiti, causing devastating losses of property, life, and limb. Orthopaedic surgeons from around the world responded to the mass casualty disaster and came together to treat many of the injured.

That deadly earthquake focused the world's attention on the Haitian health-care system. Despite years of developmental aid and the efforts of a large number of nongovernmental organizations (NGOs) before the earthquake, Haiti had some of the worst health conditions in the Americas, including the highest infant and maternal mortality rates in the Western Hemisphere<sup>1</sup>. The public sector comprised about 35.7% of the health infrastructure, demonstrating the government's limited capacity to provide health services<sup>2</sup>. Physicians, especially orthopaedic surgeons, were largely concentrated in the capital city of Port-au-Prince and in other large towns. In some areas, there was only 1 physician for every 67,000 residents. Between 2005 and 2008, nearly 30% of all health-care professionals left the country, primarily for the U.S. or Canada<sup>3</sup>. Today, these circumstances continue to negatively impact the standard of orthopaedic care for Haiti's young, active, and struggling population. In fact, with a population of 10,924,000 and a per capita income of \$1,750 U.S. (USD) (Population Reference Bureau, 2014), Haiti continues to lack many modern medical resources, including state-of-the-art hospitals and clinics; trained nurses, doctors, and other medical staff; medical devices; diagnostic technologies; and medications. Despite these circumstances, this culturally rich country has an interesting orthopaedic history. Herein, we will trace the highlights of the development of orthopaedic surgery in Haiti and describe

some of the personalities who have allowed it to become what it is today; we also will describe what we would like it to be in the future.

What is unknown to most people is the fact that, in Haiti, orthopaedic surgery started during the colonial period (between 1492 and 1803) when slaves were given the responsibility of reducing fractures and dislocations<sup>4</sup>. These men were known as "bonesetters." They probably derived their expertise in part from notions acquired in Africa and through interactions with European surgeons since these surgeons were involved in the care of island settlers<sup>4</sup>. After Haiti gained independence from France in 1804, foreign doctors and pharmacists who were not slave owners were the only ones authorized to remain in the country to practice<sup>4</sup>. In 1817, our visionary leaders started to build medical schools in Cap-Haïtien under the government of King Henry Christophe, who reigned from 1811 to 1820, and in Port-au-Prince under the leadership of Jean-Pierre Boyer, who was president from 1818 to 1843<sup>4</sup>. With these structures in place, Haitian medicine quickly became organized. For example, a fee for orthopaedic services was established, and a law dated May 12, 1828, fixed the remuneration for the reduction of a simple fracture at 12 gourdes<sup>4</sup> (approximately 2 USD currently). About 132 years after the creation of these medical schools, the first orthopaedic department was established in 1949 under the leadership of Professor Antenor Miot, who held the orthopaedic chair at the state medical school in Port-au-Prince<sup>5</sup>. Professor Miot is known as the father of Haitian orthopaedics (Fig. 1).

Professor Miot was born on November 5, 1906, in the small town of Les Cayes in the south of Haiti. After obtaining

**Disclosure:** The authors indicated that no external funding was received for any aspect of this work. The **Disclosure of Potential Conflicts of Interest** forms are provided with the online version of the article (<http://links.lww.com/JBJS/E565>).



Fig. 1  
Professor Antenor Miot, the father of Haitian orthopaedics.

his doctorate in 1931, he held the position of attending physician at the university hospital in Port-au-Prince known as Hôpital de la Université d'État d'Haiti (HUEH). He was then awarded a scholarship to study in France, where he specialized in general surgery at the Cochin-Salpêtrière Hospital in Paris. In 1937, he returned to Port-au-Prince as an assistant general surgeon at HUEH<sup>5</sup>. In 1945, Professor Miot traveled to the United States for orthopaedic training. At first, he studied at the Philadelphia General Hospital, and then he went to the Hospital for Joint Diseases in New York, where he worked under the direction of Joseph Milgram, Joseph Buchman, and Barnard Kleiger, masters of infectious disease and tumors, surgery of the spine, and pediatric orthopaedics, respectively. Under their leadership, he developed knowledge and expertise in the field of orthopaedic surgery<sup>5</sup>.

In 1946, Professor Miot returned to his native Haiti and became the head of the general surgery department at Justinien Hospital of Cap-Haïtien (HUJ), located in northern Haiti<sup>5</sup>. Because of his great passion for orthopaedics, he took on the challenge of building an orthopaedic department in the university hospital in Port-au-Prince (HUEH). Confident in Miot's capabilities, Mr. Antonio Vieux, who was the director of the public health ministry, brought the request to President Dumarsais Estimé, and in 1949, the government created the first orthopaedic department. Department leadership was granted to Professor Miot, its founder<sup>5</sup>. For 35 years, from

1949 to 1984, Professor Miot tirelessly led the orthopaedic service at HUEH<sup>4,5</sup>. One of his numerous colleagues was Dr. Mathieu Joseph, his faithful companion of 36 years, who was able to trace the trajectory of Professor Miot's career in glowing terms<sup>5</sup>. The life of this great man was characterized by total devotion to his patients day and night throughout the years. In his private office hung the prayer that summarizes the entire course of his profession and his life: "Dear Lord, please give skill to my hands, clear vision to my mind, kindness and sympathy to my heart."<sup>5</sup>

Even with all of Professor Miot's determination, courage, and surgical skill, Haiti could not afford much of the specialized equipment and implants needed to provide advanced orthopaedic care. But with his ingenuity and talent, he made, with his hands, many of the tools needed for the care of his patients, including a customized orthopaedic traction table and skeletal traction systems. He was able to modify nails, pins, plates, and other orthopaedic implants in order to adapt them effectively to the needs of his patients. His inventive mind made him a great craftsman whose talent knew no bounds.

Professor Miot's work, however, would not have been possible without the support and collaboration of colleagues such as Dr. Joseph, Dr. Vastey Parisien, Dr. Lucie Paultre Sajous, and Dr. Gérard Léon. Dr. Joseph mastered the pins-and-plaster method known as "double pinning in Haiti" for the treatment of tibial fractures. Dr. Parisien was the first Haitian orthopaedic surgeon to obtain full training at the Hospital for Joint Diseases<sup>5</sup>. He then participated in the training of several generations of Haitian orthopaedists. Dr. Sajous, who had been trained in the United States, created the orthopaedic department of the American Baptist Mission in Fermathe in the late 1950s<sup>6</sup>, where she performed numerous surgeries for the poor. She was the third female Haitian physician and the first female Haitian orthopaedic surgeon<sup>5</sup>. Dr. Léon was one of the first generation of residents trained in orthopaedic surgery in Haiti and, after fellowships in New York and France, he returned in October 1958 to inaugurate the orthopaedic department in Cap-Haïtien, Haiti's second largest city<sup>5</sup>. In 1959, with the help of the Care Foundation, he created a rehabilitation clinic and the Foundation for the Disabled Children of the North. He then focused on pediatric care at Saint Vincent de Paul, a center for rehabilitation in Port-au-Prince, from 1961 to 1997<sup>7</sup>. He also founded the Haitian Society of Rehabilitation in the 1960s (Fig. 2)<sup>5</sup>.

The orthopaedic department in HUEH (Fig. 3), led by these giants, trained several generations of surgeons who succeeded in Haiti or abroad. Dr. Jean Claude Thelemaque and Dr. Raymond Bernardin, with the strong support and help of Dr. Georges Beauvoir, founded the Haitian Orthopaedic and Traumatology Association (SHOT)<sup>5</sup> in the late 1970s.

Many Haitian orthopaedic surgeons returned home after fellowships abroad, and they used their knowledge to train residents and improve the quality of orthopaedic care, including Dr. Jacques Pierre-Pierre (chief of the orthopaedic department at HUEH), Dr. Ronald George, Dr. Debussy Damier, Dr. Beauvoir (past president of SHOT), Dr. Hans Larsen (president of SHOT), Dr. Hubert Pierre Louis (chief of the orthopaedic

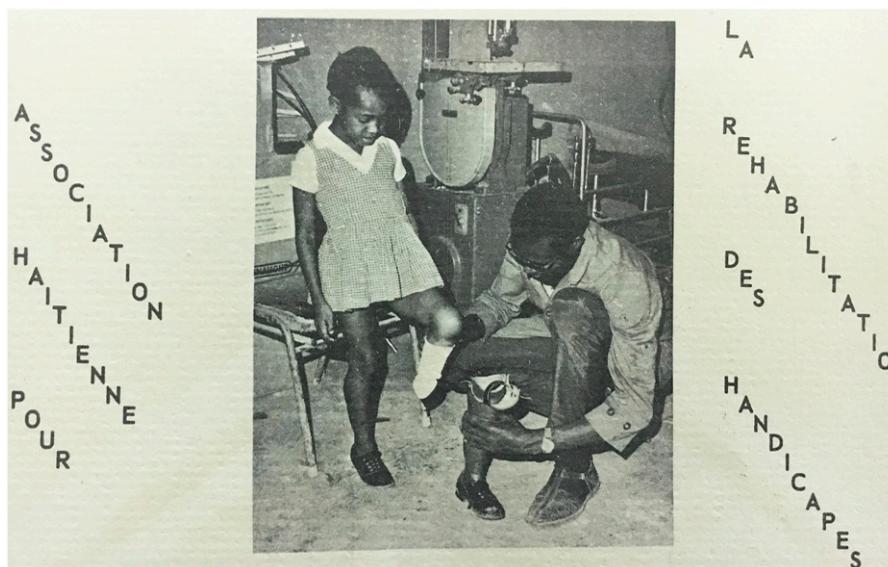


Fig. 2  
Application of a limb prosthesis by a Haitian technician in the 1960s under the supervision of Dr. Léon at Saint Vincent de Paul, a rehabilitation center in Port-au-Prince.

department at HUI), Dr. Adrien C. Andre at HUEH, Dr. Jean Marie Fritz Henry (chief of the orthopaedic department at La Paix University Hospital [HUP]), Dr. Bernard Nau (former member of the International Federation of Volleyball and founding member of the North and Central America Volleyball Confederation [NORCECA] medical commission), and Dr. Harvel Duverseau, to name a few.

Even before the earthquake in 2010, Haiti had benefited from the volunteer services of many foreign orthopaedic surgeons. Dr. Maxime Coles, an orthopaedist from Coffeyville, Kansas, who completed a residency at Howard University Hospital, contributed greatly to the teaching of generations of young surgeons through his frequent visits to Haiti and by supporting observerships for them at his own expense. Dr. Patrick

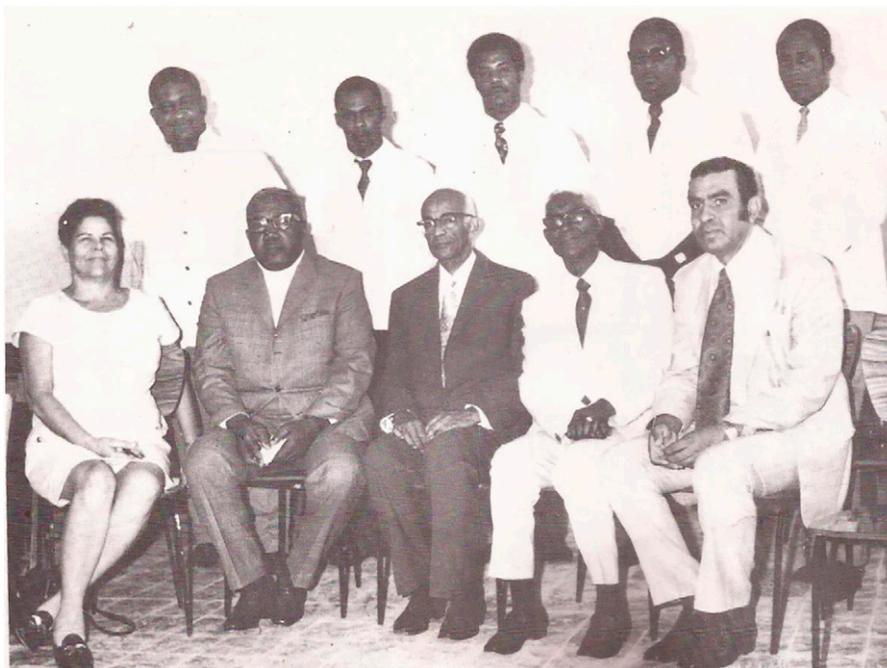


Fig. 3  
Some of the first orthopaedic staff at HUEH in 1958.

Lecorps, an orthopaedic surgeon from Poplar Bluff Regional Medical Center in Missouri, returned to his hometown of Port-au-Prince in 2014 to share with his Haitian colleagues his more than 35 years of experience practicing in the United States.

During the past 25 years, 2 additional hospitals have developed teaching programs run by Haitian orthopaedic surgeons: 1 in the northern region of the island at HUI, and 1 in Delmas, northwest of the capital city, at HUP. Currently, the orthopaedic residency programs at these university hospitals have 40 residents in training. To support these programs, many surgeons from abroad travel to these 2 sites to teach and to share their experiences. A senior pediatric orthopaedic surgeon from San Antonio, Texas, Dr. Kaye Wilkins, has traveled 2 or 3 times a year with other volunteer members of the Pediatric Orthopaedic Society of North America (POSNA) to start continuing medical education courses and establish the Haitian Clubfoot Project. He has helped to train 2 pediatric orthopaedic surgeons, Dr. Francel Alexis and Dr. Eldine Jacques, who run the pediatric orthopaedic department in Diquini Adventist Hospital at Carrefour, south of Port-au-Prince. Dr. Colin de Cheveigne, an upper-extremity surgeon from Toulouse, France, also travels on an annual basis to provide advanced upper-extremity surgical care; and Dr. Robert Belding, an orthopaedic foot and ankle surgeon from South Carolina, has created a partnership with the South Carolina Orthopaedic Association, from which attending physicians and residents come on a regular basis to Haiti for a week to provide care, and Haitian orthopaedic residents travel with them to their hospitals for observership training. Since the earthquake, many more surgeons have come to Haiti and contributed greatly to teach and to solve challenging orthopaedic problems. Some of them, including Dr. John F. Lovejoy Jr., Dr. Richard A. Gosselin, and Dr. Scott C. Nelson, to name a few, have been recognized by societies such as the American Academy of Orthopaedic Surgeons (AAOS) for their humanitarian work in our country.

While orthopaedic training in developed countries focuses heavily on the management of trauma and degenerative joint conditions, in Haiti the emphasis is on other musculoskeletal problems that are seen more commonly, particularly the late and often devastating complications of trauma and infections such as poliomyelitis and tuberculosis. Management of these challenging problems must be taught in addition to the recent advances in orthopaedic practice. One of our greatest problems is access to proper instruments and implants. Some implants that have been obsolete for decades in developed countries, such as the Austin Moore or Charnley prostheses, are still being used on a regular basis in Haiti in 2017, but with surprisingly good results. On the positive side, we learn to work with whatever implants are available at the time of surgery, much like Professor Miot did in 1949. Unfortunately, this limitation can have a negative impact on our results, creating frustration on the part of the patient and the surgeon. Very few hospitals have a C-arm or portable radiography machines, making our surgeries even more challenging. But surprisingly, even with all of these limitations, more and more surgical procedures are being done with satisfying results. We believe the reason for this is that, by not having access to the most sophis-

ticated resources, Haitian orthopaedic surgeons must be creative in their approach and be able to adjust well to the limitations. Knowing the basic principles of the field, relying on keen clinical thinking, and adding creativity can take us a long way in patient care.

When the earthquake struck in 2010, only local surgeons were available during the first hours to treat the injured; their knowledge and skills helped many in their hours of need. Then, support came from all over the world. This was truly a mass casualty incident, and teams of orthopaedic surgeons from literally everywhere worked together and learned from each other. One of the most positive results of this terrible disaster was that many young Haitian residents were stimulated to embrace medicine in all of its aspects, and they developed a desire to learn as much as possible to better serve their country in the future. A survey of practicing orthopaedic surgeons in Haiti done by SHOT in 2002 showed that there were only 67 surgeons for a population of 10,924,000 at that time; in 2017, there were 127 orthopaedic surgeons for an even larger population.

Since that fatal day in 2010, much has changed for the better. An annual orthopaedic conference for residents and surgeons called HAAOT (Haitian Assembly for Orthopaedic Trauma) is now held in Port-au-Prince in conjunction with SHOT, the AAOS, the Foundation for Orthopaedic Trauma (FOT), Partners in Health (PIH), POSNA, and SIGN [Surgical Implant Generation Network] Fracture Care International. There is also a biannual basic trauma course held in the spring by a group called Broken Earth, led by Dr. Andrey Furey, an orthopaedic trauma surgeon from Newfoundland, Canada. We also appreciate the great support we have received from Erasmus Hospital in Brussels, Belgium, through the efforts of Professor Franz Burny. Thanks to these new collaborations, many of us are now members of the Orthopaedic Trauma Association, the AAOS, the French Society for Orthopaedic Surgery and Traumatology, and other orthopaedic societies, which allows us to play a bigger role in global orthopaedics. Our desire to serve as an example to other developing countries takes us to many parts of the world to learn and share our experiences. We are very grateful to Professors Y. Bastaroud and Martin Mukasa Mukisi from Guadeloupe, and Professor Y. Catonne from Martinique, who have invited the Haitian orthopaedic community to share their knowledge regarding many common regional diseases and conditions, including sickle cell anemia, slipped capital femoral epiphysis, and tibia vara.

Despite these advances in education, Haiti still does not offer formal orthopaedic fellowships, even though many organizations, such as SIGN Fracture Care International, FOT, and the Stryker Corporation, have provided scholarships to some Haitian residents for them to participate in conferences, cadaver laboratories, and courses that are held in the United States.

We also want to express a serious concern for the future of orthopaedic care in Haiti, which is caused, at least in part, by the negative impact that some large NGOs are having on the lifestyle of our surgeons and especially on the hopes and dreams of our younger generation of orthopaedic surgeons. By providing free care for all and providing extremely low

wages for doctors, in combination with the country's political, social, and economic instabilities, we believe these NGOs are driving many well-trained surgeons out of the country and out of the profession in search of a better financial life in the United States or elsewhere. In a 2017 article, the dean of the State Medical School (FMP [Faculté de Médecine]-HUEH)<sup>8</sup> stated that a recent study showed that 40% of Haitian medical school graduates leave the country for a better life elsewhere, and most do not get the chance to practice what they have studied for so many years. To illustrate this complex problem with regard to orthopaedics in Haiti, of the 19 residents who graduated in 2016 from all 3 residency programs, 7 have left or are trying to leave the country, and 6 have been unemployed for the past 9 months, resulting in 68% of this new generation not practicing in Haiti after training for so many years. Nothing pains us more than to see a very well-qualified young surgeon leave his or her home country because he or she cannot find a job after more than 12 years of medical education, training, and countless sacrifices. It is our opinion that what the NGOs think is beneficial for our population is in fact bad for the long term, and our patients will suffer if nothing is done to correct this problem. In 2015, 1 NGO center alone had a total of 13,000 cases of trauma-related problems, and performed 3,550 surgical interventions<sup>9</sup>, all on a free-care basis. It is difficult for us to understand how a country with so few orthopaedic surgeons and so many trauma cases can afford to lose surgeons because of third-party interests. However, we do not put all of the blame on the NGOs. We recognize that this may be an unintended but devastating consequence for orthopaedics in Haiti in great part because of poor governance by the Haitian government and its associated implications for health care in general in this country. The allocation for health care in Haiti for 2016 to 2017 was only 4.5% of the government's budget<sup>10</sup>.

While trying to find a solution to this problem, much thought has been given to what is needed to have our country reach the standard of care that is found in other western countries. In our view, one of the most important things is continuous educational support for the new generation of residents. While we have benefited from the many groups of surgeons who have come to Haiti for a week or longer to teach and perform surgical cases, that is sadly far from enough. Access to online information, conferences, observerships, and, particularly, fellowships is what we believe will

drive our residents to be better surgeons. To have robust subspecialties in orthopaedics is our primary goal, and that is what we hope to achieve. Our patients are some of the poorest people in the world, but they deserve the best possible results. Learning how to properly achieve that goal is our dream.

For this to happen, our recommendation or, better yet, our hope is that the governing body of the Haitian health care system (Haitian Ministry of Public Health and Population [MSPP]), the various orthopaedic training program representatives, the NGOs, and all of our friends in the international community and in SHOT meet to define a common program, "The Haitian Orthopaedics Act," to offer the best possible orthopaedic services to adults and children with musculoskeletal conditions. The purpose of this program would be to discuss all of the issues that are preventing the field of orthopaedics from moving forward in this country, and, working as a unit, to propose positive and long-term changes in order to achieve the goal of producing the best possible orthopaedic services in a Third World country. In summary, we believe that each and every one of us, surgeons, volunteers, the government, and NGOs, can find a common ground and move forward together to better serve this population and provide a better future for orthopaedics in Haiti. ■

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