

# Tensions and consensus between medical disciplines

## The history of orthopaedics and its links with surgery.

Mariama Kaba, mariama.kaba@chuv.ch, Responsable de recherche, Institut universitaire d'histoire de la médecine et de la santé publique, CHUV



Mariama Kaba

**Orthopaedics covers a variety of techniques, from surgery to physical therapy or rehabilitation. Since orthopaedics focuses on the musculoskeletal system, which involves different parts of the body, its treatment spectrum reaches all ages. However this has not always been the case, and orthopaedics remains highly diversified from country to country. Although it is mainly developed into a highly specialized field of surgery. This article retraces the development of orthopaedics from its beginnings to the highly diversified field of surgery which is known today.**

Today, all orthopaedists are generally considered to be surgeons, but not all surgeons are considered to be orthopaedists. In the past, orthopaedists were opposed to surgical interventions, while surgeons carried out orthopaedic procedures without calling themselves orthopaedic surgeons. Surgery was quickly categorized as a medical discipline in its own right, but orthopaedic surgery did not enjoy the same recognition, and the term elicited controversy. To understand the complex reality behind these issues, we need to go back in time and examine how the links between orthopaedics and surgery were formed. This article aims to highlight key moments, which were important in the development of modern orthopaedic surgery<sup>1</sup>.

### The origins of «orthopaedics»

In 1741 a French Professor, Dr. Nicolas Andry, coined the term «orthopaedics» in the first outreach textbook written on the topic. The etymology is derived from two Greek words and means «the upright child» – orthos meaning strait and pais, paidos meaning child. Through a series of posture and corrective exercises, the author states his desire to «prevent and correct bodily deformities in children»<sup>2</sup>.

Four decades later, the Swiss doctor Jean-André Venel established clinical orthopaedics, when he founded the first known orthopaedic institution in the world. The centre opened in 1780 in Orbe, in Canton Vaud, and was an avant-garde institution intended exclusively for children. This orthopaedic institution offered optimal conditions for treatment of the musculoskeletal system, which included medical care, treatment with appropriate devices as well as teaching of the young patients, who were hospitalised for months and sometimes years. The therapeutic principle was based on the recovery of the (soft) skeleton of the growing child; surgical interventions were excluded. The successful work done in this institution gain both national and international recognition for Dr. Venel and his institution.



The form of clinical orthopaedics advocated by Venel represented a combination of several fields. The treatments consisted of conservative, physical therapeutic techniques such as manipulations, massages, baths, and even later electrotherapy. Orthopaedic gear such as prostheses and braces were also used. In the mainstream medical field, surgeons offered this type of treatment in numbers, alongside their usual practices. The example of Ambroise Paré, who was a surgeon in the French army and creator of prosthetic devices in the sixteenth century, is often cited for the period prior to that of Venel. Some techniques of manipulation, as well as the elaboration of orthopaedic gear were also achieved by non physicians, such as the truss makers, bones-setters and travelling artisans.

Malformations of the foot, legs in X or O, and the lateral deviations of the spine (scoliosis) were the most common orthopaedic ailments of the time. Venel is known for having developed the shoe named after him (sabat de Venel), intended to correct the clubfoot, as well as a device to be worn day and night (brace and extension bed) for the straightening of scoliosis. The popularity of the treatment of these illnesses was noticeable throughout the eighteenth century<sup>3</sup>.

### The rise of surgery and tensions around the discipline of orthopaedics

Between the end of the eighteenth century and the beginning of the nineteenth century, a new medical science emerged, the anatomopathology, where doctors and surgeons were authoritative. The intention was to distinguish illnesses through clinical observation at the patient's bed, and by seeking to identify the link between the symptoms and the injury of organs through the dissection of corpses. This period is marked by a strong rise in the number of surgical interventions, including orthopaedic procedures (cuts in muscles and tendons, bone resections), which led certain surgeons to advocate control over orthopaedics. Indeed, they supported the idea that the surgeon, who has expertise in anatomy, physiology and mechanics, must insure that orthopaedics progresses scientifically. If the help of the mechanic/artisan is deemed necessary, he must only tend to the construction of the devices that fulfil the aim prescribed by the surgeon<sup>4</sup>.

Promoted by surgeons at the beginning of the nineteenth century, orthopaedics acquired a certain acknowledgement in medical circles, which it did not enjoy in the past. But in fact, the hierarchy of expertise between doctor-surgeons and empiricists applied only rarely, as regulations were still very lax. The popularity of orthopaedics was palpable in several European countries, which translated into the establishment of many orthopaedic institutions, both official and unofficial, as well as a steep increase in the number of publications on the topic.

In this context, the very denomination of «orthopaedics» came under pressure, as the etymology of the term became problematic: as the practitioners of the time admitted, the term applies mainly to children, but can also include adults too. Between 1820 and 1850 other names were experimented with (orthomorphy, orthosomatics, orthopraxy, treatment of «maladies de l'appareil locomoteur»), all of which attested to the frenzy that was taking hold in the orthopaedic field. Despite this, the term «orthopaedics» remained and defined a developing field of medicine. However, consensus around the specificity of orthopaedics and its recognition in relation to the discipline of surgery still lacked.

### Seeking academic recognition

In the second half of the nineteenth century, consecutive breakthroughs in anaesthesia, antiseptics, and bacteriology marked the advent of so-called «modern» medicine, which was developed on the German model of the university hospital. Promoting links between teaching, fundamental research and clinical observation, this model proved key to the organisation of scientific disciplines, with surgery as its most prominent feature. Between 1860 and 1910, this surge gave way to the first national society of surgery, in Germany and the United States, followed by other countries including Switzerland in 1913. From the 1880s, certain members of these societies founded national societies specifically concerned with orthopaedic surgery. These societies assembled into an international section for orthopaedic surgery for the first time at the tenth International Congress for medicine that took place in Berlin in 1890.

At the onset of the following century, the dramatic consequences of the First World War led to the development of war medicine, where orthopaedic surgery had the medical purpose leading to the social and economic revival of victims of mutilations<sup>5</sup>. In the period that followed, the network of practitioners intensified, giving way to the creation of the International society of orthopaedic surgery and traumatology (SICOT) in 1929. The first congress of the SICOT took place in Paris the following year, and saw the creation of the Swiss comity within the society. Swiss members affirmed the necessity to create their own national organ, responsible for communication between several key organisations in the country (faculties, political authorities, societies of doctors, insurances). This organ finally saw the light of day in 1942 under the guise of a Free Association of Swiss orthopaedic surgeons, and became the Swiss Society of Orthopaedics (SSO) after the war – and is currently known as Swiss Society of Orthopaedics and Traumatology/Swiss orthopaedics.

In the meantime, the Federal Regulation on the matter of medical specialties came into force in 1931 in Switzerland, endorsing the title of FMH specialist in orthopaedics. Based on a two-year compulsory curriculum in orthopaedics, as well as two years in surgery, the title posed an essential complimentary merging of between the two disciplines. The recognition of the title coincided with the creation of the first (extraordinary) chair of orthopaedics in Switzerland, held by Placide Nicod, Chairman of the Orthopaedic Hospital of Occidental Switzerland in Lausanne<sup>6</sup>.

By the mid-twentieth century, the face of orthopaedics had profoundly changed. The struggle with bone tuberculosis and poliomyelitis were intensified by the responsibilities to treat victims from World War II suffering from orthopaedic ailments. Increasing knowledge of muscular and joint physiology, as well as innovations in terms of surgery and prosthetic devices, allowed orthopaedics to strengthen its relevance in the field of surgery. In the 1950s, the consequences of poliomyelitis decreased dramatically thanks to the generalization of the vaccination, while the number of accident victims (at work, on the road, and for leisure activities) definitely increased. In addition to the treatment of paraplegics and other forms of paralysis, the correction and stabilisation of scoliosis proved crucial, and so was the success story of osteosynthesis<sup>7</sup>. The workload intensified, directions multiplied, and like other medical fields, orthopaedics was confronted with the difficult problem of the breakdown of the discipline.

In the post-war period, rapid developments from abroad that provide competition and stimulation have pushed the expansion of orthopaedics. Jean-Charles Scholder, Placide Nicod's successor at the Orthopaedic Hospital of Lausanne and president of the SSO, summarized this development at the opening of the society's annual congress in Zurich in 1951: «In the last years, orthopaedics has grown wings, and new problems appear before us, distant horizons open before our gaze. The Americans, French and Italians have extended the limits of our art, which today comprises traumatology and the ailments of the musculoskeletal apparatus. We will not be able to resist foreign pressure for long... [...] But let us not forget, orthopaedics is not only

a surgical specialization. This art also belongs, sometimes even more so, to mechanics, internal medicine, paediatrics, neurology, and endocrinology.»<sup>8</sup>

Thus, from the large orientation of Orthopaedics occurred rivalries with physical therapy, rheumatology, podiatry, and even other surgical specialisations (hand surgery and plastic and reparative surgery in particular). Moreover, since the 1960s there have been multiple warnings against the increasing «hyper-specialization» of orthopaedics. It then became obvious that the survival of the field depended on the intensifying collaborations with other medical disciplines and societies. Partnerships involving research on the foot, the hand, the joints and orthotics were some areas which benefited from these new formed alliances.

### The creation of the Union of Swiss surgical societies

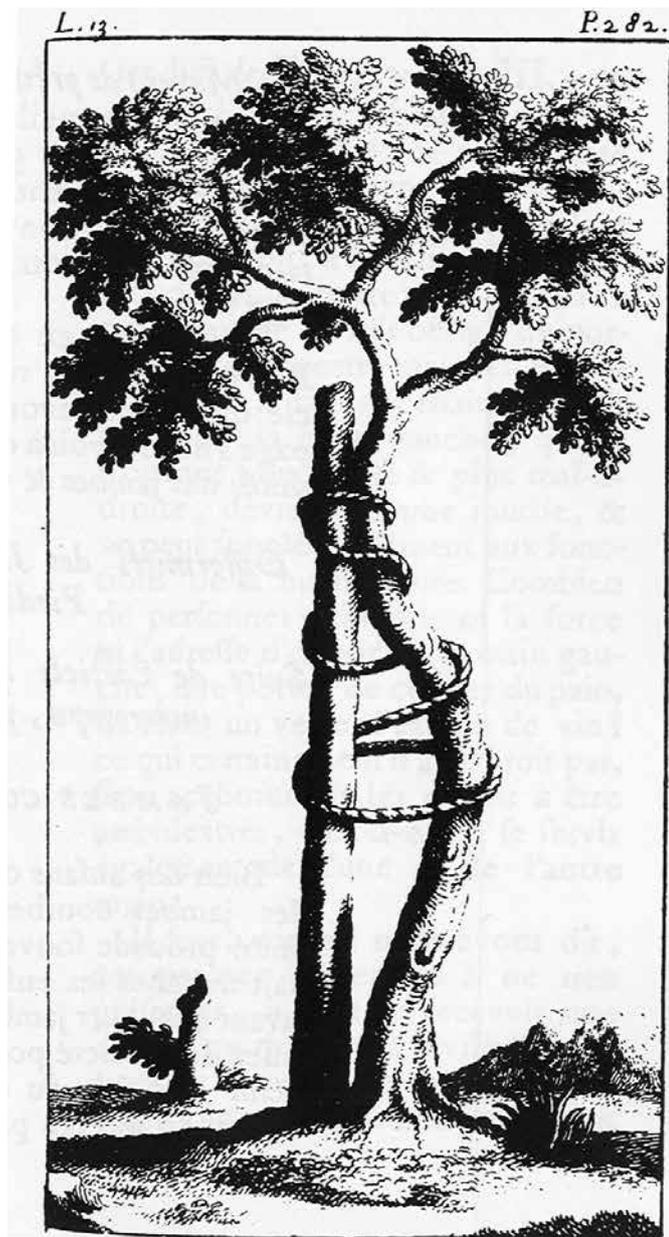
In 1966, during the revision of the FMH guidelines, orthopaedic surgeons felt that their autonomy, or even their very existence, was under threat, following the proposal from the Swiss society of surgery to create a sub-specialization of surgery that would be titled «Surgery of the musculoskeletal apparatus (Chirurgie des Bewegungsapparates/chirurgie de l'appareil locomoteur)». This proposition led to the creation of the imposing Union of Swiss surgical societies.

To settle what he saw as a «vital problem», Hermann Fredenhagen, the president of the SSO at the time, contacted colleagues and members of the Swiss Society of Surgery<sup>9</sup>. He can rely on the support of the society's new president, Frédéric Saegesser of Lausanne, who invited him to discuss the matter of specializations with the president of the Swiss society of urology, Ernst Zingg. This meeting led to the impulse to create the Union in 1974, gathering Swiss societies of surgery, paediatric surgery, neurosurgery, orthopaedic surgery, plastic and reconstructive surgery and urology. Following the model of existing societies (the American College of Surgeons, the Royal College of Surgeons in England, or the French Academy of Surgery), the Swiss Union aimed to coordinate surgical skills in the form of a collegial self-control amongst specialists, «without the intervention of state bureaucracy», as the surgeon Martin Allgöwer, then president of the Union, underlined<sup>10</sup>. The main problems discussed concerned the curriculum pertaining to the initial and postgraduate formations, working conditions of surgeons in hospitals, or the control of the quality of surgery<sup>11</sup>.

Despite the tensions that infallibly arise in the Union, the organisation had the merit of providing a space for exchange between surgeons of all sides. In the wake of the negotiations started in the 1960s and pursued in the Union and the SSO, the qualification of «orthopaedic surgeon» was imposed in 1974 in the inventory of FMH titles<sup>12</sup>. During the debates, the question of the term «orthopaedics» surfaced again. If the etymology of the term remains problematic – speaking of an «upright child» constitutes a discrepancy with most of the developments in the last decades – the term is upheld, because it has become customary. The cultural identity of a medical discipline already troubled in its autonomy depended on it. However, surgical practice remained prominent, as the president of the SSO Pierre Scholder, son and successor of Jean-Charles Scholder, points in 1978 in Lausanne: «orthopaedics [...] which [then] evolved in a hybrid context and was perhaps more medical than surgical, is now a prevalently surgical pluridisciplinary speciality»<sup>13</sup>.

### Diversified strategies

In the last third of the twentieth century, rheumatologic problems linked to the aging demographics and traumatism due to new professional and social activities posed novel challenges to orthopaedics, issues shared with other disciplines. Institutional constraints, associated with the economic demands of health policies, are directly taken into account in the choice of the orientation of disciplines. In Europe, the evolution of orthopaedics is contrasted regionally. Innovations are important everywhere, but strategies are diverse. One can note the American choice to maintain the only mention of «surgery»



**Picture caption:** The tree and its tutor symbolizing the body of the child that the adult must help redress. Illustration from the book *L'Orthopédie* by N. Andry (1741).

when talking of the different specialisations regarding the musculoskeletal apparatus, orthopaedics being essentially paediatric. Indeed, the United States possesses «pure» surgeons of infantile orthopaedics, like some parts of Europe, but contrary to England, where the great majority of practitioners who deal with infantile orthopaedics continue to treat adults<sup>14</sup>.

Another key issue in the development of orthopaedics resides in its links with traumatology, which were strongly advanced due to effects of the two World Wars. Discrepancies between countries are again to be noted: England and Italy group trauma injuries and non-trauma injuries in orthopaedic services, while Austria and Germany, followed by France, develop traumatology services centred on the notion of urgency rather than on the musculoskeletal apparatus, and therefore are independent from orthopaedic services. This dichotomy is observable in Switzerland too: in Lausanne, the Orthopaedic Hospital of Occidental Switzerland favours the union of orthopaedics and traumatology in the same service from 1978 onwards, developing a communal formation, whereas in Oriental Switzerland, the tendency is to separate orthopaedics from traumatology, the latter remaining in the hands of surgeons.

Like many other medical disciplines, orthopaedics has found its way in the vast medical field by defending its autonomy and identity. But this situation, which remains mutable, was only acquired through sustained negotiations with neighbouring disciplines, such as surgery, and these negotiations are bound to continue. Hence, by returning to the past, the examples presented here intend to account for the strategies of adaptation of a medical discipline in a continually changing society.

#### References

- 1 The present article results from a post-doctoral research on the history of orthopaedics and the Orthopaedic Hospital of Lausanne. This project is conducted at the University Institute for the History of Medicine and Public Health in Lausanne, and is funded by the Orthopaedic Hospital of Occidental Switzerland Foundation. A book is forthcoming in 2017. See also Kaba M. 2015. «Aux sources de l'orthopédie clinique. L'histoire revisitée de Jean-André Venel, 'père de l'orthopédie' (fin XVIIIe- début XIXe siècle)». *Revue suisse d'histoire* 65(2): 268-281; Kaba M. 2015. «Die Konstruktion einer medizinischen Disziplin und ihre Herausforderungen: die Orthopädie in der Schweiz im 19. und 20. Jahrhundert». *Therapeutische Umschau* 72(7): 437-443
- 2 Andry N. 1741. *L'Orthopédie ou l'art de prévenir et de corriger dans les enfans les difformités du corps*. Paris
- 3 See also Olivier O. 1987. «Jean-André Venel, d'Orbe (1740-1791). Maître accoucheur. Pionnier de l'orthopédie». In: Saudan G. (dir.) *L'éveil médical vaudois 1750-1850*. Lausanne, pp. 51-103; Ruepp R. 2002. *Orthopädie-Technik in der Schweiz. Chronik eines medizinischen Handwerks*. Dietikon
- 4 Fournier-Pescay F. & Bégin L.-J. 1819. «Orthopédie». In: Panckoucke (ed.), *Dictionary des sciences médicales, par une société de médecins et de chirurgiens*. Paris, pp. 38, 297; Pravaz C.-G. & Guérin J. 1835. *Institut orthopédique de Paris, pour le traitement des difformités de la taille et des membres, chez les personnes des deux sexes. Au château de la Muette, à Passy*. Paris, p. 2
- 5 On orthopaedics and medicine in wartime, see: Cooter R. 1993. *Surgery and society in peace and war. Orthopaedics and the organization of modern medicine (1880-1948)*. Basingstoke; Perry H. 2014. *Recycling the disabled: Army, medicine, and modernity in WWI Germany*. Manchester; Bourke J. 2000. «Wartime». In: Cooter R. & Pickstone J. (eds), *Medicine in the 20th Century*, Amsterdam, pp. 589-600
- 6 Scholder P. 1978. «SSO. Histoire de la Société», *Union des sociétés chirurgicales suisses – Bulletin d'information* 1: 92-93; Fredenhagen H., Romer U., Rüttimann B., Hrsg. 1992. *Geschichte der Schweizerischen Gesellschaft für Orthopädie. Die zweiten 25 Jahre der Gesellschaft (1967-1992)*. Bern, Göttingen, Toronto; Tröhler U. 1993. «Surgery (modern)». In: Bynum, W. F. & Porter, R. (eds), *Companion encyclopedia of the history of medicine, vol. 2*. London, New York, pp. 984-1028
- 7 On the history of the Swiss Association for Osteosynthesis, see: Schlich T. 2002. *Surgery, science and industry. A revolution in fracture care, 1950s-1990s*. Basingstoke
- 8 Scholder J.-C. «Société d'orthopédie, Congrès de Zurich, 15 et 16 sept. 1951». *File «Assemblée de la SSO... dès 1942»*. SSO Archives, Balgrist University Hospital, Zurich. In French in the text
- 9 About this society, see Steinke H., Wolff E. & Schmid R. A. (eds), *Schnitte, Knoten und Netze – 100 Jahre Schweizerische Gesellschaft für Chirurgie. Incisions, nœuds et réseaux – Les 100 ans de la Société Suisse de Chirurgie*. Zurich
- 10 Allgöwer M. 1978. «Zum Geleit». *Union*, op. cit. 1: 5
- 11 Fredenhagen H. 1978. «Wie kam es zur Gründung der Union?». *Union*, op. cit. 1: 11-14. Voir aussi: Fredenhagen H. et al. 1992, op. cit., pp. 55-102: «Im Rahmen der Amtsdauer des Präsidenten»
- 12 «Protokoll der Mitgliederversammlung der SGO, 17. Mai 1974». *SGO-SSO Information*, Oct. 1974; 10: 9
- 13 Scholder P. 1978, op. cit., p. 93. In French in the text
- 14 Fixsen, J. A. 2002. «Children's orthopaedic surgery». In: Klenerman L. (ed.), *The evolution of orthopaedic surgery*. London, pp. 149-158