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Review

This History of anesthesia, critical care and algology in Liege, from early times to nowadays

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Abstract

The medical specialty of anesthesia and intensive care medicine is relatively young, insofar as it emerged during the 1950's and was officially recognized during the 1960's. Despite this young age, the last 50 years have seen considerable progress in available anesthetic drugs, monitoring and security of anesthetized patients, life support, intensive, emergency and perioperative care, and the management of increasingly complex surgeries. Pioneers and passionate anesthesiologists thereafter have made this progress possible. In this paper, we retrace that story at the Liege University Hospital, from the early beginning to the present time, highlighting the contributions of figures of the Department of Anesthesia and Intensive Care Medicine.

Key words: **Anesthesia, History, Liege University Hospital.**

Introduction

In Belgium, modern anesthesia was born after the second world war, following a close vicinity between British and Belgian doctors within the British army. Before that time, spinal anesthesia techniques were mostly performed by surgeons, and chloroform or ether anesthesia by nurses or students. Progressively, new drugs like barbiturates and technical skills like tracheal intubation, systematic intravenous infusion or monitoring entered Belgian hospitals1. The increasing complexity of anesthesia management imposed progressive specialization of doctors in that field, through repetitive fellowships abroad by pioneers. This finally led to official anesthesia and intensive care specialty recognition in 1954, and the establishment of the first lecturers in anesthesia within the two state universities of Belgium, namely the University of Liege and Gent. Parallelly, independent anesthesia and intensive care departments emerged that were no longer under the thumb of the department of surgery. Thanks to their interest in reanimation, emergency care, and the treatment of acute or chronic pain, anesthesiologists also developed specific intensive care units, emergency medical assistance services, and algology centers. With time, the evolution of the Belgian medical needs and offer, and the development of new medical specialties or officially recognized specific competencies, it happened that some emergency, intensive care, and algology departments individualized, with sometimes reintegration after a while, making the story between those medical domains a kind of love-hate affair. We here retrace that story at the Liege University Hospital, from the early beginnings to contemporary times.

Professor Marcel Hanquet, the pioneer

M. Hanquet graduated as a medical doctor at the University of Liege in 1946, at the age of 25. Between 1947 and 1951, he held the position of

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Clinical assistant in surgery at the Liege University Hospital of Baviere, and very early showed a marked interest in anesthesiology, devoting the entirety of his time to the anesthetic management of surgical patients. He immediately performed several stays abroad to learn anesthesia, including, among others, in Stockholm under the supervision of Professor Gordh, who performed the first clinical studies with lidocaine[2], in Oxford with Professor Macintosh, and London with Professor Magill, all of them masters of modern anesthesiology. With the development of his expertise, he progressively rose through the ranks at his mother institution, passing from the grade of Head of work and Adjunct lecturer in anesthesiology first, to Lecturer in 1960 and Full professor in 1966, holding the Chair of anesthesiology. He published a book, Manuel d'anesthésiologie, in 1972[3]. He suddenly passed away in July 1975, at the age of 53, leaving the Liege Department of Anesthesia and Intensive Care Medicine orphaned. Along his career, and concomitantly to installing standards for anesthesia care, M. Hanquet also promoted the progressive development of intensive care, mainly for surgical patients.

Anesthesiologists at the bedside of critical care patients

Misfortune can sometimes be good for something. In 1952, the outbreak of poliomyelitis raged in Europe, including Belgium, prompting the necessity to develop specific care of the victims, and supply their respiratory insufficiency[4]. Means were initially limited but progressively evolved from the negative pressure iron lung, available in Liege at that time, to positive pressure ventilation that was brought to Liege by pediatricians, Hadelin Hainaut and Fernand Bonnet in 1956. At the end of the 50's, there was also a need for insuring adequate postoperative management of patients submitted to invasive surgery, insofar as, at that time, intraoperative management was of much better quality than the postoperative one. M. Hanquet, after hard palavers, obtained the creation of the first reanimation center at Baviere in 1962[5]. This 12-bed unit was considered polyvalent, with surgical orientation though, taking care of a variety of patients (more than 700 a year!) including those after heavy surgery, polytrauma, burns, intoxication, tetanus, hanging, pulmonary and cardiac failure, drowning, or electrocution. During these early developments, the anesthesia-reanimation team counted faithful collaborators like Jacques Marechal, Claude Philippart, and Georges Engels.

In 1967, Maurice Lamy, at the end of his medical training, was immediately seduced by the reanimation center and the charism of his leader. Despite disapproval by his parents, who wanted him to become a surgeon or a cardiologist, he naturally embraced training in anesthesia and reanimation, ending it by a 2-year stay in the United States, in Stanford, and research work on the acute respiratory distress syndrome and extracorporeal membrane oxygenation[4]. Back in Belgium, and confronted to the death of his mentor, he accepted the challenge of taking over the position of M. Hanquet. In addition to the early members of the department, he benefited at that time from the help of additional collaborators like Jean Micheels, Pol Hans, Robert Larbuisson, and several others.

The growth of the department and the progressive implication of anesthesiologists in multiple domains of acute care and treatment of pain

The era of M. Lamy saw several developments in the department, along a story with twists and turns. Developments concerned emergency medical assistance with out-of-hospital interventions, acute and chronic pain management, intensive care and care of patients with burns, and, of course, perioperative medicine. Concomitantly, anesthesiologists became increasingly involved in teaching to medical students at the Faculty of medicine of the Liege University. The building of a brand-new university hospital, inaugurated in 1987, and the move from Baviere to it influenced those developments.

Emergency medical assistance

The official structuration of emergency medical assistance in Belgium occurred in 1964, leading to the coordination between municipal authorities, rescue bodies, and hospital doctors, and to the creation of a single emergency call number. During the 70's, Liege was endowed with a mobile intensive care unit, equipped by the Department of Anesthesia and Intensive Care Medicine, and embarking a young resident in anesthesiology. Later, during the 80's, and after some dramatic mass casualties, a commission regrouping all emergency care stakeholders was created (the Commission des Services d'Aide Médicale Urgente or COSAMU), with the mission of an in-depth reorganization of emergency medical assistance, and training of the different categories of practitioners, notably through simulations of collective emergencies. M. Lamy and another member of the department, J. Micheels, were strongly involved[4]. The multiple emergency units at Baviere were unified during that time, and J. Micheels became the first Head of the Emergency Department in 1987 after the move to the new university hospital. These

developments went on during the 90's and 2000's, with the structuration of teaching to paramedics, nurses and doctors, and the installation of mobile emergency services (Services Mobiles d'Urgence or SMUR, Paramedical Intervention Teams or PIT and an airlifted medical service at the initiative of Luc Maquoi).

Another important contribution of the department to the improvement of emergency care was the systematization of basic cardio-pulmonary resuscitation (CPR) teaching to all students of the Liege Faculty of medicine, through theoretical courses and workshops. Here, Tony Hosmans, a non-anesthesiologist but with a master's degree in health sciences, and member of the department, played and still plays a key role.

With the official recognition of the emergency medicine specialty in Belgium in 2005, anesthesiologists progressively stepped away from responsibilities in the Emergency department and associated activities, but several of them remain involved today, independently from the Department of Anesthesia and Intensive Care Medicine, also contributing to the on-call rotation for SMUR and airlifted services. A 6-month or 1-year internship in the Emergency department is still offered to trainees in anesthesia and intensive care. A regain of interactions occurs nowadays, through the exchange of interns and the setup of trauma teams in the context of the implementation of a trauma center at our institution.

Algology

In 1975, Jean-Claude Devoghel, an anesthesiologist, creates the first algology center in Liege. He was rapidly co-opted by M. Lamy at Baviere, where he devoted full time to the treatment of patients with chronic pain as of 1979. After the move from Baviere to the new structure, and given the growth in activities in that field, the Pain Center of the Liege University Hospital was created in 1988. The center was led by J. C. Devoghel, already applying the principles of multidisciplinary, and was part of the anesthesiology department. He retired in 2000 and, after a 3-year transition period, the center was entrusted to Marie-Elisabeth Faymonville. In 2008, the center became an independent department, still headed by M. E. Faymonville, and changed name to Department of Algology and Palliative Care. She retired in 2018. The center changed name again to Interdisciplinary Algology Center and returned to the hold of the Department of Anesthesia and Intensive Care Medicine, then headed by Jean François Brichant, the successor of M. Lamy.

Alongside the development of expertise in algology, members of the department became progressively involved in teaching the treatment of pain to medical students, be it acute, chronic, or oncologic, and in the teaching of palliative care. Members of the department have also been at the origin of innovations in the management of pain, like Jean Joris, who implemented analgesia units on the ward and the use of lidocaine as part of a multimodal analgesic regimen in abdominal surgery6. Likewise, ME Faymonville was a pioneer and worldwide renowned expert of the use of hypnosis in the management of chronic pain[7] and hypno-sedation as an anesthesia technique[8].

Intensive care and burn patients

The current intensive care unit service at the Liege University Hospital was created in 1987, with 26 beds supplemented with 6 beds for burn patients. It was, at that time, under the umbrella of the Department of Anesthesia and Intensive Care Medicine, and hence headed by M Lamy, assisted by Pierre Damas for intensive care, and ME Faymonville for burn victims. Two medical intensive care units were also running in the hospital at that time, independently from the anesthesiology department, one for medical intensive care patients and the other one for coronary artery pathologies. Rapidly, a post-anesthesia care unit (PACU) was founded, open 24/24 and 7/7, and taking care not only of heavy surgical patients but also of acute non-surgical ones when the intensive care unit was too crowded. In 1999, the intensive care unit became autonomous, under the name of Department of General Intensive Care and the leadership of P. Damas. It was merged with the two medical intensive care units in 2019, counting 57 beds in total, and headed by a specialist in internal medicine, namely Benoît Misset who passed the torch to Bernard Lambermont in 2024, also an internist. Currently, the PACU is still part of the Department of Anesthesia and Intensive Care Medicine, while the burn unit is headed by a surgeon, although anesthesiologists have always been and continue to be involved. Interns in anesthesiology keep rotating in the Department of Intensive Care during their training and participate in on-call duties. Other members of the department have played a key role in the development and functioning of intensive care departments in other hospitals in Liege. This is the case for François Damas at the Citadelle Hospital, where some academic anesthesiologists were assigned.

Perioperative medicine

One of the flagships of our department is perioperative care. Under the impulsion of M. Hanquet and M. Lamy and continued by their

successors J. F. Brichant (as of 2008) and Vincent Bonhomme (as of 2021), caution has always been paid to ensure a close follow-up of patients from preparation to surgery to the return home. Generations of anesthesiologists trained in Liege have now been breast fed with those principles. This was done while taking account of the evolution of surgical techniques and of our specialty. Very early, our department organized pre-anesthesia consultations at distance from surgery, and set up tracks for enhanced recovery, particularly in the domain of abdominal surgery where it was initiated by J. Joris. Every day, an anesthesiologist performs a tour on the ward, in collaboration with the surgeons, to manage not only postoperative pain, but also all medical problems of surgical patients. This personalized care by anesthesiologists is demanding human resources. To face the continuous increase in activity, and cover the multiple tasks devoted to anesthesiologists, the department has grown rapidly over the years. From an inception kernel of a few people, the department now counts 62 senior anesthesiologists, dispersed over 4 sites, namely the Sart-Tilman (41), the Clinique des Bruyères[8], the Citadelle hospital[4], and the Clinique André Renard[8]. They mentor 56 residents in anesthesiology, over a total of 79 currently in training through the Liege University course. Such a big team and the progress in medical knowledge imposes sectorization, which has now been in place for several years. Sectorization allows people to acquire specialized expertise in several domains and is key for a tertiary center. Examples of sectors are anesthesia for neurosurgery, cardio-vascular and thoracic surgery, abdominal, endocrine and transplantation surgery, orthopedic surgery, maxillofacial and plastic surgery, urology, ear-nose-throat surgery, ophthalmology, one-day surgery, or gynecology and obstetrics.

It goes without saying that the functioning of such a big department would not be possible without administrative and technical personnel, of which prominent figures have been Christine Bettonville (from 1967 to 2012!) and Nicole Bodson (algology) for the secretariat, and Marcel Stas for the technical aspects.

Services to the community and international reach

From the birth of the department to now, its members have always made a point of fulfilling the academic missions and the services to the community that are inherent to a university center. These include teaching, research, and involvement in scientific societies and official organs. These activities have had the collateral effect of building close relationships and collaborations with other Belgian and abroad centers and have contributed to our international reach.

Aside from the above-mentioned teaching domains like anesthesia, basic CPR and the treatment of pain, others where the department was progressively involved include pharmacology, palliative care, homeostasis, intensive care, transfusion, shock, … Teaching is provided not only to residents in anesthesia and intensive care, but also to medical students, dentists, specializing nurses and others, in the form of ex-cathedra lectures and workshops. Collaborations with other Belgian universities and higher education institutions is frequent. The department has also contributed to the basic or post-graduate training of anesthesiologists from abroad, including France and outside Europe like Africa, Japan, and Canada.

The research performed in the department, either clinical or more basic, has continuously contributed to the advancement of knowledge and the progress of our specialty. Domains of research where marking contributions emerged from Liege include, among others, acute respiratory distress syndrome, acute and chronic pain management, enhanced recovery, cardio-thoracic anesthesia, neuroscience, neuromonitoring and neuro-anesthesia, obstetric anesthesia and loco-regional anesthesia. Close collaborations with scientists, both locally and all over the world have existed or still exist. These research activities have led to numerous publications and several PhD theses by members of the department.

Scientific societies and official organs where members of the department have been or are still involved and sometimes hold key positions are numerous: Belgian Society of Anesthesiology, Resuscitation, Perioperative medicine and Pain management, European Society of Anesthesia and Intensive Care, European Society of Regional Anesthesia, European Association of Cardio-Thoracic Anesthesia, Society of Neuroscience in Anesthesia and Critical Care, *Académie Royale de Médecine de Belgique, Comité consultatif belge de Bioéthique*, American Society of Anesthesiology, *Club d'Anesthésie-Réanimation en Obstétrique, Obstetric Anesthetists' Association, …*

Conclusions

The History of the Department of Anesthesia and Intensive Care Medicine in Liege is rich (Figure 1) and has always been driven by passion. It has seen a succession of mentors and mentees. The mix of passion, strong personalities, hard and stressful

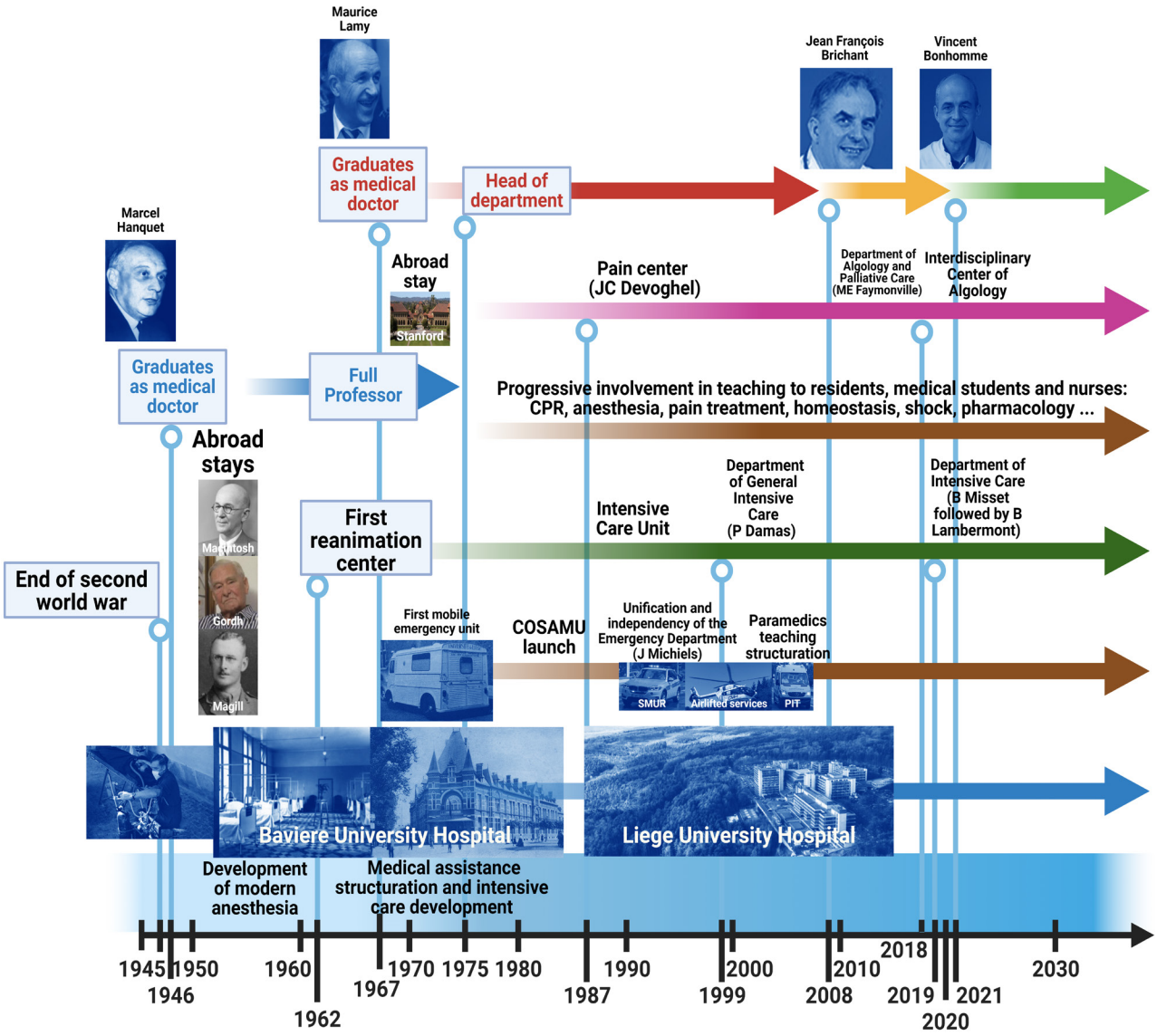

Fig. 1 — Timeline of the evolution of the Department of Anesthesia and Intensive Care Medicine at the Liege University Hospital. COSAMU = Commission des Services d'Aide Médicale Urgente; SMUR = Services Mobiles d'Urgence; PIT = Paramedical Intervention Team. Created with BioRender®.

work, financial constraints, and other political annoyances has sometimes led to storms and crises, from which the department has always stood up. The story is not finished yet, hopefully, because the department can count on the involvement of brilliant and highly motivated collaborators, young and less young. While evolving, anesthesia and intensive care stakeholders must always work towards the advancement of the specialty, notably through science and education, to the utmost benefit of patients, which should always be the priority.

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