The Wrist in My Three Lifetimes

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My First Lifetime

In 1970, at the age of 33, I became an associate professor of orthopedic surgery and plastic surgery at the Montpellier School of Medicine (the oldest active medical school in the Western world; ► **Fig. 1**). My double training as an orthopedic and plastic surgeon made me turn toward a specialization in the hand, wrist, nerves, and upper limb. I was nominated as a Member of the Groupe d'Étude de la Main (GEM) in 1970, which ultimately became the French Society of Hand Surgery. The GEM had been founded in 1963 by four surgeons (Raoul Tubiana, Jacques Duparc, Raymond Vilain, and Jacques Michon) and one anatomist (Pierre Rabischong), who introduced me. This was the beginning of a long relationship, because from 1982 to 1988 I was General Secretary of the GEM and, later, its President in 1992 and 1993 (► **Fig. 2**).

Under Rabischong's guidance, the first national course in Hand Surgery was created in Montpellier. The faculty included Vilain, Michon, Rabischong, and myself. The courses in Montpellier, Tubiana's renown, and the meetings of the GEM were at the origin of the development of hand surgery as a specialty in France. We expanded this to give overseas courses in a variety of countries as far away as Iran, China, and Japan (► **Fig. 3**).

At the Montpellier Academic Hospital and, likewise, at the School of Medicine, I was an associate professor of orthopedic surgery and plastic surgery and head of the hand surgery department (► **Fig. 4**). In this first lifetime I was very involved in surgery of the upper limb, including the hand, wrist, elbow, and shoulder. I trained many French and foreign assistants and hosted several visiting professors.

I became particularly interested in brachial plexus surgery, and in 1970 I performed the first brachial plexus operation in France.^{1–3} I also concentrated on microvascular surgery. I became a member of the American Society for Surgery of the Hand (ASSH) and I presented a paper on the treatment of congenital pseudarthrosis of the forearm by free vascularized bone grafting at the ASSH meeting in New Orleans in 1976. I was a member of the GAM (French Group for Advancement in Microsurgery) and president during its congress in 1980. The

main theme was free vascularized bone grafts of the upper limb, a topic I have continued to study throughout my career.⁴

Starting in 1981, I became interested in reconstruction of the upper limb for quadriplegia, and, stimulated by meeting Dr. Eric Moberg at a conference on Kienböck disease, I was instrumental in developing this discipline in France. Along with several colleagues I cofounded the Propara center in 1983. This center was the first of its kind to specialize in the treatment of spinal cord injuries. Our pioneering work attracted many overseas visitors, including the most prominent international specialists in the field of quadriplegia. This work has remained one of my main interests, and I am currently the president of the International Federation of Societies for Surgery of the Hand (IFSSH) quadriplegia committee.

I had two particular interests in wrist surgery: surgery for the rheumatoid wrist and carpal instability.

The Rheumatoid Wrist

I was quite involved in the treatment of the rheumatoid hand and wrist^{5–16} thanks to close collaboration with the renowned rheumatology department of the Montpellier hospital. This involvement in rheumatoid polyarthritis led to a meeting with Alfred Swanson in 1975 at a round table discussion on metacarpophalangeal arthroplasty at the International Society for Plastic Surgery meeting in Paris. Following this I met with him on a regular basis and had the pleasure of hosting him and his wife, Genevieve, in Montpellier. I also became a highly active member of the European Rheumatoid Arthritis Surgical Society (ERASS), which ushered in another important chapter of my life. The ERASS was founded by Norbert Gschwend from Zurich, who had also founded the Schulthess Klinik, specializing in the treatment of rheumatoid polyarthritis. I was the general secretary of the ERASS from 1980 to 1984, vice-president from 1984 to 1987, and president from 1999 to 2000, and presided over the ERASS congress in Montpellier in October 2001. Thanks to the ERASS, more patients were treated in Europe than in the United States at several specialized centers such as the one in Finland founded by Dr. Kauko Vainio.

Fig. 1 The main entrance to the Montpellier School of Medicine.

Alfred Swanson (► **Fig. 5**) and Bill Clayton were the only active American members of the ERASS. However, I visited Drs. Nalebuff and Millender, who were the specialists in surgery of the rheumatoid hand in Boston, and learned a great deal from them. I became aware of the importance of preserving wrist motion in the rheumatoid wrist but realized the problem of the failure of fixation of a total wrist prosthesis in fragile bones. At that time, I had performed 603 rheumatoid wrist procedures from 1968 to 1994, which consisted mostly

図 1. ナンシー大学で行なわれた手の外科の研修会にて、右より Michon, Villain, Allieu の各教授。

Fig. 3 From right to left: Jacques Michon, Raymond Villain, the author.

Fig. 2 The author dressed as a pirate at the GEM congress in Montpellier presided by Pierre Rabischong in 1974. The eye patch on the left side was a bad omen!

of synovectomies and stabilization procedures.¹² I also used the Swanson wrist implant, but I had to abandon it on account of silicone synovitis. However, I never gave up on trying to develop a reliable implant to restore wrist motion. Because of the problem of fixation with a conventional total wrist arthroplasty, I focused on developing an interposition arthroplasty, which became a reality only after the development of pyrocarbon.

Carpal Instability and Adaptive Carpal Malalignment

After reading works by Landsmeer, Fisk, Guilford, and Linscheid, I began to work on carpal instability.¹⁷⁻²⁶

Fig. 4 The Montpellier School of Medicine. The auditorium during the presentation of a thesis.

Fig. 5 Norbert Gschwend and Alfred Swanson with Monique Allieu in the center.

In 1984 I was a visiting professor at the Mayo Clinic. I was invited by Dr. Michael Wood, who was my host along with his wife, Marilee (an excellent cook who proved to me that any reticence the French may have about American cookery was entirely unjustified). I met the late James Dobyns, who, like me,³⁴ was interested in sports-related hand and wrist injuries. I also met Ronald Linscheid, who took me on a plane trip, flying all over Rochester, Minnesota, and the surrounding areas. It was in the winter in subzero temperatures, and I nearly froze my ears off because I hadn't thought to wear a hat! (► **Fig. 6**)

Rochester is the complete opposite of the French Riviera: there is nothing to do there but work! I was amazed by the organization of the Mayo Clinic as well as the uniqueness of the excellent surgeons and their remarkable work. Following my trip to the Mayo Clinic, I organized a round table on carpal instability at the GEM, at which Ronald Linscheid and Geoffrey Fisk were my guest speakers. I was especially interested in adaptive carpal instability. I made a clear distinction between carpal instability due to ligament injury, adaptive carpal malalignment secondary to a malunited distal radius fracture (which was later included in the wrist terminology classification of the International Wrist Investigators Workshop [IWIW], developed by Gilula et al²⁵), and intracarpal malalignment caused by a change in the shape and volume of the carpal bones.

At 1:30 PM on July 14 (Bastille Day), 1988, at the age of 51, my career was brutally interrupted by a terrible scuba diving

Fig. 6 Ronald Linscheid and Yves Allieu.

accident. I was testing a new spearfishing gun, which misfired, and a harpoon penetrated through my left eye and into my brain. Considering the severity of my injuries, I can only say it is a miracle that I am here to recount the tale today! During the coma I had a near-death experience, but, as Kipling would say, that's another story.

Thanks to my wife and four daughters, I was able to go on living. I am eternally grateful to them for their help and support while I relearned how to walk, write, and speak. My career, however, was placed on hold for 3 years while I recovered.

My Second Lifetime

In 1991, three years after the accident, I returned to my previous position at Lapeyronie Hospital and the Montpellier School of Medicine, but was no longer able to operate. I found myself in a whole new world. It was a real shock to me to go back to work and find that everyone was using computers: I'd never even seen a computer mouse before, and I now had to scan in all my slides! In spite of my difficulties I was able to continue working until my retirement from my academic hospital practice in 2002. During this time I worked with various collaborators in all fields and trained several hand surgeons for both the public and private sectors. I also devoted my time to developing functional surgery in quadriplegia internationally. I published several papers on the rheumatoid wrist, carpal instability, carpal malalignment, carpal dislocation, biomechanics of the wrist, wrist arthroplasty, radiocarpal arthrosis, Kienböck disease, and distal radius fractures.^{4,27-49}

My Third Lifetime

After retiring I founded the private Montpellier Institute of Surgery for the Hand and Upper Limb (IMM) with several former collaborators, including Jean-Luc Roux, who is particularly interested in the wrist^{39,41-43,48} (► **Fig. 7**). The IMM is actively involved in wrist surgery with regular visits by foreign hand surgeons. We have been organizing international meetings every two years since 2006. The first was on fractures of the distal radius, and last year's congress was devoted to wrist arthroplasties. We also meet annually with all my friends engaged in hand and wrist surgery at the Languedoc Roussillon, Midi Pyrenees, and Catalonia

Fig. 7 The surgeons at the Montpellier Institute of Surgery for the Hand and Upper Limb with Jean-Luc Roux to the right of Yves Allieu.

Fig. 8 From left to right: Michel Mansat, Alberto Lluch, Marc Garcia-Ellias, Yves Allieu, and Philippe Saffar at the 15th meeting of the LRMPC surgeons in Barcelona in 2012.

meetings, with Michel Mansat as the representative for Midi-Pyrenees and Marc Garcia-Ellias and Alberto Lluch representing Catalonia (►Fig. 8).

My research on the use of pyrocarbon in wrist surgery is now in full swing.^{50–60} This work is performed in collaboration with the manufacturers who are based in Grenoble, with Jean-Pierre Péquignot in Nice and Philippe Bellemère in Nantes (►Fig. 9). We have developed a new concept of interposition arthroplasty for the wrist and the trapeziometacarpal joint using free, unconstrained pyrocarbon implants. We are currently reviewing the mid and long term results which, so far, seem very promising. This concept was first applied by Péquignot^{50,54} with the creation of the APSI® (adaptive proximal scaphoid implant) to replace an avascular proximal pole of the scaphoid. The biomechanical design of this implant and the properties of pyrocarbon enable the implant to adapt perfectly to the movements of the wrist. We have been using this for over 23 years. We have also developed an implant for the scaphotrapezoidal joint after resection of the distal pole of the scaphoid⁵² as well as a midcarpal implant for isolated destruction of the capitolunate joint. Bellemère has recently developed the Amandys® pyrocarbon interposition implant for salvage following a failed wrist

Fig. 10a, b Amandys implant for rheumatoid arthritis.

Fig. 9 Yves Allieu with Philippe Bellemère on the right and Jean-Pierre Péquignot on the left.

procedure and the destroyed rheumatoid wrist. This implant avoids the use of a total wrist prosthesis and the associated problems of fixation^{55,56} (►Figs. 10a, 10b). Expanding on this concept, we have used smaller, unconstrained implants, such as the Pi2® to treat thumb basal joint arthritis following a trapeziectomy to maintain the height of the thumb column⁵⁹ (►Fig. 11). The results at a 9-year follow-up are most encouraging. The baby of the family, the Pyrocardan implant, is used to treat the early forms of thumb basal joint arthritis.⁶⁰

My interest in this area has also led to a new classification of thumb basal joint arthritis.⁴⁹ Wrist surgery, however, is still only a relatively minor activity of mine compared with my work in brachial plexus surgery, tetraplegia, and the spastic upper limb.^{1,2,61–78} I am currently a consultant surgeon in neuroorthopedics for the upper limb in several clinics all over France, the Canary Islands, and Germany.

To this day, I refer to neuroorthopedic surgery as my wife and wrist surgery as my mistress. Like any honorable Frenchman, however, I have a second mistress: the study of hand disorders in musicians.⁷⁸

Fig. 11 The Pi2 implant with a follow-up of 9 years.

What I Have Learned

Throughout my career I have learnt how important it is to speak English and not just bungle along with “a lovely French accent.” I’ve learned the importance of traveling and have always urged my collaborators to travel. It’s been a most rewarding experience to have so many two-way exchanges between Europe and the United States. I’ve learned about the importance of experience. I was given a second and third life thanks to my rich experiences in the first one. Nowadays I feel like a kind of *Diplodocus* (an extinct large plant-eating dinosaur) who has only survived because of the stored experience of my first lifetime, which has allowed me to keep going, even though I can no longer operate.

I have also learned that the indication for a particular treatment is more important than the actual operating technique. In the various centers where I consult, I have always noticed that, no matter who the surgeon is, the postoperative results will almost always be the same for the proper indication.

I’ve learned just how important it is to have a long follow-up (a strict minimum of 5 years) to evaluate the results of an intervention on the wrist. With wrist surgery in particular, it’s the patients who should be treated—not the X-rays!

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