MENTORS IN ORTHOPEDICS

ANDRE FERREIRA

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SUMMARY

André Ferreira's trajectory within the Lyon school reflects a consistent engagement with the technical evolution of hip and knee arthroplasty. From his early experience as a clinical assistant to succeeding Gérard Gacon at the Clinique du Parc, his career bridges traditional surgical practice with modern evaluative science. A proponent of double mobility and cementless fixation, Ferreira now facilitates international public-private partnerships through the Lyon Hip Arthroplasty congress. His Colombian heritage and interest in opera inform this global perspective.

The Lyon Hip Arthroplasty 2019 congress in September was well attended by surgeons from a dozen countries. We met one of the organizers, André Ferreira, who commented on the main achievements of this congress devoted to femoral stems. André Ferreira underlines one of the objectives of this congress: to bring together experiences from the public and private sectors. He comes from the Lyon orthopaedic school and works at the Clinique du Parc in Lyon.

This is a beautiful clinic!

> Certainly. It is a beautiful, modern, 250-bed establishment with 14 operating rooms and 150 practitioners. The Clinique du Parc originates from a former Lyon clinic that housed many great surgeons (Paul Santy, Joseph Marion...) and was bought by Gérard Gacon in the early 80's. Along with Michel Laurençon and André Rey, Gérard gave a strong orthopedic orientation to the establishment. The clinic then gradually grew, the number of practitioners increased and in 2007 we moved from Boulevard des Belges to Boulevard Stalingrad. It is a move of only about 300m, but we remained alongside the Parc de la Tête d'Or, which is where the name of the clinic comes from.

Did you experience all of these changes?

> Oh yes, because I really am a child of the clinic. I only moved there in November 1996, but when I was a medical student between 1982 and 1985 I worked with Gérard Gacon, first as an operating assistant and then as a week and weekend nurse. I then continued to work there as a student, this time doing ECGs for a cardiologist. After that I worked for two summers in the sterilization department and even as an operating room nurse! So I've done a bit of everything really.

So did this variety of work influence your orientation towards orthopaedics?

> Certainly. I had always wanted to do surgery, I went to medical school for that but I didn't have a precise idea for a speciality. Gérard Gacon mainly practiced knee and hip surgery and I was drawn in, both by the nature of the surgery and by the professional I was helping.

Where did you do your internship?

> In Lyon, of course, in the service of Henri Dejour and Jean-Paul Carret. It was with them that I became a surgeon; it was a logical pairing since Gérard Gacon and Henri Dejour were both from the Albert Trillat school. When I successfully completed the internship in Lyon, Gérard Gacon encouraged me to work with Henri Dejour. Even if they quarrelled sometimes, there was a lot of friendship and respect between them. I was assistant to the head of the clinic for three years until Henri Dejour retired.

Getting a post-internship there can't have been easy...

> That's right, but I was very involved. I didn't count my hours! And then I got involved in the department's publications and in particular in the Lyon Knee Days. That's how you could get a position as a clinic manager: by working hard, always being present and participating in the scientific work of the department.

With a profile like yours, why didn't you stay in the hospital?

> Because it simply wasn't the. Philippe Neyret was already there and he was continuing his academic progress. Then one of my co-chiefs was David Dejour, and he didn't know if he was going to stay in the hospital or not, but if he had chosen an academic career, he would logically have had priority over me because he had worked hard for it. And then, I think my past influenced my choice a lot. Towards the end of my time at the clinic, when I discussed my future with Henri Dejour, he said to me: «Obviously you're going to move on to the Clinique du Parc?» Although I was not sure of my future at that time, it was obvious to him that I would go to this establishment because of my ties to Gérard Gacon. This proved to be correct and I succeeded Gérard at the Clinic. In any case, the liberal character of my work naturally pushed me in this direction.

What kind of character did Gerard have?

> He was a workaholic and had maintained all of the discipline acquired at Albert Trillat. His vision of the development of liberal orthopaedic surgery has also received much recognition. He had started with two other surgeons, and by the time he left the clinic there were a dozen and the number of beds had doubled. He was anticipating change and that was really one of his main qualities. He also wanted to be at the forefront of innovation (as with the cementless) but this did not always work for him. In particular, he was one of the supporters of the artificial ligament for the knee, which unfortunately reached its limits after a few years. His strong character could sometimes make him excessively authoritarian, which was not always well received by his collaborators. But he had charisma and managed the clinic with a certain fatherly sentiment; which is why those who worked with him generally had an excellent memories of that time. The clinic was his baby and he invested a lot of personal and financial effort into its growth. He also wanted a clinic run by surgeons for surgeons, which has become very rare nowadays. Including in our establishment!

What are the differences between Gérard Gacon and Jacques Caton?

> I would say that one has always progressed through his brilliance and his liberal spirit and the other through his diplomacy and his close relationships with universities and public services. One had clear-cut choices and the other, even if he had very specific ideas about surgery, was moving in a more consensual direction. One was a team leader who was working for the reputation of his

clinic while the other had a predominantly scientific vision, while managing his establishment in a more associative way. At the time, the most famous clinic was the one in the Park, but often only Gérard Gacon was known there. Other Lyon establishments were less renowned, but surgeons such as Pierre Chambat, Jacques Caton and Gilles Walch enjoyed a strong reputation there.

How many surgeons are there at the Park Clinic now?

There are 21 orthopaedic surgeons plus three neurosurgeons who do mainly spinal surgery, but there is also visceral, vascular, gynaecological, urological, plastic surgery as well as ophthalmology and ENT. I gradually focused on the hip and knee prosthetics. With perhaps a slightly stronger affinity for the hip in which I have invested a lot.

Let's go back to the time you moved to private practice; did you have the means to do clinical research?

Not right away. The Park clinic had experienced some turbulence and I didn't really have the means to do so. It took me 3 to 5 years to start organizing myself, but from the beginning I indexed all my patients to make sure I could follow up with them. I endeavoured to remain in contact with the Knee Days through the Albert Trillat Centre and also with the ACORA group, which was structured around a well-established philosophy (Charnley's LFA) without refraining from opening up to the new techniques that I mainly used (cementless, double mobility, etc.). I had kept a taste for academic research and I was really interested in participating in and organizing these meetings. I also thought it was important to bring the Liberal spirit into scientific discussions. Gradually I set myself up; I now employ ARC interns and we have a scientific secretary with us. In addition, I travel a lot abroad, participating in many conferences on various topics. I enjoy it very much. Last May I was in New York to talk during the AAHKS spring meeting about the double mobility techniques that I have been defending and using since I moved in privately. It was in conflict with the dogmas in force at Henri Dejour! I believed in it from the start and today I am very glad I stuck with it.

How did you end up organizing this congress?

I started in 1996 and just like everyone else in the beginning I had to build my reputation by proving myself to launch my activity. But since 1999 I have participated in the Lyon Hip Days, organised initially by Louis Paul Fischer (Georges De Mourgues' school) and then as a speaker at the Jean-Paul Carret and Jacques Bejui days; at the same time, from 2000, I joined the organizing committee of the Charnley symposium: it was another Lyon event focused on hip replacement created by Charles Picault, Jacques Caton, Frédéric Michel and Jean-Louis Prudhon in the 1990s. The latter worked in institutions that competed with mine, but having always maintained a taste for ecumenism (my Jesuitic education probably) I did not want to enter into these considerations. In Lyon the relations between the different schools are good: we were competing in a friendly way! Despite my «Gacon» label, I had worked in Henri Dejour's department but also alongside Jean-Paul Carret and Claude-Régis Michel who were from the De Mourges sector. I was quickly in contact with Jacques Caton's group and personally it was no problem for me to make some different connections. In 2000-2004, I started to get involved in the organization, and in 2009 my involvement increased even further. The «Lyon HIP Arthroplasty» was then born from the economic need to create a public-private partnership.

(Return to the development of the congress...)

> In 2013, we tried to repeat the Charnley symposium but it didn't work and that's why we turned to another concept, the «Lyon HIP Arthroplasty», with some strong choices: an international invitational congress that would draw in some prestigious speakers, investing in sponsors and a public/private partnership: Sébastien Lustig and Michel-Henry Fessy on one side, Jean-Luc Prudhon and myself on the other; this year we are joined by Pascal Kouyoumdjian from Nîmes; and for the next edition Nicolas Reina from Toulouse will join us.

Why didn't the congress work in 2013?

> In 2013, legislation on congress and travel funding changed significantly and in the face of this uncertainty all pharmaceutical companies preferred to wait rather than commit to sponsorship. We were not able to complete the financial package. We had to go back to the drawing board, and this led us to come up with the two-faceted, public/private organisation and the ambition to make it international. LHA 2019 had 415 participants, 65% of whom were foreigners from 45 different countries and speakers (about 40) from 11 different countries. But once again, the sponsorship rules are changing and we will have to adapt quickly!

Do you have any idea of the largest foreign contingent?

> There was no majority quota (on average 5 to 10 per country) but a fairly balanced distribution: for example 15 Swiss, but also 12 Japanese, 11 Algerians and 10 Mexicans testifying to a certain international influence.

You have known the period of uncertainty in THA, but now that we are reaching a consensus, why hold a congress on the stems?

> It is true that we are no longer in a period of extreme variations, but an international congress like the Lyon Hip Arthroplasty shows that there are still many discussions to be had.
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> For example, when we do a comparative study of the registers, what conclusions do we come to? Well, at the international level it's not that uniform. There are still countries where the majority of people are cemented, I am thinking of Scandinavia but also of England. On the other hand, there are countries such as Italy where cementless is almost unanimously used. In France we have about 30% of the stems that are still cemented; in Australia surgeons use a lot of cementless but warn against the increase of periprosthetic fractures... Thus, we realize that although some have buried the cemented stems, it holds very well in the long term. Cementing has not lost any of its merits. In reality, it's cementless stems that have been questioned many times in the past...

This is no longer the case!

> Indeed, the current results are fully comparable between the two options and only differences in indications remain. Periprosthetic fractures mainly concern older people or traumatology and there is a general sentiment that the cemented rod will keep its place in these cases. After that, it is true that there has been consensus on the cementless. Today, the right quadrangular rod is the gold standard; this is what emerges from the different registers. In France, of course, the Coral prosthesis is the leader in this segment, and I believe it is the world leader in its segment as it attracts many surgeons to its design. But there are other debates such as the one about the coating. For us, the straight quadrangular stem is covered with hydroxyapatite and we realize that this is not the case in other countries. The United States is still the main user of porous coating.

> And if we push the analysis further, we realize that in France we are more in favour of a total coating of the stem, whereas there are still many North American stems that have a partial coating.

And what about modularity?

> The Italian register is very interesting in this respect. It shows that there are more revisions within countries that give priority to modular collars. This has certainly caused quite a few setbacks. In addition, and in general, and although all the THAs have progressed, year after year there are still 10% of revisions in France. On the other hand, the causes of revision have evolved; there are probably cases of aseptic loosening occurring later and in all international registers we see that the infection rate in the first years increases steadily as does that of periprosthetic fractures. The latter is related to cementless prostheses but probably also to the wider use of the anterior approach, whose learning curve is more difficult.

What other observations have been made?

> Unlike most other countries, the development of the register for prostheses is not very widespread in France, mainly because we do not have the financial means to promote it. We saw during LHA 2019 that international registries are criticized, but that they now constitute the «Evidence Based Medicine» that feeds most publications. The English have an extremely strict register because they compare institutions with each other, but also with surgeons... and one of the conclusions of Jim Timperley's presentation was that the revision rate has decreased in Great Britain since the inclusion of a register! He believes that practices have improved through the checking of surgeons' results. We are not yet at that point in France, of course, since people's attitudes are not ready to accept this, but these registers provide interesting information. Even in the United States, whose size is an obstacle to the deployment of a national register, data collection is beginning to develop. Germany is seriously considering organizing one: 30 years ago, we needed a register for each new prosthesis put onto the market... But today prosthetics mainly come from the major manufacturers who have already done everything. So what would be the point of redoing registers in France when everything already exists? To say that we want a register is not enough. You have to know exactly what you want from it. Should it be a purely epidemiological register, considering these matters are already covered by other registers? An administrative register, in order to know the types of implants used or to limit the arrival of new ones? A clinical registry to track patients, institutions, practices, surgeons? For what purpose? What are the answers we would like to have? But beyond that, the basic question remains: «Who will finance it?». Today, the debate is facing this issue. Will it be the learned societies? The manufacturers? Health insurance providers? It is the same problem as for new technologies: how much money are we prepared to invest?

What are your conclusions for short stems?

> What became clear from the conference was that these mini rods, which now have an average 10-year life span, perform well with only slightly more fractures than standard rods. In addition, the surgeons who use them are much more interested in the extramedullary than the intramedullary. For a classic stem, it is the intra-bone elements such as the shape or coating that are particularly refined, while for short stems there is more reflection on neck orientation. This is why the supporters of the mini stem focus on the extramedullary portion and also have clear differences on more or less metaphyseal filling, or on choosing a varus pose or not! So we've seen the same

debates that we had 20 years ago about the standard stem reappearing. What is certain is that for the mini stem there is no consensus yet. But more generally, all this is symptomatic of the evolution of our practices. The mini stem appeared, among other things, because the approach paths have changed. With the minimally invasive it seems easier to use a shorter stem.

But there have been no disasters?

There were some initial series in Germany with poor results that led to the discontinuation of some implants but this is ultimately anecdotal. The 5 or 10 year old mini rods give the impression that whatever the shape or fixation, it works. The femoral stem in general, as we all know, is a very forgiving implant that allows us a lot of variation. Even with questionable positioning, in strong varus or valgus, it will work (at least in the medium term) and we have the impression that the mini stem gives the same result.

Finally, what did you learn?

What we have learned is that beyond the consensus on standard cementless rods, the role of surgeons has changed. The time when surgeons designed their own custom stems is over. Today, the major prosthesis manufacturers all make comparable implants and work on extremely large databases of femurs of different nationalities to develop stems that can be adapted to entire populations. The surgeon's role today is to be an evaluator. This is what we have seen with the registers and especially the very restrictive regulatory aspect. Prosthetic manufacturers no longer need designers or developers. On the other hand, they need evaluators to monitor patients and anticipate late complications.

There has been no counter-attack by cement manufacturers who can boast good results after 30 years?

I don't think so, the cement manufacturers have now accepted the idea that the cementless prosthesis works just as well. They're maintaining their position in spite of the fact that cement is no longer used, but they are also aware that the surgical revision is not always simple when there is cement. I was trained in «cement» for the hip and knee, but my practice has evolved, and now I have mainly switched to cementless. I usually cement beyond the age of 75 or in the event of proven osteoporosis. There remains the price difference which means that in many developing countries a lot of cemented THAs are still used. But the debate is now starting to die down, just as the debate on approaches is gradually subsiding.

Have you discussed the subject of the ideal length of standard rods?

How far should a diaphysis shaft go? I believe that this question has never really been decided. If we consider the stem to be the keel of the ship, then we know that if there is a lot of stress on the sail, it requires more length. That's the notion that guided the definition of the length of these standard rods. Today we could certainly shorten them a little bit, but will that change things? The real question is: in case of a review, will it change the procedure? It's not an easy question to answer.

On the subject of revisions, is there a consensus on revision rods?

Revisions will be the theme of the next LHA congress in 2 years and we will go into a lot of detail. Today, locked revision rods are much less used in favour of conical «press-fit» rods. But I would like to come back to the first intention stem and to a debate that has resurfaced, that of the collar: do we need one or not? Some supporters of the mini stem strongly defend it as one of the

> important supporting elements as for standard rods. It would seem that with an equivalent implant and an equivalent surgeon, with a collar, it's possible to use on average one size smaller. This would probably result in fewer cracks, less post-operative pain and fewer fractures. Personally I do not use them because I am looking for a strong immediate stability through tighter fitting, but these arguments are relevant.

What about new technologies?

> We realize that in France we are constrained by the financial aspect and that this does not encourage innovation. So, what innovations are we seeing today? Especially robotization, 3D printing of implants and nanoparticles.

Nanoparticles for the hip?

> Yes. Studies are being carried out on anti-infectious nanoparticles or to improve fixation by making it stronger and more durable. These are interesting debates. 3D printing for the first intention rod does not exist today and this technology is rather reserved for repeat printing and more particularly for cup printing. But there are experiments at the Hospital for Special Surgery in New York where 3D printing of implants is being experimented on patients: a scan is performed after their consultation and their prosthesis is manufactured immediately after. So is this the return of the custom prosthesis? We will see, but it's research that revives the classic question of the ideal shape of a stem, its extra and intramedullary design. As for the robot, it is stagnating today for hip surgery because it is difficult to appreciate its added value, but when you see its evolution in cardiological, urological and neurological surgery... it is difficult to think that there is no place for it in orthopaedics.

What do you do outside of surgery?

> I like to travel a lot. I was born in Colombia and my family had emigrated for professional reasons, so my appetite for foreign countries and especially South America is natural. My grandfather was a silk worker from Lyon and went to Colombia in 1950 to develop this industry. He took his whole family there and his daughter, my mother, met my father, a Colombian gynaecologist-obstetrician trained in the USA. I stayed in Colombia until I was 4 years old before returning to France when my father died. Since then I have tried to take advantage of all my travels to immerse myself in the atmosphere of every country I visit.

Do you travel to conferences?

> Not only that. Also in a personal capacity. I try to make a big private trip at least every 2 years, to discover other ways of life. I also operate abroad sometimes. In Italy, of course, because Gérard Gacon, like many colleagues in Lyon, had ties there, but also in South America, Colombia, Ecuador and Uruguay, where I had the opportunity to share my experience with local surgeons.

What do you think of the medical level in South America?

> It's good. In the past, doctors were all Francophiles, today there is a major American influence. But as political changes take place, Central and South America sometimes turn towards Europe. We see this with Mexico, which is experiencing a crisis with the United States, and its Mexican surgeons are once again taking an interest in the old continent. South America is more or less in the same frame of mind. Countries with relatively stable economic development such as Chile, Colombia or Brazil are developing their surgical practice in a way comparable to ours and I have

> sometimes been surprised by the level of equipment and surgeons. And there are countries like Argentina, Uruguay or Venezuela that are in the greatest economic difficulty despite a desire to follow the global orthopaedic movement. In between, there are more withdrawn countries such as Bolivia or Peru where orthopaedics has difficulty modernizing. In any case, the skill of the surgeons is apparent. That said, there is a strong potential for development in South America, as evidenced by the surge of North American implant leaders on the South American continent.

Do they have a similar vision of the two sides to surgery: public vs private?

> Yes. Public surgery is developing strongly and is parallel to the economic and political development of countries, when there is a stable government and a sustainable policy, in particular for the care of patients. The private system has always existed, of course, but is now becoming more and more accessible to the middle classes who previously could not afford it. And liberal private activity is becoming very influential.

You see a lot of potential in these clinics...

> Yes, there is a great potential and great demand from patients, above all, who in the age of the Internet know very well what is happening everywhere. This is reflected in the attitude of the American industry, leader in the orthopaedic market, which is now spreading across the South American continent.

What else do you enjoy?

> Family, sports, going to the Opera and reading.

What are your three favourite operas?

> The French opera «Carmen» which for me will always remain the most grandiose. Mozart's «The Magic Flute» which is, I think, a monumental work of serious lightness! And the third is «Death in Venice» which is a less well-known opera composed by Benjamin Britten, extremely melancholic but with a romantic languor I really enjoy.

How do you do for opera? Is there an opera house in Lyon?

> There is a very beautiful opera in Lyon, renowned for its quality with prestigious conductors (I am thinking of K. Ono, K. Nagano and currently Daniele Rustioni) and a fairly modern programme.

You are not far from Milan too....

> This is the second place I go to when I can: Milan and La Scala! That's where we have the most modern productions; I don't know New York and the Metropolitan well enough to compare, but in Europe it's really Milan that you have to go to. The other Italian cities (Venice for example and its Fenice) have more classical productions as do Germany, or Hungary which I've also tried, but La Scala in Milan is really the Mecca!

What has not been said...

> Besides all this, I try to live a happy family life because it is important. I think you do your best work as a surgeon when you are also happy in your life and with your family. Like many others, I have had difficult moments but at the moment I think I have found the balance that allows me, as has been said, to work, travel, do a little sports and read!