MENTORS IN ORTHOPEDICS

SIEGFRIED HOFMANN

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SUMMARY

Professor Siegfried Hofmann's trajectory reflects a transition from early investigations into osteonecrosis and fat embolism to a definitive focus on knee arthroplasty. A former professional water polo player, his competitive drive informs a career dedicated to surgical education and the refinement of technical principles. Beyond his clinical leadership at Stolzalpe, Hofmann's commitment to knowledge transfer extends to humanitarian missions in conflict zones. He advocates for rigorous subspecialization and a distinctively European approach to orthopedic discourse and training.

Prof. Hofmann Siegfried is an experienced surgeon and international well recognized expert for knee and hip surgery. He has oriented his career towards training and education. Meet a man without compromises.

This issue of the Journal should have been released during the EFORT 2020 in Vienna, which is where you're from. The event has been postponed, but what would you say are the advantages to having such an event in Vienna?

> EFORT plays a strong and important role for all of us in Europe. It has been a long journey of more than 25 years since EFORT was established in Paris, in 1993. When EFORT decided to base itself in permanent locations a few years ago, it was a political decision. I think Vienna is a nice place and internationally well known for organizing congresses. It also gives the Austrian Society the chance to show their work in Austrian Orthopedic and Trauma Science.

Speaking of it, what are your thoughts on today's Austrian Orthopedic community ?

> Austria has a very long history in orthopedic and trauma medicine. At the moment Austria is going through a major change because historically, like Germany, trauma and orthopedics were completely separated for the last 100 years. These two subspecialties have only been joined for about 5 or 6 years. This merger is a hard and long ongoing process and Austria is behind this development in Germany, where this merger has started earlier.

You have always been an orthopedic specialist, but did you get some training in trauma ? How have you been trained and when did you start your specialization for hip and knee surgery?

> When I was a young student, I wanted to be a trauma surgeon, working in emergency rooms and saving lives every day. When I finished University, I found out that the life of an orthopedic surgeon is much easier and less stressful! Nevertheless, every orthopedic resident had to do some trauma training. During this time, I recognized that I was better suited to orthopedics than trauma. I have only had very limited activity in trauma for the last 30 years.

Did you focus on hip and knee, or have you also done some spine or other joints ?

> My practical training included, as every orthopedic surgeon in Austria, all subspecialties, but I've never done spinal or pediatric surgery by myself. I started my scientific career very early as a student with osteonecrosis. During my first 10 years as resident and junior consultant, I was very active in osteonecrosis. I'm one of the founders of ARCO, which is the International Association Research Circulation Osseous. Coming from osteonecrosis, I subspecialized as a hip expert and established a special outpatient clinic for hip problems. This why I started my specialization with hip preserving surgery, pelvic osteotomies and artificial joints in relatively young patients.

At this time, you were recognized as an international hip expert, but you were also very active in other basic scientific fields.

> On top of Osteonecrosis, by chance, fat embolism in arthroplasty became one of my main scientific topics. As a resident, my former boss did a bilateral total knee in a 56 year old lady, and she died a few days later by unknown cause. He told me «This lady should not have died. You have to find out what happened here». I worked together with the Austrian Trauma Research Centre and we could show for the first time that any manipulation during hip and knee arthroplasty caused bone marrow embolization into the circulation, like after intramedullary nailing. Furthermore, we could prove that not cementing was responsible for the cardiorespiratory problems during arthroplasty, but the driving pump effect of the cement caused fatty marrow embolization, better known as fat embolism syndrome. Due to osteonecrosis I was also involved in MRI imaging studies from very early on. Together with my radiologist friends we developed the first MRI staging and diagnosis of labral hip tears which at this time was a completely new concept for hip pain. I organized the first international Hip Symposium on labrum tears in Vienna. Together with the Bernese team we worked on the diagnosis and treatment of hip impingement problems and this was long before hip arthroscopy came into place.

When did you start to specialize in knee arthroplasty ?

> It was by chance, again. When I moved 20 years ago to Stolzalpe, we were the first hospital in Austria to decide to subspecialize ourselves. We built eight different teams, and the hip team already had some internationally renowned surgeons. At this time, like every orthopedic surgeon, I did TKA even if I was focused on the hip. Many of my patients were complaining that they could not climb stairs or cycle after my surgery and were not really satisfied. I could not find out why, and at that time, 20 years ago, there were only a few people in Europe could help. These two points were the reason why I decided to convert from a hip to a knee arthroplasty specialist. It was a very hard, long journey. I travelled a lot for training and went several times to the USA, since for knee arthroplasty they were ahead compared to Europe at the time.

Stolzalpe is a very special place, can you give us more details about its history ?

> Stolzalpe is one of the largest orthopedic departments and it's mainly dealing with elective orthopedics of all sub specialties except tumors. It's on the top of a mountain in the middle of nowhere. There's only the hospital and a very quiet but beautiful countryside. Originally it was a hospital for tuberculosis founded exactly 100 years ago. More than 60 years ago it evolved to an orthopedic clinic. The clinic was established by very well-known surgeons. When I joined 20 years ago, Prof Graf was my medical director. He was already very well-known internationally as the inventor of the hip ultrasound screening for babies. So Stolzalpe was already known as an

> international education center and doctors from all over the world came for his ultrasound and DDH prophylaxis courses. Prof Graf gave me a lot of support when I expressed the idea that if we want to survive at Stolzalpe, we will have to subspecialize ourselves. At this time, I was travelling regularly to the US and I saw that this will be the future. I am still convinced if you want to be a subspecialized surgeon, you have to do a minimum of 300 cases per year and know 200 tips and tricks - then you will be better than a general surgeon doing everything. If you're not better, stop doing it, you'll do something wrong.

How big is the hospital now ?

> We have 8 subspecialized teams, 120 surgical beds and also a conservative department for chronic musculoskeletal pain patients, which is very important for us. We do about 1500 artificial hips and knees per year, about 300 spines and another 1000 surgeries in the smaller teams. Most importantly, we are now a referral center for DDH and knee arthroplasty because of the courses we've done over the last 20 years. It means that we get a lot of difficult cases as referrals. For example, we see about 200 painful TKA each year, and many of them are the typical «looks good, feels bad» patients and we will have to do about 150 revision surgeries including failed infections, each year. We are running about 10 courses for DDH and TKA altogether every year. For over 20 years Stolzalpe has had a good reputation as a training center and more than 6000 surgeons have come to Stolzalpe from 16 different countries for training courses, as visiting surgeons and for the fellowship programs.

Obviously education is a big part of your daily practice. What is a good education for an orthopedic surgeon today?

> I strongly believe education is very important and one of the keys to being a successful surgeon. I had good teachers who really helped me in my career, and they were always telling me that we stand on the shoulders of our teachers. The new generation is different from my generation. When I started my training, I saw a lot of big professors who were very confident of their "god feeling". If I you asked them "why are you doing that this way?" they answered "Because it works. You will have to do it like I show you, it's the right way to go", but they gave no explanation. The new generation isn't satisfied until they get answers, they want to understand what you're doing. For me, understanding what you are doing is key and I'm very happy that this generation isn't likely to accept the postulate "I do it this way because we've been doing it for 30 years".

Using that huge training experience, you wrote an interactive electronic book on the 10 basic principles for a good TKA. How were you able to summarize such a complex subject into 10 basic principles to educate people?

> I personally trained more than 6000 surgeons during my career including juniors and senior surgeons. We surgeons are simple minded. We want to have a few basic rules only, but we have to understand them and must be able to use them in our daily practice. Planning and identification of the problem is the key and then we go to the OR and just apply them. For most surgeons the limitations are not their surgical skills, but the ability to understand and plan properly. I was influenced by Kelly Vince who is the greatest teacher I know. If you listen to his talks you can only kneel down and say, "Oh God, I would like to do it like him". One of the further things I have learned is that there are different ways to solve a problem, especially outside the US, where many things are dictated by industry and a few KOLs only. Very early in my teaching concept I decided that we have to separate basic principles from philosophies. At Stolzalpe we are teaching one

philosophy only, but based on the basic principles, which have been roughly the same for the last 40 years in knee arthroplasty.

What are your thoughts about the controversial discussions on the frontal alignment in TKA ?

I have seen a few hypes during my career. I was involved in computer navigation 20 years ago with some French guys. I was very interested and really went into detail as I always do when I want to understand something. I recognized that of the three things computer navigation promised knee surgeons, only one and a half were working. I decided very early that I did not want to use it, but the work I did with navigation helped me to develop the planning on long standing X-rays. Since more than 15 years I've taught "conventional navigation with X-rays" which includes deformity analysis on long leg films which allows proper planning and reducing outliers comparable to navigation, but without using a computer.

The next hype was the gender specific knee. This was a major marketing hype but in reality, it offered more options and more possibilities for the surgeon only. It didn't change anything for the patient's outcome. Then we had PSI as the next hype and promotors promised that this will solve our problems with unsatisfied patients. And for a few years it's been the strong promotion of new frontal alignment concepts, especially the kinematical alignment. I don't believe that a new frontal alignment concept, as well as the many new designs which have been developed during the last 20 years, are the solution for the 20 percent of unhappy patients. The unhappy patient is a multifactorial problem. I personally believe that we will get rid of the 20 percent of unhappy patients if the surgeons do a better job for patient selection and education as well as surgical techniques. If a surgeon follows the 10 basic principles of TKA he will get 90 percent success rate immediately. If he wants to get 95 percent success rate, which is the maximum and golden standard, he has to be an expert doing 300 cases and know 200 tips and tricks. Not everybody can reach this target, but reaching 90 % of satisfied patients is possible for every skilled surgeon. TKA never will give the patient completely natural sensation back, this is only possible by a UKA, which is done well.

As an educator, you are involved for training in more than 12 different countries including difficult places like Iraq, Iran or the Russian Federation. Can you tell us about your international network and your activities outside of Europe?

My international educational activities also happened by chance. Everything started when the iron curtain went down in 1991. Our neighbors from the former east world countries were already skilled surgeons, but they had limited access to modern technology and techniques. Some of them came to Stolzalpe to do a course and they asked "Can you come and help us to transfer this new concept to our country?". I started to travel to our neighbor countries and help them to do courses, training and education. One thing led to another, and I ended up going regularly to Gulf countries and crazy places like Iraq, Iran, Pakistan, the Russian Federation and even Sudan. I have been in very difficult places, but the demand is always the same. These are surgeons who want to learn modern techniques and serve their own people, so that's why I do the job. Over the last 15 years I have developed a huge community in all of these countries. I've also always focused on ensuring that the trainers develop a sustainable project of training and education.

What is your motivation to do so much travelling, training and education?

> Giving knowledge is more important for me than making money with private patients. One of my teachers was not only a great surgeon but also very engaged in social projects. From the beginning of my career, he told me that we have to serve our patients first. For example, he was travelling during his vacation to countries where there was no service available and did surgeries for free. On one side, he was one of the big players, and on the other side he could sit for two hours on the bed of a difficult patient to talk to them. This was very important for my career to understand the power we have as doctors and especially as surgeons. One of my teaching targets is to tell the young surgeons, it's not only your surgical skills, it is also your magic relationship with the patient. And this trust is not coming only from your knife, this is also coming from seeing the patient before surgery, talking to them the night before about their fears, and seeing them after surgery to tell them everything is fine. And this relationship and trust of the patients represents a very strong power. That's why I also like to travel to crazy places like Iraq because we cannot imagine how much the Iraqi people have suffered. They had four wars and 10 years of sanctions during just one generation. Due to the political instability normal people still suffer a lot. The program I'm running there is a governmental program and free of charge for the people. We see and can help patients who were neglected for 20 or 30 years. What you get back as a surgeon from these patients and their families is an unbelievable gift. It's much more precious than money and a career.

You promoted your concepts through many courses, but you have been involved with many international societies. Was it because you wanted to share your experience and your ideas for education or to spend also time with some good friends to discuss and exchange ideas?

> Both of them, because the majority of the things I developed are not my original ideas. I collected them all over the world, from people who are probably smarter than I am. The only thing I did was restructure and condense all of these different ideas. I am willing to learn every day. Whenever I travel to very different places, I see different things and I'm always willing to understand and learn new concepts. I'm not a politician, but I spent a lot of my time helping to establish the European Knee Society, and I spend a lot of time on bringing good teaching content to EFORT. I strongly believe that we Europeans have to have a strong political society, which is EFORT, and we have to have strong scientific society, which one of them is the European Knee Society. When I started my scientific career, whenever I presented something new, I had to go to the US, because there was no adequate platform available in Europe at this time. If you wanted to publish internationally, you had to be on one of these international US podiums and be part of this scientific club. Now after 20 years, it's different, this is not necessary anymore. I personally don't go to the US anymore for several reasons. I prefer the European way over the American way.

What is the European way ?

> I'll tell you the difference. In the US, if you go to the academy - and I went there every year – always the same KOLs will sit on the podium and will tell you everything is black or red, and most of the surgeons will go home and say: «okay everything is black or red». In many cases the "color" is driven by companies and money. In Europe if someone on the podium says it's black, someone else will stand up and say its yellow, green, orange or whatever. Because we have different cultures, different approaches and philosophies. In Europe, it's much more colorful, mutual, challenging and less driven by money and industry.

You mentioned your involvement with EFORT to help the European way to have a bigger voice in the orthopedic world. When and how do you think they succeeded ?

> The original idea of EFORT was to be a political society representing the national societies of Europe. It was never a scientific society but for a long time they wanted to control the scientific content of the EFORT meetings and also the growing scientific subspecialty societies in Europe. About ten years ago EFORT recognized that they needed the subspecialty societies to deliver the content and the science to the EFORT meeting. This was the point where EFORT really gained a strong position in Europe and is now working much better than it was 10 years ago. This went hand in hand with a change of the leading people, some of whom had been present since it all began 25 years ago.

Why do you think it's important to have a strong subspecialized society like the European knee society? Is it a way for us to balance the American knee society, or is it more of a different view from Europe?

> A bit of both. On one side, we need a balancing element to the American knee society, which for decades was more or less dictating all the guidelines and what was published. On the other side I strongly believe that it is very important for both sides that the key opinion leaders in Europe and US meet on a regular basis, exchange ideas and have personal relationships. Both aspects are equally important.

Between your clinical practices, education, traveling around in 12 different countries plus your interest into the scientific societies, how do you balance your time?

> 10 years ago now, I had a burnout because I was head of a department, scientifically still active and was travelling nearly every week, because it's difficult for me to say no. I had to decide how to move on and I had to learn it's not possible to do everything.
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> 10 years ago, I made a very unusual decision. I decided to step down from my position in my hospital, because I'd built up a very good team which did not need me anymore. Since this time I'm working part time now in my hospital only. I'm responsible for the students, training, education programs, courses and my private patients only. I am out of the routine and can spend 80% of my time on training and education, travelling around, going to international meetings and societies. Otherwise, I couldn't survive. I found a pretty good work/life balance. Unfortunately, not everybody can have these different options. If you are not a KOL, you cannot decide if you go on to work in a hospital, private practice or just be a teacher. I'm 63 now, and in Austria you have to retire at 65 in the MOH system. In two years, I definitely have to step down from my position in the hospital. I strongly believe there is a point where you should decide to slow down. And if you don't do that, you will probably be like a mouse in a wheel without realizing it. Some people leave of their own accord, others need a strong medical blow to get out of the wheel.
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> Once you're out, you rarely want to go back...

Now that you are out of it, regarding your leisure time, what do you like to do, when you're not teaching or operating ?

> I was a sports guy when I was a student, and when I started my medical career I was professionally playing water polo. I was very engaged in sports but I had to stop my sporting activities when I started to work as a doctor, because I wanted to spend time with my family. If you ask me what my free time is, it is family business.

Water polo at professional level ? That's impressive ! People who are play sports at a professional level tend to be competitive and want to achieve. If they go into another field like medical school and surgery, they don't want to be an average surgeon, they want to be a surgeon at the highest level...

> You want to be number one, because number two isn't great, number three is just acceptable and anything below that feels like you have lost already. I agree this is very common in professional sports guys and is the base for success. I am sure that my professional career had something to do with my sports but also with my family history. I come from a family where no one else is a doctor. When I decided to escape the history of my family, it was clear that I wanted to not be the average doctor. I wanted to be really good, and I was willing to invest a lot in my career. That's part of my personality, which is sometimes complicated to deal with - I always want to be a winner.