In Touch With EKA

ESSKA - European Knee Associates Spring Newsletter

EKA is alive!

#Beyond the masks
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Welcome message from the Chairman

Prof. Dr. Michael T. Hirschmann
EKA Chairman

“What the Sars Covid 19 Era is changing in our professional life?”

Message from the EKA Chairman, Prof. Dr. Michael T. Hirschmann

Dear friends of the degenerative knee, dear EKA friends,
It has been a tough year for all of us, all round Europe, all round the world. In many countries, it still is. COVID-19 has changed life in an unprecedented way one could never expect. It is the personal as well as our professional life, which has been tremendously affected by the pandemic.

The good side of being a healthcare professional is that we better understand the necessity of restrictions, vaccinations, and personal protective equipment, as it is part of our daily life in the clinical setting. Many of us also have been in the front line providing care for COVID-19 patients, then seeing how severely this disease can affect humans. As EKA, we have worked on many guidelines and published numerous papers about dealing with COVID-19 as orthopedic surgeons, which were all very well received. In particular, the paper about personal protective equipment in orthopedics, which was published in KSSTA, needs to be mentioned as it helped us all in the discussion with hospitals fighting for better protection during surgery under COVID-19.

Many others dealt with the question of how to cope with the dramatic changes in knee arthroplasty environment. These numerous papers were done in a great collaborative initiative with the European Hip Society (EHS). A special thanks to Nanne Kort and Michael Liebensteiner. Finally, we see some light at the end of the tunnel. The EKA family and I hope you are well and wish you all the best for you and your family. As a first initiative, we have put much more effort into social media to stay on the map as the educational society for the “degenerative knee”. Trifon Totlis and Riccardo Compagnoni have put a massive effort into the development of a social media strategy and have strengthened the EKA presence in Facebook, LinkedIn, and Twitter. EKA has been digitalized in a way. Time for shortly looking back at what EKA has done in the last year, but also looking into the future what is planned and coming up. Under the lead of Antonia Chen and Rene el Attal we have changed the committees by topics and also the composition. It was the aim to get everyone involved here. Most committees have started working. Some already published consensus articles in KSSTA or JEO.

The congress world is under constant change. The ESSKA Congress of Milan 2021 was first postponed to 2021 and then decided to be done virtually. As scientific chairman, I was heavily involved and as one says, "all good things come in threes"- I have done the programme three times. In this first fully virtual ESSKA@home congress, the programme contains all aspects of degenerative knee topics.
Highlight and keynote lectures present and discuss innovative topics such as personalization in knee arthroplasty, robotics, artificial intelligence, and much more. It was also our aim to get as many of you involved as speaker. Do not miss this unique congress experience and be there with us, my friends! This will be a very special one.

After the virtual congress is before the next face2face ESSKA congress 2022 in Paris. The planning has already started, and EKA has submitted a record winning number of symposia and ICLs as well as 4 keynote lectures. Many of you have contributed to the programme proposal. Again, we tried to get you all involved as moderators and speakers.

Our all about knee arthroplasty and the osteotomy courses had to be cancelled due to COVID restrictions, but when possible, we will have a restart here. Instead of these courses, we were running several successful webinars under the ESSKA umbrella. More than 500 participants were counted. Great thanks to Enrique Gomez Barrena and Geert Mermans for taking the lead in organising these.

The planned ESSKA Specialty Days (SD), which were supposed to take place in Warsaw in autumn, had to be rescheduled as a face2face meeting is not very likely then or at least unpredictable. Instead of the SD, we will run an about 1-hour EKA members webinar and a members meeting afterward in September 2021. The theme just decided on will be: “Horizon 2030- the future of knee joint preservation and arthroplasty” We will cover here how degenerative knee surgery will have changed until 2030. A fascinating world from augmented reality, robotic surgery, remote surgery, telesurgery, artificial Intelligence, personalised medicine, digital patient pathways, 5G wireless transmission technology, smartphone apps, wearables and new materials.

Finally, a society or section lives by its members only. Be active and get involved.

If you want to get involved in a special initiative, then get in contact with me.

Currently, EKA has about 200 members, but we aim for more. Support EKA and name at least one new member with interest and expertise in degenerative knee surgery. Why not send the name directly to Anna Hansen Rak at the ESSKA office (eka@esska.org).

Great to catch up with you, my EKA family, take care, stay safe and best wishes.

Michael Kirchmayer
Often technical advancements lead to a dramatic change of former standards and processes. One example is the posted letter. With the introduction of emails, the process became digital, and not many letters are written with a pen anymore. With the improvements of polyethylene quality and latest medical evidence, the dogma of systematic neutral mechanical alignment has fallen for certain knees, such as constitutional varus knees. An increasing number of surgeons claim to use a more personalised alignment approach, some systematically some rather individualised. Alignment is not clear anymore. What is the optimal target for the individual knee? This pertinent question is still under discussion. With the introduction of the functional knee phenotype concept, we have contributed to this discussion. It is clear now that we have to analyse the individual patient’s knee phenotypes preoperatively. In addition, it appears to clear to have more anatomical alignment targets. The best alignment concept is still a matter of debate.

With systematic mechanical alignment, we found good survival rates in most of our patients but poor satisfaction in about 20-30%. What do we achieve with a more personalised alignment in terms of survival rates and satisfaction? Currently, this is unknown, and hence we need to find a safe and study controlled transition from mechanical alignment to a more phenotype-based alignment. Safe zones need to be established to avoid unexpected bad results.
TKA Alignment overseas debate

Michael Hirschmann, Kantonsspital Baselland, EKA Chairman
Pierfrancesco Indelli, Standford University, EKA Board member

Do kinematic and mechanical alignment have common ground even if they use different targets for setting the femoral and tibial components?

Prof. Dr. Med. Michael T. Hirschmann (Kantonsspital Baselland) Currently, there is a huge discussion about the optimal alignment concepts. Should we use mechanical, anatomical, kinematic, restricted kinematic, inverse restricted kinematic, pheno-type, or functional alignment concepts? This is confusing, and we need to make us something clear. About 30% of all knees undergoing TKA represent a neutral phenotype. In neutral phenotype, the consequences of the choice of alignment concepts are limited, as the bone cuts are comparable or similar. It is important to think about the preoperative phenotype, simulate the bone cuts of different alignment techniques and then decide which one to choose. Confusing? The discussion will go on....

Pier Indelli MD, PhD (Stanford University, USA)

Instability represents a major cause for postoperative pain and discomfort after TKA: the patient needs to leave the operating theater with a well-balanced knee. This is one of the reasons of the recent success of robotics and computer assisted surgery (including navigation) in TKA.

Reproducing equal gaps in extension as well as in flexion has been an historic recipe for success: this needs to be achieved independently from the alignment technique. On the other side, following the individual phenotype has shown to improve patient (and knee) proprioception, leading to an increased satisfaction, while implant design has shown poor relationship with return to normal knee proprioception after TKA. One of the greatest advantages of kinematic alignment is represented by the reproduction of the parallelism between the joint line and the floor, while the joint line tends to fall into valgus after a mechanically aligned knee. The reproduction of the “parallel to the floor” joint line has resulted in better proprioception but it has not shown a better kinematic in many gait studies. This is due to the fact the human knee has a “lateral-pivoting” kinematic during the initial phase of gait but a “medial pivoting” kinematic during the mid-flexion and flexion phases of the gait: only ACL and PCL sparing TKA designs may lead to this more natural kinematic.
The “East EKA Corner”

Reha Tandogan, EKA Vice Chairman gives a look through the hole

“Highlights in the Degenerative Knee Treatment, Is time for Biology? The Expanding Role of Orthobiologics in the Treatment of Knee Osteoarthritis”

Part I: Platelet Rich Plasma & Autologous Anti-Inflammatory Products

Reha Tandogan, Alan Ivkovic

1: Prof., Cankaya Orthopedics, Ankara & Dept. of Orthopedics & Traumatology, Halic University, Istanbul, Turkey.

2: Prof., Dept. of Orthopaedics and Traumatology, University Hospital Sveti Duh, Zagreb, Croatia.
The role of orthobiologics in the treatment of the degenerative knee is one of the hottest topics in orthopedics. A recent survey of The American Orthopaedic Society for Sports Medicine (AAOSM) members reported that 66% of the respondents were using at least one orthobiologic in their practice, and their use was increasing (1). This survey also reported that 24% advertised their use, and 30% cited competition with peers as a reason. Like other emerging treatment modalities, early low-quality science has been gradually replaced by an increasing number of better-quality publications; however, many unknowns and controversies remain. Marketing concerns, the pressure of patients, and a billion-dollar industry make matters worse. As clinicians keeping up with innovative treatments, we need to be aware of what is helpful and proven and what is hype and marketing.

**Platelet Rich Plasma**

Platelet Rich Plasma (PRP) injections have been used extensively to treat the symptoms of early knee osteoarthritis (OA). PRP is relatively easy to prepare, readily available, does not require regulatory approval, and is relatively cheap. The anti-inflammatory and anabolic effects of the concentrated growth factors and cytokines found in the alpha granules of platelets have been extensively studied (2). Although these growth factors have been shown to interrupt cartilage matrix degradation in animal and in vitro models suggesting a disease-modifying effect (3); this has not yet been proven in humans, and PRP injections are still considered to be a symptomatic treatment. Although many forms of PRP are used, most of the current debate centers on the presence of leukocytes in the final injectate. Leukocyte poor PRP’s (LP-PRP) are prepared using low spin speed and times and have platelet concentrations 2-3 times of baseline, contain few white cells. In contrast, leukocyte-rich PRP’s (LR-PRP) are produced using higher centrifuge speeds and durations, have 5-9 times the platelet concentration of plasma, but also have higher white cell counts. LR-PRP contains more pro-inflammatory cytokines; however, also has a higher concentration of anti-inflammatory cytokines like interleukin 1 receptor antagonist (IL1-Ra) (4). This has led to a consensus statement against the use of LR-PRP in knee OA by the French-speaking experts group (GRIP) (5). In contrast, human intra-articular injections of LR-PRP have not resulted in increased pro-inflammatory cytokines in synovial fluid or plasma (6), and no significant differences in outcomes of leukocyte poor and rich PRP have been demonstrated in a recent meta-analysis (7). The German working group position statement does not favor one over the other (8).

Another important issue to consider is the lack of standardized PRP preparations protocols (9). In the majority of clinical studies reporting of PRP, preparation protocols are highly inconsistent, and it is therefore difficult to compare treatment outcomes between these patients. In addition, currently, there is no consensus on optimal preparation protocol for different clinical indications and scenarios.

Most studies advocate the use of PRP in Kellgren-Lawrence (K-L) Grade I-II OA. An excellent meta-analysis of 34 randomized controlled trials has shown that PRP injections are superior to placebo at 12 months (but not at 6 months) for the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) scores (10). PRP also seems to be superior to hyaluronic acid (HA) injections at 6 and 12 months. However, this benefit does not reach the minimum clinically important difference for any of the outcome measures. In line with this, a meta-analysis of 21 randomized control trials (RCTs) confirmed the superiority of PRP to placebo and steroid injections (7). Another Bayesian network meta-analysis of 20 randomized trials confirmed the superiority of PRP injections over steroid and HA injections at 3, 6, and 12 months follow-up (11). Finally, a meta-analysis of 26 randomized trials confirmed the superiority of PRP injections to HA (12). However, these results are confounded by the fact that the composition, injection volume, and frequency of various PRP products are not standardized and factors such as the volume of blood harvested, use of anticoagulant, centrifugation method, the final number of platelets and leukocytes, final injection volume vary from one product to other. Multiple injections seem to be more effective than single injections, however, may increase the risk of local adverse reactions (13). Although there is a growing body of evidence in the literature suggesting that PRP injections have a role in the non-surgical treatment of knee OA and may delay the need for total knee arthroplasty (TKA) (14); not everyone agrees on the benefits of PRP. It is interesting to note that meta-analyses looking at the same literature reach exactly the opposite conclusions. A recent network meta-analysis of 43 trials covering 5554 patients concluded that injections of HA or steroids were associated with better outcomes than PRP, adipose mesenchymal stromal cells or placebo (15). In this study, overall treatment effect differences with orthobiologics were small and possibly clinically insignificant. Recent research has shown that PRP with HA injections may improve the outcome of separate injections of both (16,17). Combination of PRP with adipose tissue or bone marrow derived mesenchymal stem cell concentrates have also been studied. A recent study found the addition of PRP to stromal vascular fraction (SVF) improved the clinical outcomes in K-L grade 3-4 OA patients (18).
Allogenic PRP use has been reported in rotator cuff repairs, and there is an interest of its use in knee OA. The feasibility of allogenic PRP treatment in knee OA has been investigated in one study showing efficacy and safety of PRP derived from allogenic umbilical cord blood (19). Fewer studies have compared the clinical efficacy of PRP with other orthobiologics. Anz and co-workers found similar outcomes with PRP and bone marrow aspirate concentrate (BMAC) injections in 90 patients in a randomized trial and could not demonstrate the superiority of one treatment over the other (20). Similarly, a recent study found no difference in outcomes comparing PRP, BMAC, and SVF in 89 patients (21). The use intra-osseous use of PRP injections in OA patients with subchondral bone edema has also been reported. The additive effect of PRP on subchondral decompression still needs to be clarified. (22, 23)

**Autologous Anti-Inflammatory Products**

Autologous anti-inflammatories (AAIs) are autologous blood-derived products that aim to concentrate anti-inflammatory cytokines. The mechanism of action of AAIs are to inhibit IL-1α and TNF-B by concentrating their respective antagonists (IL-1ra, sIL-1RII, sTNF-RI, and sTNF-RII) as well as multiple other cytokines and growth factors (2). The most widely studied AAIs are autologous protein solution (APS, nSTRIDE®) and autologous conditioned serum (ACS, Orthokine®), both have a centrifugation process with specific beads. APS is a white blood concentrate in platelet poor plasma, while ACS is a cell free serum collected from incubated white blood cells. In vitro and animal experiments have shown that these products reduce cartilage degeneration, upregulate collagen and aggrecan production and have a chondroprotective effect (24, 25).

The randomized trial by Balzer has found ACS to be superior to placebo & HA in 376 osteoarthritic patients (26), while another study reported minimal improvement of the Knee Injury and Osteoarthritis Outcome Score (KOOS) and WOMAC Scores compared to placebo (27). The duration of its effect and the changes in cytokine levels after repeated injections are still unknown (28). A 7.5 year follow-up study found no superiority of ACS in delaying surgery compared to placebo (29).

A randomized controlled trial of 46 patients showed improvement patient reported outcomes at 6 and 12 months with the use of APS compared to saline (30).

A recent meta-analysis of 15 trials using ACS/APS in the treatment of OA concluded that these products may improve pain and function in knee OA, with limited morbidity (31). However, high quality clinical studies with longer follow-up were needed.

**In conclusion**, orthobiologics for the treatment of knee OA are here to stay. Therapeutic strategies need to be refined to find the best composition, preparation method and frequency of intra-articular treatments. The role of orthobiologics as a disease modifying treatment and the superiority of combined orthobiologics are yet to be demonstrated.
References


A question to 3 Board Members

“Why did you join EKA and what is you prefered field of interest in the degenerative knee treatment?”

Enrique Gomez Barrena
I could find in EKA a great team with great discussions, and it turned out to be a great eye-opener. A good plan is to involve your clinical and academic teams in this network. This is a great opportunity to benchmark your views. Specifically, we do a lot of revision knee surgery, and those discussions require very dedicated people. Why not sharing experience and elaborate on this (and other) highly specialized topic(s)? EKA offers these possibilities.

Pawel Skowronek
I joined EKA many years ago because surgery can’t be learnt only from books, to develop you need to meet other experienced surgeons. As a young doctor I dreamed of visiting surgeons in different centers around the world to learn about new techniques - an opportunity now provided by EKA. Moreover, EKA is not only about science, but also friendship and is an orthopaedic family. I am interested in joint-preservation techniques such as UKA and the influence of patient anatomy on the optimization and improvement of surgical techniques in UKA and TKA.
Octav Russu

I found in EKA a group of open-minded people, experienced knee surgeons, that I could learn a lot of things from. Exchanging opinions in all areas of common points of interest were always starting interesting discussions which finally turned into projects, meetings and so on, proving that EKA is a beautiful orthopedic community. Being an EKA fellow was a huge opportunity to expand my medical and academical network and we surely want to offer, as future hosts, same great experiences. I am interested in total and partial knee replacement: improving surgical techniques and better ways for patients’ education.
EKA Board 2020-2022

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Joke... but to be serious... a big question!!

Interview with:

Roland Becker
Antonia Chen
Nanne Kort
Michael Liebensteiner
Reha Tandogan
Bruno Violante

Which is your approach to the knee arthroplasty? (Uni, Total and Revision)

X: I am a Human
X: I am a Robot
X: I am a Human with the Robot in the pocket
**Roland Becker**

The success of knee reconstructive surgery depends entirely from the surgeon. He is the one who decides about the surgery, which depends from numerous aspects, such as patients complains and expectations, degree of knee osteoarthritis, deformity and severity of comorbidities. Because of the complexity of achieving successful knee reconstructive surgery it is impossible to identify a single criterium for success. Instrumentation during surgery can be improved, philosophies may change, but does not automatically mean better outcome. In conclusion, surgeon should modify their standard surgery only, when convinced about the benefit for their patients, and even better, when the feeling can be underlined with evidence form the literature.

**Antonia Chen**

I am a human with a robot in the pocket. It is imperative that when we are training, we do total, uni and revision total knee replacements manually so that we understand the basic and fundamental concepts on how to perform all of these procedures. As we advance, it becomes advantageous to utilize robotics, especially for complex cases, which can help with balancing to provide potentially beneficial outcomes for our patients. Thus, being human comes first, but having a robot in your pocket is useful when performing total, uni and revision total knee replacements as it serves as a tool to fine tune how we perform these surgical procedures.

**Nanne Kort**

I am a human with the Robot in the pocket. It gives me human-centric care with robotic precision. My surgeries finally become transparent and future proof. I owe that to my patients and society.
**Reha Tandogan**

Digital aids will be an important part of our practice in the near future and I believe robotic surgery will be an integral part of this. No one disputes the fact that robotic surgery is more accurate than manual surgery for bone cuts. The surgeon can accurately perform the intended alignment precisely, and this can be any alignment philosophy the surgeon prefers, mechanical, anatomical/functional or the varieties of kinematic alignment. The opponents of robotics point out that this accuracy has not led to improved outcomes at mid-term follow-up and robotics is an expensive toy with a marketing potential. However, robotics has another huge advantage: perfect soft tissue balance. It is amazing to see how a few degrees of adjustment of component placement and rotation leads to a perfect soft tissue balance in the knee without any soft tissue releases. The same goes for the hip, I was surprised to see hugely retroverted femurs in seemingly “easy” primary hips with osteoarthritis and the ability to safely play with combined anteversion and leg length to achieve a perfect alignment. The addition of spinal parameters in newer versions of robotic software will no doubt decrease our dislocation rates even further.

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**Michael Liebensteiner**

I am a human with the robot in the pocket.

I am very happy to have a robotic-arm assistance OR-ready all the time. I enjoy using it for total knee arthroplasty, unicompartmental knee arthroplasty and also patellofemoral arthroplasty. Robotic-arm assisted knee arthroplasty accounts for approximately 30% of all my knee arthroplasty procedures at the moment. As a human I have full control of all surgical planning and executing of surgical steps. The robot arm just helps me to ensure maximum accuracy and precision.
Robotics is also a very elegant teaching tool, and the data provided by the robot during planning and surgery has led to important changes in the way we perform and evaluate our surgery. Although a psychological effect is certainly possible, I also observe an easier early postoperative period and higher rates of forgotten joints in my patients with robotics. Robotics account for 15-20% of my arthroplasty practice due to reimbursement issues, however I believe that this will increase as healthcare providers and patients become aware of the benefits of robotics and the technology will become cheaper with widespread use. We should keep in mind that robotics is an evolving technology, and I firmly believe that the increased accuracy and soft tissue balance provided with current robotic systems will translate into better clinical outcomes and survivorship at long term follow-up.

Bruno Violante

I am a human with the robot in the pocket.
I encourage all those who begin knee prosthetic surgery to increase their experience and manual skills using standard instruments.

Knee alignment, correct ligament balancing, and correct tridimensional knee prosthesis positions represent the necessary basis for acquiring the next step of the surgical implementation using the robot. The robot increases the overall level of surgical accuracy with more precise bone cuts and “fine-tuning” of the components positioning.

The assisted robot surgery, in my own opinion, represents an added value in the treatment of complex cases, extra-articular deformities, and in the use of porous implants.

First, the Surgeon always has to be connected to his human computer, the brain, which dominates the robot, remembering that in case of any complication such as fracture, ligament damage .. please switch it off and finish your surgery safely.
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Join us. Join ESSKA