August 2025

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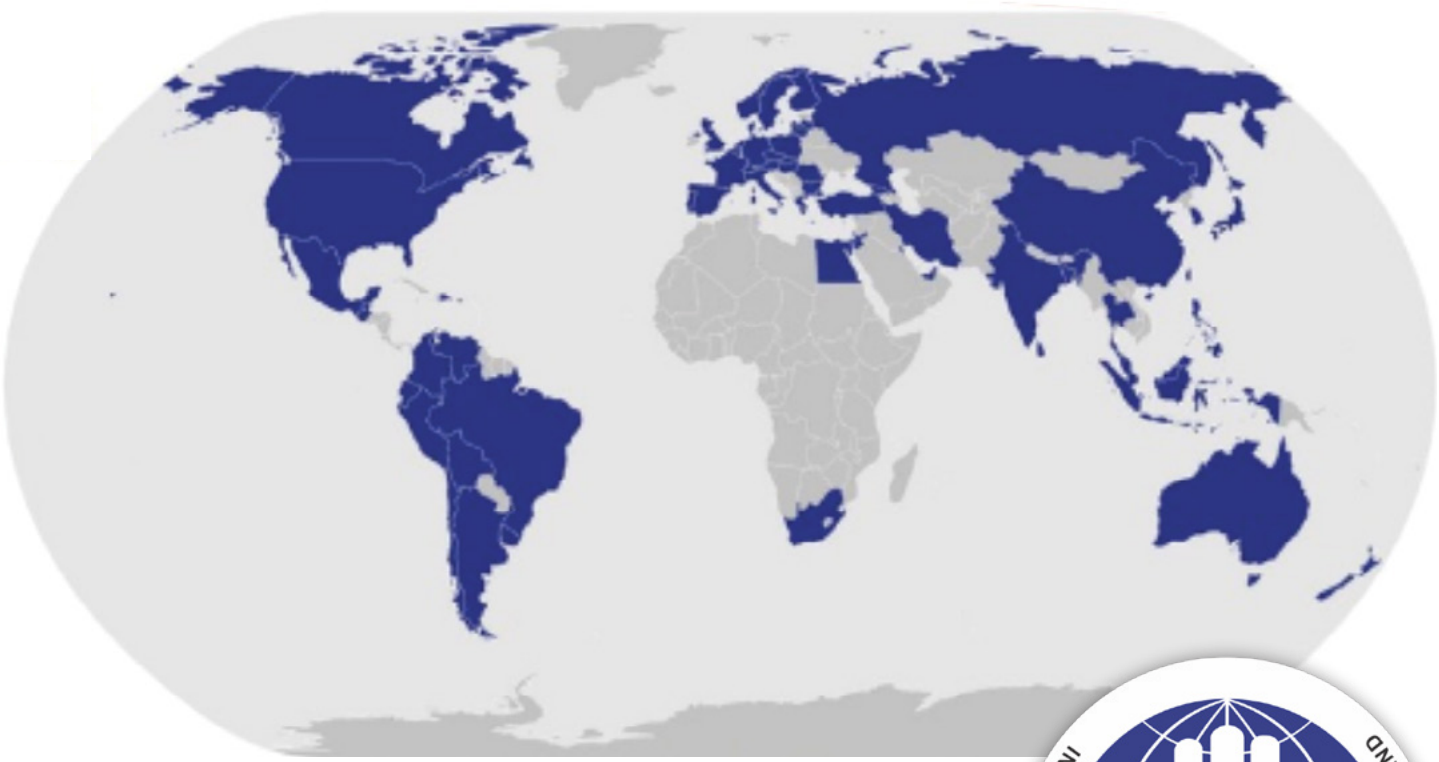
ezine ifssh

CONNECTING OUR GLOBAL HAND SURGERY FAMILY

MEMBERS-AT-LARGE REPORT

IFSSH FINANCIAL SPONSORSHIPS

65 Member Societies from 63 Countries



"BLACK-HOLES IN ANATOMY" | IFSSH MID-TERM COURSE

FREE JHS (E) OFFER | IFSSH PATRONS OF HAND SURGERY

IFSSH "Patron of Hand Surgery" Program

Your donation will:

- Provide a life changing inspirational experience, especially to a young surgeon or those from low-medium income countries.
- Develop skills, networking and leadership.
- Encourage motivation, collegiality, and loyalty: recipients want to give back.

https://ifssh.info/hand_surgery_donation_program.php

We acknowledge the generous donations to date and thank the donors for their commitment to furthering the work of the IFSSH:

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contents

Pain—Do We Truly Appreciate Its Impact?

Pain is the most common symptom that drives patients to seek medical attention.

Pain is subjective, yet undeniably real. It cannot be measured objectively, but its presence is genuine. How does one articulate such a deeply personal sensation of discomfort? It is profoundly individual, inherently emotional, and affects a person's entire being—particularly when it becomes chronic. When pain persists relentlessly, it transforms into the individual's "new normal," bringing with it an entirely new set of emotional and physical manifestations.

Pain is debilitating. It influences our emotions, judgment, decision-making, attitude, concentration, motivation, goodwill, and even our short-term personality. Sometimes, its intensity is so overwhelming that it consumes the mind, clouding thoughts, and perception. It can limit mobility, reduce energy, and disrupt sleep. Referred pain can further complicate and confuse the experience, as its origin may be misunderstood, leading to misdiagnosis or ineffective treatment.

I speak from experience.

Do we, as healthcare professionals, truly account for these emotional dimensions when assessing patients? Do we take the time to discuss pain in detail with those who seek our help?

We must recognise that simply explaining the cause and origin of pain can alleviate much of a patient's uncertainty, irritability, anxiety, and depression—almost as if the brain undergoes a recalibration or a reset. A little patience, understanding the interconnection between body and mind, and compassion can often be more beneficial to our patient, than an excessive reliance on medication.

In my own case, the doctor's primary concern was locating the pain to justify ordering an investigative test. There was no discussion regarding the character, type, or intensity of the pain.

Over many years of attending medical conferences, I cannot recall a seminar or roundtable discussion specifically dedicated to the topic of pain in hand surgery.

As healthcare professionals, do we possess the necessary insight and willingness to truly understand and empathise with our patients? Should we not integrate the study and understanding of pain as a fundamental component of hand surgery education?

Your thoughts?

ULRICH MENNEN
Editor

Letters to the Editor

FREE JOURNAL OF HAND SURGERY (E) OFFER

Like last year the Editor and Publisher of the Journal of Hand Surgery (European volume) in collaboration with FESSH are making the **entire issue of June 2025 free to access and download for one year from June 2025 to June 2026.**

This FESSH/JHSE Issue features the theme of our annual Congress which was held in Helsinki which was '**Technology and Innovations**'.
We invited several authors from all over the world to contribute articles, ranging from 3D printing, to AI, virtual reality, cervical cord stimulations, orthobiologics and advances in outcome measures.

There is a very interesting article on 'Black Holes in Anatomy' written by Gus McGrouther which may be considered for re-publication. The link for anyone to download is: https://europe.nxtbook.com/nxteu/sageuk/jhs_2025_june/index.php

Kind regards,
WEE LEON LAM
Editor: JHS (European)
lamweeleon@googlemail.com

(Editor's comment: 'Black Holes in Anatomy' written by Gus McGrouther is re-published at the end of this IFSSH Ezine)

AMERICAN SOCIETY FOR SURGERY OF THE HAND

APPLY FOR A DEPUTY EDITOR POSITION AT JHS
The Journal of Hand Surgery (JHS (American volume)) is seeking to fill seven (7) Deputy Editors positions, a brand-new opportunity under incoming Editor-in-Chief Gregory A. Merrell, MD, **open to candidates worldwide**.

These positions are paid ($15,000 USD yearly salary), with a term of three (3) years. JHS(A) is excited to implement a new editorial structure under Dr. Merrell that incorporates the input and contributions of hand and upper extremity experts from around the world.

Applications are open now through 14 August 2025.

President's Message

In the few months since the Washington DC Triennial IFSSH Congress, the members of the Executive Committee (ExCo) and our administrative staff have been extremely busy charting the course of our Federation. Most of this effort is being directed towards Hand Surgery Education. That is a welcome sign because it fits into the theme for the triennium which I envisioned at the time of taking over the presidency: 'Providing quality hand surgical care to the millions who are less privileged'.

We have made good plans, and these are backed up by enthusiasm and commitment. This is reflected in the piece written for this Ezine issue by I. Degreef and J. Hobby, the Members-at-Large representing Europe and Africa - it will be an interesting read for everyone. Our mission is to strengthen the Federation's core values: fostering connections between Societies, knowledge exchange, and creating opportunities for research and education in hand surgery (p34-39).

We are particularly committed to addressing socio-economic disparities, enhancing accessibility and encouraging interdisciplinary cooperation - so that hand patients around the world can benefit from the best possible care. Ilse and Jonathan have proposed a road map for the IFSSH to spread its wings in the underrepresented African continent.

The IFSSH has the valuable 'Hand Surgery Resource' educational suite, which is freely available to all through our website (p68-69).

Stevan Moran, our ExCo Member-at-Large representing North and Central America, has also been kind enough to facilitate free access to the ASSH 'Handthology', for all the members of the IFSSH (p45-46).

These platforms curated by renowned hand surgeons provide the knowledge that is essential to practise good hand surgery. I think we have successfully crossed the bridge to cover the 'access gap'.

To bridge the 'execution gap', the IFSSH plans to conduct regional courses and institute programs that will help to mentor the future leaders and changemakers. This requires funding. Last year we established the IFSSH Patron of Hand Surgery program: a philanthropic project to raise a corpus to help us fund US $150,000 every year towards educational activities. It is a target not impossible if all of us put our thoughts and mind to it. I request all to help in every way possible.

Dr Sarvepalli Radhakrishnan was the second President of India (1962 – 67). He was an eminent philosopher, scholar, and one of India's most distinguished twentieth-century thinkers. He believed that through education the country could solve all its problems, saying 'Books and Education are the means by which we build bridges between cultures. A life of joy and happiness is possible if based on knowledge and science'. These words still hold true more than half a century later.

The IFSSH will build bridges across nations and cultures in helping to deliver quality hand surgery care globally. I request each one of you to support this mission in all the ways you can.

S. RAJA SABAPATHY
President: IFSSH

Message from the Secretary-General

Dear Colleagues,

A central task and mission of IFSSH is education. After the Congress in Washington, DC. USA. at the end of March 2025, the ExCo members were asked to develop ideas to better serve our colleagues around the world in their professional development, to further their skills and knowledge of hand surgery. The ideas will be discussed at the ExCo meeting at the end of July. I am looking forward to new ideas of furthering the goals of IFSSH in the coming three years.

In this issue of the Ezine, a series of reports of our recent educational efforts are highlighted. You will see IFSSH Sponsorship reports including the 2025 Travelling Fellows in conjunction with ASSH and the 2025 Congress, co-sponsorship with the IFSHT grant, and educational activities of member Societies.

I am very pleased to see the excellent organisation and progress for the 2nd Mid-term Course by our Italian colleagues. The highlights and formats of this Course are already outlined on its website. The Course date will be 4–8 April 2027 in Venice. The date was carefully chosen to be just before the high tourist season to this city, so the hotel prices will be reasonably low. This is the second most important event of the IFSSH. I encourage you to plan a trip with your family to enjoy both the Course and days of relaxation. The mid-spring in Venice is beautiful, and the temperature will be just right for many activities.

The online educational videos from the 2022 London IFSSH Congress from selected sessions, are now available to watch and learn from. For those who did not attend the Congress, this is a chance to "attend" some of the important sessions. For those who attended, you may find something new by watching the sessions you have missed. (videos from London Congress).

We are collecting and producing a similar set of videos from the 2025 IFSSH Congress in Washington DC.

IFSSH Educational Sponsorship

The IFSSH Committee for Educational Sponsorship (CES) calls for applications requiring financial support.

If your Society has an upcoming project or event that could benefit from CES financial support, please review the guidelines and application requirements on the website. Questions and submissions can be forwarded to the secretariat (administration@ifssh.info).

Be inspired by the recipient reports of the IFSSH Educational Sponsored projects. These demonstrate the enthusiasm of the organisers, teachers and mentors, and the gratitude of those learning across many different programs.

The IFSSH thanks all who spend their time and experience to teach others, in both their own Societies and around the globe.

Educational Resources

The IFSSH is committed to expanding the online resources to support hand surgeons from all regions of the world. The IFSSH website - www.ifssh.info - is a treasure trove of hand surgery resources. This education is available all day, every day, free of charge, to every interested person with internet access. Some resources have been created specifically by the IFSSH, and others prepared by renowned external groups and offered as access to hand surgeons worldwide through the IFSSH portal.

Read IFSSH Scientific Committee reports from experts in their field, discover the history and education of our member societies in the IFSSH "Hand Surgery Worldwide" book, check translations of hand terminology in five languages in "IFSSH Terminology for Hand Surgery".

Utilise the Hand Surgery Resource to learn hand surgery knowledge, dive into sub-speciality information through Wrist Basecamp and the OMT Classification app and tutorial video, and review the latest systematic reviews and evidence-based guidelines through Evidence Based Hand Surgery.

Subscribe to receive the quarterly IFSSH Ezine to hear the latest news and events from the hand surgery community.

Wherever you are, and whenever you choose, log on to www.ifssh.info and update your education and passion for hand surgery.

IFSSH Patron of Hand Surgery program

The IFSSH is a not-for-profit organization. Your support is invaluable to our mission of advancing hand surgery worldwide and improving patient care.

Donations directly impact our ability to:

- fund a broad range of educational initiatives for hand surgeons and our hand therapy colleagues.
- organise international and regional conferences, courses, and workshops for knowledge exchange.
- enable access to collaborative and sub-specialty meetings worldwide.
- support travelling fellowship programs for young surgeons; and
- provide resources for ongoing professional development, such as the Hand Surgery Resource.

Please consider donating through the IFSSH Patron of Hand Surgery program to support global hand surgery education.

Future Meetings

A detailed list of national and regional hand surgery meetings is available on the IFSSH website. The IFSSH Courses and Congresses are as follows:

2nd IFSSH Mid-Term Course in Hand Surgery
4th-8th April 2027
Venice, Italy

17th IFSSH – 14th IFSHT Congress
23rd – 27th October 2028
Singapore

18th IFSSH – 15th IFSHT Congress
2031 (dates TBC) Rio de Janeiro, Brazil

JIN BO TANG
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CONNECTING OUR GLOBAL HAND SURGERY FAMILY

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Upcoming IFSSH/ IFSHT Congress: Singapore 2028

Join Us for the IFSSH Congress 2028 in Singapore!
An Unmissable Event for the Global Hand Surgery Community

We are pleased to invite you to the **17th IFSSH Congress**, taking place in **Singapore in 2028**. Hosted in one of the world's most dynamic and innovative cities, the Congress promises to be a landmark event in the field of hand surgery, bringing together leading experts, emerging voices, and enthusiastic practitioners from all continents.

A Future-Focused Scientific Program

The IFSSH 2028 Scientific Committee is preparing a rich and diverse program that reflects the evolving landscape of hand and upper limb surgery. The sessions will go beyond traditional lecture formats, with an emphasis on **interactive panel discussions, case-based learning, and real-time audience engagement**. Delegates will be encouraged to challenge ideas, share experiences, and contribute actively to debates on complex and controversial topics. With keynote speakers from all major regions of the world, hands-on workshops, live surgical demonstrations, and cross-disciplinary collaborations, the Congress will offer a platform for education, inspiration, and meaningful dialogue.

Why Singapore?

Singapore is more than just a conference destination—it is a **global hub of innovation, safety, and cultural diversity**. With world-class infrastructure, seamless connectivity, and a welcoming, multilingual population, Singapore offers an ideal setting for international gatherings. The Congress will be held at a state-of-the-art venue in the heart of the city, easily accessible by public transport and surrounded by vibrant neighborhoods, gardens, museums, and culinary delights.

From futuristic architecture to ancient temples, and from hawker centers to Michelin-starred restaurants, Singapore is a place where tradition meets progress in the most spectacular ways. Explore iconic attractions like **Marina Bay Sands, Gardens by the Bay, Sentosa Island**, and the **Singapore Zoo**, or simply stroll through the colorful enclaves of Chinatown, Little India, and Kampong Glam.

A Family-Friendly Destination

Bring your family and turn your Congress experience into a memorable holiday! Singapore is renowned for its safety, cleanliness, and wide range of family-oriented attractions. With theme parks, interactive museums, water parks, nature reserves, and some of Asia's best shopping and dining experiences, there is truly something for everyone—regardless of age.

Whether you're coming to deepen your professional knowledge, connect with peers, or enjoy an unforgettable cultural experience, the IFSSH Congress 2028 in Singapore is the place to be.

We look forward to welcoming you in Singapore in 2028!

Stay tuned for updates at ifssh-ifsht2028.

2nd IFSSH Mid-Term Course in Hand Surgery

Advancing Excellence in Hand Surgery: Venice, 4-8 April 2027

The Italian Society for Surgery of the Hand (SICM) is proud to host the 2nd IFSSH Mid-Term Course in Hand Surgery in Venice—a city that has, for centuries, stood at the crossroads of ideas, art, and commerce.
From 4-8 April 2027, hand surgeons from around the world will gather in this iconic lagoon city for a landmark scientific event dedicated to advancing clinical excellence in hand surgery.

Cutting-Edge Education
Structured around practical, clinical realities, the course focuses on advanced, practice-oriented training:

- **Morning Plenaries:** Comprehensive coverage of key topics such as trauma, soft tissue coverage, nerve injuries, congenital disorders, degenerative conditions, tumours, and Dupuytren's disease.

The (Palazzo Ducale) Doge's Palace and the Lion of Saint Mark overlooking the Venetian Lagoon.

- **Afternoon Workshops:** Intensive, hands-on training in fixation techniques, microsurgery, robotic-assisted procedures, ultrasound.
- **Focus Sessions** on infections, AI, and wrist arthroscopy across skill levels.
- **Interactive Learning:** Expert-led sessions and real-world case discussions to enhance surgical judgment and problem-solving skills.

Customization and Flexibility
Participants can tailor their experience by selecting from over 20 concurrent modules. Whether your interest lies in microsurgical nerve repair or arthroscopic repairs, you'll gain practical skills ready for immediate clinical application.

Global Faculty and Mentorship
Internationally acclaimed experts will share insights, techniques, and innovations, supported by the IFSSH's substantial educational grant, ensuring world-class instruction.

Inclusive Participation
Reduced registration fees and special accommodation rates are available to ensure broad participation from surgeons across all regions and economic contexts.

Join us in Venice for an unforgettable mix of world-class surgical education and cultural enrichment.

Hands that build bridges: the stunning installation by Lorenzo Quinn at the Arsenale in Venice.

Stunning aerial view of Venice and Mark's square overlooking the Lagoon.

IFSHT Evelyn Mackin Congress Grant and IFSHT-IFSSH Triennial Congress Grant

The International Federation of Societies for Hand Therapy (IFSHT) joined the International Federation of Societies for Hand Surgery (IFSSH) for the combined triennial congress in Washington, DC, USA. March 2025. The program featured 3½ days of educational sessions, including instructional courses, scientific paper presentations, symposia, combined sessions (therapists and surgeons), keynote speakers, and e-posters. This event provided grant recipients with advanced knowledge, global networking opportunities, and inspiration to enhance hand therapy education in their countries.

IFSHT supports therapists' attendance through two grants: The Evelyn Mackin Congress Grant and The IFSHT-IFSSH Triennial Congress Grant.

Evelyn Mackin Grant

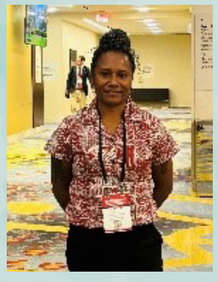
(established in 2010 in honour of our 1st IFSHT president)

This grant supports therapists from around the globe and is available to therapists without a formal hand therapy society and not a full member of IFSHT. They are potential leaders in their country and may not otherwise have the resources to attend a congress. It is a fully funded grant to attend the Congress.

With the generous donations of IFSSH (US$10,000), society donations and other private donors we were able to award six therapists with this fully funded grant. They were from Bangladesh, Bhutan, Ethiopia, Ghana, Papua New Guinea, and Vietnam.

Left to right: Peggy Boineau (IFSHT President), Robert Sowa (Ghana), Nipur Bintel Lili (Bangledesh), Kinley Tshering (Bhutan), Quyen Pham (Vietnam), Hailu S. Tsegaye (Ethiopia), Cathy Pius (Papua New Guinea).

Evelyn Mackin Grant Recipient Testimonials



"This event provided an opportunity to engage with experts, explore the different techniques in hand therapy, and exchange knowledge and experience with peers. The sessions were refreshing, enlightening, and inspiring. I was exposed to new splinting and rehabilitation strategies. Coming from country that does not have hand therapists and with many challenges, Judy Colditz's lecture was inspirational and motivating not to give up, but to embrace my creative potential and to continue learning and practising. I have added skill and knowledge to treatment protocols to improve patient outcomes. This experience has inspired me to further explore emerging trends in hand therapy, to engage in professional development, and to engage in further training and future symposiums. To conclude, I want to acknowledge the sponsors and committee for the chance of a lifetime given to visit Washington D.C and to attend the Congress.
Thank you one and all!"
Cathy Pius, Papua New Guinea

Cathy Pius educating therapists in Papua New Guinea.

"Attending the IFSSH/IFSHT 2025 Triennial Congress helped me to catch-up with the current advancement of hand rehabilitation. It gave me a broader insight into holistic hand rehabilitation, rather than looking at the hand only. I have learned that the patient-therapist relationship, the patient satisfaction and setting outcome goals are important aspects in service delivery.

I also got a chance to meet colleagues and to do networking during the conference. To sum up, if it were not for the generosity of this grant, it would not have been possible for me to experience this amazing Congress, which will change my way of treating patients dramatically".

Hailu Seifu Tsegaye, Ethiopia

Left to Right: Nupur Binte (Bangladesh), Stacey Doyon (USA), Martin Walsh (USA), Hailu Seifu Tsegaye (Ethiopia).

"Attending the IFSSH/IFSSH 2025 Triennial Congress gave me some tips, tricks, and innovations when it comes to fabrication of orthotics "

Robert Sowa, Ghana

"For me, the Congress inspired new research directions to explore unanswered questions in hand therapy. I gained practical tools such as CMMS casting motion to mobilize stiffness, which I have already begun to apply to enhance patient recovery. The experience reinspired my commitment to lifelong learning and interdisciplinary collaboration to address complex hand rehabilitation challenges".

Kinely Tshering, Bhutan

IFSHT - IFSSH Triennial Congress Grant

This grant is available to therapists with priority given to those with limited resources and those that are presenting at the congress. This grant is for partial funding only. This grant was funded from the silent auction that is held at the prior Congress and the generous donations of IFSSH (US$5,000), member societies and private donors. With these generous donations we were able to fund a total of 15 recipients from the following countries: Australia, Argentina, China, Columbia, India, Kenya, Singapore, Turkey, Uruguay, and United Kingdom.

IFSHT-IFSSH Triennial Congress Grant Testimonials

"I had the opportunity to connect, build relationships, and strengthen bonds with colleagues from Latin America, Spain, ASHT´s members and share with many people around the world. Another highlight was the keynote lecture by Judy Colditz, whose words were powerful and deeply inspiring for all of us. I loved the sessions about flexor tendon rehabilitation, wrist proprioception and carpal instabilities, scapholunate injuries and 'The Wide World of Sports Upper Extremity Rehabilitation'. There were so many topics, conferences, and research presentations one could choose from, that the problem was not being able to attend all of them!. I firmly believe that sharing what we learn multiplies its impact. That is why I am committed to encouraging more people to take part in international events like this, where working together, learning from each other and a sharing our passion for hand therapy helps us grow as professionals and provide better service in our practices which ultimately would benefit our patients. Thank you to the IFSHT/IFSSH for making this experience possible and for supporting more therapists worldwide through opportunities like this".

Carolina Molano, Columbia

Carolina Molano and Friends, Columbia.

"Attending the IFSSH/IFSHT 2025 Congress was extremely important, as it allowed me to exchange ideas with colleagues from other parts of the world and to share the work I am doing in Uruguay, particularly regarding the use of virtual reality resources applied to hand and upper limb rehabilitation. I was able to see how and which tools others are using, which served as a reference and helped me realize that I'm on the right track! I also had the opportunity to learn about the latest updates in conventional hand rehabilitation techniques and protocols, which I now apply in my clinical practice and share with colleagues at my workplaces".

Eduardo Levaggi, Uruguay

"The Congress provided an invaluable platform to engage with leading experts and specialists from around the world. The exposure to the latest advancements in hand therapy and surgery, including innovative techniques and new technologies, has deepened my clinical knowledge and broadened my perspective on evidence-based practice. The diverse symposia, instructional courses, and paper sessions allowed me to learn directly from international leaders, which has inspired me to integrate updated protocols and novel approaches into my daily practice at Prince of Wales Hospital. Moreover, the opportunity to network and discuss clinical challenges with peers and mentors from different countries has enriched my research outlook. I am now more motivated to pursue collaborative research projects and to share insights gained at the Congress with my colleagues in Hong Kong, thereby contributing to the advancement of hand rehabilitation locally and regionally. Overall, attending the Congress has reinforced my commitment to continuous professional development and has equipped me with new tools and ideas to enhance patient outcomes in hand therapy".

Fung Ho Wing Kelvin, China

"Attending the IFSSH/IFSHT 2025 Triennial Congress in Washington, USA, had a significant positive impact on my clinical practice and research in hand rehabilitation. The Congress provided valuable insights into emerging treatment approaches and the increasing use of technology, such as virtual reality-based interventions and sensor-based assessments. These advancements have enhanced my clinical practice, enriched my ongoing research projects, and strengthened the educational content I deliver to students. Moreover, connecting with international experts has inspired new research collaborations and has enabled me to better integrate the latest innovations into both patient care and academic teaching".

Ilkem Ceren Sigirtmac, Turkey

"I was invited to organise a symposium that focused on 'return to work'. I gathered experts in this area to share their insights and research findings. The content from the session has been helpful for my research and clinical practice, particularly the use of work-relevant outcome measures.
I was also invited to chair several sessions, which expanded my network of research-active hand therapists and provided up-to-date research summaries for example, tendon and nerve rehabilitation and outcome assessment. Across my research team, we had three abstracts accepted for oral presentations. This gave us the chance to share our research findings and discuss future research ideas and potential international collaborations. I also met in person colleagues from the EFSHT scientific committee for a planning meeting and visited the Curtis Hand Centre in Baltimore to find out more about the international hand surgery / hand therapy OHDSI network. For me, the Congress was a great opportunity to hear about the latest hand therapy research, and to continue to support the profession to move towards evidence-informed practice".

Lisa Newington, United Kingdom

"Attending the IFSSH/IFSHT 2025 Triennial Congress in person was one of the most impactful experiences in my academic and professional journey so far. Being in the same environment with distinguished academics, clinicians, and researchers from around the world in the fields of hand surgery and hand therapy was truly a privilege. Throughout the Congress, I had the opportunity to attend numerous scientific sessions, keynote speakers and panels, which allowed me to update both my theoretical knowledge and practical insights. Beyond gaining knowledge, I had the chance to meet and network with many respected professionals in the field. Establishing these connections and laying the groundwork for future collaborations was an invaluable part of the experience. I believe that these international ties will have a lasting positive impact on my career development. It was my first time participating in such a large-scale, dynamic, and highly interactive congress. The experience not only enriched my academic understanding but also boosted my confidence and helped me clarify my professional goals. Without this scholarship support, it would have been financially challenging for me to travel from Turkey to the United States to attend such a significant event. Your support was more than just financial assistance; it was an investment in my future. I sincerely thank you for this opportunity and would like to emphasize once again how crucial such support is for hand therapists".

Hande Usta Ozdemir, Turkey

"Arriving back home after a congress of this scale is a boost of energy to keep improving as a professional, both in clinical practice and in the field of research. I've met top-level therapists from all over the world, attended very interesting talks, learned a lot, and thoroughly enjoyed a great atmosphere".
Nuria Carnicero, Spain


Nuria Carnicero with Friends.

"The opportunity to attend this Congress was invaluable and significantly contributed to my professional growth as an occupational therapist specialising in upper limb rehabilitation. One of the most rewarding aspects of the Congress was connecting and exchanging knowledge with colleagues from around the world. Engaging in discussions with professionals from diverse backgrounds provided me with fresh perspectives and innovative approaches. Attending the various talks was another rewarding experience. Each session offered valuable insights into the latest advancements and strategies in practice. Additionally, I had the privilege of attending the surgeon presentations, which broadened my understanding of the interdisciplinary aspects of patient care. I found the keynote presentations by renowned professionals, such as Judy Colditz, particularly inspiring. They emphasized the importance of continuous professional growth and highlighted the impact we can have in our field. These sessions further motivated me to pursue excellence and to continue investing in my education and expertise. This Congress has truly been an enriching experience, leaving me with renewed enthusiasm for my professional development. I eagerly look forward to participating in the next edition and aspire to present a paper based on a related and relevant topic that can contribute actively to the exchange of knowledge within our community. Once again, I sincerely appreciate this opportunity and your generous support".
Pilar Alfonsin, Argentina

"Attending the IFSSH/IFSHT Triennial Congress had a significant impact on my research in hand therapy. I presented a scoping review on hand therapy practice and competencies, which generated valuable feedback. This experience helped to validate the relevance and importance of my research topic within the international community. Engaging with researchers and clinicians from around the world broadened my understanding of global practice standards and may provide opportunities for future collaborative research. Meeting representatives from HTCC provided perspective on the credentialing process in the USA. The opportunity to attend a session by editors of Journal of Hand Therapy and Hand Therapy offered valuable insight into the publication process and editorial expectations. Overall, the experience enriched my research through connection, collaboration, and new perspectives".
Tracey Clark, Australia

"I am truly humbled and deeply grateful for the generous IFSHT 2025 Travel Grant awarded to me. This support has gone beyond easing financial constraints; it has ignited a renewed passion within me to advance the field of hand therapy. Your recognition affirms my dedication to improving patient care and fostering meaningful global collaborations, and for that, I am immensely thankful. Attending the IFSHT Congress in Washington DC from 24 to 28 March 2025 at the Marriott Marquis was an experience of a lifetime. It provided a unique platform to connect, learn, and share with like-minded professionals from around the world. The opportunity to engage in meaningful conversations, exchange ideas, and build networks has profoundly enriched my perspective and aspirations. I must express that this enriching journey was made even more special by the financial support from IFSHT, which eased my journey and allowed me to fully immerse myself in this invaluable experience. The knowledge gained, the connections made, and the inspiration drawn from this Congress will undoubtedly fuel my efforts to inspire the next generation of hand therapists in India. I am committed to leveraging these networks to foster collaborations, undertake academic research, develop guidelines, and promote the growth of hand therapy both within India and globally. This opportunity has reinforced my belief in the power of community, learning, and shared passion. I am motivated more than ever to contribute meaningfully to our field, and I am grateful for your trust and investment in my journey. Thank you once again for your kindness, faith, and support. I am honoured to be part of the IFSHT family, and I look forward to giving back to our community with dedication and gratitude".
Eduardo Levaggi, Uruguay

"Attending the IFSSH/IFSHT 2025 Triennial Congress was an enriching and inspiring experience. I had the privilege of presenting my TFCC wrist sensorimotor rehabilitation program and engaging in meaningful discussions with international therapists about the management of ulnar-sided wrist pain. These conversations offered diverse perspectives on conservative treatment approaches and broadened my understanding of non-surgical options for TFCC rehabilitation. I also gained valuable insights into casting motion to mobilise stiffness (CMMS) as a technique for managing hand stiffness. The promising outcomes presented have motivated me to explore CMMS in my clinical practice. Another highlight was the exploration of virtual reality in hand therapy. The use of realistic, task-based VR scenarios appears to be a promising adjunct to traditional rehabilitation methods, offering exciting new possibilities for patient engagement and outcomes.
Zhiging Chen, Singapore

IFSSH SPONSORSHIPS

The 2025 IFSSH-AAHS/ASSH Travelling Fellowship Program

The American Association for Hand Surgery (AAHS) was thrilled to serve as a co-host of the IFSSH/IFSHT Triennial Congress held in Washington, DC, USA in March 2025. The Hand Association's most significant contribution to the conference was its facilitation of the IFSSH-AAHS/ASSH Travelling Fellowship program. Through generous funding from the AAHS, ASSH and IFSSH, 24 Travelling Fellowship opportunities were created. Each Fellowship paired an international Fellow with a host centre on the east coast of the United States for a multi-day observership. The Fellows were funded for their travel to the centre and to attend the IFSSH Congress.

The AAHS received 300 applications from across the globe for the Travelling Fellows program! This was an outstanding response and underscores the need for this education and to the interest in hand surgery around the world.

A selection team of 25 AAHS and ASSH members was appointed to review all 300 applications in systematic order evaluating qualifications, clinical, academic, teaching, management and leadership experience, the impact of the Fellowship on the applicant's home country, and the importance of the Fellowship to the applicant's career. Over several weeks the selection team narrowed the list of finalist candidates to 50 and then ultimately to the 24 Travelling Fellows selected for the program.

The following countries were represented within the 2025 class of IFSSH-AAHS/ASSH Travelling Fellows:

- Argentina
- Australia
- Bangladesh
- Brazil
- Colombia
- Egypt
- England (UK)
- Ethiopia
- India
- Indonesia
- Italy
- Japan
- Kenya
- Malaysia
- Nigeria
- Philippines
- Poland
- Singapore
- Sri Lanka
- Taiwan
- Thailand
- Türkiye
- Uruguay
- Vietnam

Of the 24 Travelling Fellows: 50% were men, 46% were women, and 4% preferred to not provide their gender; 71% were orthopedic surgeons and 29% were plastic surgeons; 79% were from developing countries and 21% were from developed countries.[1]

Fellows were paired with the following AAHS and ASSH members who arranged for high impact observerships and learning opportunities. Thank you to these outstanding members and their administrative support teams who worked with the Travelling Fellows to ensure logistics for their visits.

- Jim Higgins at Curtis National Hand Center in Baltimore, Maryland, USA
- Dave Ruch at Duke University in Durham, North Carolina, USA
- Daniel Osei at Hospital for Specialty Surgery in New York, New York, USA
- Kyle Eberlin at Massachusetts General Hospital/ Harvard Medical Center in Boston, Massachusetts, USA
- Mark Rekant at Philadelphia Hand to Shoulder Center in Philadelphia, Pennsylvania, USA

There were 3 Travelling Fellows who were unfortunately unable to travel (there was not sufficient time to identify replacements). All 24 Fellows selected have received a year of free AAHS membership to continue building connection within the hand surgery community and access educational resources.

The Travelling Fellows program provides high impact education, educational exchange, network building, and development of friendship and community, and we thank the IFSSH for allowing AAHS and ASSH to be a part of it this year. Positive feedback was received from the Travelling Fellows and host members alike.

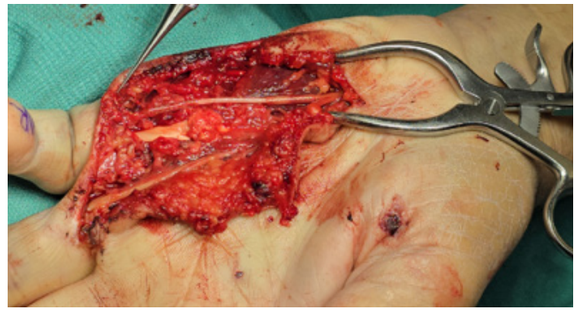
Please enjoy the following select reports from the Travelling Fellows themselves. The full reports from all Fellows can be viewed on the IFSSH website.

Dr Krishna Priya Das - Bangladesh

Host Center: Duke University, Durham, North Carolina, USA

IFSSH fellowship is a prestigious acknowledgement for every young hand surgeon. It is the opportunity to learn by planned educational activities and exchange view with colleagues in the field of hand surgery world-wide.

It was a great pleasure for me, being selected as a 2025 IFSSH-AAHS/ASSH Travelling Fellow. I got a warm reception from the Hand Surgery Division of Duke University. The Out-patient department was well organised and the doctor patient relationship was excellent. I have seen different types of operation related to hand and upper extremities, including fracture, nerve and tendon injury cases, degenerative condition, arthritis (CMC arthritis treated by suspension arthroplasty), total wrist arthroplasty, AVN of scaphoid treated by free vascular femoral condylar autograft and much-more.



Interaction between faculty and fellow was excellent, entertainment was also memorable. Dr. David Ruch was very cordial to us. Academic and training environment was good.

In Washington DC the IFSSH-IFSHT Congress was an amazing experience for me, and to meet 32 IFSSH Pioneers of Hand Surgery at the Opening Ceremony as well as renowned hand surgeons from all over the world. Academically it was great. I have learned a lot of new things from this congress and hope to participate with the next AAHS/ASSH conferences and the trienial IFSSH Congress in Singapore in 2028.

Learning is a on going process. Fellowship training in hand surgery provides specialised experties in the field. I am really grateful to the IFSSH-AAHS/ASSH-2025 Committee to organise and select me as a Travelling Fellow to experience this mega, memorable event.

Dr Warangkana (Vicky) Fongsri - Thailand

Host Center: Philadelphia Hand to Shoulder Center, Philadelphia, Pennsylvania, USA

I am honored to be one of four travelling fellows selected to visit the Philadelphia Hand to Shoulder Center, sponsored by the IFSSH-IFSHT 2025 Triennial Congress hosts. The fellowship also included attending the IFSSH-IFSHT 2025 Congress in Washington, D.C., from 24-28 March 2025.

I applied with little expectation, knowing the selection was highly competitive. The Fellowship was awarded by a respected international committee, ensuring a fair process. One key criterion was that applicants are teachers—who are excited to learn and educate others —which I believe describes me well. I'm truly grateful to have been selected.

Special thanks to my mentors, Susan Mackinnon, and Sunton Vongsiri, for their invaluable support and recommendation letters.

I spent one week observing at the Philadelphia Hand to Shoulder Center, Thomas Jefferson University. I learned clinical approaches, advanced surgical techniques, and inspiring innovations from outstanding consultants—Drs. Mark Rekant, A. Lee Osterman, and Adam Strohl. I'm excited to pass this knowledge on to my colleagues in Thailand and apply it in my own practice.

I will always remember Dr. Rekant's kindness—he even drove us back after a long surgical day; Dr. Osterman's beloved reputation—I wish him a joyful retirement; and how Dr. Strohl and Dr. Miller reignited my passion for nerve surgery, a field I am truly dedicated to. The kindness and warmth of the nurses and other fellows made this experience truly unforgettable.

I also met three wonderful fellows from Poland, Sri Lanka, and the UK. Together, we shared not only medical knowledge but also culture, family stories, and life goals. I wish them all happiness and success, and I hope our paths cross again soon.

At the opening ceremony in Washington, D.C., I was deeply honored to walk alongside the IFSSH Pioneers of Hand Surgery on stage during their memorable moment. I was especially proud to see two Thai surgeons also recognised with prestigious awards, making the moment even more meaningful for me. It was also a privilege to be recognised as a Travelling Fellow during the closing ceremony.

Throughout the meeting, I learned from inspiring speakers from around the world and explored many fascinating exhibitions.

It was also a wonderful opportunity to meet distinguished figures in the field, reconnect with old friends, and enjoy relaxed moments at the gala and game night.

I want to sincerely thank you again for this opportunity. This Triennial Congress is personally special to me—at the last Congress in London I met someone who is now close to my heart, and this time, I was honored to receive this fellowship in Washington, D.C.

Dr Antonio Kory - Italy

Host Center: Massachusetts General Hospital/Harvard Medical School, Boston, Massachusetts, USA

Participating in the IFSSH-AAHS/ASSH Travelling Fellowship at Massachusetts General Hospital (MGH) in Boston was an extraordinary professional and personal experience. MGH, one of the most prestigious hospitals in the United States, offers an environment of clinical excellence, innovation, and collaboration that made every moment of the fellowship incredibly valuable.

Under the guidance of Dr. Kyle Eberlin, the experience was not only academically enriching but also deeply human. Dr. Eberlin stood out as an exceptional leader—highly knowledgeable, approachable, and generous with his time. He was the perfect chief both inside and outside the hospital, ensuring that fellows were welcomed, supported, and fully integrated into the team's activities.

The hand surgery division at MGH, spread across two major hospitals, functions as a cohesive and highly specialised unit. It was inspiring to witness the organisation, efficiency, and team-based approach to patient care. Each morning began with early case discussions and multidisciplinary meetings, which emphasized the importance of shared decision-making and comprehensive care planning. These sessions were intellectually stimulating and allowed for rich exchanges of ideas, setting the tone for the clinical or surgical activities that followed.

From high-level reconstructive procedures to complex trauma and nerve cases, every day was filled with learning opportunities. The dedication to education, research, and clinical excellence was evident throughout the fellowship, and the hospitality extended by the entire team made the experience both seamless and fulfilling.

Following the fellowship, attending the IFSSH-IFSHT 2025 Triennial Congress further enriched the journey, providing a global platform to engage with leading hand surgeons, explore new advancements in the field, and build lasting professional connections.

In summary, this fellowship offered a unique and comprehensive immersion into the world of hand surgery at the highest level. I am deeply grateful for the opportunity, the mentorship of Dr. Eberlin, and the warmth and professionalism of the entire MGH team.

Elaine Lo - Taiwan

Host Center: Hospital for Special Surgery, New York, New York, USA

I'm I-Ning (Elaine) Lo from Taipei Veterans General Hospital in Taiwan. And I was incredibly fortunate to be chosen as one of the travelling fellows for the 2025 IFSSH & IFSHT Congress in Washington DC, with the opportunity to visit the Hospital for Special Surgery (HSS) in New York City for one week prior to the conference. The overall experience was very rewarding and memorable. I will summarize my experience under the following topics.

Observation in HSS
The staff at the HSS were very welcoming! I was assigned to shadow Dr. Osei mostly and Dr. Hotchkiss. Dr. Osei's surgery was very efficient and precise. On one of the days, he, and Dr. Fuffa worked together on a case of complex traumatic brachial plexus injury. They performed a gracilis free functional muscle transfer to replace the entire biceps muscle. Dr. Fufa clearly demonstrated the technique to harvest the gracilis free musculocutaneous flap. It was interesting to observe the hand fellows performing the microsurgical anastomosis of nerves and vessels under supervision of the attending surgeons.

I also got to observe a contralateral C7 transfer for a birth trauma-related BPI patient with Dr. Zlotolow. There was an interesting case of biceps-brachialis tenodesis by Dr. Hotchkiss. Throughout the surgeries, all the doctors were very friendly and answered any questions we had. I also shadowed Dr. Osei's clinic and got to observe his smooth interaction with his patients and other staff on the team. On the last day, I paid a visit to their wonderful Hand Therapy Center which and were able to see their amazing workspace and elaborate services.

Learning from peers
It is the best to be travelling with a group of other fellows from different backgrounds because we learn so much from each other, including our different experience, expertise, personalities, perspectives, and plans for the future. In our HSS group, we had Sze-Ryn from Singapore who is an old-time friend of mine, Barbs from the Philippines and Diego from Colombia. During our morning meeting of travelling fellow presentation, we learned so much about each other: Sze's expertise in wrist arthroscopy, Barbs' combined interest in hand surgery and bone tumors, and Diego's passion for nerve surgery and his unique sense of humor. And later that night, at the fellows' dinner we got to exchange more of our stories with each other and the hand fellows in HSS.

IFSSH 2025 in Washington DC
The conference itself was very well-organised. The opening ceremony was amazing, featuring a cabaret performance from the best-selling Broadway musical Hamilton! The exciting music and lyrics got everyone stirring in their seats! And we were privileged with the opportunity to walk with the IFSSH Pioneers of Hand Surgery from all around the world onto the stage. Throughout the four-and-a-half-days of the conference, I focused more on wrist arthroscopy surgery, nerve transfer and spastic surgery, my main fields of interest. I learned a lot, made connections with experts and formed some future plans for fellowships. I also got to catch up with some old friends and made some new ones!

I'm very grateful for this opportunity as an IFSSH Travelling Fellow. Three years ago, I attended the IFSSH/IFSHT Congress in London, knowing absolutely no one. I did a few talks and left feeling a bit lonely and unconnected. This year, the situation was completely different and partly because of evolving personal experience and networking but for the most part because I had a group of peers to learn from and excel together. Amidst the vibrant artistic New York City and the full blooming cherry blossoms in DC, this has been a beautiful and truly inspirational experience, and I am deeply thankful to have been part of it.

Dr Mahamud Lawal - Nigeria

Host Center: Massachusetts General Hospital/Harvard Medical School, Boston, Massachusetts, USA

Please accept this letter as an expression of my profound gratitude to the American Association for Hand Surgery (AAHS), the American Society for Surgery of the Hand (ASSH), and the International Federation of Societies for Surgery of the Hand (IFSSH) for selecting me as a recipient of the highly competitive 2025 Triennial Travelling Fellowship. It is with immense honour that I, a surgeon practicing in Sub Saharan Africa, have been recognised in this significant way.

Having completed my Plastic Surgery residency in 2018 at a level 1 trauma centre in Lagos, Nigeria, I further pursued specialized training through a hand and microsurgery fellowship at Assiut University Hospital in Egypt. This was followed by invaluable exposure in India under the mentorship of Dr. Bhatia Anil Ghanshyam, where I had the opportunity to observe a diverse range of hand, brachial plexus, and free flap cases across six different hospitals.

The timing of this prestigious fellowship is truly ideal, as it provides a crucial opportunity for me to refine my surgical practice through invaluable observerships, expand my professional network with colleagues from around the globe, and establish vital contacts with the American medical industry.

I am eager to return to my country and apply the remarkable knowledge and techniques I have acquired. While I anticipate challenges in adapting these advancements to our local context, I am deeply committed to fostering greater collaboration among hand surgery societies both within Nigeria and across international borders.

My aim is to bridge the gap between global advancements and local practice, thereby enhancing patient care and promoting the advancement of hand surgery in my region through strengthened partnerships facilitated by this fellowship.

Thank you once again for this extraordinary opportunity. I am confident that the knowledge and connections gained through this fellowship will have a lasting impact on my career and the development of hand surgery in Sub Saharan Africa.

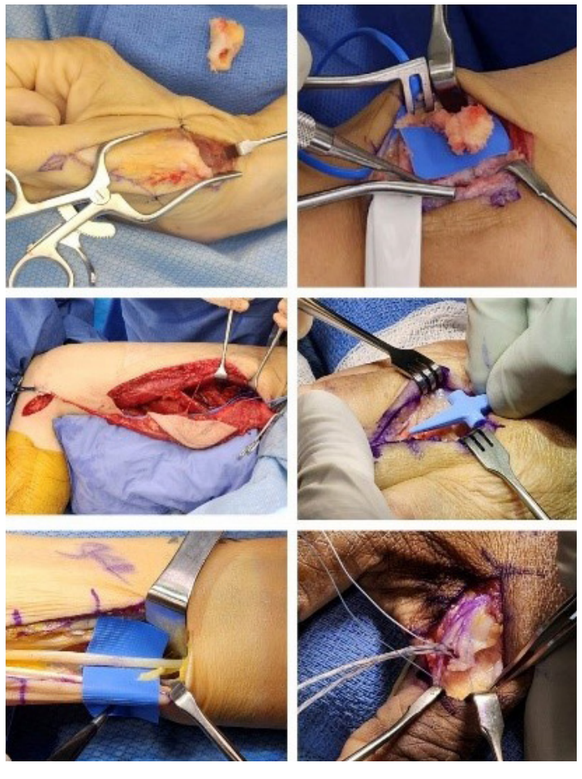
Dr Felma Rayel - Philippines

Host Center: Hospital for Special Surgery, New York, New York

The International Federation for Surgery of the Hand (IFSSH) is a prestigious group where various Societies for Surgery of the Hand throughout the world connect to share their knowledge and experiences.

As the sole hand surgeon in Region V (Bicol) in the Philippines, I serve approximately 6 million people, providing a role in delivering specialized care in hand surgery. This Fellowship gave me an opportunity to learn from experienced colleagues and gather information to share locally in my country.

My Travelling Fellowship was in the Hospital for Special Surgery, New York City 17-21 March 2025.



I had the honor of observing under Dr. Steve K. Lee, the Chief of the Hand and Upper Extremity Service, and an awesome peripheral nerve surgeon, and Dr. Duretti Fufa, who specialises in Reconstruction and Microsurgery.

I was able to learn from several surgeries done in the HSS Main Hospital and the Ambulatory Surgery Center. Most notably:

- CMCJ Suspension Arthroplasty
- Techniques in Vascularized Bone Grafting
- Gracilis Free Musculocutaneous Transfer in a Brachial Plexus Surgery
- MCPJ Arthroplasty
- Ulnar Nerve Supercharging
- Thumb UCL Reconstruction

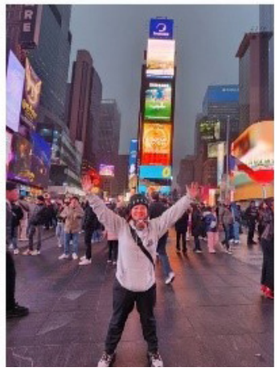
I also shadowed both Drs. Lee and Fufa during their clinics, seeing how they manage and interact with their patients.

Each of the Travelling Fellows presented a lecture to the Hand Service on 20 March 2025. I presented about my country and my hospital, and shared an innovative case we had that was accepted for presentation at the IFSSH Triennial Congress.

Being in New York, I couldn't pass the chance to go around the city and be a tourist. I went to several sites and landmarks, ate famous New York dishes, and discovered a new love for musicals.

The following week, the IFSSH-IFSHT Triennial Congress was held in Washington, DC from 24–28 March 2025. I met the rest of the Travelling Fellows and the Pioneers of Hand Surgery.

There were a lot of great lectures and research presentations. I would have attended all the lectures, if only I could multiply and split my time between them!.



Game night was fun with everyone there, especially later when we had an open bar until the end.

Same as in New York, I was also able to tour around Washington, DC during my free time. It was a very beautiful time to visit DC during the Cherry Blossom season. I would go back again to visit all the museums.

Thank you to my host, the Hospital for Special Surgery, Hand and Upper Extremity Service, Drs. Steve Lee and Duretti Fufa, hand fellows, orthopaedic residents, nurses and other staff.

Thank you also to Sarah, Belinda, Rama, Helen, and Felicia for all the assistance. Thank you to my colleagues from the Association of Hand Surgeons of the Philippines (AHSP) and my hospital, Bicol Medical Center (BMC).

Thank you Drs. Diego Rincon-Cardozo (Colombia), Elaine Lo (Taiwan), Sze Ryn Chung (Singapore), and to the rest of my Travelling co-Fellows. It was a pleasure getting to know you guys.

Finally, I am extremely grateful to the International Federation for Surgery of the Hand (IFSSH), the American Association for Hand Surgery (AAHS), and the American Society for Surgery of the Hand (ASSH) for this incredible experience. Being chosen as 1 of 24 Fellows worldwide gave me a sense of pride, and with it comes the responsibility of sharing with my colleagues back home the things I have learned.

I have made many friends and professional connections I never thought I would. I have learned a lot of techniques, tips, and pearls that I can apply locally, and teach future orthopaedic surgeons in my country.

Dr Caroline Brum Sena - Brazil

Host Center: Duke University, Durham, North Carolina, USA

Doing a fellowship in hand surgery at Duke University was a turning point in my career. Being at one of the most respected centres in the world gave me a deep dive into advanced surgical techniques and new approaches to challenging hand conditions. I had the opportunity to see wrist prostheses (I had never seen anything like that before), cadaver training for phalanx and metacarpal prostheses, brachial plexus decompression due to cervical ribs, surgical treatment of rhizarthrosis, and many other surgeries. More than just technical learning, my experience at Duke taught me about excellence, ethics, and precision in every detail of medical practice. Working alongside world-renowned surgeons and actively participating in the care of international patients helped me grow not only as an orthopaedist, but as a human being.

I return to Brazil with even more responsibility and passion for offering the best to my patients. With new ideas, valuable connections, and the certainty that shared knowledge is what moves medicine forward. Representing Brazil in this high-performance space was an honor. And this journey reinforced a principle that has always guided me: never stop learning. I would like to thank my fellows who shared this experience with me and made it more than special. I would like to thank Dr. Ruch and his entire team, and the entire IFSSH for organising it. It was truly a unique experience. Thank you very much.

Dr Brahman Shankar Sivakumar - Australia

Host Center: Curtis National Hand Center, Baltimore, MD, USA

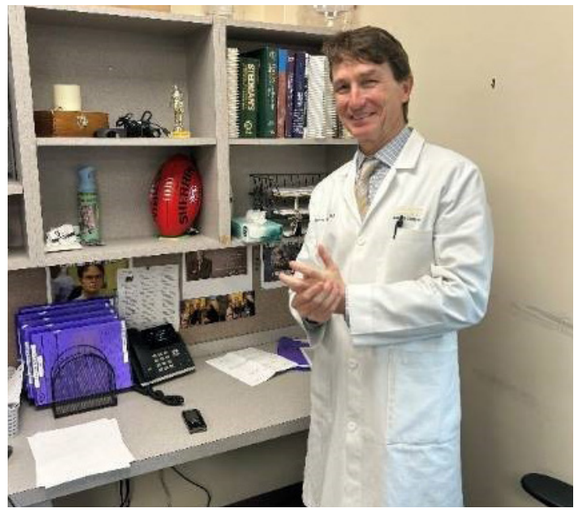
It was an honour to be selected as one of the IFSSH-AAHS/ASSH Travelling Fellows for 2025. Our visit was structured to follow the IFSSH meeting in Washington. This meeting was a great experience, with informative sessions and discussions designed to challenge traditional paradigms in hand surgery. It was also wonderful to catch up with old friends from around the world, as well as establish many new ones.

Personal highlights included opportunities to chair a session on pain management and targeted muscle reinnervation, supervise a resident presenting research on wrist arthroscopy, and walk alongside one of the fathers of hand surgery in Australia, Graham Gumley, as he was inducted as an IFSSH Pioneer of Hand Surgery.

The setting, too, was beautiful, with cherry blossoms framing the architecture of the nation's capital. Morning runs at the national mall and visits to the monuments and museums rounded out the schedule.

Following a visit to see family in Philadelphia over the weekend, I spent a week at the renowned Curtis National Hand Centre in Baltimore. This centre was founded in 1975, and has grown to become one of the largest hand centres in the world. I spent most of my time with Dr Jim Higgins, who was both an amazing host and fantastic teacher. Watching him perform a medial femoral condyle flap for a scaphoid waist non-union (an operation that he has popularized) was a privilege. My visit coincided with that of a team from Sahlgrenska University Hospital in Sweden – led by Dr Carina Reinholdt, they are leaders in the field of tetraplegia surgery, and it was great to pick their brains and establish connections.

I found this travelling fellowship extremely worthwhile and highly encourage young surgeons to apply for it in the future .



Dr Higgins (with an AFL ball from his fellowship in Australia).

Fernando Enríquez de Salamanca Lorente
1921 – 2005

Fernando Enríquez de Salamanca Lorente was born on 10 June 1921 in Madrid, Spain. He studied Medicine and Engineering simultaneously after the Spanish Civil War and ended his studies with Summa Cum Laude and the National-end-of-degree Award.

He started to work at the San Carlos University Hospital in Madrid, training as a General Surgeon. In the mid-forties he obtained a Fulbright Scholarship and went to the United States at the Columbia Presbyterian Medical Centre in New York to learn English and to further his training in General Surgery and Plastic Surgery.

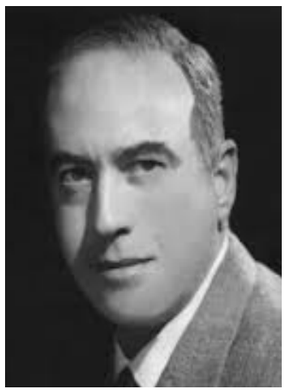
Back in Spain he continued to work at the San Carlos Hospital and later moved to La Princesa Hospital and Clinica del Trabajo. He made several visits to the Massachusetts General Hospital focusing on Plastic Surgery. Fernando visited Sterling Bunnell and Joseph Boyes in California, USA. to learn more about the principles of Hand Surgery. He was fascinated by the complex anatomy, biomechanics and functioning of the hand in part because of his engineering background.

With the help of an engineer friend from the university days, he designed and developed the Burn Centre of the Red Cross Hospital in Madrid, and became it's first Head-of-Unit. In 1965 De Salamanca Lorente moved to the new La Paz Hospital, where he created the Department of Plastic Surgery and developed the speciality of Plastic Surgery in Spain.

The last years of his professional career were spent at the Virgen de la Torre Hospital outside Madrid, where he created a Department of Hand Surgery, the first in Spain, treating patients nationwide. Over the years he taught the principles and knowledge of Plastic Surgery and Hand Surgery to multiple Plastic and Orthopaedic Surgeons. He organised multiple Hand Surgery Instructional Courses, inviting internationally known hand surgeons amongst others Morelli, Lamb, Harrison, Zancolli, and Tubiana. Most hand surgeons in Spain were influenced by De Salamanca.

He was a Founding Member of the Spanish Society of Hand Surgery (11 May 1969), the first President of the Spanish Society of Hand Surgery (1969-1971), President of the Spanish Society of Plastic Surgery and a Member of the British Society for Surgery of the Hand. The Spanish Society of Hand Surgery has created the Fernando Enríquez de Salamanca Award for the Best Paper at SECMA Congresses.

He died on 23 July 2005. Fernando Enríquez de Salamanca Lorente was honoured as "Pioneer of Hand Surgery" by the IFSSH at the 11th International Congress in Seoul, Korea in 2010.



Elvin G. Zook 1937-2020

Elvin G. Zook was born on 21 March 1937 on a farm in Lancaster Township, Huntington County, Indiana, USA. He matriculated from high school in 1955, and earned his medical degree in 1963 from the Indiana University School of Medicine, Indianapolis, USA.

In 1966 Zook was a James Whitcomb Riley Plastic Surgery Fellow. He completed his residency training in General and Thoracic Surgery at the same University in 1969 and from 1969-1971 in Plastic Surgery.

This included a Christine Kleinert Fellowship in Hand Surgery , University of Louisville, Kentucky, USA in 1970. He was Board Certified by the American Board of Surgery, with a Certificate of Added Qualification in Hand Surgery , the Board of Thoracic-Cardiothoracic Surgery and the Board of Plastic and Reconstructive Surgery.

Dr. Zook became Assistant Professor in Plastic Surgery at Indiana University, as well as Chief of Plastic Surgery at the Marion County General Hospital in Indianapolis. In 1973 he was recruited to join the Department of Surgery of the newly formed Southern Illinois University School of Medicine (SIU), Springfield, Illinois as Associate Professor and Chair of Plastic Surgery. In 1975 he was promoted to Professor of Surgery and Chairman, Division of Plastic and Reconstructive Surgery until his retirement in 2006.

He established a plastic surgery residency which produced 79 surgeons. Zook published 140 peer-reviewed articles, 60 book chapters and 2 books.

He was invited as visiting professor 61 times. Prof Zook served on numerous Boards, Associations and Societies including the Chair of the American Board of Plastic and Reconstructive Surgery (1991-1992), President of the American Society of Plastic and Reconstructive Surgeons (1993-1994), American Society for Surgery of the Hand (Chairman of many Committees) and Editor of HAND, the journal of the American Association of Hand Surgery. In 2008 SIU School of Medicine established the Ervin G. Zook Endowed Chair in Plastic Surgery.

Elvin married Sharon Kay Neher in December 1961, and they had three daughters. He passed away on 24 November 2020 at his home in Springfield, Illinois, USA.

At the 11th International Congress of the IFSSH in Seoul, Korea (2010), Elvin G. Zook was honoured as "Pioneer of Hand Surgery".

Reports

IFSSH EXCO MEMBERS-AT-LARGE (EUROPE AND AFRICA)

New Members-at-Large for Europe and Africa
At the IFSSH meeting in Washington, March 2025, we—Ilse Degreef and Jonathan Hobby—had the honour of being elected as IFSSH Executive Committee Members-at-Large representing Europe and Africa, succeeding Paco Del Pinal and David Shewring. We are deeply grateful for the trust placed in us and excited to contribute to the continued growth and collaboration within the global hand surgery community.

Over the next three years, our focus will be on supporting our Hand Societies in making the most of what IFSSH has to offer. Our mission is to strengthen the Federation's core values: fostering connections between Societies, promoting knowledge exchange, and creating opportunities for research and education in hand surgery. We are particularly committed to addressing socio-economic disparities, enhancing accessibility, and encouraging interdisciplinary cooperation—so that hand patients around the world can benefit from the best possible care.

By representing the diverse regions of Europe and Africa, we aim to serve as effective liaisons, facilitating communication and collaboration among member societies. We look forward to working closely with all of you to advance the field of hand surgery globally.

Europe and Africa in the IFSSH: A Legacy and a Vision
Europe has long played a pivotal role in the history and development of the IFSSH.

Since its founding in Chicago in 1966, the federation has benefited from strong European involvement.

Of the eight founding Societies, five were European

This historical photo was taken at the founding meeting of the IFSSH in Chicago in 1966.
This photo is courtesy of Dr. Sergio Gama. The original eight founding Societies of the IFSSH were represented by the following Delegates (from left to right): A Bonola (Italy); T Morotomi (Japan); A Barsky (USA); G Stack (UK); N Carstam (Scandinavia-Sweden); D Buck-Gramcko (Germany); A Pernet (Brazil); R Tubiana (France).

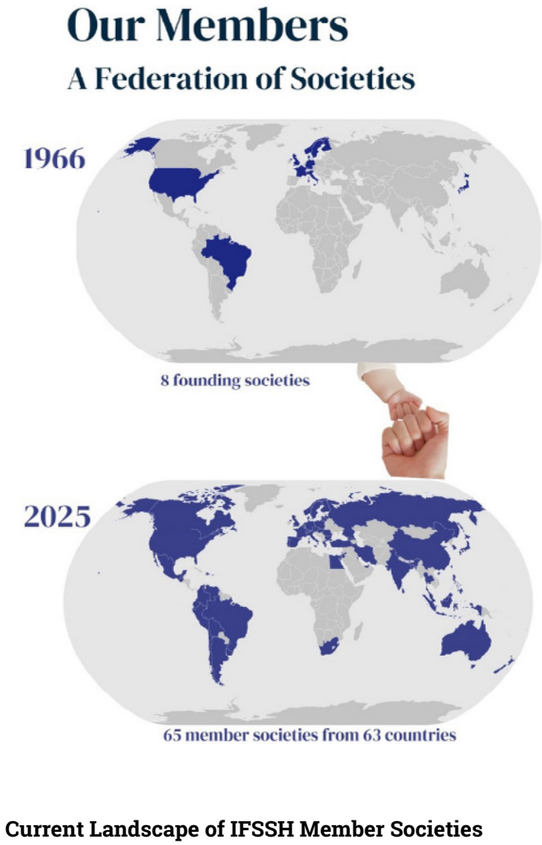
- represented at the 1966 founding meeting by A. Bonala (Italy), G. Stack (UK), N. Carstam (Sweden, then representing the Scandinavian Society), D. Buck-Gramcko (Germany), and R. Tubiana (France).

The other founding representatives included T. Morotomi (Japan), A. Barsky (USA), and A. Pernet (Brazil), reflecting the international spirit that continues to define the IFSSH.

Today, the IFSSH comprises 65 member societies from 63 countries. The most recent addition, Jordan—allocated to the Asia-Pacific region—joined during the Washington meeting. Of the current members, 28 are allocated to the Europe and Africa region.

While Europe remains a strong and active contributor, we see great potential for growth across the African continent.

Many countries could benefit from the formation of national hand societies, which would further enrich the global hand surgery community. Once a new society has been established for at least two years, it is warmly encouraged to apply for IFSSH membership. We are here to support and guide this process wherever possible.



Current Landscape of IFSSH Member Societies Represented by Europe and Africa
The Europe and Africa region currently includes 28 member societies within the IFSSH, reflecting a rich history and ongoing growth in hand surgery collaboration. Below is an overview of the societies by region and year of joining:

Europe (26 Societies)
- Austria – Austrian Society for Surgery of the Hand (1990)
- Belgium – Belgian Hand Group (1975)
- Bulgaria – Bulgarian Society for Surgery of the Hand (1986)
- Czech Republic – Czech Society for Surgery of the Hand (1992)
- Denmark – Danish Society for Surgery of the Hand (2013; previously part of the Scandinavian Society)
- Finland – Finnish Society for Surgery of the Hand (2013; previously part of the Scandinavian Society)
- France – French Society for Surgery of the Hand (1966)
- Georgia – Georgian Society for Surgery of the Hand (2023)
- Germany – German Society for Hand Surgery (1966)
- Greece – Hellenic Society for Surgery of the Hand (1991)
- Hungary – Hungarian Society for Surgery of the Hand (1978)
- Italy – Italian Society for Surgery of the Hand (SICM) (1966)
- Latvia – Latvian Association for Surgery of the Hand (2022)
- Lithuania – Lithuanian Society for Surgery of the Hand (1992)
- Netherlands – Netherlands Society for Surgery of the Hand (1975)
- Norway – Norwegian Society for Surgery of the Hand (2013; previously part of the Scandinavian Society)
- Poland – Polish Society for Surgery of the Hand (1984)
- Portugal – Portuguese Society for Surgery of the Hand (1968)
- Romania – Romanian Society for Hand Surgery (1998)
- Russia – Russian Hand Surgery Society (2013)
- Slovakia – Slovak Society for Hand Surgery (1993)
- Spain – Spanish Society for Surgery of the Hand (1977)
- Sweden – Swedish Society for Surgery of the Hand (2013; previously part of the Scandinavian Society)
- Switzerland – Swiss Society of Hand Surgery (1974)
- Turkey – Turkish Hand Society (1980)
- United Kingdom – British Society for Surgery of the Hand (1966)

Africa (2 Societies)
- Egypt – Egyptian Society for Surgery of the Hand and Microsurgery (2008; previously part of the Eastern Mediterranean society)
- South Africa – South African Society for Surgery of the Hand (1972)

Expanding Hand Surgery in Africa: A Call to Action
We are committed to supporting the growth of national hand surgery societies across Africa and to enhancing access to hand surgery for both surgeons and patients throughout the continent. We warmly welcome and encourage initiatives aimed at establishing new societies and expanding training opportunities.

The importance of this mission was clearly highlighted during the Washington meeting, particularly through the fellowship programs, which showcased the remarkable potential and dedication emerging from the region. One inspiring example was the presentation by Dr. Mahamud Lawal from Nigeria, whose work exemplifies the promise and progress already underway.

We look forward to building on this momentum and taking the next steps together—fostering collaboration, supporting new initiatives, and helping shape a stronger future for hand surgery in Africa!

The Egyptian Society for Surgery of the Hand and Microsurgery (ESSHM), one of only two African member societies of IFSSH, continues to play a leading role in advancing hand and upper limb surgery across the region. Founded in 2007, ESSHM has emerged as a dynamic platform for promoting clinical excellence, education, and research.

Through its annual international conference, cadaveric dissection courses, and hands-on workshops, the Society fosters a collaborative environment for sharing expertise and driving innovation.

From 28-30 May 2025, ESSHM hosted its international conference and practical workshop at the Triumph Plaza Hotel in Cairo, bringing together orthopedic, plastic, and neurosurgical specialists, as well as trainees and early-career surgeons from Egypt, Africa, and the Middle East. The Society also plays a growing role in promoting microsurgical training and outreach initiatives throughout the region. With a strong commitment to global standards and regional impact, ESSHM continues to serve as a vital bridge between surgical innovation and everyday clinical practice.

Looking Ahead: Congresses, Courses, and Opportunities
Over the past 60 years of the IFSSH history, Europe has proudly hosted the IFSSH triennial congresses on seven occasions: Rotterdam, Netherlands (1980); Paris, France (1992); Helsinki, Finland (1995); Istanbul, Turkey (2001); Budapest, Hungary (2004); Berlin, Germany (2019); and London, UK (2022). As we look to the future, we eagerly anticipate the congresses of 2034 and 2046—and sincerely hope to see strong candidates from both Europe and Africa step forward to host.

We encourage all interested societies to explore the updated application guidelines available online.

Jane Messina (Italy), Mahamud Lawal (Nigeria) and Ilse Degreef (Belgium) at the IFSSH Conference in Washington 2025.

Pictures illustrating the ESSHM conference attendees, workshops and the sign of appreciation handed by its president Maged El-Shennawy, to Marc Garcia Elias, former president of IFSSH.

The next host city from the European/African region will be elected during the 17th IFSSH Triennial Congress in Singapore, 23–27 October 2028. Please note that bids must be submitted at least six months in advance. Don't hesitate to reach out to us—we're happy to support and guide you through the process.

We encourage all interested societies to explore the updated application guidelines available online. The next host city from the European/African region will be elected during the 17th IFSSH Triennial Congress in Singapore, 23–27 October 2028. Please note that bids must be submitted at least six months in advance.

Don't hesitate to reach out to us—we're happy to support and guide you through the process.

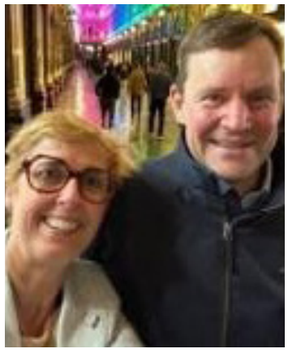
The recent IFSSH Mid-Term Course selection in Washington was particularly exciting, with two excellent proposals from our region. Dr. Nash Naam gave a compelling presentation on behalf of the Egyptian Society for Surgery of the Hand and Microsurgery, narrowly missing out to Italy. As a result, the 2nd IFSSH Mid-Term Course in Hand Surgery will be held in Venice, Italy, from 4-8 April 2027, hosted by the Italian Society for Surgery of the Hand (SICM). Andrea Atzei will share more details in this edition of the Ezine.

Looking further ahead, the next opportunity for Europe and Africa to host a mid-term course will be in 2038/2039, with applications to be presented at the 2034 Congress. This gives ample time to prepare strong, innovative proposals.

We encourage all member Societies to stay engaged and take full advantage of the many opportunities IFSSH offers.

Visit the IFSSH website for the latest updates, and please don't hesitate to contact us with your ideas, questions, or news from your Societies! We especially welcome stories about your Society's activities, projects, and innovations—big or small!

One recent highlight was the 4th Quinquennial International Dupuytren Conference, hosted in Brussels by the Belgian Hand Group (BHG) in collaboration with the Belgian Hand Therapists and Dupuytren patient Societies. With over 250 participants from around the world, the event was a resounding success, focusing on research, innovation, and patient-centered care in Dupuytren treatment. Both of were delighted to attend, with Ilse serving as chair. Events like these showcase the vibrant activity and impact of our national Societies.



Experience the Spirit of the 4th International Dupuytren Conference, Brussels 2025 https://youtu.be/Y3_bCRLCIGA?si=7cK5-gdgmcJ-wI9g

Collaborations between member Societies are also a fantastic opportunity to engage with the IFSSH community. A great example was last year's invitation from the Swiss Hand Surgery Society to the BHG.

The Swiss Hand Surgery Society (SGH/SGHR) held its annual meeting on 28–29 November 2024 at the Palazzo dei Congressi in Lugano. More than 15 Belgian surgeons and therapists attended as representatives of the guest society, contributing to knowledge exchange, scientific presentations, and a spirited Battle of the Masters—all set against the beautiful backdrop of Lugano.

We have also recently seen the Spanish Society join with the British Society in Mallorca, April 2025. These meetings provide excellent networking and scientific collaborations.

As we embark on this exciting chapter, we are inspired by the dedication, innovation, and unity that define our global hand surgery community. Whether through congresses, courses, fellowships, or grassroots initiatives, every contribution strengthens our shared mission. We invite all member societies—established and emerging—to stay connected, share your stories, and help shape the future of hand surgery across Europe, Africa, and beyond.

Stephan Schindele, Esther Vögelin, Michiel Cromheecke and Ilse Degreef in the battle of the Masters (left) at the Swiss Hand Surgery Society meeting and a group picture of the invited Belgian delegation.

The Swiss Hand Surgery Society meeting and a group picture of the invited Belgian delegation.

Together, we can ensure that excellence in care and education reaches every hand that needs it. Please contact us if you need us administration@ifssh.info.

ILSE DEGREEF,
(Belgian Hand group, BHG)

JONATHAN HOBBY,
(British Society for Surgery of the Hand, BSSH)

IFSSH Members-at-large
(Europe and Africa), 2025-2028

SPANISH SOCIETY FOR SURGERY OF THE HAND (SECMA)

The Spanish Society for Surgery of the Hand (SECMA) continues to consolidate its leadership through a wide array of scientific, educational, and communication initiatives that reflect the society's vitality and commitment to the future of hand surgery.

Under the leadership of our outgoing president, Dr. Pedro Delgado, SECMA has experienced remarkable growth and consolidation. Since 2020, our society has expanded by more than 30%, reaching a total of 649 members across all categories: full, associate, emeritus, and international. This growth has been especially notable among younger surgeons, reflecting SECMA's commitment to supporting the next generation of hand specialists and its ability to remain an open, dynamic, and forward-thinking organization.

Education and training

This past year marked the continuation of a robust educational agenda. The DECIM (Spanish Diploma in Hand Surgery) has undergone several updates to the program, which were introduced during this cycle: access to the diploma has been expanded, now allowing candidates either to follow the complete DECIM training program or to directly register for the exam if they have more than eight years of professional experience. The program has proven its solidity: of the five surgeons who successfully passed the European Board of Hand Surgery (EBHS) exam, four had previously completed the DECIM program.

There are currently 147 certified national diplomas. We are currently in the fifth edition of the DECIM accreditation program, with eleven candidates enrolled this year. Future goals include regaining both national and European CME accreditation, as well as creating a national map of certified hand surgeons, accessible via a QR code linked to SECMA's official platform.

In line with our firm commitment to continuous education, SECMA has organized several specialized training activities over the past year. The "SECMA Institutional Course," led by Dr. Martínez and held every December, continues to serve as a central meeting point for Spanish hand surgeons, combining high-level lectures with hands-on sessions.

The annual "SECMA Surgical Anatomy of the Upper Extremity" course, directed by Dr. Morro and Dr. Llusa, remains a key event in our academic calendar, offering a comprehensive theoretical and practical approach to anatomical knowledge.

SECMA Institutional Course.

Research Course.

Flap Course.

The "Flap Coverage" course, led by Dr. Roger de Oña, and the "Clinical Research Methodology" course, led by Dr. Sánchez Rosales, have also played a fundamental role in equipping our members with essential skills for both clinical practice and scientific development. Complementing this core offering, seven introductory courses on hand and wrist osteosynthesis were held, with support from industry partners. These courses, aimed at young surgeons, focused on metacarpal, scaphoid, and distal radius fractures and were conducted in collaboration with instructors from each hosting region.

Communication and outreach

SECMA has also expanded its digital educational footprint. Our YouTube channel, "SECMA Academy," led by Dr. Corella, now offers over 70 concise, structured videos—some targeting patients, while others focus on young surgeons. These include collaborative productions with the Argentine Society for Hand Surgery.

The "Hand to Hand" podcast, spearheaded by Drs. Pajares and Prada continue to thrive with growing audiences on Spotify. The top downloaded episodes featured Drs. Marc García-Elias, Paco Piñal, and Pedro Marquina. Our future goals include expanding to video podcasting and live sessions during congresses.

Research and publication

On the editorial side, the Ibero-American Journal of Hand Surgery (RICMA) saw a marked increase in submissions and downloads, reaching over 230,000 full-text downloads in 2024. Articles were received from over a dozen countries, and the rejection rate stands at a healthy 20%. The editorial team is actively working on reapplying for indexation.

Research efforts have focused on promoting registry-based data collection, especially on wrist prostheses and distal radioulnar joint implants. Though adoption is still limited, the society conducted national and international surveys on current practices. AI-based solutions and travel grants for research are in development.

International Relations and Cooperation

International engagement remains a cornerstone of SECMA's vision. We actively supported participation in the FESSH foundation and advanced courses. Notably, Dr. Sergi Barrera represented SECMA in the 2024 ASSH Traveling Fellowship, visiting top US centers and attending the ASSH Annual Meeting. Our society also contributed speakers to FESSH and IFSSH webinars. SECMA is preparing a candidacy to host the FESSH Congress in 2029.

International cooperation projects were strengthened through partnerships in Colombia, Ecuador, and Brazil. A survey on future destinations for humanitarian missions yielded promising results.

While travel scholarships are still pending, collaborative plans for upcoming missions are underway.

Young Surgeons
SECMA's younger members have taken center stage. The Journal Club for Young Surgeons, organized by Dr. García Medrano, completed three successful sessions. Young surgeons also contributed as faculty to hands-on courses and represented SECMA in YEHS meetings.

Organising Committee.


SECMA-BSSH Congress.

SECMA-BSSH Joint Congress in Palma de Mallorca
One of the highlights of the year was the XXVIII SECMA Congress, held in Palma de Mallorca in April 2025. For the first time, the congress was organized jointly with the British Society for Surgery of the Hand (BSSH), representing a landmark event in the internationalization of our society.

Under the leadership of Dr. Guillem Salvá and Dr. Carlos Heras-Palou, the congress brought together more than 800 registered participants from across Spain, the United Kingdom, and other European countries.

The scientific program was rich and diverse, covering a broad range of topics relevant to both emerging and experienced hand surgeons. Sessions addressed advanced wrist arthroscopy, complex trauma, peripheral nerve reconstruction, and innovations in tendon and joint surgery. The joint sessions with BSSH members fostered the exchange of knowledge and clinical perspectives, further strengthening the bonds between our societies.

During the National Congress in Mallorca in April 2025, Dr. Roberto Sánchez Rosales was appointed as the new president. In a session titled "Standing on the Shoulders of Giants", he presented his program for the 2025–2027 term, honoring the legacy of previous leadership while outlining a clear vision for the society's future. A renewed Executive Committee was also formed, continuing the mission of inclusivity, innovation, and excellence that characterized the outgoing board.

Looking ahead
The next SECMA Congress will be held in Valencia in 2026, and we look forward to welcoming colleagues from around the world to continue sharing knowledge, experience, and the passion for hand surgery.

New SECMA Board.

ITALIAN SOCIETY FOR SURGERY OF THE HAND (SICM)

From the ancient temples of Nara to the vibrant halls of Washington DC. USA., through the scientific crossroads of Milan and soon to the magical canals of Venice, it has been an unforgettable year for the Italian Society for Surgery of the Hand (SICM), filled with milestones of friendship, scientific excellence, and global recognition.

In April 2024, SICM was honored as the Guest Nation at the 67th Annual Meeting of the Japanese Society for Surgery of the Hand (JSSH), held in Nara under the outstanding leadership of Prof. Shohei Omokawa. This special occasion marked the 20th anniversary of the Japanese-Italian Hand Club, founded in 2004 by Prof. Satoshi Toh (Hirosaki) and Dr. Massimo Ceruso (Florence). A dedicated session moderated by the founders featured Italian and Japanese speakers showcasing two decades of scientific exchange and friendship. The celebrations culminated in a ritual exchange of gifts, with SICM presenting JSSH a specially crafted gift symbolising the strong and enduring bond between our two societies. (Fig. 1)

Beyond the commemorations, the Italian delegation, coordinated by Dr. Andrea Atzei, also contributed with keynote lectures, free papers and a significant participation in an international roundtable, further highlighting SICM's active and vibrant presence.


Fig. 1: Italian delegation at the 67th Annual Meeting of the JSSH in Nara, presenting the commemorative gift from SICM to JSSH on the occasion of the 20th anniversary of the Japanese-Italian Hand Club.

In November 2024, SICM held its 62nd National Congress in Rome, organized by Drs. Nicola Felici, Alessia Pagnotta and Michele Rampoldi, under the theme "La Chirurgia della Mano: Convergenze di Culture Diverse" ("Hand Surgery: Convergences of Diverse Cultures").

The event was marked by a significant joint session with the Federation of European Societies for Surgery of the Hand (FESSH), reflecting SICM's dedication to fostering international partnerships and exchanging knowledge across borders.

At the 16th IFSSH-IFSHT Triennial Congress held in Washington DC. USA. (24-28 March 2025), SICM brought its proud contribution to the international stage.

Fig. 2: Italian delegation at the 16th IFSSH-IFSHT Triennial Congress, Washington D.C.

A delegation of over 60 Italian surgeons and hand therapists actively participated, delivering a substantial number of presentations and enriching the global dialogue. (Fig. 2)

This Congress was a moment of particular pride: three distinguished Italian Hand Surgeons, Massimo Ceruso, Antonio Landi and Riccardo Luchetti (Fig. 3) were honoured as IFSSH Pioneers of Hand Surgery, recognising their extraordinary careers and lifetime achievements. Additionally, on the Hand Therapists' side, Dr. Francesco Romagnoli was elected President-elect of the IFSHT, further strengthening Italy's leadership within the global hand therapy community. A major achievement was SICM's successful bid to host the 2nd IFSSH Mid-Term Course, prevailing over Egypt's strong candidacy and earning Italy the prestigious honour of organising the event in Venice in 2027.

Fig. 3: Drs. Riccardo Luchetti, Massimo Ceruso and Antonio Landi, honored as IFSSH Pioneers of Hand Surgery.

SICM is ready to offer the IFSSH delegates an educational and cultural event like no other. The Mid-Term Course – Venice 2027 will feature a scientific program designed to inspire, innovate, and connect the global hand surgery community. Special attention will be devoted to young surgeons, with mentorship programs and reduced fees for participants from low- and middle-income countries.

Fig. 4: Dr. Andrea Atzei, Chair of the Venice 2027 Mid-Term Course, unveils the event at FESSH Helsinki — sparking strong interest from the international audience.

Attendees will deepen their knowledge through plenary sessions spanning key areas of hand surgery, from microsurgery to wrist arthroscopy. Participants will be able to personalise their learning journey by selecting from hands-on workshops, keynote lectures, and case discussions tailored to their specific interests. It will be an unforgettable experience of excellence, knowledge, and cultural exchange — all set in the breathtaking city of Venice, where history, art, and science converge, from 4-8 April 2027, during the city's most delightful spring season. (Fig. 4).

For more information and to consult the preliminary program, please visit: https://congressworks.com/venice2027/.

The next Annual Meeting of SICM, will be held in Milan from 2-4 October 2025. The leading topic of the Congress will be "Hand Surgery Complications and Failures: Prevention, Management, and Lessons Learned". (Fig. 5).

The Congress Chairs, Alberto Lazzerini, Giorgio Pajardi and Pierluigi Tos, intend to engage various disciplines related to hand surgery, particularly plastic surgery and orthopaedics, focusing in three key areas: Clinical appropriateness in hand surgery; New Technologies; Lessons from mistakes.

A key highlight of SICM 2025 is the participation of the Singapore Society for Hand Surgery as the official Guest Society.

The Congress Chairs and the Executive Board of SICM warmly welcome all hand surgery professionals to join us in Milan for the 63rd Annual Congress of the Società Italiana di Chirurgia della Mano, taking place from 2 to 4 October 2025.

Visit the Congress website: https://www.sicm2025.it/

AMERICAN SOCIETY FOR SURGERY OF THE HAND (ASSH)

IFSSH and ASSH partner to bring you Handthology

The IFSSH would like to thank the ASSH for allowing Handthology to be made available to all IFSSH members. Handthology is an interactive learning platform from the American Society for Surgery of the Hand (ASSH). Curated by leading surgeons in the field, Handthology compiles the best of the ASSH's resources to provide you with the premiere online source for hand and upper extremity education. This platform requires no login, allowing you to access written chapters, surgical videos, lectures and images for free to create a personalized learning experience.

On Handthology, browse 59 topics featuring full, updated chapters from the ASSH Textbook of Hand and Upper Extremity Surgery, 2nd Ed., along with bulleted summaries, key points, and anatomical insights. Each topic also includes a media gallery with detailed figures, informative surgical videos, and relevant peer-reviewed articles for further research. Additionally, structured lesson plans are available to guide your learning through key topics with videos and other academic resources.

Try out Handthology today to see how this comprehensive tool will become your go-to for hand and upper extremity education. Visit handthology.assh.org to learn more.

Wrap up from the triannual meeting in Washington DC.

This years triannual meeting was an overwhelming educational success.

Highlights included:

- 2,469 attendees from 86 countries
- More than 250 sessions
- Release of the Trauma Reconstruction instructional course book

If you weren't able to make it, the keynote lecture recordings are available for free on Hand.e: https://www.assh.org/hande/s/collection?id=aBPPb0000009tRtOAI

Steven L. Moran
Professor of Plastic Surgery, Professor of Orthopedics
Director Mayo Microsurgical Training Center
Mayo Clinic
IFSSH Member-at-Large (North America)

ECUADORIAN SOCIETY OF HAND SURGERY (ECUMANO)

Hand surgery in Ecuador has experienced sustained growth, driven by the academic and professional commitment of the Ecuadorian Society of Hand Surgery (ECUMANO). This organisation has been a pioneer in the implementation of continuous training programs, positioning itself as the articulating axis of scientific development in this subspecialty.

In cities such as Quito, Guayaquil and Cuenca, ECUMANO has organised high-level courses and workshops, including practical trainings in microsurgery, wrist arthroscopy, reconstructive surgery and management of complex hand trauma. These activities have had the endorsement of academic institutions and the participation of international experts, strengthening the technical level of Ecuadorian surgeons.

The impact of this training effort was evidenced in the outstanding participation of Ecuadorian professionals at the congress of the International Federation of Societies for Surgery of the Hand (IFFSH), recently held in Washington DC.USA. Representatives of ECUMANO presented original scientific papers, attended cutting-edge symposia and established cooperative links with colleagues from other continents.

Thanks to the work of ECUMANO, Ecuador not only consolidates a trained and constantly updated medical community, but also gains recognition on the international stage of hand surgery. These achievements reflect a sustained commitment to academic excellence and quality specialty care.

ASSOCIATION OF CHINESE-SPEAKING HAND SURGEONS UNITED (ACU)

The "Jiaxia Hand Surgery Forum" reached its 11th year since its launch in 2014 in Nantong, China. The 11th annual Jixia Forum and the First ACU Workshop were held in Yixing, Jiangsu on 14 June 2025. About 70 hand surgeons registered on-site and 170 registered online for the meeting. All participants were encouraged to meet and discuss freely, which made the meeting a great success.

This year's Forum made some changes to the content. In previous years, the same 5 Hand Surgery Units (Beijing Jishuitan Hospital, Nantong University Hospital, Shandong Provincial Hospital, Tianjin Hospital and Enzhe Hospital) were asked to suggest topics for the Forum. This year, six months before the meeting, more than 20 hand surgeons from five different provinces, (Jiangsu, Zhejiang, Anhui, Heilongjiang, and Shandong provinces), were asked to answer a questionnaire for topics of interest and problem cases.

Fig. 1: The Jixia Forum in 2025. Participants raised questions and gave opinions.

Fig. 2: Discussion among two senior colleagues.

Fig. 3: To make a point clearer, a demonstration directly on the hand.

Fig. 4: During the tea break, many classmates gathered to discuss enthusiastically.

From hundreds of opinions and suggestions, five topics were extracted: tendon injury and repair, peripheral nerve compression and injury, microsurgical repair and reconstruction, wrist arthroscopy and wrist joint injury, and lymph-oedema microsurgical treatment. Lecturers in China with clinical experience of these topics were invited, and 25-30 minutes of discussion time was added at the end of each presentation.

Although the format was changed, the discussion at this conference was as lively as in previous years. Everyone joined in to share their own experiences and opinions, making the topics under discussion clearer and more understandable. (Fig. 1-4).

This year, for the first time, a workshop related to flexor and extensor tendon repair, and tendon rehabilitation was added to the Congress. The 6-strands core suture methods were demonstrated with special reference to the M-Tang method. The post-op early passive motion combind with active motion program after flexor tendon repair was discussed (Fig. 5).

Fig. 5: ACU Workshop. Trainees learnt and practiced the core suture method for flexor tendon with instructors.

The principles and indications of the relative motion flexion and extension splint, as well as the range of splints after extensor tendon repair in different zones were explained in detail. Participants practiced these suture methods on tendon suture simulators and pig trotters.

Over the past 11 years, The Jixia Hand Surgery Forum has attracted the attention of thousands of colleagues every year, promoting academic exchanges and the development of hand surgery in China. The recorded videos of the meetings are available on the website. This provides learning and communication opportunities for young hand surgeons.

In addition, a major Chinese book project was launched this year to compose a book on hand surgery techniques. About 20 ACU members participate as authors. The book will be published in 2028. ACU members also contributed a large series of surgical videos to E-resource for the IFSSH textbook "Current Practice in Hand Surgery". Multiple journal clubs in Chinese are held each year with more than 1000 online attendees for each session. These are organized by Dr Shu Guo Xing.

On the international stage, a big team of ACU colleagues attended the IFSSH Congress in Washington, DC. USA. A total of 38 presentations were delivered. Nine colleagues were from Nantong University (Fig. 6 and 7). This is one of the largest team from a single institute attending this Congress. ACU colleagues were invited to serve as symposium and instructional course speakers on tendons, flaps, digital reconstruction, and fractures (Fig. 7).

Fig. 6: A big team of 9 colleagues from Nantong University attended the IFSSH Congress in Washington DC, 24-28 March 2025.

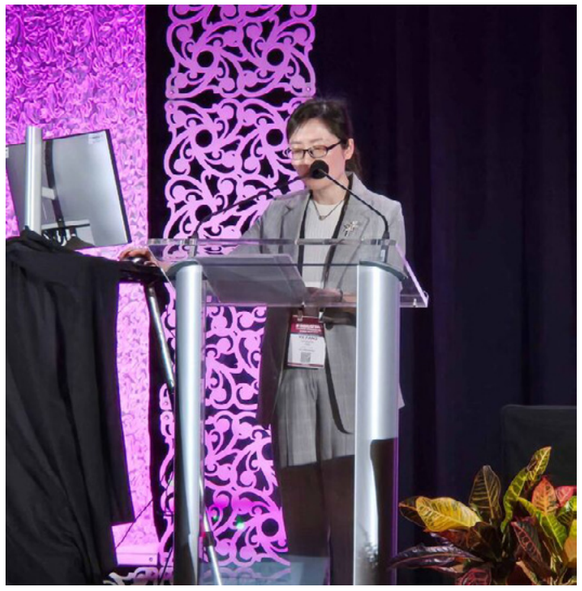


Fig. 7: Dr Ya Fang Wu from Nantong was the first speaker in the first session on the opening day in the main hall of the IFSSH Congress in 2025. She spoke on biomechanics of tendon repairs and transfers.

Fig. 8: A visit by ACU members to Turkey in May 2025, with Dr Egemen Ayhan, a very kind and thoughtful host.

Among the recent visits to international hand surgery centres, ACU members, Drs You Lang Zhou, Jia Liu Fang and Jing Chen, visited Başakşehir Çam and Sakura City Hospital in Turkey in May 2025 (Fig. 8). Jin Bo Tang visited the Niigata Hand Foundation, Japan in February 2025. Dr Jia Liu Fang will host a Journal Club in August and September 2025 with South American colleagues.

Jing Chen
Department of Hand Surgery
Affiliated Hospital of Nantong University.
China.

JAPANESE SOCIETY FOR SURGERY OF THE HAND

The IFSSH-IFSHT 2025 Triennial Congress was held in Washington, D.C., U.S.A., from 24-28 March 2025. More than seventy JSSH members participated in the Congress and had active discussions with hand surgeons from across the world (Fig. 1-3).

Fig. 1: JSSH members with Dr. Tien-Ching Lee from Taiwan.

Fig. 2: In honor of the reunion with Prof. Il-Jung Park and his colleagues from Korea.

Fig. 3: Presenting cartoons of Hand Surgery to Prof. Philippe Liverneaux and Dr. Paul Vernet from France.

Dr. Satoshi Toh, Dr. Moroe Beppu, Dr. Minoru Shibata, Dr. Naoyuki Ochiai, and Dr. Fuminori Kanaya from JSSH were honoured as IFSSH 'Pioneer of Hand Surgery' (Fig. 4). The award ceremony took place during the Welcome Reception held on the first evening (Fig. 5 and 6). All five Pioneers made significant contributions to hand surgery in Japan and internationally.

Fig. 4: Five hand surgeons from Japan honoured as 'Pioneer of Hand Surgery'.

Fig. 5: Pioneer of Hand Surgery Award Ceremony.

Fig. 6: Photo of Prof. Satoshi Toh with Dr. Daniel Nagle, former president of IFSSH.

Several JSSH members played important roles during the Congress. Three were selected for Instructional Course Lectures, eight for symposiums and chairpersons, 20 for oral speakers, and 37 for poster presentations; altogether totaling to 76. (Fig. 7)

Fig. 7: Dr. Satoshi Ichihara giving a lecture on the treatment and strategy for early stage of wrist degenerative arthritis at Instructional Course Lecture 16.

Fig. 8: Group photo of JSSH members who participated in IFSSH.

On the third day, a reception attended by 57 JSSH members was hosted by the JSSH International Committee at a restaurant downtown. (Fig. 8)
On the fourth day, the IFSSH Delegates Council Meeting was held.

The 5 Executive Committee Members-at-Large for the 5 international regions were elected for the next three years. For the first time in 15 years, a member of JSSH, Dr. Satoshi Ichihara was elected as the representative for the Asia-Pacific region (Fig. 9).

Fig. 9: Slide introducing the five new Executive-Committee members in the presentation by Prof. Raja Sabapathy, the newly elected President of IFSSH, at the Closing Ceremony.

That evening, a Gala Dinner was held at the National Portrait Gallery where many members of JSSH attended, deepening the friendship with hand surgeons from around the world.

While we look forward to the IFSSH-IFSHT Triennial Congress in Singapore in 2028, JSSH will continue to promote innovative techniques and basic research in hand surgery, and support hand surgery education in developing countries in collaboration with other Asia-Pacific Member Societies.

Satoshi Ichihara
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IFSSH Executive Committee Member at Large (Asian Pacific Region): 2025
Associate Editor: Journal of Hand Surgery Asian Pacific: 2024
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BRITISH SOCIETY FOR SURGERY OF THE HAND (BSSH)

Join the BSSH

The BSSH International Membership category aims to connect surgeons from all corners of the world. We are committed to the global accessibility of hand surgery and have recently made our application process easier.

Scan now to JOIN!

Membership benefits include:

- Online subscription to the Journal of Hand Surgery (European Volume)
- Member rates for scientific meetings
- Opportunities to be involved in multi-centre research studies, overseas projects, and committees

'MALLORCA HAND 2025' success!

It was fantastic to see over 900 people join us for our Spring Scientific Meeting with the Spanish Society for Surgery of the Hand (SECMA) in Mallorca. It was truly an opportunity to expand friendships and international networks. The educational programme was vast from cadaveric and ultrasound workshops to case-based discussions and presentations on the breadth of hand and wrist surgery, peripheral nerve repair, amyloidosis, congenital hand conditions and microsurgery.

BSSH BAHT Combined Autumn Scientific Meeting 2025

Join us in Birmingham, UK from 27 – 28 November 2025 for our Autumn Scientific meeting. We look forward to welcoming Dr P C Ho and the Hong Kong Society for Surgery of the Hand as our guests.

Find out more and register

BSSH-SECMA Mallorca Hand 2025.

BSSH-SECMA Mallorca Hand 2025.

Instructional Courses in Hand Surgery (ICHS)

The 9th series of our Instructional Courses in Hand Surgery (ICHS) continue with a programme of short focussed lectures, small group tutorials with expert faculty, practical simulation work and facilitated case-based discussions.

Teaching faculty at the ICHS 9.2 Fractures and Joint Injuries.

Upcoming courses:

- Dupuytren's Children's Hand and Tumours, 6-7 February 2026, Manchester, UK
- The Wrist, 19-20 June 2026, Manchester, UK

Delegates getting hands on at ICHS 9.2.

BSSH and The Lilongwe Institute of Orthopaedics and Neurosurgery (LION)

The BSSH LION project continues its third year in good health. There is no shortage of high calibre surgeons and therapists all keen to volunteer their time and experience for this ambitious global project to develop a sustainable hand unit in Malawi.

Senior resident at LION during Module 6 of teaching

In June 2025, the team treated 230 patients including 40 surgical cases. The clinics and theatres ran at full capacity with several children's cases including an extensive release of a burn's contracture as well as a first stage tendon reconstruction with a tendon spacer in a young man.

The team continue to teach regularly, delivering our bespoke curriculum formally every Tuesday morning to the extended LION team. This has recently included paediatric hand teaching about classifications and embryology of the upper limb.

To find out more or donate to this worthy cause, please CLICK HERE

CHILEAN SOCIETY OF HAND AND MICROSURGERY

Every invitation from the IFSSH to publish in the Ezine is a tremendous opportunity to review what has happened in previous years.

Our constant academic activity and attendance often don't allow us to measure the passage of time or have the necessary distance to review our path. As the Chilean Society of Hand and Microsurgery, our local growth and international participation, from Latin-America to the rest of the world, has been constant.

The support of the Latin-American Federation, the International Federation, and friendly societies such as Argentina, Brazil, Colombia, the United States, and Spain, to name a few, has been fundamental to our development. This process and example have allowed us, in turn, to support societies in different growth processes, promoting the training of hand surgeons always with a focus on our patients. Being part of multidisciplinary and global working groups, research, education, and continuous training seems to us the appropriate way to grow and contribute. From this point of view, Chile feels like an important part of this collective.

A relevant milestone is always the triennial IFSSH Congress, a moment to learn and reconnect with old friends and make new ones. On this occasion, in the beautiful city of Washington, DC. USA. with the incredible organisation of our American friends, Chile had, as usual, great participation in terms of attendance and presentations of topics, discussion panels, and research.

Some months after the Congress, in May, the usual Southern Hand Surgery Course and IWAS-LAWA Symposium took place in the beautiful city of Concepción, in southern Chile, with the participation of multiple national experts and our friends from Argentina, Martín Caloia and Ezequiel Zaidenberg. Our Society recognised and honoured Alberto Pérez, one of the founding fathers of hand surgery in our country and a teacher to many. We mourned the passing of our dear Genaro González, another pillar of our specialty, a good friend and professor to many generations of hand surgeons.

In the coming months, we have multiple society activities and active participation in international courses and congresses.

Southern Hand Surgery Course and IWAS-LAWA.

The 20th Latin American Congress of Hand Surgery in Buenos Aires, Argentina, stands out, taking place from 15-17 October 2025, and then our Annual Congress 22-25 October 2025 in breathtaking Puerto Varas, with the participation of our dear friends, Amy Moore, and Antonio Carlos da Costa from Brazil. Bauback Safa will also participate in the Congress and will later perform some complex upper limb surgeries as part of the ASSH Visiting Professor program. Everyone is invited to participate in our Congresses.

In Memorian, Dr. Genaro González

The doors of our diverse and beautiful country, Chile, are open to receive our friends and colleagues from around the world.

Dr. Pamela Vergara, President of the Chilean Society of Hand and Microsurgery.
Dr. Mauricio Prado, Vice President of the Chilean Society of Hand and Microsurgery.
Dr. Esteban Urrutia, Secretary of the Chilean Society of Hand and Microsurgery.
Dr. Sebastián von Unger, IFSSH Delegate.
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ARGENTINE ASSOCIATION OF HAND SURGERY

(AACM "Asociación Argentina de Cirugía de la Mano")

50 ANIVERSARIO 1974 - 2024
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It has now become a standard practice that we are very motivated conducting numerous scientific activities and practical courses to enhance the surgical skills of colleagues from Argentina and Latin-America.

The new Executive Committee for 2024-2025 led by President **Dr. Jorge Boretto** and General Secretary **Dr. Sebastian Valbuena**, and with a special group of surgeons, established a workgroup with the purpose of organising several medical education activities for its associates and members of different Latin-American Societies.

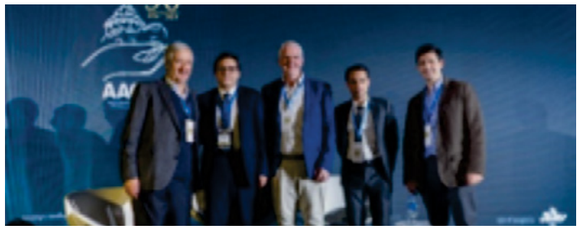
Continuing Medical Education and Scientific activities. As we have been doing since 2021 with great success, **practical courses to develop surgical skills** for young surgeons during the months of March, April, and May were organised. The three practical courses on animal models were: Z-plasty and local flaps, Flexor Tendon Repair and Peripheral Nerve Repair.

A new Webinar format has been launched this year in collaboration with multiple professional societies. From March to June, sessions were conducted jointly with SECMA, ASSH, AAHS, and the International Microsurgery Club."

Flap Coverage Course for Lower Limb Reconstruction was held at the School of Medicine, University of Buenos Aires. This two-day, hands-on cadaver-based course took place in April.

Two **Regional Scientific Conferences**, one in T**renque Lauquen** city in March and the next in **La Rioja** city in August will be held. This kind of activity is important for doctors and rehabilitators from the whole country.

In June, the AACM carried out the **51st Updating Course on Hand and Upper Extremity Surgery** with the theme "Wrist and Hand Arthrosis" in Buenos Aires, at the UCA Puerto Madero Convention Centre, with renowned specialists from Geneve (Lionel Athlani), Liverpool (Daniel J. Brown) and Porto Alegre (Jefferson Braga Silva). This course welcomed 300 attendees and is one of the Association's traditional annual events



Following the Annual Course, on 14 June, a **Cadaveric Workshop on Wrist and Trapezio-metacarpal Arthroplasty** was organised. The course featured the participation of distinguished faculty members, providing attendees with high-level training in advanced surgical techniques.

In July, a **Basic Skills in Upper Limb Spasticity Course** over two days by a group of experts and lead by Caroline Leclercq was held.

In August, AACM is bringing to Tucumán a course that combines the three **practical surgical skills workshops**. This initiative is part of our commitment to providing high-quality, hands-on training opportunities for surgeons and medical professionals in the interior regions of the country.

Also, during August:

- **Regional Scientific Conference** in LA RIOJA with the participation of doctors and rehabilitators. Discussion of problem cases contributed by AACM members and guests.
- A new 7 Class course: **Critical Reading of Systematic Reviews and Meta-Analyses in Hand and Upper Limb Surgery"** by Dr. Sergio Barcia
- Another **Combined Webinar**, with the British Society for Surgery of the Hand (BSSH).
- A new edition of a two day course titled: **Advanced Course in Experimental Microsurgery.**

In **September and October**, a new simulation workshop on **Basic arthroscopy and wrist arthroscopy techniques**, a new Webinar with Dr Sergi Barrera Ochoa and another **Webinar combined with the SFCM led by Dr Jorge Boretto and Dr Laurent Obert** will be organised.

From 15-17 October , Buenos Aires will host the **20th Congress of the Latin-American Federation of Hand Surgery, the 49th Argentine Congress of Hand Surgery, the 14th Latin-American Congress of Hand Therapy, and the 26th Congress of the Argentine Chapter of Hand Therapy**, Led by Drs Sergio Daroda and Guillermo Belluschi.

The event will take place at the **UCA campus in Puerto Madero** and will feature Dr. Alexander Shin as a special guest, along with a large number of national and international speakers from across the Americas. This combined Congress will be full of scientific activity, workshops and will be dedicated to continuing the development of professional expertise and sharing moments of camaraderie and enjoyment.

We look forward to welcoming you in October.
https://www.aacm.com.ar/cursos/congreso2025/

Strength Training Principles in Hand Therapy

Incorporating exercise into the treatment program.

As hand and upper extremity specialists, our focus is to facilitate the healing process of a plethora of conditions in patients from after surgery, trauma related, overuse syndromes to arthritic joints. We learn in our professional development how to assist our patients to navigate through their recovery from initial insult to return to prior level of function using a multitude of treatment modalities. Strength training is one of the most effective interventions that hand therapists can implement yet is still often misunderstood and underutilised. This may be due to several reasons which include, however is not limited to, lack of education on strength training program formulation, fear of injury related to the recovering tissues, unfamiliarity with strength training principles and commonly used nomenclature. The purpose of this article is to begin to help the upper extremity specialist navigate through the patient's healing phases addressing some of the noted concerns and to help unlock the healing potential of strength training.

Strength training has many benefits which includes improved overall strength and cardiovascular function, weight loss, , increased bone mineral and connective tissue density, muscular hypertrophy, improved cognition, greater motor control, improvement in depression scales, and decreased stress levels.[1-2]

As therapists, we prescribe range of motion (ROM), stretch, manual techniques and targeted exercises as part of our daily treatment regimens for our patients. The question is how much do we prescribe? Does every program have to be "3 sets of 10 repetitions"? By prescribing too much we "overdose" our patients with exercise causing inflammation, loss of motion, increased pain, and loss of function. By prescribing too little, we "under-dose", rendering our intervention ineffective. By implementing some basic training principles, we can tailor our exercise prescription for a more focused program meeting our patients' needs. Intensity of the exercise or the volume of the exercise can significantly impact the participant's performance as well. Defining specific common nomenclature, which is used in the strength and conditioning profession, will be beneficial to better plan an exercise program for enhanced muscular adaptation.

Our patients come to us with a variety of needs. These needs may begin in the post-operative phase of intervention or present with a chronic condition which requires a completely different approach to treatment. The negative effects of immobilisation, even within a few days, has been shown to have a 3.5% reduction in muscle mass and 9% loss in strength which may reach 23% reduction after 14 days.[3-4]

Many of our patients already function in a deconditioned state prior to injury, illness, or surgery. Age-related sarcopenia and loss in muscle mass has been shown to increase 3-8% per decade after 30 years of age and that percentage increases after age 65.[5] Prior to programming, it is essential to ask a few basic, however extremely necessary questions. These three questions can inform clinical reasoning in any situation to help in the decision-making process from the use of physical agent modalities to strength training. The questions are:

- What is the target tissue you want to have an impact on?
- What impact are you trying to achieve?
- What healing phase is your client in?

The general term healing is being used here to gain insight into how the hand therapist can begin to introduce a more focused exercise regime in each healing phase (Stage I: inflammatory/haemostasis, Stage II: Fibroplasia/Proliferative, Stage III: Maturation phase). Knowing what phases of healing each patient is in and understanding their precautions gives insight on starting a structured strength and conditioning programme that will lead to enhanced recovery.

Healing Phases

In the early inflammatory phase of healing (Injury onset to 3 days), protection may be necessary for optimal healing to occur, however active range of motion may be acceptable. In this phase we may start with higher repetitions of a non-resistive exercise in a short arc of motion or motion in a particular region proximal or distal that protects the injured tissue yet allows for neuromuscular re-education of the involved motor unit. It is important to note that after immobilisation, cortical smudging can be noted on functional MRI studies.[14,15] Initiation of early active motion or exercise will help mitigate these neural changes due to neural plasticity.

During the fibroplasia or proliferative phase (3 days to 3 weeks), where disorganized type 1 collagen matrix scaffolding is being laid down by the body, exercise that focuses on isometric contraction and isometric holds at various points throughout the arc of motion for a prescribed period may help with reestablishing normal movement patterns, increased fibroblastic tissue healing, greater tensile strength and short-term pain relief.

As the patient moves to the scar maturation/ remodelling phase (3 weeks to 1 year) here we can begin to load the recovering tissue for muscle endurance, hypertrophy, or explosive power/strength based on the individual needs of the client through progressive overload or the SAID principle (Specific Adaptations for Imposed Demands). Progressive overload is a principle defined as "The gradual increase of stress placed on the body during resistance training".[16] The SAID principle or the principle of specificity can be defined as "...the closer the training routine is to the requirement of the desired outcome the better the outcome will be."[17]

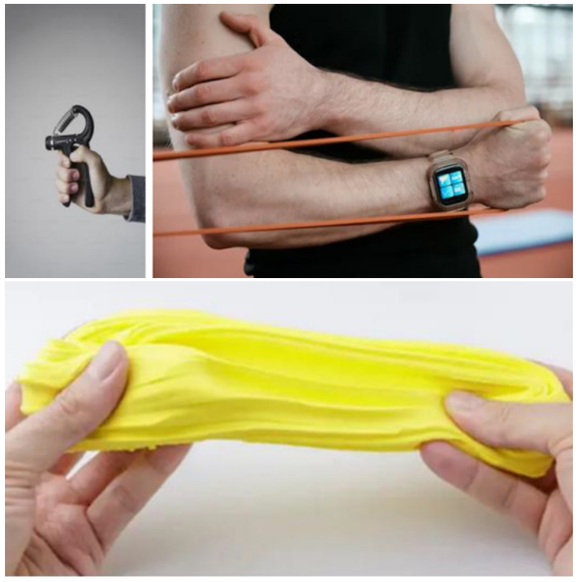


Fig.1: Commonly used mediums in a hand therapy clinic.

With these two principles in mind and understanding healing guidelines, the treating therapist can create an effective strength program to maximize the highest return for function. Commonly used mediums in hand therapy clinics includes therapy putty, therapy bands, dumbbells, adjustable hand strengtheners and everyday objects to simulate the patient's work demands or leisure pursuits (Fig. 1).

Approaches to Prescription

Exercise dosage includes repetitions, number sets of exercise, volume (repetitions x sets), load/resistance, rest periods, multi-joint vs isolated exercise, isometric and isotonic exercises.[6] Each of these modalities can be modified to have a specific impact on the treatment program. Early on in recovery, isometrics may be a prudent choice and have demonstrated a positive impact on tendon healing, improving load tolerance and having a short-term analgesic effect.[7,8] Muscle hypertrophy is a complex lengthy process that can take months.[9] In the subacute phases of healing, individuals may not be able to sustain high demand loads as this may be contraindicated. Early strength gains are made in neurological adaptation, enhanced motor recruitment, and muscle endurance.[10,12] In the early phases, neurological retraining may be the programming of choice prior to increasing overall load and volume. Muscle hypertrophy has been defined as an accumulation of contractile muscle protein while adding sarcomeres in parallel with muscle protein synthesis exceeding muscle protein breakdown. When overall strength or hypertrophy are the goal, the programming can then be modified to meet those desired outcomes.

There is an acronym that I created that helps guide my exercise process for hypertrophic muscular adaptation. I call it the "LIVE principle". L is for load, I is for intensity, V is for volume, and E is for explosive power/strength. There are many combinations of exercise repetition and set programs designed to achieve muscular adaptations, however the "LIVE principle" encompasses them all in a simple way (Fig. 2).

Using the "LIVE principle" the treating therapist can modify exercise resistance/load, overall volume of exercise and intensity based on the needs of the patient in each of the healing phases. As the injured tissue can accommodate greater load following tissue healing precautions, the therapist can begin to increase the intensity of the exercise and the volume of exercise which leads to greater explosive strength. This will accelerate a greater return to dynamic daily living skills and occupational performance. The term volume in strength training encompasses the overall amount of work performed in a training session. This includes the number of repetitions multiplied by the number of sets of a particular exercise, multiplied by the weight used, which helps to stimulate muscular adaptation and growth.

Fig.2: The LIVE acronym can be used as a simple guide when prescribing exercise dosage.

Progressing the patient through each phase of healing can seem daunting when applying various exercise prescriptions. Dosage is the key. If we overdose on exercise, we injure the tissue we are trying to help heal, too little and we are ineffective. Exercise prescription entails many variables, factors and shared goals between the therapist and patient. One of my favourite quotes which is most profound regarding exercise prescription is "The effective application of exercise is equal parts science and art."[18]

Communication with the patient

Rate of perceived exertion (RPE) (Table 1) and reps in reserve (RIR) are terms used in strength and condition programs. RPE scales enhances greater communication with exercise performance between the therapist and patient regarding "...how many more repetitions they believe they could perform before reaching failure..."[19]

Resistance training specific rating of perceived exertion (48)	
Rating	**Description of perceived exertion**
10	Maximum effort
9	1 repetition remaining
8	2 repetitions remaining
7	3 repetitions remaining
5–6	4–6 repetitions remaining
3–4	Light effort
1–2	Little to no effort

Reprinted from Zourdos et al. 2015 with permission.

Table 1: Rate of perceived effort (RPE) scale (Zourdos et al.)

Repetitions in reserve (RIR) is a predictive scale used to assess the patient's estimation of the number of prescribed repetitions that they can safely perform. The higher the RPE score , the lower the RIR "(i.e., 10 RPE = 1 RIR; 9 RPE = 2 RIR, and so forth).[19] Using repetitions in reserve gives the patient greater insight into how safely they can perform the given exercise without poor exercise performance.

For example, in the early fibroplasia phase of tissue healing the load and intensity of the exercise may be kept low, the repetitions may be higher to establish more functional movement patterns. The therapist may cue the patient to keep at least 3-4 reps in reserve towards the end of their set of exercise to ensure not damaging the involved healing structures. The combination of using these two scales can help the therapist safely progress their patient to the next level of exercise performance and enhance greater communication.

Incorporating strength training for the patient in the hand clinic must be individualised. Programming for these needs can prove difficult at times. Is the goal hypertrophy, muscle endurance, explosive strength/power, or muscle endurance/neurological adaptation? Do we use isolated muscle/joint exercise or multi-joint specific resistance training? Making the correct clinical progression without damaging repaired structures or overloading sensitive neural tissues can seem daunting. Table 2 blends the science of tissue healing phases and strength and conditioning programming to help with that clinical decision-making process. Incorporating strength and conditioning into your hand programme can help to improve overall performance and functional outcomes.

Healing phases	Inflammatory phase	Fibroplasia/proliferative phase	Scar maturation/remodeling phase
Mode of Exercise	Strength/Isometrics	Muscle Endurance/Neurological adaptation	Hypertrophy / Explosive Strength
Repetitions	5-8 repetitions	15-20/30 reps	6-12 reps / 4-6 reps
Sets	1-3 sets	2-3 sets per exercise	4-6 sets / 6-10 sets
Holds	10-30 second iso-hold	30-45 second rest periods	30-60 second rest / 120 second rest
Effort	10-20% of 1 rep max	25-30% of 1 rep max	70-80% / 60-70% load(of 1 rep max)

Table 2: Proposed. Proposed Exercise Algorithm for Healing Phases (Krzysztofik et al 2019, Lum et al 2019)12,1. Note: This is only a hypothetical algorithm based on wound healing and cited research. Sound clinical judgment based on indications/contraindications, tissue reactivity and desired goals need to be addressed. Prescription based on specific patient needs must be modified.

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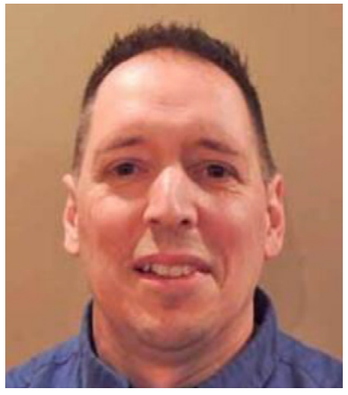

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IFSHT NEWSLETTER – REACH

Issue 1 of volume 5 of the IFSHT newsletter is available on the IFSHT website. This issue is a special feature on the 2025 joint IFSSH-IFSHT Congress: https://ifsht.org/publications/

The publication aims to collate research, education, achievements and clinicians in hand and upper limb therapy around the world.

We call on hand and upper limb therapy clinicians and researchers to submit any contributions for consideration to: informationofficer@ifsht.org

UPCOMING EVENTS

In August (20-23 August 2025) the Colombian Association of Hand Therapists (ASCOTEMA) will hold their 14th National Congress. This will take place in the city of Barranquilla at the Blue Gardens Convention Centre in the Hilton Hotel Garden Inn. Please see website for more details:

Website: https://ascotema.org/

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At the IFSSH and IFSHT Triennial Congress in Washington DC the host of the 2028 Congress was announced. Hosted by the Singapore Society for Hand Surgery and the Singapore Association of Hand Therapists, the meeting will take place in the modern city-state of Singapore. This will take place on the 23-27 October 2028 at the Singapore Convention and Exhibition Centre. Mark your calendars, and we'll see you in 2028!

https://www.ifssh-ifsht2028.org/

Art Exhibit #24

Artist: Tanya Gomelskaya
"Unrest"
3D: oil paint on glass, clay, vintage frame.

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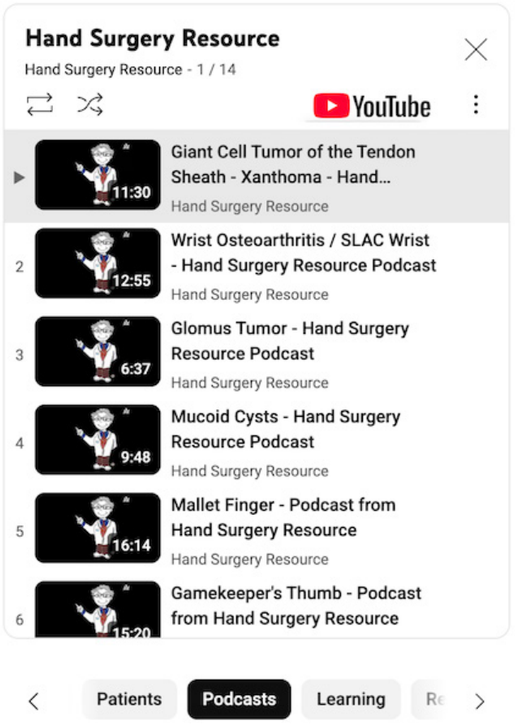

Hand Surgery Resource podcasts are now available on our Hand Surgery Resource YouTube Channel!

An educational asset of The International Federation for Societies for Surgery of the Hand (IFSSH), the Hand Surgery Resource YouTube channel has 2.6K+ subscribers, 46 videos, 173K+ views, and now, 14 Hand Surgery Resource podcasts.

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The International Federation of Societies for Surgery of the Hand (IFSSH) and its educational team, Hand Surgery Resource are thrilled to announce the release of its latest new free mobile application, "Anatomy at Risk." Developed in collaboration with Mobileware, Inc., this innovative educational resource is now available for download on the Apple App Store and Google Play.

Key Features of "Anatomy at Risk":

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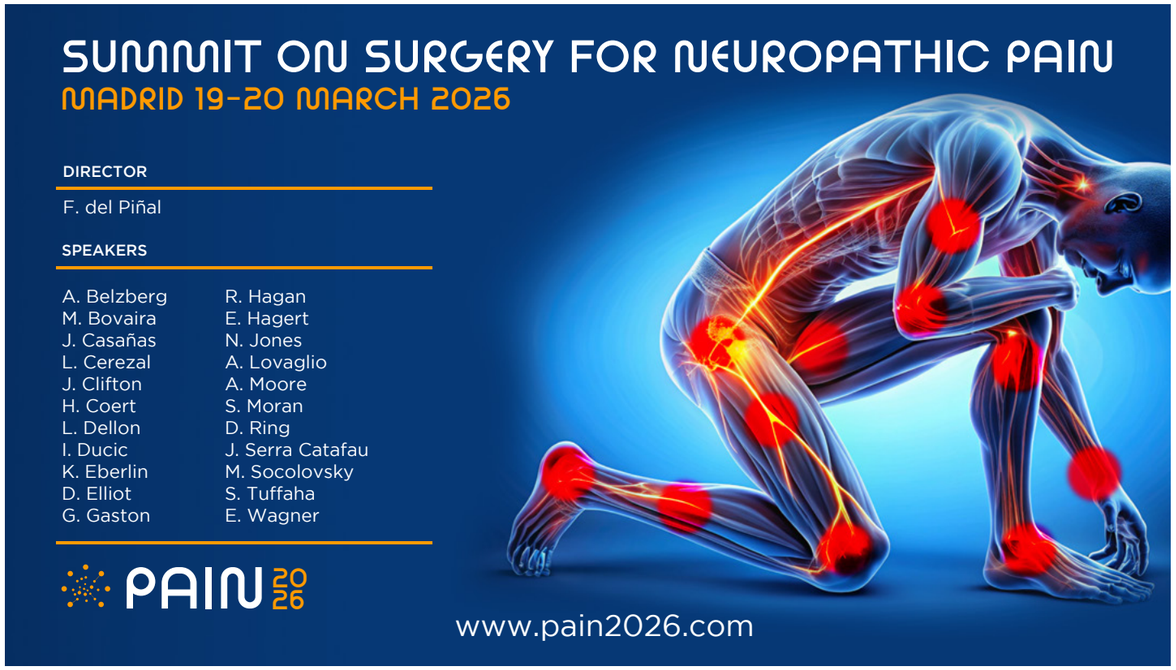
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Black holes in hand anatomy: exploring research areas in hand surgery

Duncan Angus McGrouther

Abstract

The term 'black holes' has been applied to anatomical areas needing further study. The historical account *On Growth and Form* (D'AW Thompson, Cambridge University Press, 1917) applies mathematical principles to explain how physical forces influence the morphology of bone, tendon, ligament and fascia. The trabecular structure of bone is maintained by force loading, providing a map of strain concentrations to better understand fracture fixation and bone healing. The flexor tendon is classified in zones of sheath pathology, but the site of tendon injury depends on the posture at the moment of injury. Ligaments are multistranded structures and in maintaining joint stability throughout motion different fibrous strands must share load by ligament buckling. The fascial description of Guimberteau visualizes the human body as consisting of microvacuoles, quantifiable from the physical Laws of Plateau. Human morphology can be understood through mathematics. These 'black holes' offer possible research avenues to manage some of the unsolved problems in hand surgery or to optimize outcomes.

Keywords

Anatomy, bone, fascia, ligament, synovium, tendon, trigger finger

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Introduction

Despite centuries of anatomical study of the human hand, there remain many areas where structures have either been described quite differently by different authors, or perhaps wrongly described or not described at all. Those deficient areas where confusion or traditional views persist may be considered by application of the cosmological term 'black holes'. Anatomy is often mistakenly considered by the inexperienced to be a dead subject where everything worthwhile has been discovered and recorded, but our knowledge has been constantly improving through the centuries and there is much more to explore.

One example of the potential for age, study and experience to improve the accuracy of anatomical description is that of Leonardo da Vinci. Firstly, as anatomist and later artist, he drew the brachial plexus in his early career with one nerve root absent, and a more accurate depiction followed in later years (da Vinci, n.d.). Another of Leonardo's drawing of the human hand illustrates the flexor tendons as robotic machine-like forces, pointing the way to future biomechanical science, emphasizing that structure and function must be studied together.

Charles Bell (1833) made many contributions to description of anatomical structure and physiology, some of which have earned his eponym, e.g. long thoracic nerve of Bell's palsy, Bell's phenomenon, etc. He undertook many dissections working with his brother-in-law, publishing many illustrations, books and atlases. However, Bell's analytical understanding extended far beyond structure into the realms of analysing *why* our morphology is the way it is. The role of environmental influences is apparent in his published Bridgwater Treatise: *The Hand, Its Mechanism and Vital Endowments as Evincing*

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Black Holes: 'An area in space that nothing, not even light, can escape from, because gravity is so strong there.' (Oxford English Dictionary)

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Design (Bell, 1833). Bell understood that our anatomy conforms to physical forces: 'The magnitude of the earth determines the strength of our bones, and the power of our muscles; so must the depth of the atmosphere determine the condition of our fluids, and the resistance of our blood vessels'. The influence of physics on evolving morphology in this Treatise published in 1833 did not capture the same attention as Charles Darwin's *Descent of Man* 26 years later, and advocacy of the importance of physical forces had to await many decades.

The influence of physical forces was also noted by D'Arcy Wentworth Thompson (Figure 1), anatomist, polymath and philosopher working at the University of Dundee, who published in 1917 *On Growth and Form*, in which he used examples from many species including fossil evidence to propose that laws of physics and mathematics could explain morphology of plants and animals (Thompson, 1917). Considering bone in general, Thompson noted that tubular bone was thickened in the midshaft area to withstand stress and tapered towards the joints proximally and distally where stress was less. He noted that bone was essentially plastic, and the trabecular anatomy was reconfigured after fracture.

In looking for black holes to develop there is a great deal of knowledge that predates Index Medicus, and therefore modern cell and molecular techniques if applied to historical observations can provide new understanding. And so, if as surgeons we can understand why *we are the way we are*, there is potential to capitalize much more on physical force and biological mechanisms to improve current therapies, including rehabilitation regimes.

The drive to define precise structure and function has been encouraged by new concepts in surgical reconstruction, and new imaging technologies such as four-dimensional MRI have stretched the boundaries of our understanding. Black holes do, however, remain and it is difficult to write a review with extensive literature as chosen examples seem to have insufficient literature. My apologies are due to scientists who may have written extensively on a subject of which I am unaware. In this article, examples of dark hole areas seeming to require new insight will be described with illustrations by a selection of tissues: bone, ligament tendon and fascia.

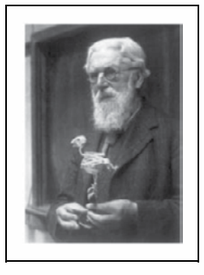

Figure 1. D'Arcy Wentworth Thompson 1860–1948. Author of *On Growth and Form*, 1917, which introduced mathematics to biology, explaining the role of physical forces in anatomical morphology.

Bone

Bones are generally recognized and named from their outside morphology and there is a general appreciation of the influence of muscle origins and insertions on their shape and strength. In comparative anatomy there seems to be a pattern of limb skeletal structures which curiously appear to have common parameters across species. The mouse and the elephant each have five digital rays, as did many dinosaurs (BBC, 2024). It appears that all mammals have evolved from a pentadactyl ancestor and it remains hard to believe that five-fingered species have benefits over other numbers of digits that make them the fittest survivors, or perhaps there are physical laws as well as genetic influences at work. However, given the skeleton that nature has provided, there is a tendency to overlook the complexity of precise internal bone structure, which is important for understanding fracture patterns and means of internal fixation. Each bone is in fact a complex structure with a quite unique arrangement of its rigid internal component parts.

The German surgeon and anatomist Julius Wolff (1836–1902) (1986 translation of 1892 publication) noted that bone in a healthy animal will adapt to the load under which it is placed. The remodelling of bone in response to loading is a process of mechanotransduction by which mechanical forces are converted to biochemical signals (Huiskes et al., 2000). A common example is the map of the trabecular pattern in the head and upper shaft of the femur often described as complying with Wolff's law. In a letter to *Nature*, Huiskes et al. (2000) considered the distribution of trabecular bone based on their understanding that the trabecular bone pattern was not genetically mapped but maintained and adapted in response to mechanical forces, as had been suggested by Thompson's *On Growth and Form* (Thompson, 1917). Pursuing this concept by computer simulation, they considered that osteocytes were likely to be mechanosensors reacting to strain energy density, recruiting osteoblasts with the effect that the lamellae of bone are laid down in a laminated pattern that complies with strain. In Chapter XVI of *On Growth and Form*, Thompson (1917) further outlined an extensive

bibliography over 100 years in multiple languages on the physical effects on tissues, but much of the signalling still requires clarification today. Different cells in different tissues respond to different mechanical influences, with each single cell influenced by its immediate mechanical environment. Much of the detail is beyond the scope of this review

Internal bone architecture

The upper limb has had less focus than weight-bearing bone (i.e. the lower limb or spine), but precise mapping of the internal structures of the distal radius has been described in detail by Bain et al. (2017) along with its relationship to fracture pattern. Using microcomputer tomography on dry bone specimens, they noted a strong subchondral bone plate supported by arches of trabecular bone. The trabecular structure of the metacarpals and phalanges, however, has not had the same attention from clinicians, although the internal structure of bone has been of interest in anthropology where the detailed morphology and therefore strength of bone have been of interest in defining hand and limb usage in extinct primates (Saers et al., 2022).

In preparing imaging data for 'The Interactive Hand', a teaching aid in CD-ROM format (McGrouther and O'Higgins,1997), a detailed series of MRI images with millimetric slices showed patterns of trabecula in great detail. Passing from proximal to distal across the proximal interphalangeal (PIP) joint a series of figures demonstrates the individual arrangement at each cross-section (Figure 2). Commencing in the mid shaft proximal phalanx region there is a well-defined thick cortex with very few if any trabecular structures within the medullary canal (Figure 2(a)).

Passing distally towards the PIP joint, the cortex progressively thins (Figure 2(b)) with a suggestion of delamination of the inner margin; as a result, the cortex becomes less sharply defined. The trabecular component becomes much more defined and longitudinally orientated in the head of the proximal phalanx (Figure 2(c)). At the joint region the cortex is just a thin shell (Figure 2(d)) covered by cartilage on the

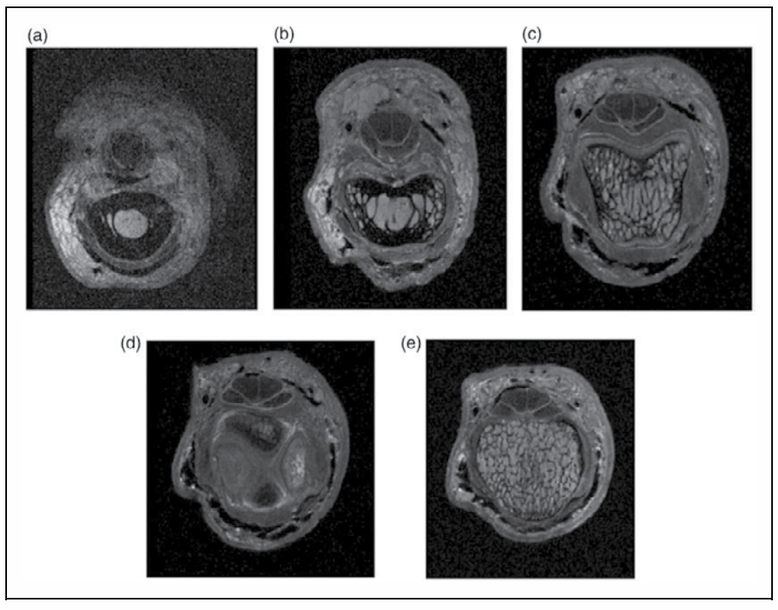

Figure 2. Bone morphology in relation to stress and strain. Cross-sections from a detailed MRI scan from proximal to distal. The Interactive Hand CD-Rom. First edition, 1997. (a) Mid proximal phalanx; cortex has a well-defined tubular form and there are few trabecula. (b) Distal proximal phalanx; commencement of transfer of load bearing from cortex to trabecula and trabecula more obvious. (c) Head of proximal phalanx; cortex dramatically thinned and trabecula well developed and longitudinally orientated. The collateral ligaments are thickened at this point where they are arising from the sulci in the head of the proximal phalanx. (d) Cross-section through articular contact surface of the proximal interphalangeal joint. High spots of proximal phalanx medial and lateral. High spots of middle phalanx flexor and extensor surfaces and (e) cross-section through base of middle phalanx; cortex very thin and trabecula orientated longitudinally and transversely forming multiple small cuboidal cellular structures.

contact surfaces, comprising a structure for load transmission with some flexibility. In contrast, distal to the proximal interphalangeal joint line the trabecular pattern in the base of the middle phalanx has finer laminations (Figure 2(e)) orientated both longitudinally and transversely, displaying a very different load bearing pattern amounting to multiple cubic compartments. These different patterns map out the strain pattern in the proximal phalanx head as longitudinal whereas the compressive strain in the base of the middle phalanx appears multidirectional.

The process by which trabecular pattern is achieved has been discussed by Huiskes et al. (2000) with evidence that the maintenance and adaptation of form are dependent upon stimulation of trabecular bone formation, essentially owing to shearing strains in the bone. Using computer simulation, they describe how given a chosen direction of strain energy density bone hypertrophy is likely to reinforce the format of architecture rather than forming different patterns. These strain patterns determine that traumatized bones will fracture in different ways. Excess longitudinal strain in the proximal phalanx head is likely to result in a unicondylar or bicondylar fracture whereas the bone at the base of the middle phalanx will crumple and collapse under impact loading.

These anatomical trabecular structures also give clues to the deformity patterns in degenerative joint diseases. A detailed study of hand osteoarthritis by Simon et al. (2020) using high-resolution peripheral quantitative tomography has shown decreased trabecular density and increased cortical density in the metacarpal heads in hand osteoarthritis. A trabecular bone score using X-ray diffraction studies has been described as a predictor of compression fractures in vertebrae, but does not seem to have been applied to hand arthritis (Schousboe et al., 2002).

There is a need for a more extensive study and mapping of the inner anatomy of hand bones to give a clearer picture of fracture patterns, and consequently, more information on the best means of fracture management. We know from experience that collapsed fractures of the base of the middle phalanx may require traction or bone grafting (Kolovich and Heifner, 2023), but it is not yet known how we should best deliver the strain necessary to stimulate new bone generation. We should understand that areas of thin cortex adjacent to joints may not provide firm screw fixation. There are many other applications of better trabecular knowledge in trauma management.

Another potential application is in small joint arthroplasty. The difficulty in developing successful long lasting joint replacements in the hand is due in part to a lack of understanding of the mechanical influences that preserve and strengthen bone stock. Despite recent advances, modern arthroplasty designs may result in stress shielding rather than bone promotion. There is a need for further detailed study of microanatomy and strain-driven mechanisms of regeneration in our pursuit of the perfect prosthesis.

Tendon

The subject of flexor tendon injury and repair has been considered at length by this author in the conference book of the 2022 International Federation of Societies for Surgery of the Hand (McGrouther, 2022). As these comments were based on more than half a century of personal experience of tendon anatomy, it would be surprising to suddenly write about a new series of blackholes. There will inevitably follow a repetition of concepts and text but with further pointers to the younger generation of gaps that need to be filled.

Synovial sheaths

The macroanatomy of digital synovial sheaths was beautifully demonstrated by Alan Kanavel (1922) by injection of barium in cadavers using a pump with controlled pressures. He showed that there are separate synovial sheaths in the index, middle and ring digits distal to the A1 pulleys, but sheaths in continuity from digit to carpal tunnel in the case of the thumb and little finger, which incidentally have the least flexor tendon excursion of the digits. Cases of horseshoe abscesses of the flexor sheaths support the likelihood that thumb and little finger sheaths are connected in the carpal tunnel, at least in some patients. With the development of new mini-arthroscopic techniques there must surely be potential for future sheath imaging and intrasynovial repairs (Figure 3).

Focussing on the dynamic mechanisms of the tendon within the sheaths, many concepts of the arrangement of tendon synovium are based upon the description of Mayer (1952) in relation to his original study which was of the tendon of the tibialis anterior. That tendon had a loose fascial covering which he described as paratenon when situated outside a sheath. Within the sheath at the ankle, the tendon had a compact outer layer which he described as an epitenon and internal tissue within the substance of the tendon described as an endotenon. At the proximal pole of sheaths of many different tendons he described a loose fold, termed a plica,

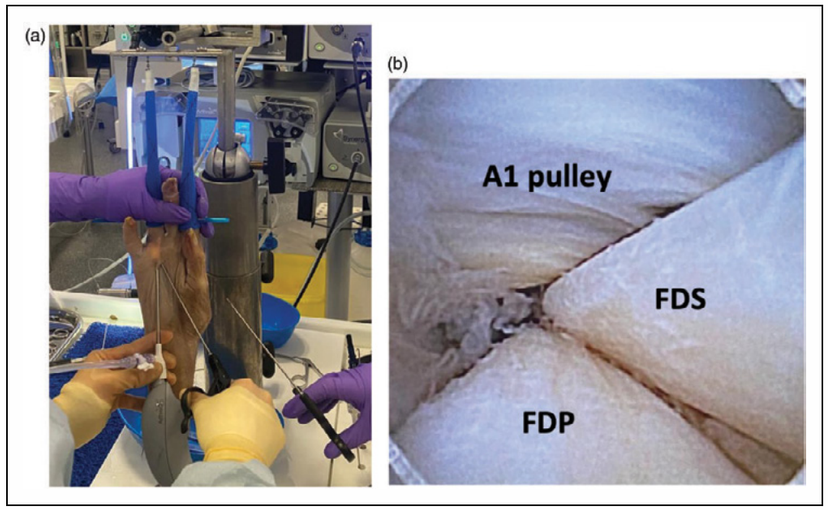

Figure 3. Arthroscopic examination of ring finger flexor sheath and tendon arrangement. (a) Instrumentation setup; and (b) image showing A1 pulley, with flexor digitorum superficialis (FDS) lying above the flexor digitorum profundus (FDP).

allowing invagination on movement. Within this sheath and on the non-contact surface of the tendon he described a thin membrane to supply blood vessels described as a mesotendon. Despite these studies, a full description of the blood supply of tendons is still lacking and there is little evidence for an avascular zone in flexor tendons. There remains considerable variability in tendon sheath descriptions and subsequent attempts by many authors to describe a common format and nomenclature for synovial sheaths of different tendons have been unconvincing. Terms such as epitenon, endotenon, paratenon and mesotenon have considerable variation in different anatomical sites and should be clearly defined or better replaced.

Tendon gliding and resistance

In the uninjured finger, flexor tendons have a frictionless excursion within the flexor sheaths and as tendons glide from intrasynovial to extrasynovial areas it is necessary to appreciate the connective tissue arrangements that allow this smooth motion at the junction to take place. Both Kanavel (1922) and Doyle and Blythe (1975) illustrated sleeve-like arrangements reminiscent of a bowel intussusception as a mechanism at the margins of synovial sheaths, but neither this arrangement nor Mayer's plica would seem to allow enough free movement for the 35 mm of flexor tendon excursion in the mid palmar region. Guimberteau (2001) has demonstrated multiple fascial layers gliding upon one another in his videotape recordings (see below).

As mentioned, direct observation of tendon gliding using modern micro-endoscopy techniques may help our understanding of tendon pathology (Figure 3). A common description of the outer surface of the flexor tendon as a visceral synovial layer and a lining of the sheath as a parietal layer is an oversimplification as both tendons and sheath have many different areas of specialization which require further detailed cellular description. In areas of contact between tendons and between tendons and annular pulleys the synovium is quite different and needs better description. There is a clear need for new studies of tendon synovium employing cell and molecular technology rather than relying upon dated concepts derived from histopathology or naked eye observation (Cohen and Kaplan 1987). The A1 pulley is one area that has had detailed study (Sampson et al.,1991) and has been shown to have a covering of amorphous extracellular matrix including hyaluronan and lubricin (Taguchi et al., 2009). This surface is fragmented and partially absent in trigger finger, suggesting a shearing injury which in turn suggests that trigger finger may be initiated by a 'degeneration' of the delicate lubrication system. Where the cellular pathology lies in trigger finger remains to be seen; I know of only two papers on tendon biopsy of living patients and no functional problems were reported, yet there are many papers on A1 pulley biopsy.

Another area for research pertains to the palmar and dorsal surfaces of the tendons which have very different function and structure. The delicacy of the synovium has made histological study of the surface of the flexor tendon challenging. Edwards (1995) noted that synoviocytes are specialized fibroblastic lineage cells which he stained by uridine diphosphoglucose dehydrogenase (UDPGD). He described a synovial intima of overlapping cells rarely more than three cells thick without a basal lamina or tight junctions, and this cell pattern was incomplete in several areas. More recent studies (Kemble and Croft, 2021) on joint synovium have confirmed this general arrangement of a monolayer or near monolayer of synoviocytes (a basement membrane is now identified), supported by a subsynovial layer of loosely packed fibroblasts and macrophages. This work needs to be repeated on tendon synovium; standard histological preparation has been found to largely remove the surface layers but previous work in our laboratory has managed to image surface cells and our interpretation was that surface cells have numerous surface flagellate processes which appear to bind a layer of hyaluronidase and lubricin which in turn bind water to give a fluid film, thus reducing friction (Kakar et al, 1998). Given the delicacy of this arrangement it would seem necessary for it to have cellular mechanisms of repair and regeneration, possibly owing to macrophages. Tenocytes, which are tendon stem progenitor cells, have been identified but their role and their niche remain uncertain. A recent paper by Chen et al. (2025) has identified a tendon stem/progenitor cell residing in peritendon with self-renewal and multipotent differentiation potentials. These cells were shown to emigrate into the tendon mid substance and differentiate into tenocytes during tendon healing.

Finally, a general finding in various species is that compression areas within tendons have a chondroid appearance and this is also apparent, for example, on weight-bearing areas of the feet of rodents. It is rather less widespread in man but contact areas between two flexor tendons have a chondroid appearance (Walbeehm and McGrouther, 1995). Merrilees and Flint (1980) employed a series of experiments in which they modified the musculotendinous anatomy in various ways; by dividing most of rabbits' tendons in the leg but sparing one tendon and then allowing all of the proximal muscles side by side to apply traction through the residual tendon they managed to place this tendon under excess lateral force as it passed through a retinaculum. The effect was that the tendon area under lateral compressive force changed its glycosaminoglycans towards a much more chondroid pattern. They then had an escape experiment whereby on allowing the tendon to bowstring and straighten up the chondroid biochemistry reverted to a tensional tendon profile. These were ingenious experiments performed before the terms cell biology and molecular biology were in common use and these experiments need to be repeated with up-to-date technology to refine the molecular changes.

Annular pulleys

The A1 pulley has been shown to have chondroid metaplasia (Sampson et al., 1991) whereas the dorsal surface of the tendon has loose gliding synovial tissue with abundant blood supply fed by vincular vessels reinforcing an intratendinous longitudinal supply This vascularized tissue appears to have the function of producing an ultrafiltrate of serum to provide fluid for tendon nutrition or lubrication. Tendon also has an important longitudinal blood supply which seems likely to be disrupted by any method of suture in tendon repair. Synovial surfaces need to be an area of focus for the future to understand and manage 'adhesions', which are currently the greatest challenge in improving outcomes.

Synchronized flexor and extensor tendon biomechanics

A particular Black Hole is our understanding of the complex biomechanics of integrated flexor and extensor function. If an engineer were to devise a machine to drive four linked mechanisms of unequal length it would not work and it is not clear how the hand does this. Of note, the flexor digitorum profundus muscle complex has a double innervation, with a general pattern of index and middle innervated by the anterior interosseous nerve and the ring and little by the ulnar nerve, suggesting an evolutionary process as separate muscles but presenting a neurological challenge in control of simultaneous motion. With so many bones and joints motored by so many different muscles under the control of three peripheral nerves it is amazing that the hand functions as it does in such a co-ordinated fashion.

Flexor tendon zones

Zones are an arbitrary concept which corresponds to a grouping of certain chosen lengths of the synovial sheaths (Figure 3). They do not however adequately describe tendon anatomy within the sheath and a very different pattern of tendon division may be found depending upon whether the wound occurs in flexion or extension (Figure 4). Moreover, the exact degree of digital flexion at the moment of injury

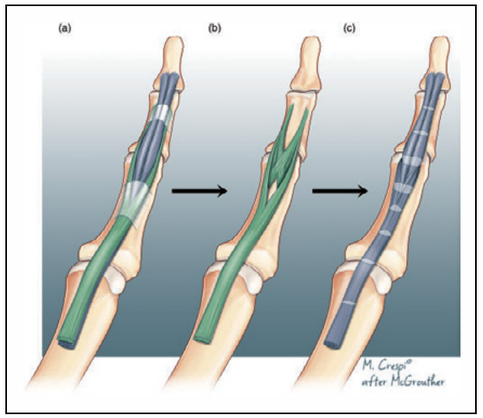

Figure 4. Flexor tendon anatomy. (a) Normal anatomy of flexor digitorum superficialis (FDS) and flexor digitorum profundus (FDP) in a relaxed digital posture. Distal FDP is bifid. Redrawn from dissections and sketches kindly provided by Professor Erik Walbeehm. (b) Normal anatomy of FDS. Modelled after Schmidt et al. (1994) and (c) normal anatomy of FDP alone. Note that the fibres spiral within the FDP tendon in a pattern which parallels the spiralling pattern of FDS. On passing from proximal to distal most lateral fibres curve around the outer tendon from anterior to posterior. The lighter coloured bands show different cross-sectional profiles at different points.

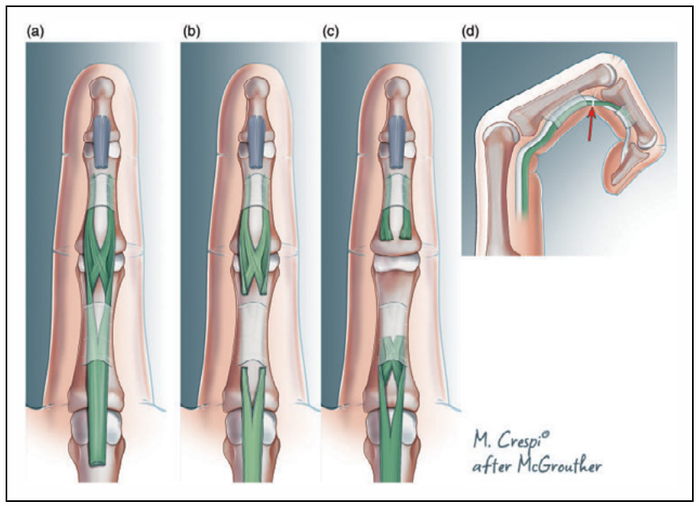

Figure 5. Different pattern of flexor digitorum superficialis (FDS) injury with digit in extension or flexion. (a) Normal FDS modelled after Schmidt et al. (1994). FDP has been divided distally and removed. (b) Pattern of FDS location after division with finger extended, just distal to the A2 pully. (c) Site of FDS injury with finger flexed. There is less proximal retraction when the finger was flexed during injury. However, the amount of proximal retraction in situation (b) or (c) will also be determined by the applied load at the moment of injury and (d) the site of tendon laceration with the finger flexed.

(Figure 5) will alter other parameters of tendon anatomy – blood supply, innervation, chondroid specification and degeneration and lubrication. Some new system of classification is needed to characterize what factors are really important to determine clinically relevant flexor zones.

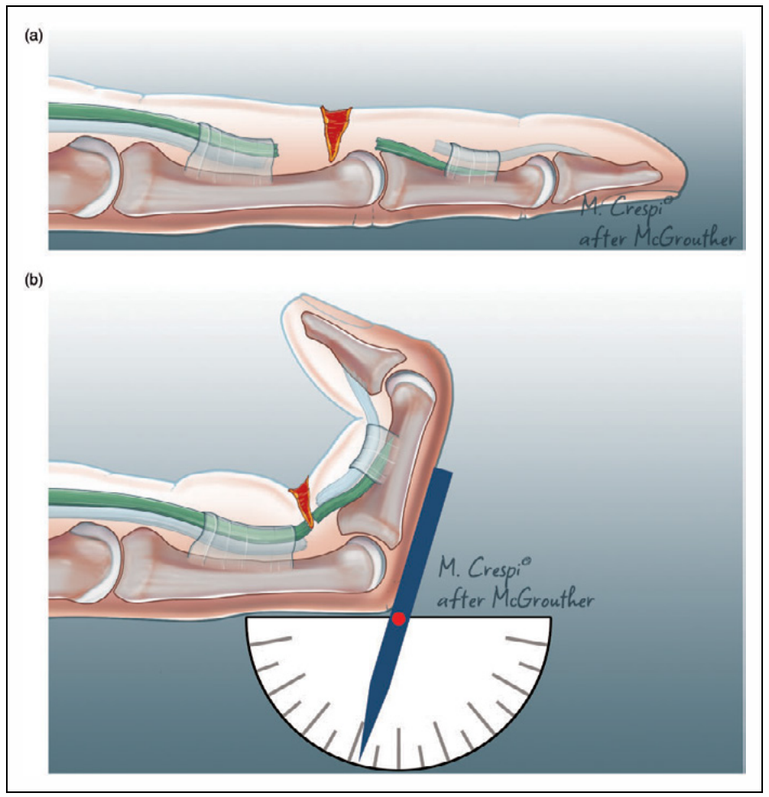

Figure 6. Recreation of the digital posture at the moment of injury. (a) When the patient with a flexor tendon injury presents at the A&E department it is not possible to know whether the injury was sustained in flexion or extension although there may be clues from the history and (b) it is possible to recreate the posture that prevailed at the moment of injury by flexing both interphalangeal joints until the distal cut ends of FDS and FDP are aligned with the wounds of skin and sheath, This will aid in locating the tendon ends, planning the incision and by recording the joint angles this provides potential data for outcome analysis.

Tendon adhesions

'Adhesions' (Wong et al., 2010) are a very non-specific clinical term after a tendon trauma as surface adhesion is only a small part of the zone of cellular injury. Deep to the surface adhesion there is a dense zone of cellular inflammatory change in both damaged tendon and surrounding tissues. An outdated concept is the theoretical potential for intrinsic vs. extrinsic healing. Many cell populations participate in tendon healing inevitably from both within the tendon and neighbouring structures. The surface cells have been shown to migrate into a wound defect and also through the tendon substance. Distant stem cells may also be involved as many tenocytes will necrose after injury and many more after surgical repair (Wong et al., 2010). There

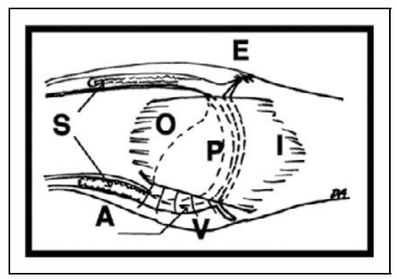

Figure 7. Collateral ligaments of the proximal interphalangeal joint (PIP joint) showing attachment to bone. E, Extensor insertion; V, volar plate; O, origin of collateral ligament proximal to dotted line; I, insertion on middle phalanx; P, proper collateral ligament; A, accessory collateral ligament. Illustrations by kind permission of Mark Allison. *J Hand Surg* 2005; 30A: 1026–1031.

is a need for us to know much more about the cell and molecular participation, both local and distant, in order to optimize our management of tendon injuries.

Degenerate tendon conditions

Tendons suffer a range of 'degenerative' tendon pathologies around the fifth decade of life. When encountered in significantly younger patients there is usually a history of physical overuse activities in the gym, repetitive job stresses or carrying heavy objects or young children. Tendinopathy conditions have in common an anatomical basis of a tendon being under pressure, but the exact pathology differs. The tendon in trigger finger may have little to show when explored other than some yellowish discolouration or a dry surface, whereas in de Quervain's tenosynovitis the tendons can be visibly and painfully inflamed, swollen and hyperaemic. It is not clear if the different pathology is due to different mechanical stress or different cell biology. De Quervain's involves two different tendons undergoing multiple different axes of wrist movement whereas trigger finger has a single bending axis. Triggering occurs (Chuang et al., 2017) at an area of anatomical thickening of the combined flexor tendon mass where the flexor digitorum superficialis splits and encircles the flexor digitorum profundus. The trigger occurs when the tendon overall is swollen for reasons yet to be determined.

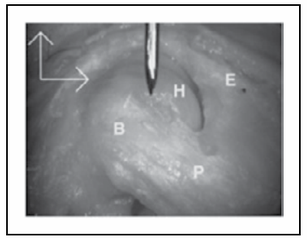

Figure 8. Lateral view of the proximal interphalangeal joint (PIPJ) in flexion. E, Extensor partly removed to expose H, proximal phalanx condyle. On PIPJ flexion, a bulge, B, appears in the proper collateral ligament, P, owing to folding as fibres roll over their neighbours.

Ligament

The third structure we will look at is ligaments. Ligaments are condensations of viscoelastic fibrous tissue with roles in influencing motion and resisting unwanted motion in skin anchorage or joint stability. Joint ligaments are fibrous structures that maintain contact of articular cartilaginous surfaces during a range of movements. Some ligaments seem to have a role throughout joint motion while others seem to have a major role in checking the end of a range of motion; the anterior cruciate ligament in the knee is a good example.

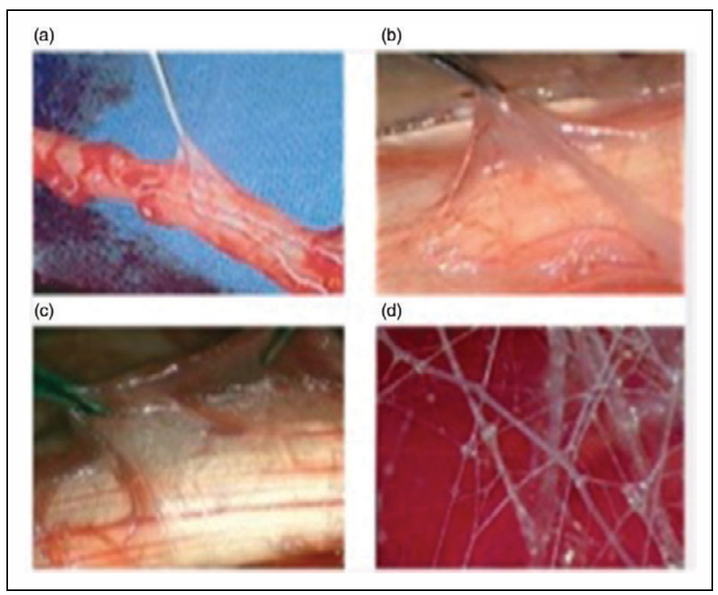

Figure 9. Fascia after the observations of Jean Claude Guimberteau: (a) low magnification image of fascial structure; (b) higher magnification view of mobile fascial structure; (c) higher magnification – bubbles of microvacuoles seen in junctional areas; and (d) individual connective tissue fibres criss crossing to form boundaries of microvacuoles.

Ligament in hand joints

In considering what is required in the hand the interphalangeal joints have a very specific requirement of preventing subluxation or dislocation not just at the end of a range of motion but contributing to stability throughout the range of joint flexion or extension. Thinking about this geometrically and understanding that the PIP collateral ligaments have broad areas of origin and insertion on the phalanges (Figure 6), any individual fibre would only be under tension at one point of the range of joint motion and otherwise it would be slack. It might be expected that the dorsal edge of the ligament would be tense on flexion but slack on extension, but this was not apparent in cadaveric studies (Allison, 2005). Clearly a different mechanism was required to maintain stability in this complex three-dimensional ligament structure. Allison (2005) also noted that as the PIP joint flexed, bulges appeared in the ligaments with the fibres of one part of the ligament rolling over its neighbours (Figure 7). Rather than any fibres becoming slack they maintained their tension by adopting a curved course from origin to insertion bunching up in a more curved alignment.

Figure 2(c) illustrates the remarkable thickness of the collateral ligaments, a detail that had not been made plain in previous illustrations. The bulging of the collateral ligaments increases their strength such that trauma is more likely to result in fracture rather than total ligament disruption although partial tears are not uncommon. The ligament pattern of the PIP joint requires further study of the microanatomy and dynamics of movement, although every ligament in the hand is a candidate for microfibrous analysis during joint movement. This could be an excellent computational study which could greatly contribute to our understanding of fracture patterns around the hand joints.

Fascia

The last structure we will examine is the humble fascia. Fascia is an anatomical term which encompasses many different types of tissues for static or dynamic movement, restraint or lubrication (Guimberteau et al., 2010). The most obvious macroscopic structures have been named, including the deep fascia, fascia lata and palmar fascia, but their mechanical roles of restraint and lubrication have long been underplayed. Traditional anatomical cadaveric dissection has often removed delicate fascial tissue to access solid organs without considering its static structure or dynamic behaviour.

A detailed anatomy of fascia

In the hand, Jean Claude Guimberteau (2001) has given us an entirely new concept of fascial structures by high-magnification studies in living patients at operation. He has used video as a medium to explain his innovative concepts of fascia dynamics of movement rather than relying upon more traditional and static forms of academic literature publication. Relying upon his operation fields as the basis for his studies he has avoided the problems inherent in cadaveric dissections of desiccation and specimen deterioration. Much of the delicate tissue he describes can be damaged at open surgical procedures owing to surface drying, chemical toxicity and traumatic surgery. Offset against these benefits of video recording of dynamic movement are the problems of rapid change of format in electronic teaching media limiting dissemination of knowledge.

Guimberteau's new concept of the structure of the human body explains many confusing historical findings, such as the fact that the human body is 60% water. Essentially, we are a mass of fluid-filled spaces of different dimensions both intracellular and extracellular. Guimberteau (2001) views fascia as a network of fine fibrous filaments (Figure 8) in a fractal configuration, best explained as similar patterns recurring at progressively smaller or larger scales. The tiny three-dimensional spaces between delicate fibres are described as microvacuoles. The whole structure of our microvacuolar system is therefore analogous to the structure of soap bubbles where round bubbles packed together become facetted in shape and comply with the Laws of Plateau (they meet in threes at angles of 120°). These laws were formulated in the nineteenth century by the Belgian Physicist Joseph Plateau and explained recently by the science author Philip Ball (2011).

Blood vessels in a zig -zag pattern course through this fascia plexus with enough laxity to allow motion between layers of microvacuoles. Three-dimensional movements of any area of tissue result in the fibres changing orientations and thus altering the shape of the microvacuoles. On this pattern, Guimberteau et al. (2010) describes the flexor tendon synovial sheath as a larger macrovacuole with blood vessels as vincula traversing the vacuoles. Such a complex arrangement in a structure often considered insignificant and removed without hesitation has been demonstrated by Guimberteau (2001) to play a key role in the frictionless excursion of flexor tendons. It is therefore unfortunate that Guimberteau's

tissue dynamics and fascial science have not had the recognition and wide understanding that they deserve. There should be no black hole here but only something waiting to be discovered and announced.

Conclusion

The framework of Guimberteau meets with the philosophy of D'Arcy Wentworth Thompson, where this article commenced, about the role of physics and mathematical laws and quantitation of our tissues. Even as modern surgery advances, any procedure will continue to be blighted by scar, fibrosis and adhesions. The supreme challenge in innovation of repair of all tissues is to be able to regenerate Guimberteau's microvacuolar fascia. An enhanced appreciation of the different internal bony architecture will allow us to understand more about fracture patterns. A fresh look at the microanatomy of tendons will help us achieve better outcomes following injury. The same can be said for ligaments, where mere assumptions must give way to novel biomechanical studies. It is hoped that these few examples will hopefully show where black holes still exist in hand surgery, with potential research areas for our enlightenment of this wonderful organ.

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