

RE-PUBLISHED ARTICLES
MANAGEMENT OF UPPER
LIMB SPASTICITY

HAND THERAPY
MUSICIANS IN PAIN:
EMPOWERING CHANGE



Report on Newborn Compartment Syndrome



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We've revised the abstract timeline for the 2025 IFSSH-IFSHT Triennial Congress to give you more time to craft the best abstract possible. There are hundreds of opportunities to present your work at this unique Congress taking place in the United States for the first time in more than three decades!

Start planning your trip, and submit an abstract by May 20 to be part of this prestigious, international meeting in 2025, hosted by the American hand surgery and hand therapy societies.

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Notes from a MULTITASKING SURGEON

The term 'routine surgery' is a misnomer.

No two surgical procedures are the same, even if a specific type of procedure has been done countless times and therefore gets labelled as routine. Pathology and anatomy are different in every patient.

Surgery is not an exact science; there are too many variables at play. For this reason, it is essential to focus on the surgical task at hand because the unexpected may be encountered with each next step.

Teaching or mentoring while operating could compromise one's concentration and may lead to suboptimal surgical outcomes or unintended mistakes.

I thoroughly enjoyed lecturing and mentoring, both in the classroom and the operating theatre. However, while operating, I was always aware of my divided attention, and worried that I would miss or overlook something during an operation while attempting to teach simultaneously. I was often worried about the final outcome of those operations which did not have my full attention, even when these were so-called 'routine procedures'.

Multitasking may be a special talent, but it is important to remember that patients put their full trust in you as their surgeon to do your very best without compromise.



Just a thought from experience.
Happy surgery!

ULRICH MENNEN
Editor

ezone
ifssh
CONNECTING OUR GLOBAL HAND SURGERY FAMILY

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IFSSH President's Report



Our Triennial IFSSH Congress in March 2025 is less than a year away. Our Secretary General, David Warwick, and I had the privilege to meet with the organizing team in Washington DC to catch up on the preparations and evaluate the proposed Congress venues. Washington DC was at its best: a majestic capital city, with warm sunshine, and cherry blossoms in full bloom. Plans are already well underway for what will be an outstanding international meeting. The organizing committee leaders—Jim Chang, David Ruch, Nash Naam, and Aviva Wolff—and the Congress secretariat led by Natalie Hinman hosted us and showed us with pride how far and how effectively the event is progressing.

The venue at the Marriott Marquis is ideal. It is situated in the heart of the city and has abundant space for all the scientific sessions and exhibits. A block of 800 rooms has been reserved at the Marriott Marquis, and there is a wide range of hotels very close by. The Congress venue is within walking distance of the White House, Washington Memorial, Smithsonian museums, galleries, downtown shops, and restaurants.

The program committees led by Jeff Yao, Jeff Friedrich, and Aviva Wolff have designed the scientific sessions to include up to 11 parallel sessions including scientific papers, symposia, instructional course lectures, and industry workshops. They allowed space for 600 free papers for surgeons and 264 papers for therapists. We are deeply honored and privileged to announce that Dr. Fu-Chan Wei will give the Swanson Lecture.

The deadline for abstract submissions has been extended to Monday 20 May 2024 (<https://www.ifssh-ifsh2025.org/s/abstract-submissions>). There is still time to submit any work you wish, even if presented at another national or international meeting—we want to capture what is going on around the world.

The congress hosts have made every effort to make the Congress affordable and will offer a "Buy-One-Get-One Free" (BOGO) program. The BOGO program functions as follows: anyone who registers for a full registration from a low or middle-income country as defined by the World Bank will be eligible to have one of their trainees attend the Congress free of charge. Of course, the person sponsoring the trainee will need to document that the person sponsored is a direct trainee under their supervision.

The Travelling Fellowship program, successfully introduced at the London IFSSH Congress in 2022, will be sponsored for this Congress by the AAHS, ASSH and IFSSH. This program will underwrite the visits of 24 young hand surgeons to several leading East Coast hand surgery centers and cover the fellows' IFSSH Washington DC Congress registration fee. This program has been wildly popular and has significantly impacted the professional lives of those who have had the privilege of participating.

The Program Committee has worked diligently to design a social program that will be worthy of the IFSSH and reflect the splendor of Washington DC. One bonus of having the Congress in Washington DC is that entry to all of the Smithsonian museums is free.



Washington DC has a plethora of great restaurants of all prices. There is a vibrant nightclub scene and of course, if Mother Nature cooperates, we will have the backdrop of cherry blossoms. The program committee has outdone itself in securing the National Portrait Gallery for the Gala Dinner to be held on Thursday 27 March 2025. (<https://npg.si.edu/home/national-portrait-gallery>) This is a truly stunning and majestic venue featuring many important works of art, including the portraits of all of the Presidents of the United States.

Registration and housing will open on 15 July 2024 (www.ifssh-ifsht2025.org)—start planning your travel and visas now. If you need a formal letter to support a visa, please contact the Congress secretariat and include the information required, as listed on the Congress travel page (www.ifssh-ifsht2025.org/s/travel).



Finally, I would like to thank Professor Warwick for allowing me to base this message on his Washington DC site visit report.

I look forward to seeing you in beautiful Washington DC.



DANIEL NAGLE
President IFSSH

Message from the Secretary-General



The Inaugural IFSSH Mid-Term Course, Quito Ecuador, 31 January - 3 February 2024

The International Federation of Societies for Surgery of the Hand officers Jin Bo Tang and Raja Sabapathy proposed in 2021 that, in an effort to increase Member Society engagement and regional hand surgery education, the IFSSH would support what would be called an "IFSSH Mid-Term Course in Hand Surgery". The Course would be an educational event featuring local, regional and world experts presenting lectures on all aspects of surgery of the upper extremity. It was not to be a congress featuring original scientific research. Through a bid system, in 2022 the IFSSH Delegates' Council awarded the opportunity to host the inaugural Mid-Term course to the Ecuadorian Society for Surgery of the Hand (ECUMANO). The first IFSSH Mid-Term Course in Hand Surgery was a spectacular success expertly hosted by ECUMANO led by Dr. Fidel Cayón and Dr. Gabriel Alegría, with significant input from our IFSSH South American Member-at-Large, Dr. Aida Garcia.

The beautiful city of Quito was tranquil as we had indeed been reassured by the organisers. Participants travelled from all over the world to the centre of the world.

The new Quito Metropolitan Convention Centre was a perfect venue, set 2850 meters above sea level in a valley surrounded by the Andes with easy access by metro, taxi and buses arranged by the hosts. The IFSSH-sponsored keynote speakers - Don Lalonde, Amy Moore, Andrea Atzei, Marc Garcia Elias, and Chaitanya Mudgal – provided excellent masterclass lectures. Several workshops and innumerable lectures covering all aspects of hand surgery were offered.

The atmosphere was friendly, fun, relaxed yet excited. There were 493 attendees including 54 Hand Therapists from 25 countries.

Thank you Drs. Cayón, Alegría, Garcia and ECUMANO for hosting an amazing Inaugural IFSSH Mid-Term Course.

We hope you enjoy reading the full report of the 1st IFSSH Mid-Term Course from the ECUMANO hosts in this Ezine issue.

Site Visit: 2025 IFSSH-IFSHT Triennial Congress, Washington, DC.

Dan Nagle, IFSSH President, and I joined the IFSHT Executive and the 2025 Congress Local Organising



Committee (from the ASSH, AASH and ASHT) in Washington, DC., on 24-26 March 2024 to inspect the congress scientific and social venues and discuss the planning and progress. This site visit occurred exactly one year prior to the Congress commencement ie 24-28 March 2025, to allow us the full March experience, including the cherry blossoms that framed the streets. We were able to explore the fantastic city with our wonderful hosts and can assure all Congress participants that they will be treated to an excellent time at the 2025 Triennial Congress. We remind you to submit your abstracts by 20 May 2024 to be part of the scientific program

More Congress information and a Congress update by Jim Chang (2025 IFSSH Congree Chair) can be found elsewhere in this Ezine issue. A full report of the site visit is provided in the President's Report by Dan Nagle.

2024 IFSSH Delegates' Council Meeting – Save the date

The 2024 IFSSH Delegates' Council Meeting will be held at 12:30pm, Thursday 27 June 2024. This will be in Rotterdam, hosted within the annual FESSH Congress. We hope to see many IFSSH Delegates (or appointed proxies) there to represent the 63 IFSSH Member Societies.

Calls for Nominations and Applications

Please note the following five topics and dates, all of which will be selected/awarded at the 2025 IFSSH Congress in Washington, D.C., 24-28 March 2025.

1. 2025 Pioneers of Hand Surgery: Call for Nominations

The IFSSH welcomes nominations for the 2025 IFSSH Pioneer of Hand Surgery honours. The IFSSH awards "Pioneer of Hand Surgery" status to any person who excels exceptionally. We encourage your Society to nominate only the most deserving of members who fulfil all the listed criteria.

The guidelines for nomination and the application form are on the IFSSH website - <https://ifssh.info/>

[pioneers_hand_surgery.php](#). Complete applications must be received by the secretariat (administration@ifssh.info) by 24 September 2024.

2. 2025 Elections: Executive Committee and Nominating Committee members

At the 2025 Congress, the IFSSH Delegates' Council will elect the following officers to join the IFSSH Executive Committee:

- the incoming Secretary-General;
- a Communications Director; and
- 5 ExCo Members-at-Large (regional representation)

In addition, outside of the Executive Committee, but to specifically be a part of the Nominating Committee only:

- 2 Nominating Committee Members-at-Large

The full position descriptions and application processes for these positions have been distributed to all Society delegates. These are also listed on the IFSSH website https://ifssh.info/2025_committee_elections.php. All societies should consider the essential and desirable qualities for the positions when considering nominations.

Applications must be received by the secretariat (administration@ifssh.info) by 24 December 2024.

3. 18th IFSSH Triennial Congress (to be held 2031): Call for Host Society Bids

The IFSSH Executive Committee has recommended that member societies from the South American region be invited to host the 2031 triennial congress. This main scientific event of the IFSSH will be celebrated every three years in a Member Society country that is in good standing with the IFSSH, including payment of their annual dues.

The Congress Guidelines are available on the IFSSH website: <https://ifssh.info/guidelines.php>. The bidding host must register their intent to bid with the IFSSH Secretary-General (administration@ifssh.info) by 24 September 2024, then distribute their full submission to the named groups in the guidelines by 24 December 2024.

4. 2nd IFSSH Mid-Term Course in Hand Surgery (to be held 2026-2027): Call for Host Society Bids

The IFSSH Executive Committee has recommended that member societies from the European/African region be invited to host the 2nd IFSSH Mid-Term Course in Hand Surgery. This Course is to be held midway between the 2025 (Washington, D.C.) and 2028 (Singapore) triennial Congresses.

The Course Guidelines have recently been updated and the revised information is now available on the IFSSH website: <https://ifssh.info/guidelines-to-host-anIFSSH-mid-term-course.php>. The bidding host must register their intent to bid with the IFSSH Secretary-General (administration@ifssh.info) by 24 September 2024, then distribute their full submission to the named groups in the guidelines by 24 December 2024.

5. 3rd IFSSH Mid-Term Course (to be held 2029-2030): Call for Host Society Bids

To allow for additional Course preparation time, the host Society of the 3rd Mid-Term Course n Hand Surgery will also be selected at the 2025 IFSSH Delegates' Council Meeting. Moving forwards, the Course will always be selected 4-5 years in advance, similarly to the Congress being selected 6 years in advance.

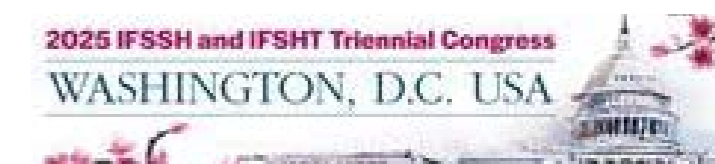
The IFSSH Executive Committee has recommended that Member Societies from the North and Central American (including Caribbean) region be invited to host the 3rd Mid-Term Course, midway between the 2028 and 2031 Triennial Congresses.

As above, the Course Guidelines have recently been updated and the revised information is now available on the IFSSH website: <https://ifssh.info/guidelines-to-host-anIFSSH-mid-term-course.php>. The bidding host must register their intent to bid with the IFSSH Secretary-General (administration@ifssh.info) by 24 September 2024, then distribute their full submission to the named groups in the guidelines by 24 December 2024.

Future Meetings

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

XVIth IFSSH – XIIIth IFSHT Congress
Washington D.C., USA
24 - 28 March 2025



XVIIth IFSSH – IVth IFSHT Congress
Singapore
23 – 27 October 2028



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David



DAVID WARWICK

Secretary-General, IFSSH

davidwarwick@handsurgery.co.uk

Report of the first Mid-Term Course

Fidel Cayón



This is a report of the achievements of the first IFSSH Mid-Term Course.

It is important to remember that we had major geopolitical problems which we had to overcome during the last weeks before the Course. In spite of having lost some commercial sponsorships as well as having lost the participation of some speakers and attendees who were previously registered and confirmed, we managed to have a very successful Course.

We had a total of 493 attendees (418 in person and 75 virtual). Fifty four were therapists. There were 150 speakers. Of these speakers, 24 were hand therapists and 126 were hand surgeons. The number of attending industry representatives who contributed to the financing of the course was 72.

Delegates came from 25 countries including: Argentina (14), Australia (2), Brazil (5), Canada (2), Chile (21), China (6), Colombia (40), Costa Rica (5), Dominican Republic (13), Ecuador (141), Germany (3), Guatemala (3), Honduras (2), Hungary (1), Italy (1), Mexico (21), Nicaragua (1), Panama (2), Peru (23), Philippines (3), Spain (5), United Kingdom (3), Uruguay (2), United States (13) and Venezuela (11).

Five Master Classes were presented by 5 invited guests who are experts in their field. These complemented the rest of the Course. The Master Classes covered five main areas: biomechanics and basic science, arthroscopy, nerve and microsurgery, fractures and osteosynthesis and WALANT surgery.



A conference room was set aside especially for the workshops (Mitad del Mundo). A total of 10 different theoretical-practical events were held in the open exhibition area thus reaching all the attendees of the event. Some of these events were held during the coffee break times.

A few "Meet & Greet" conversation events between attendees, speakers and professors were organised. Since it was a new format the attendance was not as expected. However all the comments by those who attended were excellent. We are sure that in future this format can be taken as an example and built on.

The social part of the Course was a dinner, called "Dinner to unite the Hand Surgery world at the very center of our Planet". Indeed, we had this social dinner, in the very center of the planet, behind the Mitad del Mundo monument, with 241 participants who danced in the northern as well as in the southern hemisphere.



In short, the First Mid-Term Course was really a great and successful event. The Course was recorded and may be of interest, not only for those who have attended, but especially for those who missed the Course.

FIDEL CAYÓN
 First Mid-Term Course Organiser
 International Representative ECUMANO
www.ecumano.org
info@ecumano.org





JOIN US IN THE UNITED STATES AND SHARE YOUR EXPERTISE.

Hand care professionals from across the globe will gather at the [2025 IFSSH-IFSHT Triennial Congress](#), March 24-28. You won't find a better place than the most influential stage in the global hand care community to share your work.

The meeting will take place in the one-of-a-kind city of Washington DC, during the beautiful [National Cherry Blossom Festival](#), when 3,000+ cherry blossom trees will be in full bloom, honoring both USA and Japanese culture. Mark your calendar and join us in March 2025!

ABSTRACT PROPOSALS ARE DUE: MONDAY, MAY 20, 2024

Questions may be directed to abstracts@ifssh-ifsht2025.org.

START PLANNING TO TRAVEL TODAY

International visitors who need a visa to travel to the U.S. must apply for one at an American embassy or consulate. To request an invitation letter, please reach out to info@ifssh-ifsht2025.org with your full name and current address.



PASSPORTS

If you are travelling by air between the U.S., Canada, Mexico, Central and South America, the Caribbean, and Bermuda, you are required to present a valid passport, Air NEXUS card, or U.S. Coast Guard Merchant Mariner Document, or an Alien Registration Card, Form I-551, if applicable.



2025 IFSSH/IFSHT Congress Update



Dear IFSSH/IFSHT Friends and Colleagues,

I am very pleased to announce that, in response to many requests for additional time to join this momentous meeting, we will be extending the abstract paper deadline for the [2025 IFSSH/IFSHT Congress](https://www.ifssh2025.org) in Washington DC 2025 to May 20, 2024! Hopefully this will give everyone time to submit their best work for wide exposure to the world of hand surgery and therapy.

As this is truly a standalone international meeting, we will be happy to review and accept papers that have been or will be presented at your own local and national hand surgery meetings. This is because we want the best material from your region presented to the whole world.

The final deadline for submission will be May 20, and you will know results by July 15. Even though meeting registrations do not open until July 15, we urge you contact the host societies at info@ifssh-ifsht2025.org so that you can receive a letter of invitation to begin the US visa application process. The US visa process can be time-consuming, so please begin NOW, even if you are just considering coming.

Our organizing team recently returned from a site visit exactly one year before the meeting, and you can see that the setting around the Washington Monument is beautiful. We look forward to springtime in Washington DC in 2025, when the cherry blossoms will again be in bloom, and we can gather as hand surgery and therapy colleagues and friends.

Please check the website www.ifssh2025.org for continually updated information about the program, registration, lodging, and festivities. All of American hand surgery and therapy are looking forward to welcoming you to Washington DC in March 2025!



JAMES CHANG, MD
Congress Chair

NEWS FROM THE 2025 IFSSH-IFSHT TRIENNIAL CONGRESS ORGANIZING COMMITTEE



The exciting 2025 IFSSH-IFSHT Triennial Congress is just one year away! The United States is excited to welcome hand and upper extremity professionals from around the world to the capital: Washington, DC.

In March, members of the Organizing Committee and Scientific Committee – including ASSH Chair James Chang, AAHS Co-Chairs David Ruch and Nash Naam, ASHT Chair Aviva Wolff, Program Chairs Jeffrey Yao and Jeffrey Friedrich, IFSSH President Dan Nagle, and IFSSH Secretary-General David Warwick – visited Washington to view the venues in-person to ensure the best experience possible at the Congress. The meeting will take place at the beautiful Marriott Marquis, with many rooms available at this hotel as well as another lower cost hotel to be announced soon.

Planning is underway for exciting social events including the opening reception at the Marriott Marquis, the President's Dinner at the International Spy Museum, the gala dinner at the National Portrait Gallery, and a casual pub night at a venue to be determined.

The Scientific Committee is currently reviewing hundreds of abstract submissions that were submitted from across the globe. The full program is packed with sessions and will be finalized soon. Each session will be truly international, with at least ½ of the faculty from outside the United States. The Congress is honored to have Dr. Fu Chan Wei as the 2025 Swanson Lecturer, and additional keynote speakers will be decided soon.

Registration for this Congress will open in July of 2024. The meeting co-hosts encourage all individuals outside of the United States to begin visa applications now. There is more information about which countries require a visa on the Congress website <https://www.ifssh2025.org/s/travel>. Personalized letters for visas are available.

Learn more about the upcoming Congress at www.ifssh-ifsht2025.org!

Basil Helal

(1927-2007)



Basil Helal was born on 28 October 1927 in Cairo, Egypt, was educated at the English School in Cairo and then enrolled at The London Hospital, London, UK, as medical student qualifying with an MB BS (London) in 1951. In the same year he obtained the MRCS

and LRCP qualifications, in 1960 the FRCS (Edinburgh) and in 1962 he added the MCh Orth (Liverpool) to his qualifications. He did his houseman appointments at The London and became orthopaedic registrar first at the United Liverpool Hospitals and then again at The London working under Sir Reginald Watson-Jones and Sir Henry Osmond-Clarke.

Basil completed his orthopaedic training as senior registrar at St George's Hospital and the Woking and Chertsey Group of Hospitals, before his appointment as consultant orthopaedic surgeon to the Enfield Group of Hospitals in 1965 until 1988. He was also consultant hand surgeon at the Royal National Orthopaedic Hospital.

Helal's orthopaedic interest was especially in the hand and foot and the surgical treatment of rheumatoid arthritis. His other interest was in sports injuries and he was orthopaedic advisor to the British Olympic Association over five Olympics. Basil was instrumental in the development of the British Association of Sports and Medicine and later became its President.

He was President of the Rheumatoid Arthritis Surgical Society, the Huntarian Society, the orthopaedic section of the Royal Society of Medicine and the British Society for Surgery of the Hand (1985).

Basil Helal published extensively and contributed to several orthopaedic textbooks. He wrote a biography of the German surgeon Richard von Volkmann.

Basil married Stella Feldman a fellow junior doctor in 1952 with whom he had two daughters and one son. After Stella's death in 1977 he married Susan Livett, a theatre sister with whom he had two sons. He died at his retirement home in Dornoch, Scotland on 17 July 2007.

At the 11th Congress of the International Federation of Societies for Surgery of the Hand in Seoul, Korea in 2010, Basil Helal was honoured as a "Pioneer of Hand Surgery"

Morton Spinner

(1928 - 2003)



Morton Spinner was born in the Bronx, New York (NY), USA on 15 April 1928. He completed his schooling in 1944 at the Bronx High School of Science. In 1944 he graduated with a bachelor's degree and in 1951 with his medical degree from the New

York University. His internship was at the Beth Israel Hospital in NY followed by an assistant surgical residency at the Bellevue Hospital before joining the US Army Medical Corps in Korea. He became a captain and was awarded the Bronze Star in 1954. Morton then completed his orthopaedic residency in 1957 at the Hospital for Joint Diseases in NY and then did additional hand surgery training with Emanuel B. Kaplan. He became board certified in orthopaedic surgery in 1960.

Spinner was appointed clinical professor of orthopaedic surgery at the Albert Einstein College of Medicine, and practiced at a number of hospitals on Long Island and Brooklyn, NY. His main interest in hand surgery was in the management of peripheral nerve injuries including nerve compression syndromes of the upper limb. In 1972 and 1978 he published the textbook "Injuries to Major Branches of Peripheral Nerves of the Forearm". He co-edited the textbook "Management of Peripheral Nerve Problems" with George Omer in 1980 and its second edition with Allen van Beek in 1998.

Spinner was an active member of the American Society for Surgery of the Hand and served on a number of committees. He served as associate editor of the Journal of Hand Surgery (1978-1983). He was a founding member and president of the New York Society for Surgery of the Hand. Morton was also member of numerous other medical associations nationally and internationally, including American Orthopaedic Association, founding member and president of the Sunderland Society, Group D'Etude de la Main (GEM), founding member of the American Society for Reconstructive Microsurgery, SICOT, and chairman of the New York Academy of Medicine.

Morton Spinner presented multiple honorary Lectureships, wrote 5 books and 20 book chapters, and published 60 articles.

Morton was married to Paula Lerner with whom they had three sons. He died on 23 September 2003 in Rochester, Minnesota, USA.

In 2010, at the 11th Congress of the IFSSH in Seoul, Korea, Morton Spinner was named a "Pioneer of Hand Surgery".

Newborn Compartment Syndrome: A challenge

Preface

Newborn Compartment Syndrome (NCS) is a rare and often unrecognised disease which needs to be diagnosed and treated immediately without hesitation. In 2019 we collected cases from all over the world through a survey with the support of the IFSSH Ezine (see IFSSH Ezine #32 November 2018). Additionally, we did a literature review and presented both results at the 14th IFSSH Congress in Berlin. In this article our current state of knowledge is reported. Based on additional own experience over the years we begin to understand the syndrome better and suggest management principals.

Introduction

NCS is characterized by various symptoms at the time of birth, which present as skin changes, reduced perfusion and deep necrosis mainly of the upper extremity. Miscellaneous accompanying symptoms and findings are discussed to understand the pathogenesis.

What do we know from the literature?

The literature analysis during 2019 on "newborn compartment syndrome" and related articles produced 42 publications. There were 31 single case reports, 7 with two cases and only 4 with 4, 5, 8 and 24 cases. All together 86 cases of NCS were published (after double published cases were excluded). The first report from 1951 describes two cases with a unilateral wrist drop and an associated small patch of "sclerema" (i.e. leather-like hardened, waxy, pale, cold, non-liftable skin and subcutis) [1]. In the following years single cases were reported and a description of five cases was

published 1990 [2]. The largest series reported on 24 newborns, described in a multicenter review [3].

Descriptions of the 86 cases were very diverse with a huge lack of data. There were 28 girls and 41 boys, but in 17 cases the sex was not noted. Mostly one arm was affected without side preference. An involvement of both arms was described in 2 cases. One leg was affected in 4 cases. In one baby both arms and one leg were symptomatic and in another case all extremities were involved.

Seventy four percent were full term babies, while the preterm (26 %) were born between the 29th and 37th week. So, the rate of preterm babies was higher in the NCS cases than the overall average between 9% and 12% [4]. We found reported APGAR scores in 24 publications with a conspicuous low median APGAR of 6.5 after 1 minute. Maternal diabetes data was missing in two-third of cases, but in 19 % diabetes was reported and excluded in only 12%. Additionally two macrosome newborns might belong to this group. The birthweight of the full term NCS-babies with a median of 3.6kg was higher than the median of healthy full terms (girls 3.2kg, boys 3.3kg). In 47 cases several problems in pregnancy and delivery were described for babies with NCS such as oligohydramnios, foetal distress, meconium-stained amnion fluid, prolonged delivery and birth related complications like twisted umbilical cord, emergency caesarean section or forceps delivery.

In the articles the following terms were used to describe the first observable symptoms: blisters and bullae, desquamation, ecchymosis, dusky red,

yellowish, pallor, swelling, edema, induration, cyanotic, pulseless, ischemic, ulceration and necrosis. Missing, reduced or abnormal active movements of the affected limb were described in 33 cases. For 19 babies clinically missing pulses were reported, which were mostly confirmed by imaging diagnostics within the first 6 days. Laboratory findings, if examined, did not show a clear pattern of coagulopathy. In 13 cases the authors described a kind of encephalopathy or stroke. These findings were mainly recognised after several days. Specific cerebral diagnostics were performed between 36 hours and 7 months in cases with suspicious symptoms.

From the reports no common pattern concerning the timing of diagnosis or treatment could be found. Only five babies were treated by fasciotomy within the first 24 hours (table 1).

Reports about later outcomes were rare and varying. Mostly there was a substantial loss of function and growth disturbances. Four cases seemed to show no further impairment at the corrected age of 40 gestational weeks, at 7 months, 9 months, and 5 years.

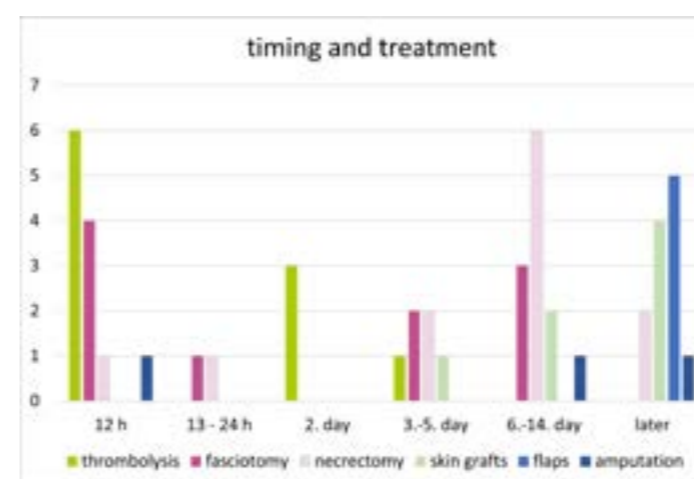


Table 1: Literature review – timing and kind of invasive treatment

The survey: method and results.

With the help of the Ezine the survey was initiated to get more knowledge about epidemiology, treatment

strategies and to connect with other experienced surgeons in this field. We received 80 questionnaires from the USA (35), Germany (32), Finland (3), Canada and Brazil (2) and one each from South Africa, Israel, Argentina, France, Switzerland, and the Netherlands. Due to the retrospective character of the survey several questions could not be answered in many reported cases.

The data collection showed similar results as the literature research. Forty-one boys and 27 girls were described. We received results of 62 upper extremities without side preference and only one leg was affected. Maternal diabetes was over-represented in 8 out of 50 cases, as well as preterm babies (14/56) and twins (5/64).

Early symptoms were described similarly with blisters, swelling, purple colour, skin necrosis and palsy. The survey did not ask for other affected organs such as stroke. Nevertheless, cerebral stroke was mentioned in 6 cases. Data about early diagnostics was rare and varying. We received 18 reports about vascular investigation with ultrasound and/or angiography with 12 babies showing pathological findings. We had 53 reports concerning early treatment with fasciotomy performed in 17 of these cases (table 2).

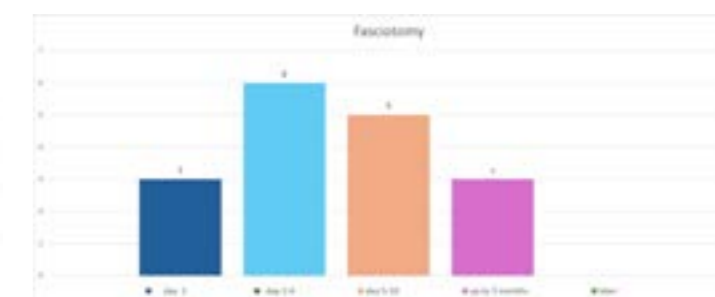


Table 2: Survey – fasciotomy was carried out between day of birth up to 3 months

Only in 3 babies with established skin necrosis was the fasciotomy performed at the day of birth. Eleven free flaps have been performed. At the age of 6 months to 6 years tendon lengthening (16), tendon transfers (12) and bone correction (12) were described.

The last examination of the affected patients was reported in 62 cases at a median age of 9.6 years (range: 5 days to 20.3 years). Forearm contractures (22/58), wrist contractures (41/57), shortened forearms (48/53) and bone deformities (41/53) were mentioned. Normal sensitivity was described in 43 out of 53 cases. Pain was rare (7/52). The function of 61 children was impaired in 32 cases, resulting in a supporting hand in 16 and a useless hand in 3 cases. We suspect a higher risk for severe sequelae, because we have no information about final impairment in 24 reports concerning children younger than 5 years.

Summary

The development of NCS seems to be triggered by several factors and not a single cause. Since this condition is very rare, and the symptoms and signs are diverse, diagnosis may be difficult. But obstetricians and midwives must at all times be aware of this condition.

After birth every suspected symptom should be a reason for an immediate colour doppler sonography or other kinds of imaging. Laboratory inflammation and coagulation parameters should be examined as a screening, but are limited in information due to the immature coagulation system during the first 6 months of life. The age related reference values vary considerably.

The literature and results from the questionnaires show a clear consistency with a high frequency of maternal diabetes and preterm babies. Complications during pregnancy or at delivery seem to be frequent. In our experience mothers often reported on a sudden change of foetal movements. Prenatal ultrasound might be helpful to detect NCS necessitating an emergency delivery.

Embolism and thrombosis in many cases, involves not only the extremity but also the vertebral and internal

carotid artery. Babies with NCS have an increased risk for compromised cerebral perfusion. Additional diagnostic measures may be indicated to determine the extent of the disease.

The first symptoms are sometimes not very impressive, but can give a hint to the underlying pathology. The authors strongly recommend fasciotomies within the first 10 hours to avoid extensive necrosis and loss of muscle and innervation.

Treatment varied widely. As a result, more specific recommendations for diagnostic or therapeutical guidelines could not be worked out in detail on the bases of our findings. The rareness of NCS calls for continuing international and multidisciplinary collaboration in the interest of better understanding this condition, and improvement in early recognition an timely treatment.

This work could only be realized with the cooperation of centres all over the world. They participated with the survey and added their experience and expertise in Berlin during the IFSSH Congress.

We thank the following colleagues for participating: Marianne Arner, Anna Browning, Louise Caouette Laberge, Kristen Davidge, Andres Alejandro Dogliotti, Marybeth Ezaki, Diego Falcochio, Charles Goldfarb, Stephane Guero, Andrea Jester, Scott Kozin, Terry Light, Scott Oishi, Michael Solomons, Joe Upton, Ann van Heest, Christianne van Nieuwenhoven, Simo Vilkki, Daniel Weber, Batia Yaffe (in alphabetic order)

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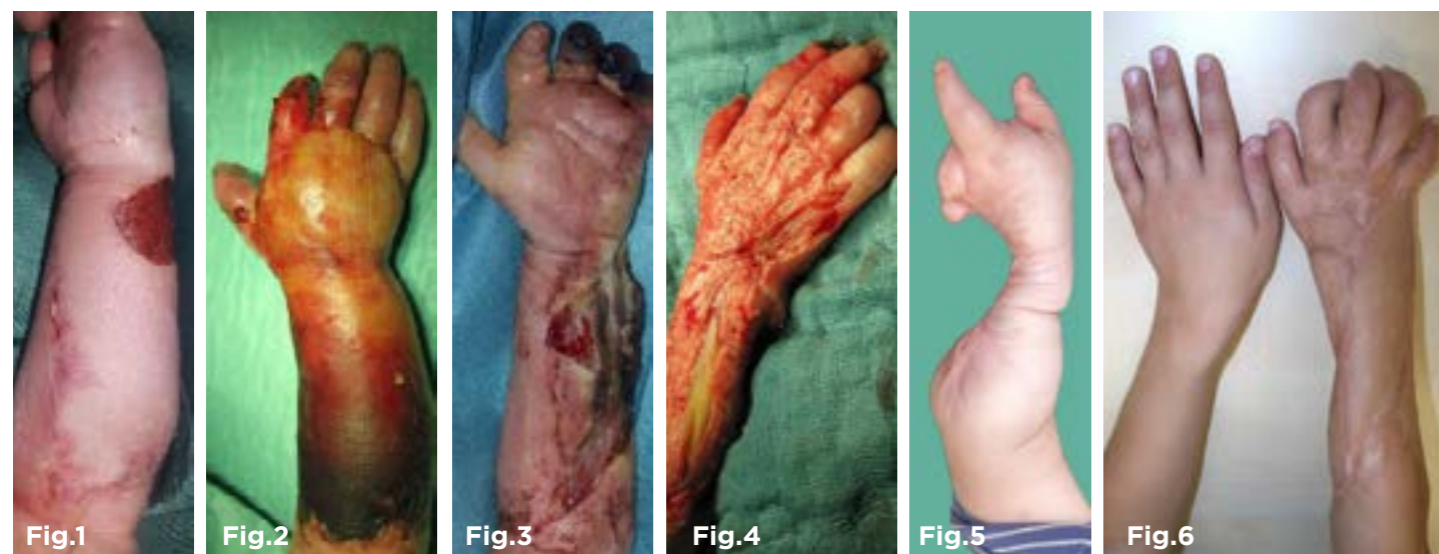
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Figures:

Fig.1 fullterm at birth with first signs at the surface

Fig.2 preterm (37 gestational weeks), day 4 after birth

Fig.3 same baby as in fig 1, deep necrosis visible after fasciotomy at day 4

Fig.4 same baby as in fig 2, soft tissue defect and muscle necrosis after fasciotomy at day 6

Fig.5 same baby as in fig 1,3: contracture after 8 months

Fig.6 thirteen years old boy with NCS, free flap performed at the age of 3 years

(For all figures parents agreed publication. All rights: CC BY-NC-ND, Böttcher)

Member Society News

AMERICAN SOCIETY FOR SURGERY OF THE HAND

The American Society for Surgery of the Hand (ASSH) is excited to share details about an upcoming hand and



upper extremity tool as well as information about two international hand surgery meetings taking place in the United States in the coming year.

Handpedia

Handpedia is a new online tool from ASSH launching in September 2024 that is free to everyone around the world. This comprehensive website will include the full, updated text of the ASSH Textbook of Hand and Upper Extremity Surgery, with 58 chapters included. Each chapter will feature surgical videos, a chapter summary in bullet format for quick consumption, linked articles, and, if relevant, podcasts and cases.

The content has been updated and edited by a group of highly acclaimed surgeons led by Steve Moran, MD of the Mayo Clinic. Handpedia is a tool like no other that will change how hand and upper extremity specialists learn. Watch for updates later this year.

2025 IFSSH-IFSHT Triennial Congress

ASSH is proud to co-host, along with AAHS and ASHT, the 2025 IFSSH-IFSHT Triennial Congress in the United States for the first time in more than three decades.

The international program will be led by hand surgeons Jeffrey Friedrich, MD and Jeffrey Yao, MD and hand

therapists Yafi Levanon, PhD, OT and Aviva Wolff, EdD, OT, CHT, featuring world leaders in the field. Abstracts are now open through May 20, 2024, and individuals from around the world are invited to submit. Learn more at <https://www.ifssh2025.org/s/abstract-submissions>.



2024 ASSH Annual Meeting

Registration for the 79th Annual Meeting of the ASSH will open in the Spring of 2024! ASSH's classic annual conference will take place in beautiful Minneapolis, Minnesota, USA, an area of the United States with more than 10,000 lakes. Outdoor activities are plentiful during this wonderful time of year. Mark your calendars for September 19-21, 2024, and join us for a rich program of lectures, cadaver labs, and more. Learn more at asshannualmeeting.org.



Check out more resources from ASSH: assh.org/hand, www.assh.org, www.afsh.org.

TURKISH SOCIETY FOR SURGERY OF THE HAND AND UPPER EXTREMITY

The Turkish Society for Surgery of the Hand and Upper Extremity (TSSHUE) was established in 1977. Hand surgery was officially accepted as a subspecialty by our Ministry of Health in 2009. And since 2012, a subspecialty education fellowship program enabled surgeons to become a "Hand Surgery Specialist".

Orthopaedic surgeons, plastic and reconstructive surgeons and general surgeons are allowed to enter the fellowship exam and the surgeons who pass the exam begin the 2-year education program. After completing the requirements, the surgeon earns the title of "Hand surgeon" with a diploma and license number given by the Ministry of Health.

Unfortunately, Turkey was affected by two major earthquakes on 6 February 2023.

The Turkish Society donated two containers full of medical items to colleagues working in the disaster area. Society members participated in the rescue effort. In addition, in collaboration with the Plastic and Reconstructive Surgery Society, voluntary team rotations were organized at different hospitals.

The TSSHUE had a very active year. The following are some of our 2023 highlights.

Upper Extremity Winter Symposium 5-8 January 2023.

This symposium was performed with the participation of the Shoulder and Elbow Surgery Society, and the Reconstructive Microsurgery Society.

Cadaver Humerus Surgery Course 8 April 2023.

This course was performed using fresh frozen cadavers. Surgical approaches of the arm region and alternative fixation methods for humeral injuries were demonstrated.

Konya Regional Meeting 29 April 2023.

This meeting was hosted by Selcuk University, and the subject was "the things we noticed during the earthquake."

18th National Hand and Upper Extremity Surgery Congress 24-27 May 2023.

The 18th National Hand and Upper Extremity Surgery Congress was held in Eskişehir from 24-27 May 2023. During the congress, we aimed to prepare a scientific program that would allow the sharing of new scientific and technological developments, as well as discuss current diagnosis and treatment approaches with the contributions of expert speakers from the national and international arena.

17th Prof. Dr. Ridvan Ege Basic Hand Surgery Course 30 September - 1 October 2023.

The scientific program and workshops of this annual course attract nationwide interest.

Upper Extremity Tendon Transfers Cadaver Course 9 September 2023.

This course was performed using fresh frozen cadavers. Surgical techniques of tendon transfers for radial, median, and ulnar nerve palsies, and tendon transfers for pronation or supination of the forearm were demonstrated.

DR. ÖZGÜN B. GÜNTÜRK

Turkish Hand Society IFSSH Delegate



Photo from the tendon transfers course:

National Congress announcement:



Konya Regional Meeting announcement:



17th Prof. Dr. Ridvan Ege Basic Hand Surgery Course announcement:



SOUTH AFRICAN SOCIETY FOR SURGERY OF THE HAND (SASSH)

After a first successful post COVID year completed last year, we are looking forward to another enjoyable year full of academic meetings and courses.

We had two surgeons attend the FESSH congress in Rimini last year. They reported that it was a great



Enjoying A Pizza in Rimini at the FESSH congress

learning experience and lots of fun.

Our annual congress took place in Cape Town in September 2023. We had the honour of Jayme Bertelli and Natasha van Zyl educating us on nerve transfers for tetraplegia patients. The congress was preceded by a cadaver workshop on Flaps by Henk Giele and nerve transfers by Natasha Van Zyl. It was a fantastic day at the Surgical skills lab at Red Cross Childrens Hospital.

In January we had another IWAS arthroscopy course held in Cape Town under the organisation of Dr Martin Wells. There were 17 participants of which 4 were from outside of SA. (Qatar, Australia and Belgium). The course was run by Dr Petrus VAN HOONACKER (Belgium), Dr Henk COERT (Netherlands) and Martin WELLS (South Africa).



IWAS wrist Arthroscopy course

This was followed by our annual Refresher Course held at the President Hotel in Cape Town on the last weekend of February. This year's topic was Hand Trauma and was very popular. This was one of our most well attended courses with over 110 delegates from all over Southern Africa.

It is presented by local faculty giving talks that combine latest up to date research and local practical advice for registrars, junior consultants and therapists. Senior colleagues give input during discussions following each talk and it is very interactive and informative.



Basic Microsurgical course

The Basic Microsurgery Course took place once again at the Zeiss Academy in Johannesburg between 6-8 March 2024. 7 orthopaedic surgeons and 3 plastic surgeons both at consultant and registrar level were introduced to the techniques of basic microsurgery under the guidance of 5 consultant faculty members.

The facility is now equipped with 10 double header microscopes allowing faculty to interact much more closely with trainees. The course is run twice yearly with the aim of training surgeons in South Africa and sub-Saharan Africa in the skills of microsurgery utilizing an easily reproducible chicken simulation model. The next edition is scheduled for 18-20 October 2024. Registration is possible on our website.

We Are looking forward to our Annual Congress in August this year to be held in beautiful Cape Town. We have Dr Praveen Bhardwaj from Ganga (India) Dr J Orbay (USA) and Dr S Hadlow (New Zealand) joining us for what will be a great congress.

DR LG BIDDULPH

SASSH President

SINGAPORE SOCIETY FOR HAND SURGERY (SSHS)

2023 was a busy year for the Singapore hand surgery community. We hosted a combined meeting with the British Society for the Surgery of the Hand (BSSH) in February and organised the combined 13th Congress of the Asian Pacific Federation of Societies for Surgery of the Hand, the 9th Congress of the Asian Pacific Federation of Societies for Hand Therapy and the 8th Asia Pacific Wrist Association Annual Congress in May. In addition, a number of our hand surgeons were also involved in the World Society for Reconstructive Microsurgery conference in August.



Associate Professor Teoh Lam Chuan sharing his experience in toe-to-hand transfers

More recently, we concluded the 32nd SSHS Hand Review Course and Annual Scientific Meeting 2023 with an entirely local faculty. It was a 3 day event involving hand surgeons, specialty nurses, hand therapists, residents and medical students. The meeting comprised of discussions on updated knowledge and evidence on various hand surgery topics, surgical technique-sharing, free paper presentations and lunch symposiums with our industry partners. Concurrently, there were also nursing and hand therapy symposiums. On the third day, there was a cadaveric workshop on upper limb

flaps and advanced bone fixation targeted at the residents.

All in all, it was a meaningful meeting; one which we believe is going to make our patients' care better.

SSHS and BSSH / British Foundation for International Reconstructive Surgery & Training:

A collaborative surgical mission trip - A resident's perspective

From 30 October to 3 November 2023, a few members of the SSHS embarked on a surgical mission trip. Our destination was the Children's Surgical Centre (CSC) in Phnom Penh, Cambodia. Our group consisted of hand surgeons from Singapore - Dr Wee Leon Lam, Dr Andrew Yam, Dr Soumen Das De, and Dr Joyce Tie – and two hand surgery residents. I was privileged to be one of the two residents. The team also included surgeons and residents from the United Kingdom. The project to CSC started with the intention to train local surgeons and has evolved into a biannual event for SSHS and BSSH since 2013.

Work began every morning with preoperative rounds of the patients who were waiting for us expectantly. The patients had previously been screened by the local staff or our teams from previous mission trips. The cases ranged from congenital conditions such as macrodactyly and complex syndactyly in Apert syndrome, to brachial plexus injuries requiring nerve or tendon transfers. Although we were already briefed on the patients who will be coming for surgery before the trip, it was still saddening to see patients with neglected hand injuries such as severe burns contractures of the hand. Two of these patients were a father-son pair who were involved in a gas explosion accident years ago. They developed extensive keloidal scar contractures with severe limitation to the range of motion of their upper limbs. We excised the scars and covered the defects with locoregional flaps and synthetic dermal matrices.

I was initially taken aback by the infrastructure and the limited resources. The operating theatre was basically a room with four operating tables side by side, separated only by panels. On one of the nights, there was a thunderstorm which caused a flood at the exit of the surgical centre. According to the local residents, this was a common occurrence. Although the infrastructure was basic, the local staff were very efficient and innovative. Make-shift wheelchairs made from plastic chairs and bicycle wheels were used to transport non-ambulatory patients around. The experience made me appreciate the infrastructure back home and admire the adaptability of the locals. While the trip was a short one, it was a great learning experience. On a personal level, I gained much from the trip. I appreciated the opportunity to work closely with experienced surgeons from Singapore, United Kingdom and Cambodia, who were masters in their field. The conditions the patients suffered from were not typical of what we see in our patients back home – as such, there was much learning value obtained while managing them. It was also heartening to realise that our skills can be used to help communities beyond our own.

In summary, the trip was a fantastic opportunity for mutual learning for all the surgeons involved, overseas and local. Though not a necessary component of our residents' training, such an experience can only serve to enhance it and provide unique perspectives.



Our team of surgeons and residents from Singapore and UK with the local surgeons and staff



Daily preoperative rounds to discuss the surgical plans

17th IFSSH Congress 2028

Singapore is proud to host the 17th International Federation of Societies for Surgery of the Hand and 14th International Federation of Societies for Hand Therapy triennial congress in 2028. We are looking forward to connect with our friends from the international community in 4 years' time. Stay tuned for further announcements.

MIN KAI CHANG

BSc, MD, MRCS

Resident Representative of Singapore Society for Hand Surgery

THAI SOCIETY FOR SURGERY OF THE HAND (TSSH)

The 39th Thai Society for Surgery of the Hand (TSSH) Annual Hand Meeting was held on 21-22 March 2024. The TSSH is an esteemed organization dedicated to advancing the practice of hand surgery in Thailand and beyond. Renowned for its commitment to excellence in patient care, education, and research, TSSH serves as a beacon of innovation and collaboration within the field. The TSSH brings together hand surgeons, plastic surgeons, orthopedic surgeons, residents, and other allied healthcare professionals within Thailand for a comprehensive exploration of the latest advancements and practical insights in hand surgery.



Executive committee of The Thai Society for Surgery of the Hand

Under the overarching theme of "The Practical Points in Hand Surgery," the Annual Hand Meeting offered a focused platform for addressing real-world challenges encountered by hand surgeons in their clinical practice. This theme underscores the meeting's commitment to delivering actionable knowledge and tangible strategies that directly impact patient care. A diverse array of sessions tailored to provide practical guidance on surgical techniques, rehabilitation protocols, perioperative management, and interdisciplinary collaboration were presented.

The meeting agenda encompassed sessions dedicated to various subspecialties within the realm of upper extremity surgery, including hand surgery, wrist surgery, elbow surgery, flap surgery, nerve surgery and microsurgery.

These sessions delved into the latest advancements, techniques, and best practices in each area, providing attendees with invaluable opportunities to enhance their skills and stay abreast of emerging trends. Furthermore, the meeting featured research presentations showcasing groundbreaking studies and scientific discoveries, highlighting the importance of evidence-based practice and innovation in advancing the field of hand surgery.

Through its focus on practical insights, interdisciplinary collaboration, and cutting-edge research, the 39th Annual Hand Meeting exemplified a commitment to excellence in hand surgery and the continual advancement of patient care. Attendees gained valuable knowledge, forged meaningful connections, and contributed to the collective advancement of the field during this prestigious event.



39th TSSH Annual Hand Meeting



39th TSSH Annual Hand Meeting

NAVAPONG ANANTAVORASAKUL, MD.

Secretary: TSSH

Upper Extremity and Reconstructive Microsurgery Unit

Institute of Orthopaedics, Lerdsin Hospital
Silom Road, Bangkok, Thailand 10500

TAIWAN SOCIETY FOR SURGERY OF THE HAND



In 2023, the Taiwan Society for Surgery of the Hand (TSSH) hosted its annual meeting on 6-7 May at the Taipei Veterans General Hospital (TVGH). This was the first annual meeting since the

subsidence of the COVID-19 epidemic, and it featured many international colleagues. Among them were Kazuki Sato, the president of the Japan Society for Surgery of the Hand (JSSH), Prof. Jong-Woong Park, Hyeok Rhyou, the president of the Korean Society for Surgery of the Hand (KSSH), and Dr. Duretto Fufa from the Hospital for Special Surgery (HSS) in New York, who were our keynote speakers.



TSSH also welcomed travelling fellows, including Dr. Hiroo Kimura and Dr. Kazuhiro Kohata from Japan, and Dr. Chang-Sik John Pak and Dr. Hyun-Joo Lee from Korea. They joined our fellow sessions to share their studies with our members.



Hospital visits were also arranged. The Chairman, Prof. Fu, expressed his appreciation to Linkou Chang Gung Memorial Hospital (CGMH), National Taiwan University Hospital (NTUH), China Medicine University Hospital (CMUH), Kaohsiung Medical University Hospital (KMUH), and E-Da Hospital for their hospitality towards these travelling fellows.

Following the Asian-Pacific Federation of Societies for Surgery of the Hand (APFSSH) annual meeting in Singapore, we were delighted to welcome Prof. Alexander Shin to Taiwan. We organised a Distal Radius Fracture Symposium at Kaohsiung Medical University on 4 June.

We are grateful to Prof. Shin and Prof. Yuan-Kun Tu for their insightful speeches.

On 5 October, the General Secretary of TSSH, Tien-Ching Lee, attended the annual International Federation of Societies for Surgery of the Hand (IFSSH) Delegates' council meeting in Toronto.

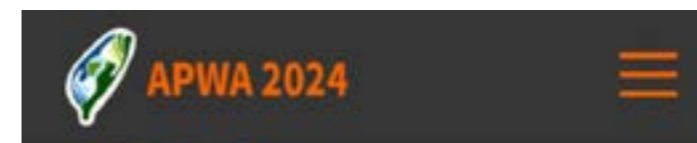
During the Annual Meeting of the Taiwan Orthopaedic Society (TOA), we invited the President of



JSSH, Prof. Iwasaki, to deliver a keynote speech about a novel cartilage repair technique for advanced elbow osteochondral dissecans on 28 October.

On 16 November, TSSH organized a cadaver workshop at Hualien Tzu-Chi University, where many experts demonstrated surgical skills and approaches in detail to the participants. The attendees found these lessons very beneficial for their clinical practice.

The 2024 TSSH Annual Meeting is scheduled to take place at Kaohsiung Medical University Hospital on 4-5 May. We invited JSSH as our guest Society for this meeting.



The 9th Asia Pacific Wrist Association Annual Congress will be held at TVGH on 15-16 November. We anticipate that these meetings will provide our guests and attendees with a memorable experience.

SWISS SOCIETY FOR SURGERY OF THE HAND



Schweizerische Gesellschaft für Handchirurgie SGH
Société Suisse de Chirurgie de la Main SSCM
Società Svizzera di Chirurgia della Mano SSCM

Promote good ideas and approaches

Like every year our annual congress takes place in November. The 56th Annual Hand Surgery and 24th Hand Therapy Congress on 23-24 November 2023 was held in Interlaken, hosted by the president Maurizio Calcagni in his second term. Over 518 participants (218 Hand Surgeons, 270 Hand Therapists) visited the congress and shared their knowledge between surgeons, therapists and the industry. The main topic of the congress was "Patients first".

One highlight was the visit of our guest societies: the Hong Kong Society for Surgery of the Hand (HKSSH) and the Hong Kong Society for Hand Therapy. During the Congress and at the gala dinner, there was an active exchange between them and us.



Ursula Osterwalder, president of SGHR (Swiss Society of Hand Therapists), Hand Therapist and Hand Surgeon from Hong Kong and Stefan Schindele



The good exchange and friendship continued during the 36th Annual Congress of the Hong Kong Society for Surgery of the Hand in March 2024 with the topic: "Occupational and recreational hand disorders", where a Swiss delegation contributed with an own session and 9 presentations.



Hong Kong Delegation of Hand Surgeons and Hand Therapists with past president Maurizio Calcagni Daniel Herren, Ivan Tami and Stefan Schindele



The Swiss Hand Society increases its membership slightly every year, with 219 members in 2023; 200 who are highly qualified medical specialists and 19 are junior members. The Hand Therapist Society have 425 therapists of which 25 are specialised Hand Physiotherapists and 400 Hand Occupational Therapists.

Since 2019, Handfacts (www.handfacts.ch), was created and we get noticed a lot more. Our commitment is registered. We are respected. This is very important because the political pressure increases to save positions in the hospitals decreasing leading positions because of economy measures since Hand Surgery does not pay as much as other surgical disciplines.

In contrast to such negative developments a newly created Swiss Society for Surgery of the Hand (SGH) Quality Award was created.

The Swiss Society has launched its own quality award. The SGH Quality Award honors implementations in the area of quality and good ideas with a focus on everyday practice.

Hand Surgeons and Hand therapists are encouraged to become pro-active and innovative and have the opportunity to present innovative approaches. In December 2023, the SGH, a relative small specialist society with only about 220 members set an example with the SGH Quality Award, demonstrating that Hand Surgeons and Hand Therapists are serious about practising their profession with quality, an innovative and a positive attitude.

This award is presented every two years.

Three awardees were honoured:

1. Daniel Herren, MD and Miriam Marks, Dr. Phil.: Improvement of indication and treatment of patients **using registries**.
2. Christoph Erling, MD: innovative concept of **communication with patients**.
3. Myriam De Ieso, Occupational therapist: **innovative concept** in rehabilitation.

ESTHER VÖGELIN,
STEPHAN SCHINDELE,
IVAN TAMI, (President SGH)

ITALIAN SOCIETY FOR SURGERY OF THE HAND (SICM)

In May 2023 the Società Italiana di Chirurgia della Mano (SICM) had the privilege of hosting the XXVIII FESSH & EFSHT Congress, chaired by Riccardo Luchetti. (Fig. 1) A record number of 2,184 hand surgeons and therapists attended the meeting. Approximately 16% of surgeons came from non-European countries, mainly Asian, especially Korea and Japan, and the United States, as did 10% of therapists.



Fig. 1: Who's who of the XXVIII FESSH-EFSHT Meeting 2023, held in Rimini (Italy). From left to right: Henk Coert: Congress co-chair FESSH-EFSHT 2024; Silvio Tocco Congress Chair EFSHT 2023, Riccardo Luchetti Congress Chair FESSH 2023, Brigitte van der Heijden Congress co-chair FESSH-EFSHT 2024, Daniel Herren FESSH Secretary General, Daniel Nagle President IFSSH

The scientific contents, covering the current major topics in hand surgery 'From Basic to Controversy'. The organisation of the Congress in general was rated excellent or good by 90% of the participants, who also appreciated the warm hospitality of the beautiful city of Rimini.

The other main educational event of the year 2023 was the 61st SICM Annual Congress, which was held in Genoa in a sunny mid-October. The congress chairs, Stefania Briano and Antonio Merello, organized a 3-day

intensive program on "New surgical techniques... a bridge between past and future", addressing key topics such as high-energy lesions from the hand to the elbow, hand malformations and the controversial conditions of "The hand that does not heal". Around 500 participants enjoyed the lively discussion enriched by numerous international faculty. Particular attention in the SICM Congress was given to the training of young hand surgeons: a dedicated session "False friends in hand surgery" was full of very motivated and interested young hand surgeons. This group, called "SICM Young", began its activity in 2022, led by Matteo Guzzini. It is carrying out numerous educational activities dedicated to young hand surgeons: particularly online webinars, which are broadcast every 3 months. These always arouse great interest and participation.

During the SICM Congress, Prof. Michele Riccio (Ancona) took office as the 31st President of SICM (Fig. 2). The new SICM Executive Committee and the new Vice President, Dr. Sandra Pfanner (Florence), were also elected.



Fig. 2: The 31st President of SICM, Prof. Michele Riccio and his associates of the Department of Reconstructive Surgery and Hand Surgery, AOU Ospedali Riuniti, Ancona, Italy

The Società Italiana di Chirurgia della Mano was the guest society of the Annual International Hand & Wrist Congress, organized by the Emirates Hand Surgery Society (a new member of IFSSH), from 10-12 November 2023, in Dubai and chaired by Dr. Khalid Alawadi.

The next Annual Meeting of SICM, will be held in Rome from 14-16 November 2024. (Fig. 3)

"Roma caput mundi (Rome head ((capital)) of the world)" will be the place for "Convergence of Different Cultures", being the objective of the congress. The Congress Chairs, Nicola Felici, Alessia Pagnotta and Michele Rampoldi, intend to engage various disciplines related to hand surgery, particularly plastic surgery and orthopedics, on three main topics: Clinical appropriateness in hand surgery; New technologies; Lessons from mistakes.

The Congress Chairs and the Executive Board of SICM are thrilled to invite you to Rome for the 62nd Annual Congress of the Società Italiana di Chirurgia della Mano, from 14-16 November 2024

<https://www.sicm.it/it/corsi-congressi/184/62°-Congresso-Nazionale-SICM.html>
info: sicm2024@mediacongress.it

ANDREA ATZEI

IFSSH Delegate For The Società Italiana Di Chirurgia Della Mano



Fig. 3: Flyer of the 62nd Annual Congress of the Italian Society for Surgery of the Hand, Rome 14-16 November 2024

SPANISH SOCIETY FOR SURGERY OF THE HAND (SECMA)

The Spanish Society for Surgery of the Hand (SECMA), under the leadership of the SECMA Board, is committed to continue with the exciting projects of 2023 to educate, disseminate and collaborate to advance our discipline.

November 2023 marked the beginning of the fourth edition of the expert training course in hand surgery, a comprehensive educational program culminating in March 2025 with the DECIM exam. This exam, known as the Spanish Diploma in Hand Surgery (DECIM), is the cornerstone of training for future hand surgeons, providing a standard of excellence and rigor in our specialty. In addition to being an essential requirement for obtaining the Spanish diploma, DECIM also serves as preparation for the EBHS exam, solidifying our position internationally.

In line with our commitment to continuous education, various specialised courses have been conducted over the past year. The annual "SECMA Surgical Anatomy of the Upper Extremity" Course, led by Dr. Morro and Dr. Llusà, and two editions of the "SECMA Basic Training Course in Hand and Wrist Osteosynthesis" were held. Similarly, the "Clinical Research Methodology" Course, led by Dr. Rosales, has provided our members with fundamental tools for research and scientific advancement.



An event relevant to our educational agenda was the 14th edition of the "SECMA Institutional Course," which is held annually in December. This course brings together the country's leading hand surgery experts and provides an unique opportunity to update knowledge, share experiences, and refine surgical techniques. With a theoretical-practical approach, the course covers various topics, from anatomy to the latest innovations in surgical techniques, including dissection practices and cadaver demonstrations.

Regarding dissemination, this Board has aimed to strengthen the spread of all aspects of our hand surgery specialty among professionals and our patients. This is why we have leveraged the benefits of social media as a fundamental tool in this endeavor. Throughout 2023, we have consolidated various communication proposals.

A YouTube channel titled SECMA-Academy has been initiated, directed by Dr. Corella, with two clear missions: creating essential videos on diagnosis, examination, and surgical techniques aimed at residents and young surgeons, as well as disseminating common hand problems aimed at patients.

Additionally, thanks to the initiative of Drs. Pajares and Prada, a podcast channel titled "Hand to Hand," has been launched. This channel is aimed at professionals and the public. This podcast addresses technical aspects of hand surgery and delves into emotional and human factors related to our discipline.

In the same dissemination line, the webinar of the Ibero-American Journal of Hand Surgery (RICMA), titled "Conversations with the Author," organised by Dr. Barrera and with a large attendance, has been developed. These initiatives demonstrate our ongoing commitment to education and the dissemination of knowledge in hand surgery, both among professionals and in the community at large.

The Journal Club for Young Surgeons of SECMA has been developed, organised by Dr. García Medrano, with three editions. This format allows for discussion among young professionals on common hand surgery topics from a scientific perspective based on scientific literature. This space for exchanging knowledge and experiences contributes to the growth and development of the new generations of hand surgeons. An extraordinary assembly of the SEMA Board took place in December 2023 in Madrid. It was a pivotal event where key points shaping the future direction of our Society were addressed. At this meeting, ambitious goals were set for 2024, reflecting this new board's consolidated and progressive spirit.



A firm commitment has been established to the needs and aspirations of our members, placing them at the forefront of our priorities.

We had our SECMA National Congress in Sitges at the end of April 2024. We had a most pleasant meeting, and exchanged much knowledge and experiences. These Congresses also strengthen the community of hand surgeons and therapists in Spain and beyond.



HIGINIO AYALA, MD FEBHS

Specialist in Plastic and Reconstructive Surgery
Hand, Wrist, and Microsurgery
Associate Professor of Plastic and Reconstructive Surgery at the University of Cantabria
Spokesperson of International Relations of SECMA

RUSSIAN SOCIETY FOR SURGERY OF THE HAND

The Russian Society for Surgery of the Hand is also known as the Russian Handgroup. It was founded in 2003; so, in 2023 we celebrated 20 years of existence of our Society at the tenth Congress in Novosibirsk.

After the COVID pandemic the Handgroup changed the congress schedule from a biennial to annual meeting.

In 2024 up to 500 Russian-speaking hand surgeons and therapists will meet in Saint-Petersburg for the annual Hand Surgery Society meeting.

Every year since 2020 the Handgroup has organised a 4-day course called Handclub Academy for surgeons who are starting their career in hand surgery. Most of doctors come from an orthopaedics background. We do not have a separate hand surgery speciality yet.

At the beginning of 2024 we have 5 members who have obtained the European Diploma in Hand Surgery; four more will sit for the exam this year.

In November 2023 four delegates of the Russian Handgroup took part in the Congress of the United Arab Emirates Society for Surgery of the Hand.

We also restored the ambassador program with the Hong Kong Society; one Russian delegate visited Hong Kong in March 2024.

Despite all the borders disputes and tragic events in the world the Russian Society for Surgery of the Hand is open for cooperation with colleagues around the globe.

Sincere regards,

GEORGIY A. NAZARYAN MD, PhD

European Diploma in Hand Surgery,
Secretary of Russian Hand Surgery Society

secretary@handgroup.ru

<https://handgroup.ru>

AMERICAN ASSOCIATION FOR HAND SURGERY (AAHS)

The American Association for Hand Surgery (AAHS) is pleased to again share an update with the IFSSH community.

The AAHS hosted its 2024 Annual Meeting with stellar participation this past January in Nassau, Bahamas. Under the leadership of Dr. Bill Dzwierzynski, Program Chairs Dr. Kyle Eberlin, Dr. Meredith Osterman, Gayle Severance, MS, OTR/L, CHT and Jerome Wenninger, PA-C organized a diverse and engaging program which included 32 ICLs, and 8 educational symposia with outstanding faculty. The combined sessions with American Society for Peripheral Nerve (ASPN) and American Society for Reconstructive Microsurgery (ASRM), which always meet together with AAHS, were excellent and highly attended, as they are each year.

This year's AAHS meeting was highlighted by a nerve repair skills course, a competitive Hand Surgery Trivia competition along with the following lectures: a Diversity, Equity and Inclusion focused panel, "Collaboration for a Better Tomorrow," featuring J. Manuel De La Rosa, MD and Aletha Maybank, MD; "Psychological Adjustment Following Traumatic Hand Injury" by Brad Grunert, PhD, Professor of Psychology at Medical College of Wisconsin; "Art and the Hand: Subject, Tool, Metaphor" by art educator Bruce Hucko; the annual Danyo Lecture, named in honor of the AAHS's first President Dr. Joseph Danyo, "Pain: Is it



in the Heart, The Head, Or The Hand" by AAHS Past President Dr. Wyndell Merritt; and a Keynote Lecture by Nadine Hachach-Haram, MD, "The Journey of Exploring the Potential of Operating Room Digitization." AAHS is grateful for the participation of so many members of the Colombian Association for Surgery of the Hand, who joined the meeting to represent their country from the podium, ICL's and poster presentations!

The 2025 Annual Meeting Program Committee, currently being led by Dr. Robin Kamal, Dr. Marc Richard, Stephanie Kannas, OTR/L, CHT, and Jerome Wenninger, PA-C, is already at work developing the best educational program in Hand Surgery at one of the best locations - the Hilton Waikoloa Village in Waikoloa, Hawaii. [See more information on the Hilton Waikoloa Village resort.](#) Please [visit the AAHS website](#) for meeting information. Abstracts are currently being accepted!



AAHS will continue to provide year round education through its webinar series, organized by Sonu Jain, MD and the AAHS Webinar Committee. This series is designed with Hand Association core values of inclusion and synergy in mind, and features collaboration with affiliate societies including American Society for Peripheral Nerve (ASPN),

American Society for Reconstructive Microsurgery (ASRM), American Academy of Orthopaedic Surgeons (AAOS), American Shoulder and Elbow Surgeons (ASES), American Society of Hand Therapists (ASHT), Pediatric Orthopaedic Society of North America (POSNA), and Orthopaedic Trauma Association (OTA) to strengthen the education delivered to our hand care community. This year AAHS will be expanding its webinar series to include more collaborate with its international partner societies. Information is available [on the AAHS website.](#) [Please also be sure to see past webinar replays, which are FREE to all!](#)



The AAHS is thrilled to co-host the [IFSSH and IFSHT Triennial Congress in 2025](#) alongside ASSH and ASHT. A major responsibility of the AAHS in its co-hosting responsibilities is to facilitate the IFSSH-AAHS/ASSH Traveling Fellowship program, which will provide twenty-four international recipients \$5,000 to offset the cost of their travel to the United States for a multi-day Fellowship at one of five host center sites followed by their participation at the IFSSH Triennial Congress in Washington, DC. Three hundred applications were submitted for the Traveling Fellowship program from all over the world! The AAHS and ASSH selection team working with led by Dr. Nash Naam and Dr. Dave Ruch are working to identify a globally represented Fellowship class.

This year AAHS will debut one of its most impactful programs to date – a [Hand Surgery Fellows Boot Camp](#)

for incoming Hand Surgery Fellows. Chaired by Dr. Kyle Eberlin and Dr. Dave Ruch the Boot Camp 2024 will provide incoming Fellows (2024-2025 academic year) with a hands-on opportunity to improve existing skills and develop new skills in preparation for Fellowship. This course is timed to coincide with the end of residency and the August start date for Hand Fellowships to optimize incoming Fellows' preparation for the year. AAHS recognizes that residency programs have different strengths and inherent weaknesses which can make starting a Hand Fellowship challenging. Boot Camp 2024 will provide incoming fellows with a two day, hands-on, intense skills course to improve core competencies leading into Hand Surgery Fellowship. Boot Camp 2024 is oversubscribed with a wait list to participate, an outstanding faculty roster, and AAHS has secured participation from many industry partners who have committed equipment and resources to make this program a success.

And finally, [HAND, the official journal of the AAHS](#) has reached an incredible milestone. After years of diligent work, HAND, led by Editor in Chief Michael Neumeister, MD, will received its initial impact factor in June 2024 and be included in Web of Science Core Collection in Emerging Sources Citation Index!

Be sure to follow AAHS on social media to participate in the [Weekly AAHSk quiz program](#) which challenges the community's hand care knowledge each week, as well as other tips, tricks, and updates.



THE BRITISH SOCIETY FOR SURGERY OF THE HAND (BSSH)

BSSH Instructional Course in Hand Surgery (ICHS)



The first course in series 9 will cover soft tissue reconstruction, burns and infection and will run on Friday 7th and Saturday 8th June 2024. The course will provide comprehensive learning for trainees and a valuable update for established hand surgery consultants, with the opportunity to discuss cases, concepts and techniques with faculty.

You can find the full programme and register [HERE](#). Confirmed national and international faculty for this course are:

- Grainne Bourke – Leeds
- Roísín Dolan - Dublin
- Rodd Dunn – Abu Dhabi
- Naguib El-Muttardi - Chelmsford
- Henk Giele - Oxford
- Shehan Hettiaratchy - London
- Alexandra Murray – Stoke Mandeville
- Pierluigi Tos – Milan
- Hari Venkatramani - Ganga
- Emily West – Bristol

An exciting programme with lectures and tutorials will run over the Friday and Saturday, designed to accommodate the learning needs of hand surgeons from both orthopaedic and plastic surgery backgrounds.

There will also be the chance to socialise with faculty and meet new friends from the hand surgery community in a welcome reception on the Friday evening.

The BSSH have been running Instructional Courses in hand surgery for 25 years. Throughout this time the courses have consistently provided world class teaching from an expert faculty, attracting delegates from the UK and Europe, from orthopaedic and plastic surgery backgrounds.

Over a 3-year period a series of 2-day courses running in June and February each year will cover the entire syllabus in hand surgery. Each course will explore a subject area in depth with innovative teaching combining lectures, small group tutorials and simulation.

Upcoming courses include:

Date	Course title
7th-8th February 2025	Fractures and Joint Injuries
6th-7th June 2025	Inflammatory and Degenerative Arthritis
6th-7th February 2026	Dupuytren's, Children's Hand Surgery & Tumours
19th-20th June 2026	The Wrist
5th-6th February 2027	Nerve and Tendon

The BSSH wished to thank platinum sponsors for this series of courses: Acumed and Sovereign Medical

**SAVE THE DATE:
BSSH Autumn Scientific Meeting 2024**



Join us on 14th - 15th November 2024 at the International Convention Centre (ICC) in Belfast, Northern Ireland for our Scientific meeting where we welcome our guest society Die Deutsche Gesellschaft für Handchirurgie.

Abstract submission is now open, [CLICK HERE](#) to find out more.

Lilongwe Hand Unit



For five years, the BSSH and the British Association of Hand Therapists (BAHT) will assist the Lilongwe Institute for Orthopaedics and Neurosurgery (LION) in the delivery of treatment for elective and traumatic conditions of the hand in Lilongwe Malawi.

BSSH and BAHT volunteers are working in the LION Hand Unit, collaborating with local staff in the running of specialist hand clinics and regular hand trauma and elective lists, while promoting sustainability through education and training.

LION aspires to become self-sufficient in the provision of specialist hand services by the end of the project.

Please scan the QR code to find out more about the project, to help us fundraise or to donate.



General Anaesthetic Operating in Main Theatres. Scrubbed - Mr Soren Sjolin (BSSH Orthopaedic Consultant) and Miss Kajal Gohil (BSSH Plastic Surgery Registrar). 1st stage flexor tendon repair - silicon rod insertion. Observed by Theatre Staff x4



Main Theatre Operating. Scrubbed - Mr Michael O'Sullivan (BSSH Orthopaedic Consultant), Miss Kajal Gohil (BSSH Plastic Surgery Registrar), Ms Gladys Ngondo (LION Orthopaedic Consultant).

LION Main Entrance



BSSH Mentor Scheme

The BSSH continues to offer a mentor scheme for its members. The scheme provides free professional training in mentoring for established BSSH member consultant hand surgeons. Consultants within 5 years of training as well as post-CCT hand surgery and Training Interface Group Fellows can apply for a mentor. The BSSH is happy to discuss the logistical set up and running of its mentoring scheme with any interested society@secretariat@bssh.ac.uk.

BSSH Supporting Education

BSSH are supporting hand education further in the forms of teaching on FESSH's academy courses, as examiners for EBHS, and recently supported the first Interim IFSSH course held in Quito, Ecuador, which was an outstanding success.

History of Member Societies

DOMINICAN REPUBLIC SOCIETY FOR SURGERY OF THE HAND



Dominican Republic Society for Surgery of the Hand: History

In 1995 the Hand Club was established in the Dominican Republic, which was renamed the following year in 1996 the Dominican Society for Surgery of the Hand (ADOCIMA). The 14 founding members consisted of nine full, one overseas and four associate members. Currently the Society has 14 full members. The population of the Dominican Republic is 11.0 Million (2022 statistics). The majority of the full members are plastic surgeons and the rest being orthopedic surgeons. One member is in an exclusive hand surgery practice.

The Society secretariat is based at the MANOCLINIC "Centro de Cirugía de la Mano y Microcirugía". The current President is Otoniel Diaz and the Secretary is Marcos Nunez.

Training

After two or three years in general surgery, surgeons aspiring a hand surgery career in the Dominican Republic join a further orthopedic, plastic surgery or general surgery training program which includes a

rotation in hand surgery to acquire the basic hand surgery skills. An additional one year of training at the end of this residency provides a higher level of hand surgery training and facilitates an opportunity for a fellowship abroad in the United States, Europe, Latin American or elsewhere.

The Development of Hand Surgery and National Personalities

During the 1940s and 1950s the only hand care in the country was provided by plastic surgeons and orthopedic surgeons who came from the USA to operate at the military hospitals. They came for short periods of time and were invited by the government of the dictator Leonidas Trujillo. They provided general plastic and orthopedic care to the population including treatment of congenital abnormalities, burns and reconstruction of injuries.

In the 1950s Dr. Antonio Dohse who trained in Canada at the Queen Mary Hospital was probably the first Dominican Plastic Surgeon in the country who provided regular plastic reconstructive surgery at the military hospital. The "La Nacion" newspaper in August 1952 described his tendon grafts for hand reconstructions as well as syndactyly releases. He couldn't continue his practice in the Dominican Republic because of the dictatorial government of Trujillo and returned to Chicago, Illinois, USA, where he practiced, not as a surgeon, but as a general practitioner.

Years later Dr. Sony Moreta arrived in the country. He had been trained by Dr. Luis Gomez Correa, who is

considered one of the most important hand surgeons in Mexico. Dr. Moreta worked at the Dr. Salvador B. Gautier Hospital performing hand surgery procedures for a couple of years, and then he immigrated to Puerto Rico.

At the same time, orthopedic surgeons who were also doing hand surgery included Drs. Santo Domingo, Eliseo Rondont, Eros Cruz Sanchez† (with the CARE group), Mejia Feliut† (the founder of the Orthopedic Surgery Department at the Dr. Salvador B. Gautier Hospital in Santiago) and Perez Simo.

In 1969 Ivanhoe Baez Commet, a plastic surgeon who trained at Temple University in Philadelphia, PA, USA, with Dr. Cramer arrived in Santo Domingo. At the beginning he was integrated in the general surgery staff at Dr. Salvador B Gautier Hospital because of his general surgery background. International surgeons visited the country to offer plastic and hand care. In 1972 Dr. Baez founded the Plastic Surgery Service as part of the General Surgery Department. This service covered general plastic surgery and a vast area of upper extremity care on trauma, burns, congenital and degenerative conditions. Dr. Baez also started the first plastic surgery residency program in the country in 1972. This service treated open fractures of the hand and orthopedics treated closed fractures. The Department of Plastic Surgery at Dr. Salvador B. Gautier Hospital trained two groups of plastic surgeons, one group from 1980 to 1992 and another group from 1995 until now. Both groups got special training in hand surgery, but the second group incorporated microsurgery training as well.

In the 1970s Luis R. Scheker, a young doctor left the country to obtain plastic surgery training in Scotland. In 1982 he was selected for a hand fellowship in Louisville, Kentucky, USA, with Dr. Harold Kleinert. After concluding the training, he was selected as an adjunct professor where he practiced until 2016 when he retired from the staff at the C. M. Kleinert Institute for Hand and Microsurgery. Dr. Scheker is considered the Father of Hand Surgery of the Dominican Republic,

since he was instrumental in the training of most of the early hand surgeons in this country: Marcos Nunez 1990, Hector Herrand 1995†, Otoniel Diaz 2005, Silvia Aviles 2012, Gregorio Santana 2014, Maria Herrand 2019, and Abel Herrera 2022.



Dr Luis Scheker, the father of hand surgery in the Dominican Republic, is renowned for training the majority of the country's hand surgeons.

Drs. Nunez, Herrand† and Diaz have been responsible for the replantation of more than 53 hands amputations (including one bilateral hand) with a 70% success rate. They were the core of hand and microsurgery development in the Dominican Republic and have trained the new generation of surgeons. Other plastic surgeons and orthopedic surgeons have also dedicated part of their practice to hand surgery following training in Germany, Cuba and Brazil are e.g. Drs. Marcos A Martire Borrell, Maximo Periche and Ricardo Gutierrez.



The Cathedral of Santo Domingo, better known as the Primate Cathedral of America, was declared the first cathedral in the New World in 1546 by Pope Paul III, at the request of Emperor Charles V. This beautiful minor basilica is dedicated to Santa María de la Encarnación,

Drs. Silvia Aviles (2018), Kervin Brito (2020) and Otoniel Diaz (2023) have been trained by the world-renowned professor Dr. Jorge Clifton from the University of Coahuila in the city of Torreon, Mexico in brachial plexus and peripheral nerve surgery benefiting hundreds of patients.



Punta Cana, located in the east of the Dominican Republic, is one of the most attractive tourist places in the world. Its beautiful beaches, monumental hotels, the warmth of the people make the experience unforgettable for everyone who visits us.

Our Dominican Republic Society sponsored the 1st Ibero-American Hand Surgery Meeting in Bavaro, Punta Cana, in April 1998 with participation of more than 100 hand surgeons from North America, South America, the Caribbean, Spain and Portugal.

The Salvador B Gautier Hospital in the city of Santo Domingo has been the public health center where most hand surgery cases have been performed. In terms of private medicine, a large part of the cases were performed at the Santo Domingo CECIP Plastic Surgery Centre until 2019 when the MANOCLINIC Centre for hand surgery and microsurgery opened its doors, a clinic that brings together the professional practice of the majority of hand surgeons of the Dominican Republic.

GUATEMALAN HAND SURGERY

ASSOCIATION, GHSA



(Asociación Guatemalteca de Cirugía de la Mano, AGCM) <https://www.agcm.gt/>

At the beginning of 1980 a group of surgeons from different medical disciplines, from both public and private hospitals, held regular meetings to discuss hand surgery cases and innovations for hand surgery rehabilitation. With time it matured to become the formal Guatemalan Hand Surgery Study Group. It met monthly and invited all those from the health care services who were interested in hand surgery topics. This study group became then popularly known as the Guatemalan Hand Surgery Association, but it never went through the formalities of becoming a real association.

But the growing interest of well-known hand surgeons, orthopaedic and trauma surgeons, plastic surgeons and general surgeons, and others interested in health care dedicated to the hand, made it possible to give birth to a formal, renewed and reformed Guatemalan Hand Surgery Association, viz. Asociación Guatemalteca de Cirugía de la Mano (AGCM). At the monthly meeting of 22 November 2022 it was legally founded under the guidance of its first formal chairman Dr. Juan Carlos Gonzalez Morales. This Association went through the formalities of getting registered as a formal nonprofit, educational centered association, dedicated to the sole purpose of enhancing the knowledge and diffusion of hand surgery through Guatemala. From that year on the Association consisted of practitioners with formal training in hand surgery, microsurgery, orthopaedic and plastic surgery, brachial plexus and peripheral

nerve surgery.

The aim of our Association is to work together with all relevant institutions, both in the public and private sector, to promote the best and effective ways in teaching and managing patients with hand problems. This does not only apply to the development of knowledge and skills of the hand surgeons, but also to promote the best practice in hand rehabilitation and hand therapy.

Furthermore, it is the aim of the GHSA to spread basic knowledge eg through publications, and understanding of the pathology to patients in order to optimize

communication between the medical professionals and the patient. These aims will be affected through the development of treatment protocols which will meet existing international standards, but within the economic, physical and existential realities of Guatemala. Another important aim of the Association is in training more skilled hand surgeons to cater for the large population of our country (17 million). Presently there are only 18 full members, 2 prospective members, and another 4 in the year thereafter.

The following table lists all our members: The Executive Board of the GHSA for the 2023-2024 period is:

Name	Educational system	Type of Member
Juan Carlos Gonzalez	Morales Orthopedic and Trauma Surgeon	Founding Associate
Victoria Choquin	Orthopedic and Trauma Surgeon	Founding Associate
Marcos Sanchez	Plastic Surgeon	Founding Associate
Heydi de Leon	Orthopedic and Trauma Surgeon	Founding Associate
Fernando Romero	General Surgeon	Founding Associate
Jose Francisco Arce	Orthopedic and Trauma Surgeon	Founding Associate
Rodrigo Bolaños	Orthopedic and Trauma Surgeon	Founding Associate
Ernesto Cofinio	Plastic Surgeon	Founding Associate
Samuel David Wug	Orthopedic and Trauma Surgeon	Founding Associate
Carlos del Valle Monge	Orthopedic and Trauma Surgeon	Founding Associate
Leonel Foncea	General Surgeon	Founding Associate
Francisco Hernandez	Orthopedic and Trauma Surgeon	Founding Associate
Gabrien Hernandez	Orthopedic and Trauma Surgeon	Founding Associate
Giovanni Lopez	Orthopedic and Trauma Surgeon	Founding Associate
Horacio Lopez	Plastic Surgeon	Founding Associate
Carlos Quintero	Plastic Surgeon	Founding Associate
Federico Rosales Arzu	Plastic Surgeon	Founding Associate
Luis Carlos Urzua	Orthopedic and Trauma Surgeon	Founding Associate
Carlos Rios	Orthopedic and Trauma Surgeon	Associate
Lucia Dominguez 2023	Orthopedic and Trauma Surgeon	Eligible Associate Candidate
Faduah E. Salazar L. 2023	Orthopedic and Trauma Surgeon	Eligible Associate Candidate

The GHSA has an annual national meeting, and plans

Juan Carlos Gonzalez Morales	Chairman
Victoria Choquin	Vice Chairman
Marcos Sanchez	Treasurer
Heydi de Leon	Secretary
Fernando Romero	Member-at-large

a combined event in November 2024 with the help of the Latin American Hand Surgery Federation, and if possible, with the participation of the International Federation of Societies for Surgery of the Hand.

Many of the GHSA members have been invited as speakers, faculties, moderators and instructors to various international hand surgery meetings, giving international exposure to our members and thus encouraging our upcoming hand surgeons to get the best educational opportunities available.



November 2022, when GHSA as such began. Guatemala.



Juan Carlos Gonzalez, MD; 2019 Founding associate, Chairman
Fernando Romero, MD; 2019 Founding associate, Member-at -arge
Faduah E. Salazar L., MD; 2024 Eligible associate candidate, International Educational Committee Delegate



Founding Associates of the GHSA. Guatemala 2022. Associates of the GHSA at the monthly meeting. Guatemala 2022. Associates of the GHSA at the monthly meeting. Guatemala 2022.



Schweizerische Gesellschaft für Handchirurgie **SGH**
 Société Suisse de Chirurgie de la Main **SSCM**
 Società Svizzera di Chirurgia della Mano **SSCM**

SWISS SOCIETY FOR SURGERY OF THE HAND

THE FIRST 57 YEARS OF HAND SURGERY

12 NOVEMBER 1966
 Founding of the "Swiss Study Group for Surgery of the Hand ("Groupe Suisse d'Etude de Chirurgie de la Main", "Schweizerische Arbeitsgemeinschaft for Handchirurgie", "Gruppo Svizzero di Studio per la Chirurgia della Mano") by Prof. Claude E. VERDAN and approved by 50 general surgeons in the Lecture Room of the Surgical Policlinic of the University of Lausanne which was located at that time at the Clinique Longeraie in Lausanne. There was only one officer: the Secretary General.

7 SEPTEMBER 1972
 The first by-laws are approved by the General Assembly in Bern.

19 NOVEMBER 1983
 Under the impulsion of its president K. M. PFEIFFER, the Study Group becomes the Swiss Society for Surgery of the Hand. New by-laws are accepted by the General Assembly: the first Executive Committee is created, as well as the first IFSSH Delegate, as the Swiss Society becomes an IFSSH member.

11 MAY 1988
 Hand surgery is recognized as a sub-title by the Swiss Federation of Doctors (Federatio Medicorum Helveticorum = FMH, which represents the Swiss Medical Chamber).

A specific curriculum is established, honored by a diploma of "Hand Surgery", which is similar to the certificate for added competence in Hand Surgery in the United States. The curriculum requires at least 2 years of special training in Hand Surgery. One of the four main Specialty Boards - General Surgery, Orthopedic Surgery, Plastic and Reconstructive Surgery or Pediatric Surgery - must be acquired before this training program in Hand Surgery can be entered.

1 JULY 2002
 Recognition of Hand Surgery as a focus title of the Swiss Medical Association (FMH).

1 JANUARY 2007
 A recognition as a specialty on its own (as a private by law title) was given by the Federal Council in 2007. Another 6 years of certification process and political struggle passed until the accreditation as an acknowledged specialty by the Swiss Medical Association (FMH) was completed (1 July 2013).

Trainees who completed a structured and verified postgraduate training may then use the title "Hand Chirurgie FMH" - a title which is recognized in most European countries.

RECOGNITION OF HAND SURGERY SPECIALITY

1 JANUARY 2015
 Full acknowledgement of the Title "Hand Surgery FMH" like General Surgery by the Swiss Medical Association.

19 MAY 2016
 Second Revision of the Educational Program has been accredited for the second time by the Federal Office of Public Health.

24-25 NOVEMBER 2016
 The Society celebrates its 50th annual congress in Geneva.

PRESIDENTS OF THE SOCIETY

- 1966 - 1972 Professor Claude E. VERDAN, Lausanne. 1st Secretary General
- 1973 - 1976 Professor Henry NIGST, Basel
- 1977 - 1982 Professor Algimantas O. NARAKAS, Lausanne



- 1983 - 1986 Professor Karl M. PFEIFFER, Basel
- 1986 - 1987 Privat-Dozent Andre CHAMAY, Geneva
- 1988 - 1989 Professor Viktor E. MEYER, Zurich



- 1989 - 1991 Privat-Dozent Daniel V. EGLOFF, Lausanne
- 1991 - 1993 Professor Algimantas O. NARAKAS, Lausanne
- 1994 - 1995 Professor Ueli BÜCHLER, Bern



- 1996 - 1997 Docent Dominique R. DELLA SANTA, Geneva
- 1998 - 1999 Privat-Dozent Beat René SIMMEN, Zürich
- 2000 - 2001 Dr. med. Chantal BONNARD, Lausanne

- 2002 - 2003 Dr. med. Michael STURZENEGGER, Lausanne
- 2004 - 2005 Dr. med. Walter KÜNZI, Zürich
- 2006 - 2007 Dr. med. Urs VON WARTBURG, Luzern
- 2008 - 2010 Dr. med. Daniel HERREN, Zürich
- 2011 - 2012 Professor Dr. med. Esther VÖGELIN, Bern
- 2013 - 2014 Professor Dr. med. Claudia MEULI, Aarau
- 2015 - 2016 Dr. med. Michaël PAPALOÏZOS, Geneva
- 2017 - 2018 Dr. Mario BONACCIO, Frauenfeld
- 2019 - 2021 Dr. med. Urs HUG, Luzern
- 2022 - 2023 Professor Dr. med. Maurizio CALCAGNI, Zürich
- 2024 - 2025 Dr. med. Ivan Tami, Lugano (President elect)

MEMBERS OF THE SOCIETY

Since the original 50 founding members in 1966, the members of the Society continuously increased in number. At the end of 2022, the Swiss Society for Surgery of the Hand counts 212 members, including 184 active members, 28 junior members as well as honorary and corresponding members.

THE SWISS SOCIETY FOR SURGERY OF THE HAND is the association for professional, active Hand Surgeons in the country. A council of 9 members (fotos 2023) as well as an administrative office (www.swisshandsurgery.ch) is in charge to take care of the daily business of the Society as well as to take decisions in the political processes concerning the medical care in Switzerland.

An annual congress is organized by the sitting president, who changes every two years. This congress is a joint venture with the Hand Therapists. The Society supports and develops the specialty, as well as defending professional interests of its members.



President:
Maurizio Calcagni



Young Hand Surgeons:
Saskia Kamphuis



Vice-President:
Ivan Tami



Administrator:
Silvia Schibli



Past-President:
Urs Hug



Teaching Committee:
Stephan Schindele



Tariff Committee:
Torsten Franz



Quality Committee:
Laurent Wehrli



Education Committee:
Philipp Honigmann



Tariff Committee:
Michaela Winkler



ACTIVITIES OF THE SOCIETY

In 2020, the website "handfacts" (www.handfacts.ch) was founded and the goal was to inform stakeholders of the national health system and the public about the value of a specialization in Hand Surgery in Switzerland. Our specialty got more recognition due to this campaign and esteem in public, politics and from insurance companies. The lack of awareness could be diminished but does not yet reflect in better tariffs for many of the outpatient surgeries. This is an ongoing struggle.

The Swiss Society of Hand surgery is a member of the European (FESSH) and International Federations (IFSSH) of Hand Surgery. It represents the hand surgery specialty within its borders and abroad.

FIRST DELEGATES TO THE IFSSH:

1983 - 1986 Professor H. NIGST
 1987 - 1991 Professor A. NARAKAS
 1991 Professor V. E. MEYER

GIANTS OF HAND SURGERY HONOURED AT IFSSH

20th Century Fritz de Quervain, Bern Switzerland

PIONEERS IN HAND SURGERY

1986 Tokyo, Japan, Claude Verdan
 2010 Seoul, Korea, Viktor E. Meyer and André Chamay
 2016 Buenos Aires, Argentina, Ueli Büchler
 2019 Berlin, Germany, Diego Fernandez
 2022 London, UK, Beat Simmen

FIRST DELEGATE TO THE FESSH

1990 Privat-Docent D.V. EGLOFF

SECRETARIES GENERAL, FESSH

2020-2023 Daniel Herren, Switzerland
 2017-2020 Maurizio Calcagni, Switzerland

HAND TRAINING IN SWITZERLAND

Trainees who complete the structured and verified postgraduate training may carry the title "Handchirurgie FMH"
 - a title which is recognized in most European countries. The council in accordance with the FMH has the responsibility to support all training centers to adapt to the new training program and its regulations. The official training starts with a common stint of two years of general surgery and is completed by an examination of surgical basics.

After passing this exam, the trainee can enter the specialized training in hand surgery and in surgery of peripheral nerves. This training takes 4 years in at least 2 different institutions.

There are different training centers in 3 categories

- 5 University hospitals: Basel, Bern, Lausanne, Geneva, Zurich;
- 3 Center hospitals: Aarau, St. Gallen, Luzern;
- 11 smaller hospitals or Clinics: Geneva, Sierre, Chur, Bruderholz/Liestal, Münsterlingen/Frauenfeld, Solothurn/Olten, Schulthess Klinik Zürich, Balgrist University Zürich, Winterthur, Fribourg, Geneva-Meyrin.

Since 2016, the new program includes the written and oral examination by the European Board of Hand Surgery with the FESSH obtaining the European FESSH Diploma as the "Swiss Hand Diploma". Passing this exam and fulfilling a defined logbook, the trainee receives the Swiss Hand Diploma (FMH certificate) at the end of 6 years training.

OTHER ACTIVITIES BY THE SOCIETY:

- 22 hand training centers in Switzerland (8.927.007 inhabitants /41'285 km2 /4 language communities), from which 7 are at a university level.
- 10 accredited FESSH Hand Trauma and Replantation Centers (Aarau, Bellinzona, Bern, Bruderholz/Liestal, Chur, Lausanne, Sierre, St. Gallen, Winterthur, Zurich)
- Annual Research Fund to support clinical or experimental research for junior members.
- The Claude Verdan Fund supports a travelling young member each year.

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Submitted by Esther Vögelin, IFSSH Delegate and Stephan Schindele, Council member.

Musicians in Pain: Empowering Change

Abstract

This paper explores the niche and holistic role of the hand therapist working with professional musicians who are experiencing pain in their upper limbs. The majority of those presenting have developed their symptoms from their work demands. Understanding the physical and mental health requirements of a career in elite music enables the hand therapist to take an analytical and practical role in nurturing this musician back to full health. Common disorders and different therapeutic modalities will be discussed.

Main Section

Over the last few years, an increasing number of musicians have been seeking help in my clinic in London, UK. It is reported that 60 – 90% musicians will suffer a play-related musculoskeletal injury over the course of their career¹. The effect of these disorders is complex and can lead to significant psychological distress, interruption to family life and threaten work commitments². Musicians often have a precarious financial situation therefore cancelling performances and time off their instrument will increase anxiety and eventually, this may lead to a shortening of their career.

From 106 musicians seen in my clinic in 2022, the instrument most represented was piano (N=18) however, when considering all string instruments together, this group represented 60% of those seen (See Fig.1). Where figures do not add up, this is explained by multiple instruments played or no single primary instrument.

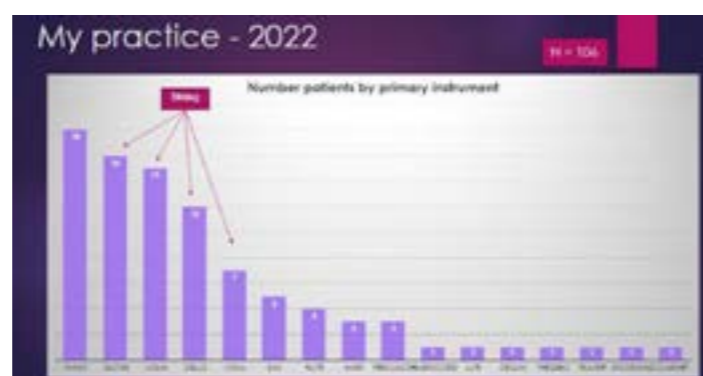


Fig.1: Number of patients by primary instrument

All age groups were represented from teenage to over 70. Most musicians were working as professionals either freelance or employed in orchestras and musical groups however, music students in undergraduate and postgraduate programmes in conservatoires as well as those at specialist secondary schools were also seen. Of those seen, 24% suffered a traumatic injury causally unrelated to their play. Most often, these musicians presented with soft tissue injuries, fractures of the phalanges, metacarpals or forearm. Two had mallet injuries.



Fig.2: Trauma by diagnosis

The vast majority of musicians seeking help, had a play-related musculoskeletal disorder (PRMD). Only one, of 60, had focal dystonia and five had osteoarthritis of the carpometacarpal joint of the thumbs. The remaining 54, had a work-related upper limb disorder (sometimes also called cumulative trauma disorder, non-specific arm pain or repetitive strain injury).

Many studies have explored the risk factors associated with instrumental careers. Commonly cited factors include poor and awkward postures, change in musical load or instrument, poor overall fitness, challenges in lifestyle including diet and sleep, being a string player and cultural issues in the elite musical world^{3,4}. It is very difficult for a musician to admit to pain and problems for many reasons including a misbelief that this is normal, an unwillingness to withdraw from commitments or have a reputation develop that they are injured or unreliable. Musicians in some work environments are also more vulnerable to injury for environmental reasons including poor locus of control and increased resentment of the employer demands⁵.

It is my observation that many elite musicians, paralleling elite sports people, are high achievers, driven by their determination to aim for perfection. They are passionate, intense, focused and have to be competitive to reach the higher echelons of their profession. The musical instrument and their music are integral to their personality and often define who they are as well as providing their creative outlet. When injuries or painful symptoms emerge, this threatens both the career and the person themselves. Catastrophisation and anxiety is common. However, the deep determination to get back to playing makes most musicians dedicated to their rehabilitation and highly focused in their approach.

Evidence is strong that hand therapists, physiotherapists and occupational therapists have good skills to help musicians overcome their issues

using teaching of good body mechanics, general fitness, upper body balance and sensible play habits^{6,7,8,9,10}. In the excellent study by Wolff in 2021, a 90 minute injury prevention session was run for musicians at the beginning of a summer course. It was voluntary to attend. By the end of the course, those who had attended the course experienced a 38% reduction in MSK symptoms in comparison to an 8% increase in those who chose not to attend¹¹.

There are two common PRMD seen in musicians namely overuse syndromes and adverse neural tension. Overuse is common in the common extensor muscles but can occur in all muscle groups. Various studies have explored why the wrist extensors are so vulnerable to this disorder and conclude that the flexors are task dependent and constantly move through the contraction / relaxation cycle whereas the extensors remain consistently contracted¹².

This presentation may be associated with a tendinopathy. Musicians and their technique teachers often concentrate primarily on the movement, sequencing and interplay of the fingers and wrist forgetting that the placement and recruitment of these muscles is dependent on scapula setting, shoulder strength and the whole kinetic chain of the upper limb. Leaning over the instrument, which is the position of many musicians sitting behind their instrument, can lead to shoulder protraction resulting in a tightness and overuse of the anterior muscles and a lengthening and under recruitment of the posterior muscles. The intrinsic and extrinsic muscles of the hand and wrist are small and therefore have lower capacity for strength and endurance than the larger proximal muscles. This education is rarely given to musicians in training.

The second common pathology seen is adverse neural tension. Nerves in the upper limb should glide and unfold up to 20% of its' length when the

whole arm is moved in specific positions. These movements are essentially the opposite to postures adopted when playing.

Patients may present with sensory symptoms leading to other healthcare professionals diagnosing compression syndromes. Although sometimes this may be the case, more often the symptoms come from an irritation along the length of the nerve. Additional symptoms can include rapid onset muscle fatigue, stiffness along the whole upper limb and neck and underuse of the muscles supplied by this muscle. This condition develops over time and may also lead to overuse in other specific muscle groups. This phenomenon is shared with people who spend many hours each day hunched over a desk.

When evaluating the musician, it is important to cover all the "normal" hand therapy assessments including oedema, pain, movement, function, sensation and dexterity. A detailed history of the development of the symptoms and a deep dive into the professional workload is important. Take note of hours of play, types of play, different repertoire and any changes recently in workload or instrument. Whenever possible, the hand therapist should observe play. If the musician is unable to bring their instrument with them, as will be the case with piano and harp, ask for recordings or look on You Tube!

The core skills of hand therapy will be utilised regularly. Below are listed some pointers specifically relating to musicians drawn from my personal experience:

1. Exercise prescription
 - a. Check intrinsic strength. This is surprisingly low in many musicians.
 - b. Neural gliding. Be gentle and go slowly.
 - c. Proprioception exercises. The better the proprioception, the better recruitment of the correct muscles
 - d. Posterior upper back strengthening. The

position of the instrument and the over-recruitment of the anterior muscles leads to tight pectoralis muscles and overuse of biceps. This, in turn, results in poor recruitment of the rhomboids, trapezius and other posterior muscles.

e. General fitness. With the variable lifestyle, sticking to regular fitness activities is challenging. It is essential that musicians realise that they are elite athletes and staying fit is vital.

2. Oedema and scar
 - a. Any swelling or tension at a scar site will put all tissues under strain. Be sure to assess the dorso-sensory branch of the radial nerve. Irritation to this nerve can cause pain over the dorsum of the radial hand and, in some, pain in the first carpometacarpal joint of the thumb.
3. Splinting
 - a. The wearing of thermoplastic splints can be difficult for musicians to tolerate. Detailed understanding of the range of movement requirements enables the therapist to select and fabricate appropriate splints.
 - b. Hypermobility is common among musicians and the proximal interphalangeal joint is vulnerable to adverse positioning especially when placing the fingers on a bow or guitar strings, for example. Oval 8 style splints work well. If they prove useful, having them made in silver encourages the musician to wear them when performing.
 - c. Neoprene splints work well as they allow good movement but provide some support.
4. Kinesiology taping
 - a. Muscle-enhance techniques work very well for musicians. The wrist extensors are very vulnerable to overuse and respond well to taping.
 - b. Placement of tape to restrict any over-used motion is excellent for retraining. For example, in pianists who overuse ulnar deviation place

tape with tension along the radial aspect of the wrist.

c. Control of hypermobility can be attempted with kinesiology tape. This is easier to manage than a splint but take care not to cover the area of the finger which makes contact with the keys or strings.

d. Any digit that needs to touch a string should never have tape near the tip as the adhesive can leave imperceptible residue on the string,

5. Other modalities
 - a. Myofascial release – especially the wrist extensors
 - b. Mobilisations – releasing stiff joints may be relevant after injuries
 - c. Desensitisation – for any neural symptoms
 - d. Joint Protection Techniques – the teaching of the biomechanics of the hand, how the fingers work, the way the muscles work and analysis of the use of the hands, wrists, and whole upper limb for this individual and their instrument is important. This helps emphasise the importance of the proximal muscles.

Musician specific modalities:

The role of the therapist extends beyond the above for the elite musician. All skills in activity analysis and graded rehabilitation will be recruited by the therapist. As will a combination of both physical health and mental health management skills.

1. Posture analysis
 - a. Observe the musician with their instrument.
 - b. Remember that many musicians are freelance and spend much time at their computer. Their posture and movement is important in this activity too.
 - c. Ask for photos and video. Often professional musicians have You Tube and other online presence and this can be found through search engines or your patient can send you a link.



Figure 3: Music related physical modalities

2. Technique evaluation
 - a. It is not expected that a hand therapist has intimate knowledge of every instrument. However, watching your musician playing can identify key factors such as holding tension in unused fingers, excessive work in a wrist flexed or ulnar deviated position or head immobile looking at the keys / strings.
3. Return to play planning
 - a. This is an art. Wherever possible, keep your musician on their instrument. Taking the musician away from their instrument can cause a dissolution of their sense of self and lead to mental health issues.
 - b. Balance the amount of time spent on instrument with mental practice (see below) and shadow practice.
 - c. Try not to be specific with time (unless this suits you and the musician as the only option) otherwise this can become an obsession. Better to listen to the physical signs and grade it gradually.
 - d. Warm up (see below) is essential before each and every session. Have a short and a long version.
 - e. Depending on the underlying pathology, build gently. It may be necessary to spend time explaining that any muscle that is being built for strength and endurance will feel fatigued and this is a "good" feeling.
 - f. Recovery is not linear and therefore it is

inevitable that some days will feel better than others. Comparing week on week rather than day by day is the key.

4. Mental practice

a. Mental practice works. There is so much evidence from the neuroscience literature both in sport and in music.
b. "Mental imagery facilitates multiple aspects of music performance. The deliberate use of anticipatory auditory (and/or motor and visual) imagery during performance may assist in planning and executing one's own actions— with potential beneficial effects on the control of parameters such as timing, intensity, articulation, and intonation"¹³

Key elements include:

- i. There are many ways to do mental practice
 - ii. It is a skill and therefore takes time and effort to become effective
 - iii. Understanding the neuroscience helps with the belief that it will work. MRI studies have shown that the cerebral cortex lights up in a similar pattern irrespective of whether a movement is actually done or purely thought.
 - iv. The more vividly the images are brought into the mind, the more effective the technique.
 - v. This is a skill for life and not just for use when injured.
- c. Types of mental practice include:
- i. Hearing as yet unwritten music in your head.
 - ii. Imagining the music in your head when away from your instrument.
 - iii. Silent reading of musical scores.
 - iv. Visualising the hands / fingers making the movements to perform a score.
 - v. Actively hearing a score from memory.
 - vi. Thinking about sound, speed, emphasis of a score.
 - vii. Thinking about the kinaesthetics of play including pressure on fingertips, motion, air against skin

5. Instrument adaptation

- a. This takes imagination and knowledge of what is possible. This comes with time and exposure to many musicians. Here are some common solutions:
- i. Posture pegs on a cello to clear the inner edge of the neck of the cello to allow the musician to have free motion of their head and neck. The strings are managed by a key instead. This adaptation has to be done by a specialist cello maker.
 - ii. Chair support for wind instruments to take the weight but allow the body to move.
 - iii. Double straps for heavy base guitars to spread the weight over the left and right shoulders equally.
 - iv. Contour foam plus coban overwrap on the end of a bow.



Fig.4: Additional music related physical modalities

6. Warm up and cool down

- a. Most musicians think of a warm up as something they do on instrument.
b. Warm ups should
- i. raise the body temperature
 - ii. increase the blood flow through the body
 - iii. take the nerves through some gliding
 - iv. warm up the specific muscles used (so this might mean different exercises for the right and left sides)
- c. Cool downs should stretch out the main muscles used and any tension that has developed during play.

It is not uncommon for musicians to play through their pain and present late for treatment with pain that has been present for many months or years. The pain has evolved from an acute to a persistent pain. It has been hard for the individual to admit to the pain for fear of loss of reputation and revenue.

Panic will set in fast leading to catastrophising and anxiety. Understanding pain is a critical part of the hand therapy approach. Signpost your musicians to the various excellent videos available from institutions such as NOI (Butler and Moseley), COPE with pain and Flippin Pain (Ryan) – all on You Tube.

Key points I teach in clinic include:

- Pain is a normal response.
- Being in pain changes our behaviour.
- The brain can associate movements, activities, smells and sounds to pain.
- The more important the part of the body that has the pain is to the individual, the more it will hurt.
- The amount of injured tissue is not in proportion to the experience of pain.
- The brain decides each and every time it feels pain whether it is important.
- All pain receptors have a life of a few days so they have the capacity to change.
- A body under threat can produce more pain sensors.
- All tissue heals but pain can persist beyond healing.
- Pain causes responses in the autonomic and parasympathetic nervous systems.
- Emotional and physical pain are felt in the same area of the brain.
- The pain response of fight, flight or freeze causes the production of cortisol and adrenaline which heightens our awareness of pain.
- Our body produces "happy" hormones (endorphins, dopamine, oxytocin and serotonin) which dampen our awareness of pain.
- Physical responses to pain are wide-reaching including in the muscles, blood flow, nervous

system, heart, gastro-intestinal system and genito-urinary system.

Hand therapists from an occupational therapy background will be able to utilise their mental health skills to explore these concepts with their musicians including explaining the science of pain, understanding how the catastrophising presents for that individual, developing cognitive behavioural approaches including neurolinguistics to explore the counterarguments and redirecting the focus in the body. Stimulation of the happy hormones is important through analysis of activity which excites the individual and brings on happiness and laughter.

However, there are occasions where it is important to bring in a psychologist to address the issues if the skills required to resolve the situation lie beyond the professional skills of the hand therapist. A holistic approach is essential and working collaboratively with surgeons and physicians is vital as summarised by Ulrich Mennen in his previous article in Ezine February 2102¹⁴.

Conclusion

Healthy play requires good physical and mental health and working in this field is demanding and rewarding in equal measures. Teaching healthy play approaches is holistic and includes conversations around sleep, nutrition, alcohol, drugs, relaxation, fitness and wellbeing. Changing the mindset to understanding that working at an elite level in music makes for being a musician athlete is the most important message to be given. Understanding demand, warming up effectively, promoting good posture and movement when playing, cooling down and staying fit are all important but addressing the stresses and challenges facing professional musicians makes this a very holistic and satisfying area of work for the hand therapist.

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**NICOLA GOLDSMITH**

MS SROT

Nicola Goldsmith is Immediate Past President of IFSHT and runs a private practice in London, UK specialising in the management of musicians. She is a registered practitioner with the British Association for Performing Arts Medicine. Nicola loves the meshing of physical and mental health skills needed for effectively working with musicians. She also works as a partner in NES Hand Therapy Training, as the Clinical Ambassador for Performance Health and is the project lead for Hand in Hand with Ukraine, an initiative she initiated in 2022 to help develop hand therapy skills in Ukraine since the outbreak of war.

**IFSHT NEWSLETTER - REACH VOLUME 4, NO. 1**

Issue 1 of volume 4 of the IFSHT newsletter is now available on the IFSHT website. Please check out the following link to access it:

https://ifsht.org/publications/?publications_category=29

The publication aims to collate Research, Education, Achievement and Clinicians in Hand and upper limb therapy around the world.

This edition of REACH takes on a sports theme! Inside we have clinical pearls from Hamish Anderson (accredited hand therapist with Hawthorn Australian Football Club) and a fresh look at strength and conditioning in the context of hand therapy from Dr. Jim Wagner (certified hand therapist, certified strength and conditioning coach and bodybuilder) along with many of our regular features.

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

UPCOMING EVENTS

At the time of writing two events are happening in April. These are the Spanish Hand Therapist Association Conference 2024 and the Canadian Society of Hand Therapists 2024 Conference. Please check out their websites for more details on these events: <https://secmacongreso.es/programa-cientifico/> <https://csht.org/>

Now fast approaching is the next Joint Triennial Congress in Washington in 2025. Submission of abstracts is now open until Monday, May 20, 2024: <https://www.ifssh2025.org/s/>





VOLUME 8, NUMBER 4

HAND SURGERY SOURCE APP 8.0 NOW AVAILABLE

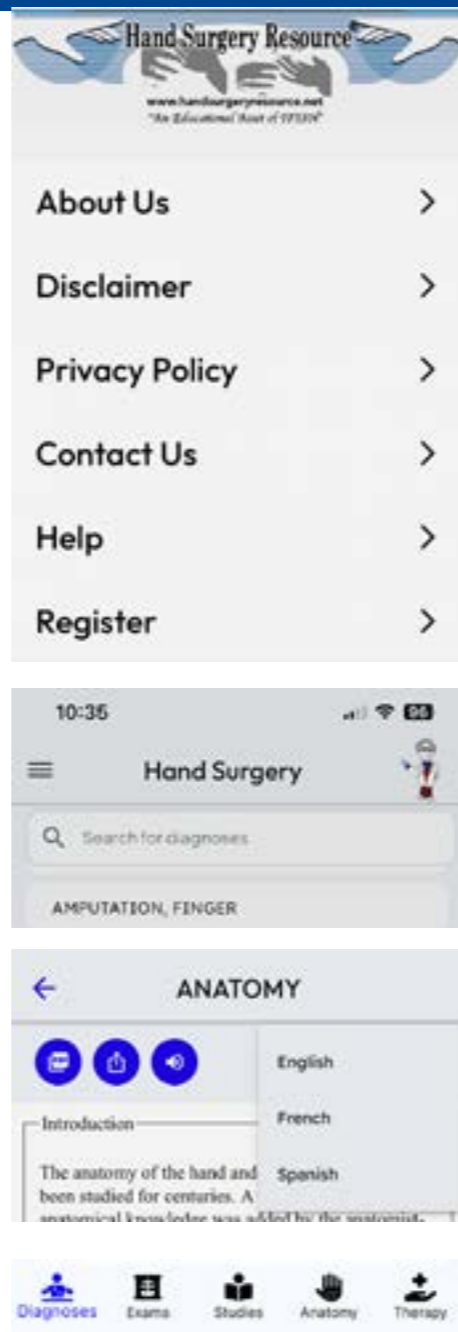
The new Hand Surgery Source App works seamlessly with the new Hand Surgery Resource “.net” website. Like the version 8.0 website, the new Hand Surgery Source App is FREE and now OPEN ACCESS - no registration is required! The new App is completely refreshed with an intuitive interface that makes using the Hand Surgery Source App easier than ever! Bug fixes and performance enhancements provide a smoother user experience. Users can quickly view hundreds of diagnostic guides, exams, study explanations, and therapy chapters.

The new App brings it's rich content to the users in English, French, or Spanish! In addition, all content is available via the “read-it-to-me” function so users can listen to any chapter while keeping their eyes on the road. The ability to send QR codes to others and to print PDFs also remain at the user's fingertips.

Don't forget, you can still sign up for our newsletter by providing a valid email address. Whether you're a seasoned hand surgeon, a resident in training, or a healthcare professional interested in hand surgery, our App is designed to provide relevant and up-to-date information at your fingertips. Enjoy immediate, effortless access to essential hand surgery information.

Your feedback drives our improvements, so keep it coming! Thanks for your support, and explore the new features today.

Get the new 8.0 Hand Surgery Source App version at the [Apple Store](#) or at [Google Play](#).



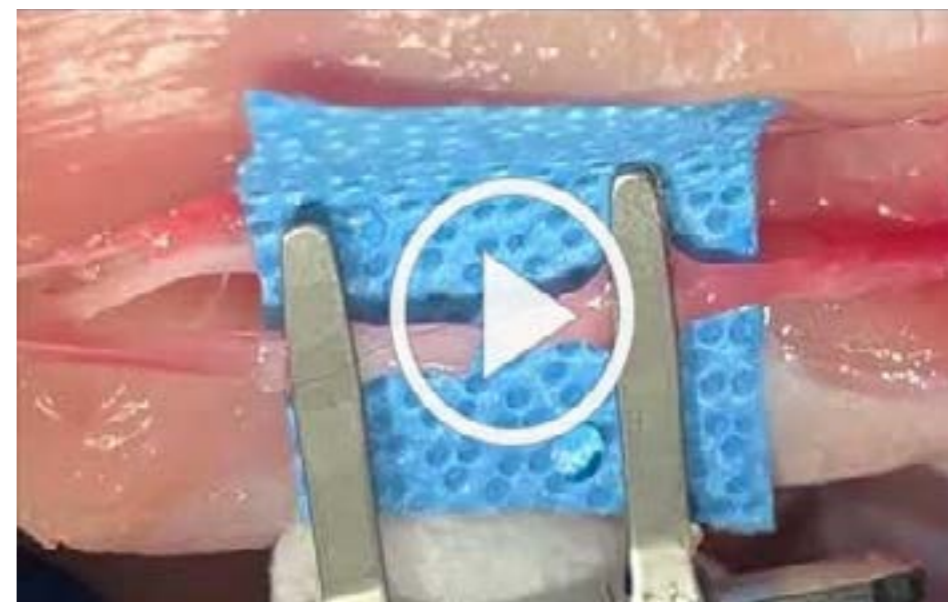
2025 IFSSH-IFSHT TRIENNIAL CONGRESS CALL FOR ABSTRACTS

We are pleased to personally invite you to [submit an abstract](#) for the upcoming [2025 IFSSH-IFSHT Triennial Congress](#), one of the most anticipated meetings of 2025 taking place from March 24-28 in Washington, DC, USA. The IFSSH has a special way of bringing the global hand surgery community together, and we're doing so in the United States for the first time in more than three decades.

This will be a remarkable meeting with influence from hand surgeons all around the world. We're lucky to be in amazing Washington, DC, the capital of the United States, during the short but beautiful Cherry Blossom Festival.

We have hundreds of abstract slots available for you to share your work, and we would love for you to join us. Please [submit your abstract](#) by Monday, May 20, 2024. More information about the meeting, including registration, is coming soon.

NEW YOUTUBE VIDEO: LEARNING MICROSURGICAL TECHNIQUES USING THE TURKEY WING MODEL



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Hands In Action

An initiative with heart



“We know only too well that what we are doing is nothing more than a drop in the ocean. But if the drop were not there the ocean would be missing something.” - Mother Teresa.

Colombia, land of incomparable beauty and enviable cultural diversity, radiates a spirit of resilience and creativity in every corner. Its picturesque landscapes and warm people reflect the richness of its identity. However, behind this shining facade lies a challenging reality.



Socioeconomic inequality persists as a shadow, limiting equitable access to opportunities and medical treatment alternatives.



By the year 2020, the National Institute of Health of Colombia reported an incidence of congenital malformations of 108.6 per 10,000 live births, with 30% corresponding to malformations of the osteomuscular system, with a significant number of these affecting the hands.



A vast majority of these children are immersed in complex social contexts, where access to corrective interventions is limited. Living with these malformations affects both their physical capabilities in daily life and their self-esteem in long-term lifehood, often becoming a stigma that prevents them from developing at their fullest. It is for this reason that in 2019, under the leadership of Dr. Aida García, the Colombian Association of Hand Surgery set out to address this issue through its project: “Manos a la Obra”.

Through this initiative, the goal is to bring together healthcare professionals both national and international, experienced in the management of congenital pathology of the osteomuscular system and make them available with no cost to the communities in need for corrective surgical alternatives, in order to improve the functionality and quality of life of hundreds of children across the country. Since its inception, the initiative has held 4 sessions with a total of 228 surgical interventions.

Table 1. Surgeries performed by “Manos a la obra”

City	Patients	Procedures	Year	Institution
Cartagena	17	29	2019	Hospital Naval Cartagena
Pereira	44	71	2022	Hospital San Jorge Pereira
Montería	19	25	2022	Clinica CUMI
Barranquilla	76	103	2023	Clinica Unión Vital
Total	156	228		

Due to my interest in orthopedics and hand surgery, I became involved with this initiative and participated in two of its sessions. Having the opportunity to support such an initiative is a highly broadening experience, especially for those of us who are in the process of training in the healthcare field.

Being able to see doctors come together to evaluate cases and discuss them with the sole purpose of performing the best possible intervention for each patient is quite enriching, as it demonstrates how academia goes far beyond the classroom. For a medical student, it is incredibly motivating to see how in these sessions everyone rallies under the same mission banner, putting aside egos, institutions, regionalisms, and more, demonstrating the true essence of our profession.

The future for “Manos a la Obra” is hopeful. As of the date of this article, two more surgical sessions are already planned, with 80 additional surgeries projected.



Over time, our young patients grow with their new hands and being able to see the incredible functional results being achieved is nothing short of fascinating.

To speak of this initiative without giving special thanks to Dr. Aida García and all the sponsors of the session would be unacceptable, as seeing that once-impossible idea turned into the most valuable project of the Colombian Association of Hand Surgery is truly hopeful and shows what it means to contribute even if it seems little to achieve a better society.

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 Colombia



Art Exhibit #20

Dorothy Hodgkin 1910-1994
 Nobel Prize in Chemistry in 1964 for defining the molecular structures of penicillin (1949), vitamin B12 (1955) and insulin (1969).
 She suffered severe arthritis from age 28.
 Oil on canvas. 1985. NPG 5797.
 Artist: Maggi Hambling. National Portrait Gallery, London, UK.

S A V E T H E D A T E

5TH EUROPEAN SYMPOSIUM ON PEDIATRIC HAND SURGERY AND REHABILITATION

Rotterdam

More information at: www.kinderhand.net

Preceding the FESSH meeting:
25-26 June 2024

2024 COMBINED MEETING
OF THE AMERICAN SOCIETY FOR SURGERY OF THE HAND AND THE AUSTRALIAN HAND SURGERY SOCIETY

INNOVATIONS
ACROSS THE PACIFIC *in* HAND SURGERY

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THE WESTIN MAUI RESORT & SPA, KA'ANAPALI

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ASSH | American Society for Surgery of the Hand

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2024

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HAND IN THE THEATER

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TUE 21/05 - 18.00-23.00



belgian handgroup spring congress 2023



CSSH ANNUAL MEETING

JUNE 18th 2024 HALIFAX

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17^o Congresso Brasileiro de Reabilitação da Mão
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Presidente FLACM: Dr Sergio Daroda
 Secretario FLACM: Dr Fernando Menvielle

Presidente : Dr Jorge Terrazas



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53rd Annual Congress of the South African Society for Surgery of the Hand



Dates – 30 August – 1 September, 2024
 Place – Cape Town, SA
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Review Article

Expert consensus on the surgical evaluation and management of upper extremity spasticity in adults

Christopher S. Crowe, Paula A. Pino,
Peter C. Rhee and the Upper Extremity Spasticity Working Group

Abstract

In the last decade there has been incredible interest and advancement in the surgical care of adult patients with upper motor neuron (UMN) injuries. Spasticity represents a prevalent and debilitating feature of UMN syndrome, which can result from cerebral palsy, spinal cord injury, cerebrovascular accident and traumatic or anoxic brain injury. While several diagnostic tools and management strategies have been described for upper limb spasticity, evidence-based practice guidelines do not currently exist due to low patient volume and a paucity of surgeons routinely performing surgeries in UMN syndrome patients. As such, expert consensus may help provide guidance for patients, therapists and clinicians alike. In this article an expert panel was assembled, and the Delphi method was utilized to present diagnostic considerations, define operative indications, discuss surgical treatment modalities and encourage a standard set of outcome measures for patients with upper extremity spasticity.

Keywords

Upper motor neuron syndrome, spasticity, stroke, cerebral palsy, reconstructive surgery

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Introduction

Spasticity is defined as a disorder of normal inhibitory motor pathways characterized by increased muscle tone and hypersensitive stretch reflexes (Rhee, 2019a and 2019b). It represents a prevalent clinical feature of upper motor neuron (UMN) syndrome resulting from cerebral palsy, spinal cord injury, cerebrovascular accident and traumatic or anoxic brain injury. Each of these conditions might produce varying degrees of muscle spasticity and paresis, thus representing a disparate and often mixed nature of lesions. Because of this heterogeneity, there is no panacea for spasticity diagnosis and treatment. Reported data is largely limited to case series and no minimum duration of follow-up or standardized method of outcome reporting has been adopted. Moreover, indications for surgery can vary widely based on the aetiology of spasticity, joints affected, degree of volitional control and level of function. These factors make comparison between studies challenging, if not frankly impossible.

As few evidence-based conclusions regarding upper extremity spasticity surgery are possible at this time,

expert consensus may help provide guidance for clinicians. This article addresses the challenges of comparative effectiveness research in spasticity, discusses diagnostic consideration, defines operative indications, provides a consensus opinion of surgical treatment modalities and proposes a minimum set of standard reporting outcomes using the Delphi method.

Methodology

A modified Delphi methodology was employed to determine consensus for clinically relevant queries relating to upper extremity spasticity (Okoli and Pawlowski, 2004). An expert surgical panel was

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recruited to the Upper Extremity Spasticity Working Group (UESWG) consisting of 15 surgeons representing Europe, Asia and North America. Panel members participated in multiple rounds of online surveys from December 2022 through April 2023. Round 1 consisted of 22 open-ended questions focused on major themes of function, treatment and outcomes (Supplementary online material: Appendix 1). Additional questions were posed based on respondent feedback. Responses were summarized into narrative statements and were again presented to the working group, with five additional questions. Replies were evaluated by two authors to determine the level of agreement: complete (100%), majority (>75%) or partial (>50%).

After consensus opinion was determined for all questions, a revised draft was distributed to the panel for final approval. The expert panel was given a final opportunity to agree with the manuscript or to state a differing opinion. Statements that did not reach consensus were also included, but were noted as such. The end result is an article focusing on four main topics: diagnosis and non-operative treatment, surgical indications, surgical technique and postoperative rehabilitation.

Diagnosis and non-operative management of upper extremity spasticity

Defining functional and volitional control in the upper extremity

Assessing control in the spastic upper extremity is challenging, not only in the context of a nuanced physical examination, but also from imprecise interpretation and false equivalence of motion and function. The panel defined an upper extremity with volitional control as one capable of initiating deliberate movement at a specific joint level. This is dependent on the integrity of the central and peripheral nervous system, muscle-tendon units, joints and skeletal framework. While volitional or voluntary motion is quantifiable, it does not necessarily imply usefulness. In contrast, a functional upper extremity or component thereof, is one capable of completing a predefined task or activity. The assessment of function is consequently situation specific; for example, a patient's spastic limb may be functional with respect to using a joystick, but non-functional for dressing oneself. While strength and motion may be assessed independently at each joint, each level has the potential to greatly influence functionality at adjacent levels. Although native volitional control cannot be introduced or improved with current interventions,

functionality of the upper extremity may be improved with both non-operative and surgical treatments.

Evaluation of upper limb spasticity

While several tools and classification systems have been described to objectively evaluate and standardize communication, there was no universally agreed metric for the assessment of spasticity among the members surveyed and a variety of outcome measures are currently used by the panel (Guo, 2022; Rekan, 2010). It is most critical to use the same metric before and after treatment, and have the same evaluator complete the assessment to ensure reliability.

Volitional control (Table S1) (Photopoulos et al., 2014) and the resting position of the hand and wrist can be assessed at each joint level (Table S2) (Keenan et al., 1987). The Modified Ashworth Scale (MAS) is a simple system to evaluate the degree of spasticity at a single joint and was the most frequently used spasticity assessment by panel members (Ashworth, 1964; Meseguer-Henarejos et al., 2018) (Table 1). It requires no additional equipment but is disadvantaged by rater subjectivity and inconsistent inter-observer reliability. The Tardieu system is a widely recognized alternative to MAS (Table 2). This spasticity scoring system was agreed by 40% of the panel to be more objective and accounts for the angle of muscle reaction (Haugh et al., 2006).

Patient-reported outcome and other related scoring measurements, such as arm activity (ArmA) (Ashford et al., 2013) (Table 3) and visual analogue scale (VAS) pain (Kersten et al., 2012) scores, are also helpful for assessing patient-perceived severity, function and response to intervention. The House

Table 1. Modified Ashworth Scale.

Grade	Description
0	No increase in muscle tone
1	Slight increase in muscle tone, manifested by a catch and release or by minimal resistance at the end of the ROM when the affected part(s) is moved in flexion or in extension
1+	Slight increase in muscle tone, manifested by a catch, followed by minimal resistance throughout the remainder (less than half) of the ROM
2	More marked increase in muscle tone throughout most of the ROM, but affected part(s) easily moved
3	Considerable increase in muscle tone, passive movement is difficult
4	Affected part(s) rigid in flexion or extension

ROM: range of motion.

Functional classification system provides straightforward pre- and postoperative grading to measure the impact of interventions on activity level (House et al., 1981) (Table S3).

While patients may have modest quantifiable objective changes in their physical examination

Table 2. Tardieu Spasticity Scale.

Velocity and Angle of Resistance	
Velocities: indicated for each muscle and remains the same from one test to another.	
V1	The velocity is as slow as possible (greater than 3 seconds)
V3	The velocity is as fast as possible (less than 1 second)
Angle of resistance (degree): position in which the increased resistance is first felt	
X _{V1}	The angle of arrest at slow speed of stretch (maximum passive range of motion)
X _{V3}	The angle where the catch-and-release or clonus is first felt at fast speed (less than one second)
Spasticity grade (Y): quality of the reaction (gain)	
0	No resistance throughout passive movement
1	Slight resistance throughout passive movement
2	Clear catch at precise angle interrupting passive movement
3	Fatigable clonus (less than 10 seconds when maintaining pressure)
4	Unfatigable clonus (more than 10 seconds when maintaining pressure) occurring at a precise angle

$X_{V1}-X_{V3} = X$: Spasticity angle reflects the velocity-dependence of the stretch reflex. The larger the spasticity angle the more spastic the muscle is.

Table 3. Arm activity measure.

Section A: Caring for the affected arm		Section B: Independently completing tasks or activities using affected arm	
1	Cleaning the palm of the hand	1	Do up buttons on clothing
2	Cutting fingernails	2	Pick up a glass, bottle, or can
3	Cleaning the armpit	3	Use a key to unlock the door
4	Cleaning the elbow crease	4	Write on paper
5	Positioning arm on a cushion or support in sitting	5	Open a previously opened jar
6	Putting arm through a garment sleeve	6	Eat with a knife and fork
7	Putting on a glove	7	Hold an object still while using unaffected hand
8	Putting on a splint	8	Difficulty with balance when walking due to your arm
		9	Dial a number on home phone
		10	Tuck in your shirt
		11	Comb or brush your hair
		12	Brush your teeth
		13	Drink from a cup or mug

0 = no difficulty; 1 = difficulty; 2 = moderate difficulty; 3 = severe difficulty; 4 = unable to perform activity.

based on the outcome measure that is utilized, they may experience tremendous quality of life improvements after reconstructive surgery. This concept underscores the need for outcome studies to include goal attainment scores (such as the Canadian Occupational Performance Measure (COPM)) (Law et al., 1990), adaptive testing and subjective quality of life measures (e.g. Neuro-QoL) (Reeves et al., 2018). Importantly, evaluation of patients with non-functional extremities should focus on pain, hygiene and the impact of interventions on the caregivers' burden and burnout perception.

Future instruments for quantifying spasticity may include video capture and analysis, which would have the benefit of being reviewed asynchronously. Such video assessments include the Assisting Hand Assessment (AHA) (Krumlinde et al., 2003) and Shriners Hospital Upper Extremity Evaluation (SHUEE) (Davids et al., 2006), though these metrics these have only been validated in a paediatric population.

The role of selective nerve blockade and use of botulinum toxin

Injectable local anaesthetic can be used to induce a selective nerve blockade in spastic patients providing prognostic information about pain relief after neurectomy, identify spastic muscle groups and distinguish fixed, fibrotic soft tissue contractures from spasticity. These effects are similar to botulinum toxin. One panel member felt the reliability of local anaesthesia administration could be improved with the use of high-resolution ultrasound. A major disadvantage of local anaesthetic blockade is its short duration of effect, which prevents patients from fully

experiencing the impact of tonal reduction on their activities of daily living.

For therapeutic purposes, botulinum toxin can be used to improve the efficacy of other modalities, such as stretching and splinting, with the aim of preventing fixed contractures. Chemodenervation may be especially beneficial in cases of early, evolving spasticity (e.g. post-stroke or brain injury) and during periods of growth for children with cerebral palsy where the outcomes of muscle-tendon rebalancing procedures would be unreliable or short lived.

The diagnostic benefit of botulinum toxin is also substantial and allows the surgeon to determine what portions of deformity are related to spasticity alone, evaluate muscle group spasticity masked by other deformities (e.g. intrinsic spasticity in the setting of a clenched-fist deformity), and evaluate pseudo-paretic antagonistic muscle spasticity (e.g. triceps in the context of highly spastic elbow flexors). It also simulates a surgical denervation for the patient and provides insight regarding a potential outcome and improvement in function after hyperselective or complete neurectomy.

The optimal duration of treatment using botulinum toxin is not well understood, and the panel agreed that long-term treatment is less cost-effective as compared with surgery (Van Heest et al., 2015). Ideally, coordinated care between physicians, therapists and surgeons allows patients who have benefited from chemodenervation to be referred for possible hyperselective neurectomy (HSN).

The panel mostly agreed that botulinum toxin injections can be repeated as many times as necessary to obtain diagnostic and prognostic information for surgical planning, and repeated injections should be spaced out over 4–6-month intervals. Patients who have developed contractures and are not benefiting from chemodenervation should be referred for soft tissue releasing or lengthening surgeries. Injections should be discontinued if they fail to decrease the deformity, no longer relieve pain, and are not well tolerated.

No panel member advised the use of phenol and all suggested it be reserved for instances when surgery may be contraindicated.

Role of dynamic electromyography for preoperative planning

Dynamic electromyography (dEMG) is an instrument that provides information regarding specific muscle group control and spasticity (Kozin and Keenan, 1993). Currently, it is not widely available except for specialized centres with dedicated dEMG protocols. The panel was split on its routine use and

approximately 25% utilize it in their clinical practice. Half felt dEMG was most useful in an academic or research environment, citing concerns regarding the subjectivity and potential inaccuracy of surface marker systems employed to pinpoint specific muscle activity, in addition to the expertise needed by the team to obtain accurate results. Furthermore, needle testing can be painful, and its invasiveness might increase spastic tone in the upper extremity.

Motion analysis combined with dEMG permits an accurate association of specific joint movement with electrodiagnostic findings. Its main limitation is accurate assessment of the hand, which is difficult to capture with high fidelity using infrared sensors. The potential advantage of motion analysis is that it provides a video-recorded evaluation of the patient in a lower stress environment, which can be reviewed later for surgical planning.

Role of orthotics for fixed deformities

The role of orthotic use and bracing for upper extremity spasticity depends on the patient, as well as the location, cause and extent of contracture. All panel members agreed that well fabricated orthotics may assist in the prevention or correction of nascent joint contractures and can be used as an adjunct to botulinum toxin injection. However, established moderate-to-severe deformities are difficult to treat with splinting alone. In some respect bracing may be counterproductive, as it can trigger spasticity and have the unintended consequence of promoting neglect of the extremity. Confining bracing to a nocturnal period only may be helpful for encouraging use of the hand during the daytime and has the benefit of acting upon the contractures itself when muscles are flaccid while sleeping.

Indications and considerations for reconstructive procedures

Appropriate setting for surgical evaluation and management

There was complete agreement that surgical evaluation and management of spasticity patients should be performed in specialized/tertiary centres with a multidisciplinary team involving physiatry, occupational therapy, physiotherapy and surgeons. Ideally, the whole team works in concert to provide single setting care (Patel and Rhee, 2020). The environment where the patient is examined and evaluated should have large rooms with appropriate accessibility and a comforting environment. Structured evaluations with video surveillance are ideal for gathering information

as complete and objective as possible, which can be utilized for asynchronous surgical planning, retrospective research and for multi-disciplinary review.

Staging and surgical approach

In patients with multiple deformities in the upper limb, surgeons should follow the principle of treating the base of the kinetic chain first and proceeding in a proximal to distal manner. The panel could not definitively recommend the ideal number of joints addressed at the same time in one surgical setting and agreed that staging of upper extremity spasticity surgery be individualized to the patient. If a single deformity is predominant, correcting it primarily may spontaneously improve adjacent deformities – for example, improvement of a mild wrist flexion deformity after correction of a moderate to severe flexed elbow deformity. Considerations for whether or not to stage procedures include goals of care, resources available (e.g. personal finance, insurance coverage, travel requirements), medical complexity of the patient and the surgical teams' experience and protocol (Patel and Rhee, 2022).

Appearance as an indication for surgery

The appearance of spastic deformity and its psychosocial ramifications are a common concern for patients with UMN injuries, especially during adolescence. The social implications of their appearance

should not be underestimated or dismissed. It can negatively influence their body image and behaviour, even compromising function if they avoid and neglect that extremity. The panel agreed that surgery in properly informed and consented patients with low functioning limbs for aesthetic reasons may have significant impact on their wellbeing and may improve function in ways we are unable to currently measure (Figure 1).

Contralateral C7 nerve transfer

Contralateral C7 (cC7) nerve transfer has been shown in isolated studies to be beneficial for the treatment of spasticity (Pan et al., 2020; Zheng et al., 2018). Most surveyed felt there is not enough available data to support routine use in patients with spastic hemiplegia. Improvement in reported cases may be due to a reduction in tone secondary to the associated ipsilateral neurectomy, rather than reinnervation from the contralateral side (Spinner et al., 2018). Comparative studies are necessary as there already are efficacious procedures (e.g. HSN, muscle-tendon lengthening) to address the deformities a cC7 nerve transfer aims to treat.

Role of HSN for the treatment of dystonia

Dystonia is a complex movement disorder that poses several diagnostic and treatment challenges. It manifests as involuntary muscles contractures resulting

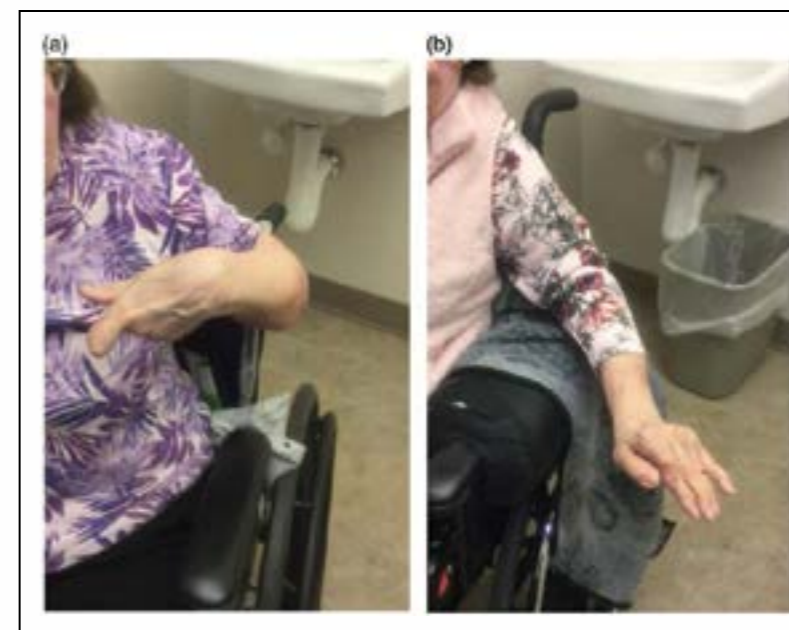


Figure 1. Change in overall appearance of the limb before and after spasticity surgery. Photographs demonstrate the limb appearance before (a) and after (b) shoulder, elbow, wrist, hand and thumb reconstruction to preserve volitional control while correcting the spastic deformity.

in repetitive or twisting motions that involve one (focal), two adjacent (segmental) or all parts of the body (general). HSN may have a role in the treatment of focal or segmental dystonia, but the panel could not provide a definitive recommendation. Improvement in function after repeated botulinum toxin injection will simulate the effect of a HSN and provide prognostic information for its use in dystonia. In some instances, temporary chemodenervation may improve the deformity but could result in joint imbalance from increased activation of antagonist or adjacent muscle groups. The surgeon and patient should both understand the possibility of hypercorrection and developing further uncontrolled imbalance or a change in the pattern of dystonia in the upper limb.

Surgical treatment recommendations by joint level and deformity

Correction of shoulder contracture

Significant contracture and/or spasticity of the shoulder adductors and internal rotators – pectoralis major, teres major, latissimus dorsi, short head of biceps and subscapularis muscle – is the primary indication for partial tenotomy or tendon lengthening procedures. While no objective threshold for offering reconstruction at the glenohumeral level has been established, most panel members advocate for surgery if the degree of contracture/spasticity is associated with hygiene difficulties, pain related to inferior subluxation or dysfunction of the distal limb. In patients with voluntary control, surgical treatment of the spastic shoulder may increase range of motion of the upper limb. The surgeon should understand the patient's specific objectives to determine if those goals can be effectively met with surgery.

Treatment of the spastic elbow

HSN of the terminal branches of the elbow flexors motor nerves (Figure 2) and muscle-tendon lengthening procedures have both been described as treatment options for elbow flexor spasticity (Gong et al., 2014; Leclercq et al., 2021; Namdari et al., 2012), but the literature currently provides little evidence to support one technique over the other. All panel members agreed that pure spasticity of the elbow flexors with good passive motion and elbow control are strong indications for proceeding with HSN alone, while fibrotic contracture of the elbow flexors necessitates muscle-tendon lengthening or release. Often patients present with a mixed pattern of deformity. In these instances, the relative contribution of

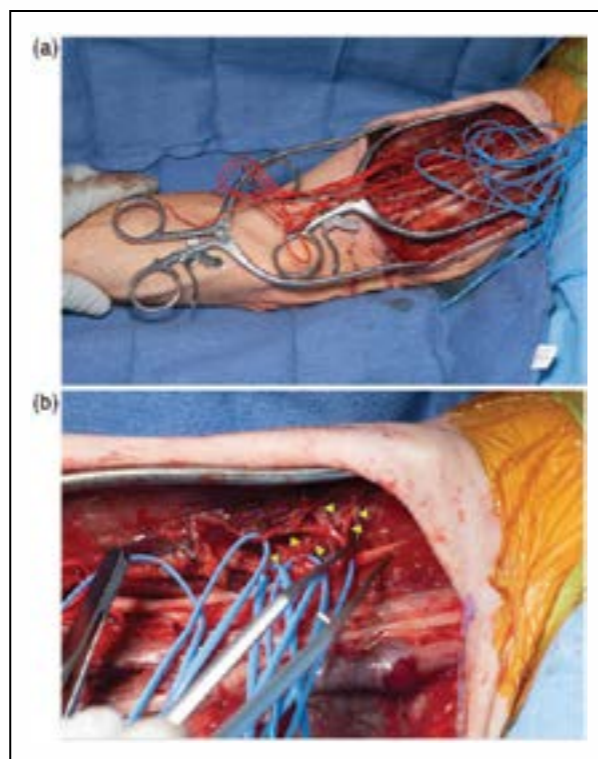


Figure 2. Hyperselective neurectomy of the elbow flexors. A medial brachial approach is performed to isolate the biceps (blue vessel loops) and brachialis (red vessel loops) motor branches (a). Terminal motor rami (yellow triangles) to the biceps are exposed by intra-muscular dissection (b).

increased tone can be deduced in part by physical examination, but more definitively by improvement after chemodenervation, or can be detected with EMG. The benefit of performing HSN in addition to tendon lengthening to decrease long-term contracture recurrence is still unknown.

The goal for correction of severe fixed elbow contractures (>90°) depends on many factors. Patients with no volitional control or function in the upper extremities will need correction to improve hygiene, prevent skin maceration, reduce pain and facilitate dressing. If the patient is in a wheelchair, a semi-flexed (30–45° of flexion) position is more optimal for upper limb positioning on an arm rest and is sufficient for dressing.

Patients with preserved volitional hand and elbow control may benefit from greater corrections between 0–30° of elbow contracture, especially if they are ambulatory. The goal in this context is to enable elbow extension, thereby increasing the effective area in space for hand positioning. However, caution must be exercised in patients who use their bent elbow to carry objects or utilize the flexed elbow to hold objects to the body with brachiocephalic pinch.

This function should be preserved by performing limited releases and highlights the importance of setting clear surgical goals with the patient.

Pronation deformity

The panel could not recommend a single optimal treatment for pronation spasticity, and many felt restoration of supination remains one of the most challenging aspects of managing upper extremity spasticity. The specific surgical strategies used will depend on the amount of pronator spasticity, presence of fixed contractures and volitional control of supination. Focused physical examination, targeted botulinum toxin injection and dynamic EMG all may assist in distinguishing these elements and the relative contribution of each muscle to the deformity.

In a forearm with isolated pronator contracture, tenotomy or fractional lengthening of pronator teres (PT) (Figure 3) versus muscle origin release (ulnar and humeral heads) will provide a more passively correctable forearm. This will allow the arm with volitional control to assume a more neutral position if the biceps and/or supinator can contract or if there is increased tone in these muscles.

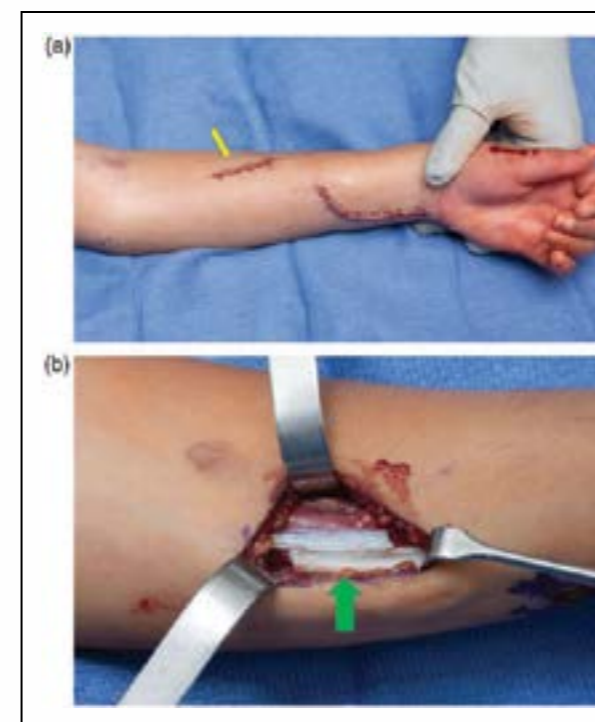


Figure 3. Pronator teres fractional lengthening. Through a proximal forearm incision (yellow arrow) (a) a step-cut fractional lengthening (green arrow) is performed at the muscle-tendon junction (b) to improve passive and active supination in a patient with preserved volitional supinator control.

Simultaneous tenotomy of PT and pronator quadratus (PQ) is not recommended and increases the risk of supination deformity.

In the case of pronator spasticity without contracture and with volitional control of supinator muscle, HSN of the median nerve branches to PT, and in some cases PQ, is considered (Leclercq et al., 2021). This can be performed at the same time as HSN for the flexor carpi radialis (FCR) muscle. Supinator control is best evaluated after botulinum toxin injection into the pronators. In the absence of supinator control and supination less than neutral, tendon transfer may be indicated. The most common procedure is pronator re-routing, which requires volitional control of the PT muscle (Strecker et al., 1988).

Supination deformity

For many activities involving a tabletop (e.g. joystick or keyboard), supination may be functionally more impairing than pronation deformity. Similar to pronation dyssynergy, careful evaluation of contributing muscle forces (e.g. biceps, supinator) is critical before proceeding. Biceps rerouting is a favoured approach (Figure 4) (Gharbaoui et al., 2016), though increased biceps tone leading to supination may also be addressed with tendon lengthening or musculo-cutaneous nerve to biceps HSN. Derotational osteotomies or distal radioulnar joint arthrodesis in a more functional position are rarely utilized but could be offered in certain instances based on individualized patient goals (Hankins et al., 2006).

Tenodesis versus arthrodesis for spastic flexed wrist

Total wrist arthrodesis should be limited to severe long-standing wrist flexion deformity, ankylotic joints and non-functional hands with hygiene problems. Tendon transfers are preferred, especially when the wrist can be passively corrected into a neutral or extended position. Flexor carpi ulnaris to extensor carpi radialis brevis (ECRB) is the transfer most commonly performed among panel members when there is no active wrist extension (Hoffer et al., 1986; Malizos et al., 2010). It also provides a force vector for forearm supination (Cheema et al., 2006). In patients with some active wrist extension, transfer of a palmarly subluxated extensor carpi ulnaris to ECRB counteracts the paradoxical ulno-palmar deviation in the spastic flexed wrist and provides a strong tenodesis to bring the hand into a central and extended position (Kritiotis et al., 2019).

One-third of the panel members perform proximal row carpectomy (PRC) with tendon transfers to

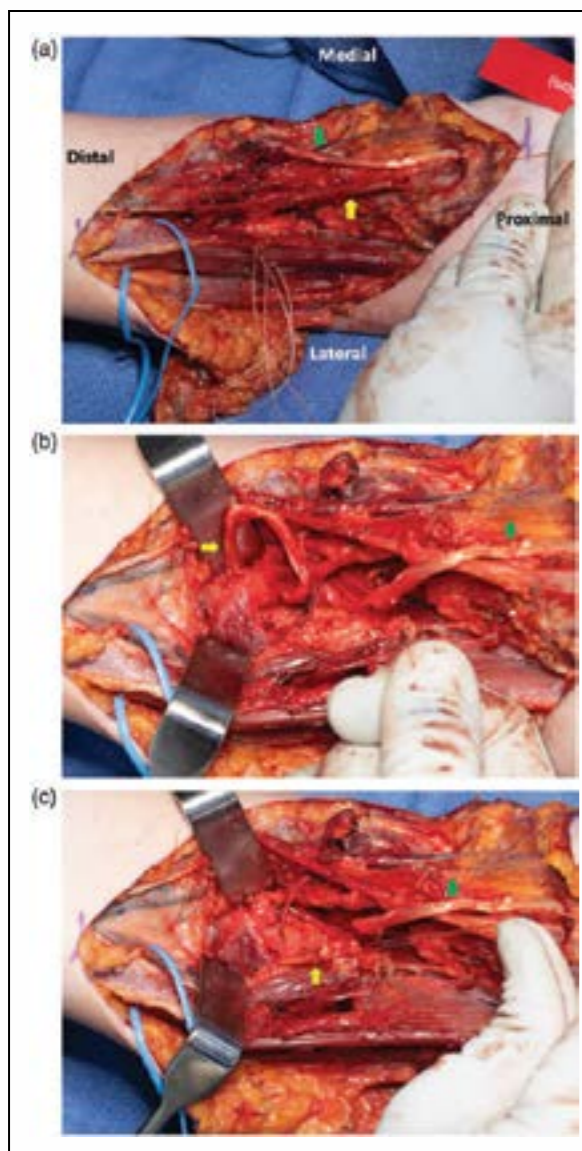


Figure 4. Biceps rerouting to correct spastic supination deformities. Patient's left elbow is approached through a direct anterior approach to the proximal forearm to expose the biceps tendon (a). The biceps tendon is divided in a 'Z-tenotomy' to elongate the distal (yellow arrow) and proximal (green arrow) tendons for later tenorrhaphy (b). The distal biceps tendon is routed around the proximal radius to exert a radius pronation moment (c).

passively correct higher degrees of wrist flexion contractures and improve overall range of motion. PRC can also be performed simultaneously with wrist arthrodesis to provide additional length to the extrinsic finger flexors (Neuhaus et al., 2015; Power, 2015); however, care should be exercised for patients who use the tenodesis effect of wrist flexion to open the palm for grasp.

Role of flexor-pronator slide

A flexor-pronator slide has the advantage of providing en-bloc lengthening of the volar forearm musculature in the combined spastic flexed wrist and clenched deformity (Thevenin-Lemoine et al., 2013). Most panel members felt that this procedure is disadvantaged by its invasiveness, propensity for blood loss and potential injury to the nerve supply and muscle substance. Furthermore, often there are asymmetric imbalances of the flexor digitorum superficialis (FDS) and flexor digitorum profundus (FDP) tendons and an en-bloc lengthening is unable to provide precise de-tensioning of both muscle-tendon groups. It is more predictable to address these imbalances at the level of the musculotendinous junction with fractional or Z-lengthening procedures.

Role of superficialis-to-profundus (STP) for the non-volitional, non-functional hand

Compared with individual FDS/FDP flexor muscle-tendon lengthening, STP tendon transfer can provide greater overall lengthening effect and is consequently less prone to recurrence, especially when combined with recurrent median motor branch and deep ulnar motor branch neurectomy in the non-functional hand (Pappas et al., 2010). Panel members agreed that the main limitation of this technique is that it does not provide functional finger flexion. As such this procedure should be reserved for the non-functional clasped hands with the goal of facilitating hygiene.

Treatment of intrinsic muscle spasticity and contracture

In a functional or non-functional hand with intrinsic muscle spasticity or contracture, an intrinsic release can be effectively performed via a dorsal approach with resection of the lateral bands at the proximal phalanx (Littler, 1969). Severe intrinsic contractures can be addressed with intrinsic tenotomies in the palm with simultaneous Z-plasty for palmar skin contractures (Figure 5). Intrinsic spasticity should be addressed after wrist realignment and FDP tendon lengthening, as the origin of spastic lumbrical may change after these procedures. If intrinsic spasticity is noted prior to surgery, intrinsic muscle fractional lengthening or origin slide can be performed in the same surgical setting as the index procedure. Otherwise, vigilance is maintained for the development of intrinsic spasticity after initial reconstructive

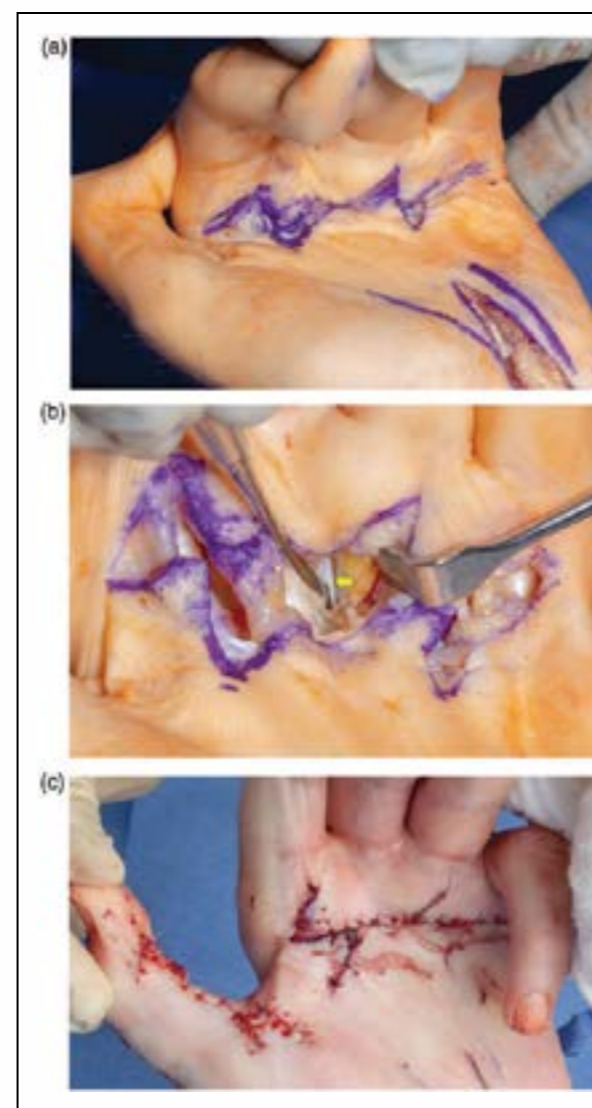


Figure 5. Intrinsic tenotomies and palmar Z-plasties for intrinsic plus deformity. The patient's left hand exhibits intrinsic muscle and soft tissue contractures despite extrinsic finger flexor lengthening (a). A palmar approach to the intrinsic tendons is performed through serial Z-plasty incisions to expose the intrinsic tendons (yellow arrow) for tenotomy (b). Local tissue rearrangement is then performed to address the associated skin contracture (c).

surgery since an intrinsic plus deformity can be unmasked after correction of a clasped hand with extrinsic finger flexors.

Role of complete ulnar motor and median recurrent motor branch neurectomies

Neurectomies of the deep ulnar motor and median recurrent branches are indicated for non-functional hands to improve posture for hygiene or pain control

and are most often combined with a STP transfer (Pappas et al., 2010). The goal of neurectomy in this context is to prevent recurrence of clasped hand or thumb-in-palm (TIP) deformities, as tendinous procedures alone may be insufficient and carry an elevated risk of recurrence. The presence of fixed contractures can be identified with botulinum toxin or selective nerve blocked with local anaesthetic. If associated contractures are found preoperatively or intraoperatively, intrinsic and adductor pollicis tenotomies or releases should be performed.

Treatment of TIP deformity

TIP deformity is a debilitating aspect of upper extremity spasticity that might render an otherwise volitional hand non-functional. Several strategies exist for treatment of a TIP deformity and should be applied individually to the patient in the context of their deformity and potential for functional pinch (Matev, 1991).

Release of the adductor pollicis from the third metacarpal or its insertion on the proximal phalanx and lengthening of the first dorsal interosseous is a reliable procedure and addresses contracture at the same time (Fahrenkopf and Rhee, 2023). Flexor pollicis longus (FPL) fractional or Z-lengthening will correct interphalangeal (IP) joint hyperflexion, which can be combined with a split FPL to extensor pollicis longus (EPL) transfer or extensor loop knot as a restraint to recurrent IP hyperflexion posture (Van Heest et al., 1999). In instances of M-shaped thumbs (metacarpophalangeal flexion and IP extension) tenodesis of EPL to the base of P1 with a suture anchor can rebalance forces and help extend the metacarpophalangeal joint (MP) joint while neutralizing the extension forces at the IP joint.

The panel suggested several strategies to strengthen antagonists include tendon transfers to augment abductor pollicis longus (APL) and/or thumb extensors using the brachioradialis muscle (Van Heest, 2011). The EPL can also be rerouted into the first dorsal compartment (Figure 6) or volar to it to assume a more radial position and provide palmar abduction force (Alewijns et al., 2019). A Z-plasty of the first webspace may be necessary in long-standing contracture, together with a volar plate advancement in the case of MP hyperextension deformity.

Postoperative protocols and outcomes

Postoperative immobilization and therapy

The duration of immobilization following muscle-tendon lengthening procedures depends on the

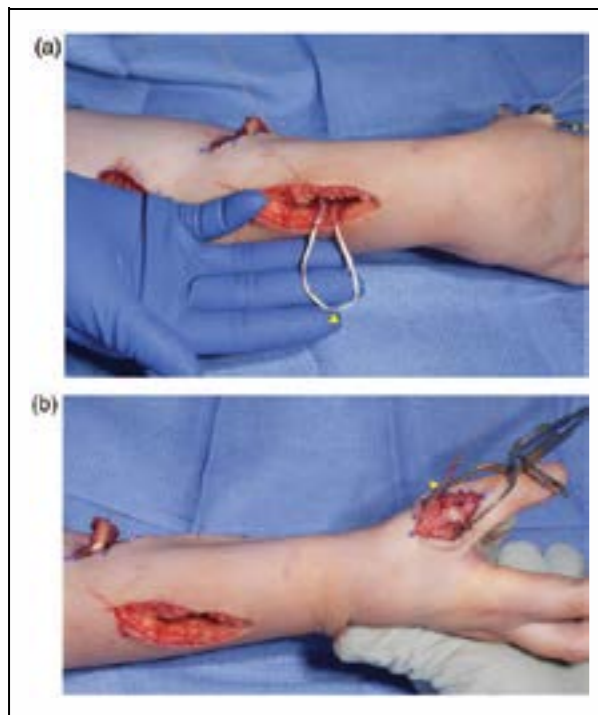


Figure 6. Extensor pollicis longus (EPL) rerouting for thumb-in-palm deformity. The EPL tendon (yellow arrow) is released from the thumb extensor hood and retrieved proximal to the extensor retinaculum (a). The EPL tendon is then delivered through the first extensor compartment back to its native insertion site for tenorrhaphy (b), thereby converting thumb adduction/retropulsion into a palmar and radial abduction moment.

specific muscle-tendon unit treated, functional status of the extremity and surgical technique used (i.e. type of lengthening and simultaneous use of tendon transfers). For HSN procedures in isolation, unrestricted movement as tolerated is encouraged.

For muscle-tendon procedures, protected active and active assisted protocols can be initiated as early as 1–2 weeks after surgery in a reliable patient. An orthosis is utilized in the first 6–12 weeks after surgery to maintain correction of the deformity and to protect tendon tenorrhaphies while permitting early rehabilitation protocols. In cases of static tendon transfers or severe deformity correction, active and passive range of motion can be delayed for up to 4–6 weeks following cast removal and transition to an orthosis.

Future directions and research

The panel suggested several important aspects of upper extremity spasticity deserving of future research and attention (Table 4). Importantly, patient and provider knowledge regarding the surgical

Table 4. Future directions for spasticity research.

Research questions

1. Natural history and prevention of muscle contracture associated with spasticity
2. Comparison of hyperselective neurectomy and muscle-tendon procedures
3. Role of nerve transfers for spasticity
4. Optimal timing of intervention
5. Role of nerve-based procedures for dystonia
6. Guideline creation for common deformities
7. Dynamic assessment of spastic contractures
8. Effect of postoperative appearance of the limb on quality of life
9. Cognitive load and plasticity relation to severity measures and outcomes
10. Improving awareness of surgical management of spasticity

rehabilitation of a spastic upper extremity is limited, though there are multiple ways to improve awareness. Online resources would ideally provide patient- and provider-appropriate explanations of various surgical options, data on objective outcomes, pictures and videos of pre- and postoperative results, and patient testimonials. Clear referral guidelines should be created, and multidisciplinary teams set up in tertiary centres that look forward to treating these patients.

Another meaningful endeavour is the creation of standardized assessment tools that provide reliable metrics for evaluating the spastic upper extremity. Consistent use of such measures is the only way to accurately compare outcomes of treatment strategies across institutions and studies. Future research should aim to provide a better understanding of the nature, prevention and optimal treatment strategies for muscle contractures in the context of spasticity. Similarly, some of the most common deformities are not well understood, such as the pronation deformity in the forearm and swan neck deformity in the hand. Efforts should be directed at objectively evaluating and creating guidelines for these challenging problems.

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Tendon transfers in cerebral palsy: art or science?

Abstract

Tendon transfers in cerebral palsy are commonly described as a method to improve function in the upper limb. The field can be considered by some to be more of an art than science due to the unique challenges involved, which include poor volitional control and spasticity. Surgical outcomes can be uncertain and, in certain circumstances, worsened. This presentation looks at the rationale behind tendon transfers for patients with cerebral palsy and the application of this rationale (science vs. art) to a philosophy of treatment.

Introduction

Tendon transfers in cerebral palsy are commonly described as a method to improve function in the upper limb. Due to the unique challenges, which include poor volitional control and spasticity, tendon transfers can sometimes be considered more of an art than science. Are they better designed and conducted by a Cezanne or a Fibonacci? This presentation looks at the rationale behind tendon transfers for patients with cerebral palsy and the application of this rationale (science vs. art) to a philosophy of treatment.

The science of muscle function

The work of Paul Brand was most influential in an understanding of the properties of muscles and how they move joints under normal circumstances (Brand, 1985). Brand pointed out that the total tension developed in any movement is a combination of the contractile tension present in the active muscle and the elastic passive stretch of the relaxed muscle, in the manner of a modified Blix curve (Figure 1). Tension is developed according to the length of both agonist and antagonist muscles at any given time.

Brand emphasized the concept of balance. The contraction of a muscle or muscles is accompanied by the relaxation of an antagonist muscle or group of muscles, with both (all) playing a role in the stability and movement of a joint. Of course, both movement and stability are also consequences of intact and normal joint restrainers, i.e. ligaments and capsule. Take, for instance, wrist extension and flexion,

movements that are compromised in cerebral palsy and to which I shall return often in this text.

Figure 2 from Brand's text demonstrates normal balance. It describes simplistically how the wrist is balanced in extension/flexion and in radial/ulnar deviation planes. If we take flexor and extensor carpi ulnaris (ECU) muscle units, the number of dots indicates the tension able to be developed in each muscle. The position of each in relation to the longitudinal and transverse axes is also apparent. Flexor carpi ulnaris (FCU) is the stronger muscle and although an ulnar deviator it is a strong wrist flexor. The insertion of the ECU deems that it is an effective ulnar deviator of the wrist in all but full forearm supination when its activity as a wrist extensor comes into play. In other forearm positions, its wrist extension activity is limited or non-existent. A dissection demonstrates the axes of the three wrist extensors (Figure 3). For balanced extension in the neutral plane, all must be intact and functioning normally.

From Figure 2, a clear reasoning can be determined for the appropriate selections of tendon transfers after a proximal radial nerve lesion. This figure is applied to a system in which the muscles were in a normal state before the radial nerve injury, not for those affected by cerebral palsy. All muscles above the horizontal axis are paralyzed. The recipient tendon for wrist extension should be the extensor carpi radialis brevis (ECRB) as it is the most central of the three wrist extensors. Transfer to all three wrist extensors is impractical. If one is to choose a wrist flexor to recreate finger extension (not necessarily the first choice of all), it is reasonable to choose the flexor carpi radialis (FCR) as it is the

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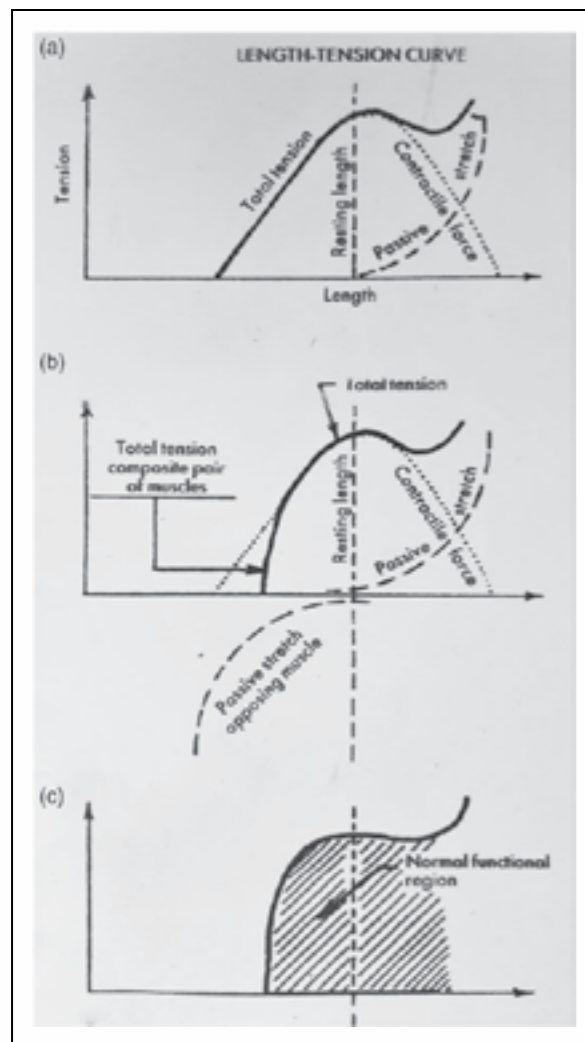


Figure 1. (a) The Blix curve integrating the active contraction and elastic recoil. (b) Brand's modification of the Blix curve integrating the above with the elastic curve of the opposing muscle subtracted from the active output of the primary muscle and (c) Final approximate shape of muscle curve in situ in intact limb. (Reproduced from Brand PW (Ed.). *Clinical Mechanics of the Hand*. St. Louis, Mosby, 1999.)

weaker of the two main wrist flexors. Positioning not strength is the hallmark of finger extension. In addition, the FCU is preserved as a strong wrist flexor and the only remaining ulnar stabilizing unit of the wrist as the ECU is paralysed.

Brand's diagrams superbly demonstrate the principle of balance. He showed that it is possible to determine the degree of imbalance when specific normal muscles are deprived of normal control, such as after a radial nerve palsy, and also allowed some degree of planning when considering which

muscles to act as donor or recipient, based on strength and positioning.

The principles of tendon transfers

Robert Jones and many others have previously detailed the principles of tendon transfers, those of the donor muscle, the recipient and the surgical technique (Jones, 1908, 1916, 1921; Smith, 1987). It is opportune to consider whether these principles are valid when considering tendon transfers in patients with cerebral palsy:

- (1) The donor muscle: all affected muscles are spastic or weak and fire in phase, out of phase or continuously.
- (2) The recipient: this refers to the person and the recipient site/muscle: cerebral palsy may have affected the general health including intelligence, speech, eyesight, sensibility and mobility. The recipient muscle(s) are often weak and/or affected by spasticity and lack of control; there may be soft tissue disruption with joint laxity or contracture.
- (3) The technique: this is the only part of the process over which the surgeon has control. We can ensure a straight line of pull, an adequate subcutaneous passage, avoid transfers in parallel or in series, ask the transfer to perform one job only, and attach it to tendon or bone.

Therefore, it is possible to perform the techniques of tendon transfer in the manner demanded, but the qualities of the donor muscle and the recipient, person and muscle/site are beyond our control. We contravene most, if not all, donor and recipient principles of tendon transfers because the neural insult is central, and not peripheral like a traumatic radial nerve palsy affecting previously normal muscles.

Measurement of spasticity

Is it possible to apply the principles of tendon transfers to patients with cerebral palsy by measuring muscle spasticity and allowing for this? The Ashworth and the modified Ashworth Scales estimate the muscle tone during joint movement, placing the resistance to movement into five grades (Ashworth, 1964; Bohannon and Smith, 1987). The Tardieu and modified Tardieu Scales measure the amount of joint motion available with slow and quick joint movement (Boyd and Graham, 1999;

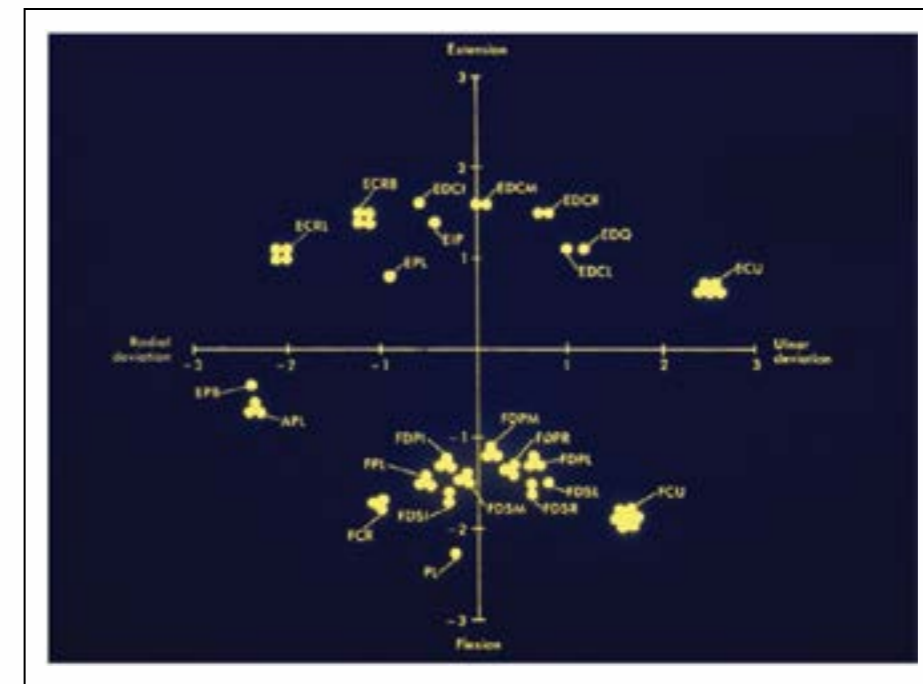


Figure 2. Simplified mechanical statement of the capability of each muscle to affect the wrist joint. (Reproduced from Brand PW (Ed.). *Clinical Mechanics of the Hand*. St. Louis, Mosby, 1999.)



Figure 3. The axes of the three wrist extensors.

Tardieu et al., 1954); these measure the resistance to spastic muscle control in order to quantify muscle tone. Unfortunately, although effective as a general grade of tone, no scales are helpful in determining the quality and degree of function in each specific muscle for use as a donor, even when combined with electrophysiology, electromyography, ultrasonography, isokinetic dynamometry and the like. It should also be noted that these methods of assessment of spasticity have changed little since their introduction over 50 years ago, perhaps an indication of our continued inability to precisely measure the degree of muscle spasticity.

Furthermore, these scales do not quantify the decrease in tone obtained from intramuscular tenotomies in spastic muscles, unlike in a normal muscle, where it is possible to determine the relative elongation obtained after tenotomies at different levels within a muscle. This is not so when spasticity intervenes.

According to Brand, 'the laws of muscle mechanics do not apply to spastic muscles. They are a law unto themselves' (Brand, 1985). The principles of Brand's modification of the Blix curve (Figure 1) do not exist and the concept of joint balance is lost.

Functional assessments

Many functional assessments are in use, including the Gross Motor Function Classification system, Canadian Occupational Performance Measure, Melbourne Assessment of Upper Limb Function, Goal Attainment Scaling, Kids-Assisting Hand assessment, Individually Prioritized Problem Assessment, among others (Cerebral Palsy Alliance: cerebral.palsy.org.au/assessments and outcome measures). These are pertinent and helpful in that they can be used to assess a level of function and can be used for preoperative and post-operative comparisons. Some have separated scores obtained from assessments into groups to describe the function of the patient. The House assessment of upper limb function in Cerebral Palsy is one (House et al., 1981). Perhaps, four groups only provide an adequate picture of hand function: good (but not normal) function – good grasp and release; poor function (poor grasp and release); assist function (without grasp and release); and finally, no function. However, again, these assessments provide little information about the qualities of a specific muscle.

Furthermore, although both estimates of a grade of muscle spasticity and scores of a functional assessment are necessary, practical and helpful, the reality in cerebral palsy is that it is a dynamic condition. Sleep, certain activities, exercise, emotion, tiredness, will and intent play a part in the severity of deformity and level of performance. Established contractures, when present, can be measured but these other influences cannot. The ability to perform certain tasks and achieve certain levels of performance change with them. A task may be possible if trained for but may not be performed when the child is not encouraged or forced to do it. It is too difficult for spontaneous activity. Alternatively, it may be impossible for a child to perform a task when directed to do it, but it may be spontaneously conducted when free of direction and control.

Some specific tendon transfers

In general, if surgery creates the opposite deformity to that which was present preoperatively, patient function becomes worse. Returning to the model for wrist function in patients with cerebral palsy, this involves the transfer of a spastic or weak muscle to a weak or non-functioning ECRB for wrist extension. The FCU remains spastic and if used for wrist extension, the result may be unpredictable. This is a fine example of the possible complication of surgery causing the opposite deformity. If a postoperative wrist extension deformity results, the patient may be unable to extend the



Figure 4. Wrist extension deformity with inability to extend the fingers after flexor carpi ulnaris transfer.



Figure 5. Supination deformity.

fingers (Figure 4). Another example is a pronator teres transfer, which may cause a postoperative supination deformity. With loss of pronation, the child can no longer perform tasks on a table (Figure 5). Many are chairbound and use their hand on a table with a pronated forearm. If an extensor pollicis longus rerouting through the first dorsal compartment creates a metacarpophalangeal joint hyperextension deformity, abduction of the metacarpal from the palm may be prevented (Figure 6).

The preoperative assessment becomes vital. For instance, to decrease the likelihood of the first complication (FCU to ECRB transfer), it is necessary to determine if the FCR is functioning and can balance the extension activity of the FCU transfer. The use of a splint can help in determining the ability for finger

extension without wrist flexion. One or other, or both, must be present if the transfer of a wrist flexor to wrist extensor is to be considered as a possibility (Figure 7), this even before a subsequent assessment of degree of spasticity and whether firing in phase and under volitional control.

It may be that the FCU should not be used as a wrist extensor for patients with cerebral palsy. The ECU is, theoretically, a better positioned muscle. It is an ulnar deviator in the pronated forearm, thereby contributing to the deformity. Its transfer to the ECRB increases its wrist extension function and removes its effect on ulnar deviation (Figure 8). Of course, it is often weak and there is little room for manoeuvring between a tension creating too little wrist extension and a tenodesis allowing too little

wrist flexion. The tension of transfer should, minimally, hold the wrist in 20° of flexion only (Figure 9) to allow finger extension by tenodesis, if necessary. This is a far less dangerous transfer than that of FCU and overall achieves a better balance of the wrist. The latter muscle, left in its natural position, even when deliberately weakened by intramuscular



Figure 8. Transfer of extensor carpi ulnaris to extensor carpi radialis brevis.



Figure 9. Ideal wrist position after extensor transfer is about 20° of flexion.



Figure 6. Metacarpophalangeal joint hyperextension.

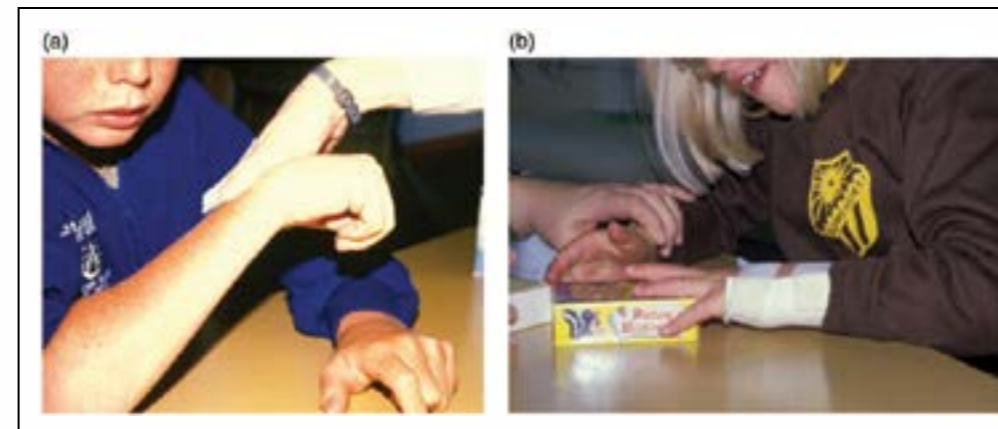


Figure 7. (a) Assessment of activity of flexor carpi radialis. (b) Finger function when the wrist is held in a neutral position.

tendon lengthening or hyperselective neurectomy, maintains some ulnar deviation capacity and balances the wrist in both radial/ulnar deviation and extension/flexion. However, it remains a spastic muscle and one in which we are unable to measure specific qualities!

In a similar manner, it is necessary to ascertain that active pronation is present preoperatively, to avoid a supination deformity after transfer of pronator teres.

This attention to preoperative assessment does not allow the surgeon to forego a correct postoperative assessment. It is not good enough to simply report an improvement in wrist extension and/or supination after surgery. Studies should report these improvements and also provide documentation of maintenance of the opposite activities.

Discussion

Eduardo Zancolli Sr described his ideal cerebral palsy patient as having the following characteristics [Zancolli and Zancolli, 1987]:

- (1) Spastic hemiplegia
- (2) Good intelligence
- (3) Some volitional central control
- (4) Good sensibility
- (5) Preferably approximately 6 years of age

The above patient is mildly affected by cerebral palsy and, of course, the results are more likely to be better than for those without these characteristics. Zancolli went on to point out that 'soft tissue surgery is not for those with an extra-pyramidal disorder with athetosis'. Certainly, he never considered tendon transfers in such circumstances.

So, is it clear as to whether tendon transfers for patients with cerebral palsy are an art or a science? For this author, the answer is that tendon transfers in patients with cerebral palsy are both an art and a science. The work of many to assess function and to measure spasticity may not be ignored. However, clinical assessment predominates and controls decision making. Observations should be on multiple occasions, in the playground as well as the clinic, by multiple people (certainly not the surgeon alone), involve the performance of many varied tasks, especially involving grasp and release, and be in different environments and at different times, even when the child is asleep.

These observations are combined with clinical evaluation of the degree of spasticity, measurements of joint movements and contractures, functional grading and application of the many sophisticated investigations, which are currently available.

Nevertheless, a precise measurement of spasticity continues to be elusive. Therefore, our surgical

efforts suffer from unpredictability. For this author, an emphasis on diminishing spasticity (by intramuscular tendon lengthening/tenotomy or by hyperselective neurectomy) is attractive. The enhancement of weak muscles by tendon transfer could perhaps be relegated to a later time to allow an assessment of results of the former approach, particularly when the muscle to be used to enhance a weak muscle remains spastic.

Finally, some words of advice. In no surgical field is there greater dependence on experience. Spend time with an older colleague. The principle of 'less may be more' is paramount. Common sense is more important than sophisticated investigations. This is the art.

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