BSSH Educational Bursary Award to Visit Institut de La Main

Aims

I am Christina Lipede, a Consultant Congenital Hand, Upper Limb and Plastic Surgeon in Birmingham Women's and Children's Hospital. I worked part time in the Children's Hospital and part time in the adult setting in Salford Royal NHS Foundation Trust as a Consultant Hand, Nerve and Plastic Surgeon, where I set up services in Spasticity, Nerve and Orthoplastics Hand as a junior Consultant and wanted to expand my knowledge and exposure to certain aspects within these fields, in particular spasticity and its treatment including Hyperselective Neurectomy.

In order to broaden my knowledge in spasticity I completed the Masterclass in Spasticity in Budapest in 2022 hosted by Dr Caroline Leclerq from Institut de la Main in Paris. I observed exceptional standards of teaching, incredible breadth of her and her team's knowledge and found the cadaveric laboratory time invaluable. I wanted to have further exposure to the clinical application of this practice in clinics, rehabilitation centres and theatre. I felt this would be highly beneficial to my development as a Consultant and the knowledge and expertise gained from visiting and spending time with this team would greatly benefit my patients, colleagues and practice, particularly in children where practices such a Hyperselective Neurectomies, for example, are not as widely implemented.

Institut de la Main

Institut de la Main is a Hand Unit consisting of a collection of surgeons working out of clinics in and around Clinic Bizet in Paris and its President is Dr Caroline Leclerq. I spent the majority of my time with Dr Caroline Leclerq and her colleague Dr Nadine Sturbois-Nachef. Outside of their commitments I joined Dr Ahlam Arnaout a Hand and Wrist surgeon, who had previously visited my colleagues and I in Manchester, with some other international visitors, joining me in my nerve clinic and theatre to observe me do a nerve transfer earlier this year for example. It was great to make international friends with a shared love for the hand and wrist and have interesting discussions, debates and a sharing of knowledge and experience.



These types of visits are an excellent opportunity to observe different practices, have the chance to have in depth discussions about the nuances of applications and techniques and gain tips and tricks from a wider the pool of experts. I was very fortunate to be able to maximise my time within spasticity, enhance it with seeing patients with tetraplegia, have the chance to see both children and adults and in between see nerve, hand and wrist cases.

Institut de la Main is a privately run hospital and patients either self-fund or reclaim the cost of their care via insurances. There are state insurances, which pay for basic standard of care and private insurances that pay for additional care/ procedures. After the consultation with the surgeon, once management decisions were made for surgery for example, the patient was sent to the secretary who discussed the fee schedules, booked them for theatre and this was also the time when the consent was completed, with pre-printed consent forms for each procedure. Waiting times seemed to be only a couple of months.

From the first day of the visit, I was delighted to see a range of procedures in theatre with interesting cases including a patient who had developed Guillain-Barre syndrome believed to have come on post food poisoning. His surgery was aimed at correcting his ulnar clawing under regional anaesthesia. He had a Zancolli FDS IV lasso procedure to his ring and little finger, and it was great to see Caroline teaching her 4 international fellows the Bouvier test and explaining the operation and rationale of her modifications.

The 'fellows' were a mixture of Consultants from Singapore and Abu Dhabi and Registrars in training from Belgium and Italy and there was also a locally trained Registrar, originally from Dubai. There were numerous Fellows and visitors and as one left, another one or two arrived.

Operating started in theatre between 8:30 and 9am. Most of the time one of the Fellows took on the role of a Scrub Nurse, organising the equipment on the table and passing instruments. They had to learn their names and appearances of all of the kit quickly! There were one or two nurse runners on the floor to help retrieve equipment and dressings etc. The surgeons often ran 2 theatres in parallel and the Fellows get the patients ready by prepping and draping them ready for her arrival. Once the operating surgeon arrives a verbal checklist is carried out before the procedure commences confirming the patient's details, allergies, medications and procedure and then surgery can start.
The second case was a quick trigger finger release in a patient who had 6 previous steroid injections. Back to the original theatre and the next patient was prepped and draped ready for surgery. She had spasticity with no volitional control of her hand and wanted a more aesthetically pleasing cascade of her hand. She previously had Superficialis To Profundus (STP) transfer to open up her hand but was still not happy with the position of her digits due to tight intrinsics. She underwent complete neurectomies of the motor branches to the ulnar and median nerves in the palm. Incomplete division of palmar ulnar and Median motor branches would involve Hyperselective Neurectomy identifying the branches and only dividing a proportion of each nerve branch, in order to reduce the innervation to the muscles but not completely divide them. Hyperselective Neurectomy aims to reduce the tone in the muscle without greatly reducing the power or removing function. Caroline demonstrated the patient's tight intrinsics using the Finoccietto (Bunnell-Littler) test. She then released the palmar and dorsal intrinsics through dorsal incisions and discussed tips and tricks to avoid large haematomas for example and the importance of having the correct rehabilitation to avoid undue stiffness.

The morning theatre list is planned to finish at 12 and the afternoon sessions for theatre or clinic are planned to start at 2 and finish between 5-6pm. As occurs everywhere, some morning sessions run into the afternoon and some afternoon sessions finish much later than expected. This never seemed to be a problem, especially with a 2-hour planned lunch break as a buffer.
After theatre we headed over to the clinics where the therapists have their treatment room along the corridor, enabling regular discourse and easy access for the patients for manual therapy with passive stretching of contractures, tight joints, and manipulations in the therapy room in addition to splinting and strapping etc.
The secretary's room is also along this corridor and the patients are sent to her after review to coordinate payment and surgery date planning etc.

We saw a range of patients including post-op for Dupuytren's Disease, FPL rupture 12 y post distal radius plating, 4-month-old P2 base fracture with an articular step in the index finger. Although there is not an A&E there were still some emergency cases seen slotted into the clinics and the cases managed by the surgeon on call and cases slotted into elective theatre gaps. On this occasion it was a Spanish gentleman who had injured himself abroad with a saw, had it sutured without formal washout and exploration and presented a few days later when back in Paris with an infected finger expressing pus. Caroline had seen him as an extra in her clinic and called Ahlam who was on call, and she expedited the patient onto her list. The team work really well together and run an efficient and coordinated service.

After a fruitful day, Caroline, myself and Sze one of the Fellows planned the rest of the visit over some chocolat chaud and fresh tarte fine aux pommes!

Amongst the wide and varied caseload for Caroline and Nadine are patients with tetraplegia, which can be a very challenging subgroup of patients due to the limited number of working options for nerve and tendon transfers, but in whom any improvement in function can make a huge difference to their independence and quality of life. In one particular patient a biceps to triceps transfer was performed to aid his mobilising with transfers and help him propel his wheelchair forwards. We had some excellent discussions around management choices, indications, complications and post operative rehabilitation. It was particularly useful to see the extensive examination and recording of measurements and scoring of the patients to aid decision making.

Caroline and Nadine work out of at least 13 different sites, visiting Rehabilitation Centres and clinics in and around Paris and sometimes further afield.
We went for an MDT clinic in a Rehabilitation Centre in the North of France by the sea, which was 2 hours by train. Hopale in Berck-sur-Mer is the largest French rehabilitation facility for neurological conditions and orthopaedic injuries that includes over 300 inpatient beds for rehabilitation patients, many with tetraplegia for example. It was initially used for patients with TB with over 2000 beds. As antibiotics were developed and the need for this kind of facility decreased the hospital was repurposed, hospitals merged and eventually this site was utilised as a rehabilitation facility.

The joint MDT clinic had Doctor Dr Jean Gabriel Previnaire, the Physical Medicine and Rehabilitation Doctor and Dr Leclerq, with whom he has been working in the MDT setting for over 5 years now, with Therapists and a Secretarial Coordinator.
Each appointment was set for 40 minutes and the patient's detailed examination findings and assessments, carefully logged and tabulated, were discussed before each patient came into the room and then they underwent a detailed re-examination and discussions in clinic. Formal assessment tools were used, and their scores documented in a prospective database for each patient. ICS, Tardieu Scale, Ashworth Scale, Volkmann Angle and MRC power grades measured during examination were recorded and compared to previous results, thus assessing the effect of any interventions, be them therapy led, post Botox or surgical.
The patients had a mixture of nerve transfers and tendon transfers and we saw quite a few patients who had undergone Supinator to Posterior Interosseous Nerve (SPIN) transfers, with some excellent results, enabling patients to grasp items they had previously been unable to open their hand for. There were some new patients for whom nerve transfers and tendon transfers were planned and it was very useful to have discussions around their examination findings helping to reason each tailored surgical and rehabilitation plan. Any Botox planned was carried out by the Rehabilitation Doctors.
The Secretarial Support in clinic was able to help coordinate a date for surgery there and then in under two months' time, considering the availability of the surgeon, patient, and their relatives in addition to their needs and capabilities! This also enhanced planning prehab and post op care. Funding for tetraplegia patients included appointments and surgery with all rehabilitation, which could include up to 2-3 months of inpatient care, paid for by social security. It also included funding for the patient's relatives to stay in a hotel, and their surgeon too if needed! Their overall care was funded for 12 months post injury/event. Patients are asked to contribute €20 a day for catering whilst an inpatient.

Speaking of which, we were invited to Jean Gabriel's house for a delicious 3 course lunch cooked by his wife in their Canadian style log cabin surrounded by trees. This was followed by a quick scenic drive by the beach to see the sea, then back for the afternoon clinic and a postprandial espresso to get us through the afternoon!

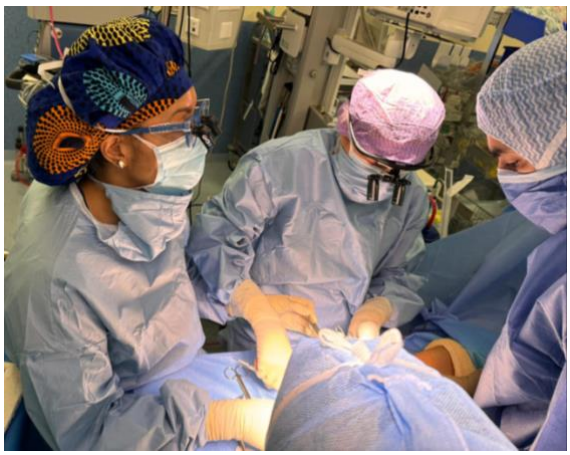
On the train journey back to Paris we had a fantastic discussion about the plans for the next day for a 42y old gentleman who had transected his median nerve in the antecubital fossa and did not have sensory recovery following repair elsewhere. We discussed the merits and disadvantages of different options and decided to do a modified version of Susan Mackinnon's description of sensory nerve transfers using the Dorsal Branch of the Ulnar Nerve (DBUN) for restoration of sensation to the first and second webspace. They had previously taken half of FCR to reconstruct biceps tendon and had resultant ulnar deviation at the wrist. FCU to FCR tendon transfer was planned to correct the ulnar deviation. He had weak FPL function so EPL tenodesis at MCPJ was planned rather than an arthrodesis. It was a fascinating case and I look forward to hearing how he recovers.

If there were gaps in Caroline's or Nadine's schedules I joined Dr Ahlam Arnaout in her clinics and theatres and she had some patients with challenging nerve issues, and we had interesting discussions about clinical assessment, surgical planning and management.
I joined her in theatre on occasion for some wrist arthroscopies for ulnar sided wrist pain, TFCC repairs and ligament repairs for example. Their set up in theatre with traction and the arthroscopy towers were different to those I had seen and it was useful to see a variety of approaches to treat a number of wrist conditions both acute and chronic. I saw her carry out other general hand and upper limb procedures including mini open and open carpal tunnel surgery with use of fat flaps to cover the median nerve post-release.

Back to clinics with the home team and in addition to their independent clinics, Caroline and Nadine ran joint clinics mainly for spasticity and tetraplegia, where having detailed discussions and assessments are very useful for surgical planning.

We visited two children's rehabilitation centres and had MDT clinics similar to those described above with video assessments carried out by the therapists, which we watched before seeing the children and then brought them into the clinic room to assess them. We saw a variety of patients with varying severities of spasticity, ages and independence levels. Their cohort of patients included those who were post op for Hyperselective Neurectomies, releases of contractures and tendon transfers and some new patients.
Observing and taking part in the clinical assessments and discussions around decision making and planning were invaluable.

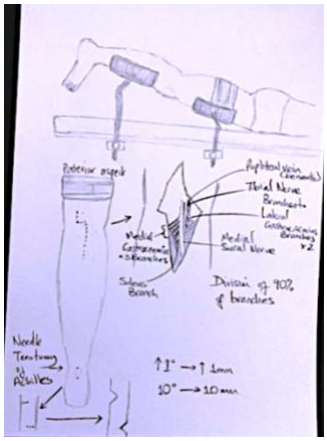
Intraoperative assessment and rationale for treatment options was also priceless, for example choices around end to end versus end to side nerve transfers depending on how many branches are stimulating and how strongly in a transfer onto triceps - if one branch is weak or not working, they will do an end to end onto that, if all three are branches working but not fully they will do an end to side with care and consideration not to downgrade function. Decision making around how much of the nerve to divide and which branches following dissection and assessment with nerve stimulation was also instrumental.



Summary of some Spasticity and Tetraplegia theatre cases during my visit

- Shoulder: Pectoralis release in a patient with spasticity with tightly internally rotated shoulders with difficulty getting into the axilla for personal hygiene and dressing. Improvement of abduction to 90 degrees achieved.
- Elbow: Biceps Hyperselective Neurectomy, tenotomy, fractional lengthening of brachialis and myotomy of brachioradialis, flexor tendon lengthening to wrist and digits
- Biceps to triceps transfer in a patient with tetraplegia to help with propelling the wheelchair forwards
- Wrist: Fusion, tenotomy, tendon lengthening and tendon transfers
- Fingers: Tendon lengthening, tendon transfers, Lasso procedure
- Intrinsics: releases of insertions and attachments, neurectomies and Hyperselective Neurectomies
- Lower limb: Hemi tendon transfer of tibialis anterior to correct foot inversion, Hyperselective Neurectomy of nerves to gastrocnemius, soleus, tibialis posterior, tenotomies to toe flexors and tendon lengthening to flexor hallucis longus

I took hundreds of photos, wrote extensive notes, drew pictures asked lots of questions and had some very interesting discussions. This time was extremely useful and has greatly enhanced my knowledge and experience not only in spasticity and its treatment including Hyperselective Neurectomy but also in tetraplegia. It was useful seeing alternative health systems, how other surgeons approach patient assessment, formulate management plans and the intraoperative journey with fine tuning decision making. I have forged friendships, have more mentors in this niche field and am excitedly sharing my experiences during the Institut de la Main back home in the UK. I am grateful to BSSH for facilitating this excellent opportunity.



Christina Lipede FRCS Plast, British and European Diplomas in Hand Surgery