Travelling fellowship to Children's Hospital of Philadelphia Department of Craniofacial Surgery

12th to 23rd February 2017

Children's Hospital of Philadelphia (CHOP) was founded in 1855 and is one of the largest and oldest children's hospitals in the world, and United States' first hospital dedicated to the healthcare of children.

CHOP has 527 beds, almost 40 percent of which are allocated to neonatal, cardiac, and paediatric intensive care.

The department of craniofacial surgery was established in 1972 by Dr Linton Whitaker and falls within the plastic surgery service at CHOP. They cater for the full range of craniofacial and cleft lip/palate conditions diagnosed antenatally or neonatally, with treatment and follow up to 25 years of age.

I carried out my observership under the supervision of Prof Jesse Taylor and Prof Scott Bartlett, and experienced general craniofacial and specific outpatient clinics, MDT meetings as well as operating theatre sessions and local teaching/conferences.

I was welcomed to the department and was free to determine my own schedule as was most appropriate for my needs. I also met with the CHOP maxillofacial surgeons and attended some maxillofacial operating lists.

I have divided my report up as follows:

- Staffing, general daily timetable and educational programme
- Outpatient clinic format and patient mix
- Operating theatre (OR) sessions and activity
- MDT meetings
- Administration, costs & clearances, and social aspect

Staffing, general daily timetable and educational programme

The staffing of the plastic surgery department is as follows:

- 3 Interns (House officers)
- 15 Residents (SHO/SpR)
- 3 Microsurgery senior fellows, one craniofacial senior fellow
- 18 Attendings (consultants) of which 2 are full time craniofacial surgeons
- Nurse practitioners, geneticists, psychologists, SALT

Daily timetable for operating day:

6AM – intern pre-round

6:30AM – ward round led by residents

7AM – see pre-op patients

7:30AM – first patient in OR

7:45AM – usual ‘Knife to Skin’ time

Operating until 5pm, usually 4 to 5 patients on list, cranial vault surgery or orthognathic case first on list.

Daily timetable for clinic day:

8AM – 1pm – Morning clinic session

1:30pm – 5pm – Afternoon clinic session, MDT at 3:30 pm every Thursday

Educational programme

Monthly evening conference held at the ‘Centre for Human Appearance’ led on rotation between craniofacial and allied surgical specialties, health professionals and invited speakers. I attended a lecture on ‘controversies regarding communications and media reporting of the first face transplant case in France’.

Every Thursday there is mandatory 6AM departmental teaching led by one of the attending plastic surgeons at the Perelman School of Medicine with breakfast and coffee included. This is followed by an hour presentation by one of the plastic surgery fellows/residents. OR starts later at 8:20am to accommodate this.

Outpatient clinic format and patient mix

Each week there are around 4 outpatient clinic sessions at CHOP along with other peripheral activity in satellite hospitals.

All outpatient consultations are initially performed by either the senior fellow or one of the nurse practitioners. Every patient is then reviewed by the attending surgeon who moves from room to room and determines the management plan. Medical notes are electronic, consents are generated and printed from templates and all patients are photographed in the department, with images uploaded the same day to the epr system (Epic). Procedures such as ear moulding and LA excisions are also performed within the clinic by the Attendings. Residents do not usually attend outpatient clinics unless there is no operating that day.

I attended 6 clinic sessions with a mix of new and review patients, as well as the specific craniofacial TEAM clinic which has a multidisciplinary approach for patients with more complex, and often syndromic conditions.

During my attendance, there were no patients that DNA'd their appointments. It was clear that most parents had prepared for the consultation through internet research, and/or may have already had a consultation in an alternative craniofacial centre regarding the same condition.

I also attended an online web meeting for virtual surgical planning of a facial bipartition for a patient with Aperts syndrome. The system used was Synthes Trumatch, with the aim of producing cutting guides for the medial cuts, and a printed skull for comparison.

Below is a list of the conditions that patients presented to the clinic/ward with either pre-or post-operatively:

- Antenatal diagnosis of ?cephalohaematoma
- Apert Syndrome
- Beckwith-Wiedemann Syndrome
- Cleft Lip and Palate
- Complex Cutis Aplasia
- Craniofacial Fibrous Dysplasia
- Craniofacial frontonasal dysplasia
- Craniopagus conjoined twins
- Ear deformity – for moulding
- Metopic/sagittal/lambdoid Craniosynostosis
- Crouzon Syndrome
- Deformational Plagiocephaly
- Dermoid Cyst
- Hemifacial Microsomia
- Linear Scleroderma
- Micrognathia, Pierre Robin sequence
- Neurofibromatosis
- Oromandibular Limb Hypoplasia
- Parry-Romberg Syndrome
- Pfeiffer Syndrome
- Tessier Craniofacial Clefts
- Saethre-Chotzen Syndrome
- Pfeiffer

- Treacher Collins Syndrome
- Van der Woude Syndrome

Operating theatre (OR) sessions and activity

The Attendings operate between 3 and 5 days per week at CHOP often running more than one OR at once. When this is the case, they move from OR to OR performing the 'critical steps' of the operation, whilst the fellow or resident continues to make progress in the 'non critical' aspects of the case.

They often attend other ORs to perform joint cases with neurosurgery or orthopaedic surgery. All personal activity is recorded for billing and insurance compensation purposes.

The ORs are generally run efficiently, with prompt starts and reasonable turnaround times. There were very rarely equipment problems or issues with stock/supplies. The scrub nurses were excellent in my opinion, engaged in the process, interested and very effective. Communication was clear amongst all members of the team.

Many/all of the processes are electronic with around 20 screens in each theatre displaying patient information, operative information, imaging, live video, patient vitals and lab results etc…

I was not permitted to scrub in, and at times, depending on the case observing is difficult, and frustrating. For this reason, two weeks was enough for me. Any longer and I believe the benefits would start to diminish.

Of specific interest to me was the RAPIDSORB injectable Polymer System (Synthes) used in conjunction with the poly (L-lactide-co-glycolide) resorbable plates. The IPS system has been on the market since November 2016, but is only currently available in the United States. It provides a very quick method of fixation with no palpable screw heads under the skin.

I also noted the 3M AVAGARD Chlorhexidine/alcohol scrub that is used by the surgeons pre-op as an alternative to iodine or Hibiscrub. This meant that 'scrubbing' time was only a few seconds and not three minutes as it is in the UK. This saved a huge amount of time when surgeons were going from OR to OR. There is no evidence to suggest that cross infection / contamination risk is any higher according to the hospital.

I was also very privileged to observe primary tissue expander placement for vertically oriented craniopagus conjoined twins. The theatre setup for this case was fascinating, with each anaesthetic machine, equipment, drugs and personnel either designated as green or purple colour code to prevent any mixups between the patients. The surgery went very smoothly, and tissue expansion is likely to occur for the forthcoming 2 to 3 months prior to separation surgery.

I attended 9 OR sessions, with operative activity as below:

- Bimaxillary osteotomy, genio, fat grafting (patient had previous orbital rhabdo myosarcoma). Case was virtually planned, with Synthes CAD-CAM wafers
- Metopic, with fronto – orbito advancement and anterior cranial vault remodelling
- Second stage ear recon (revision) autologous construct
- Bilateral otoplasty
- Tissue expander removal and bilateral cheek rotation flaps for Tessier 4/10 clefts
- Cleft palate primary repair – Furlows double opposing Z plasty, steroid injection to lip repair
- Bilateral Mandibular distractor removal
- Mid vault remodelling for bicoronal synostosis
- Tissue expanders to craniopagus conjoined twins
- Metopic, with fronto – orbito advancement and anterior cranial vault remodelling
- Primary ear reconstruction with Medpore implant and temporoparietal fascia flap and FTSG
- Sagittal synostosis cranial spring removal
- Lip revision
- Oro-nasal fistula repair
- Bilateral mandibular distractor placement

MDT meetings (TEAM)

The MDT meetings are held weekly and alternate between craniofacial and cleft conditions. Patients attend in the morning and are seen throughout the day by the multidisciplinary health professionals: Surgeon, speech therapists, ENT/Audiology, Ophthalmology, psychologists and a geneticist. Their 'CHOP Passport' is stamped at each consultation to ensure that every child is seen by everyone.

Each case in then discussed in a board meeting to assess progress and agree an ongoing plan. There were no strict criteria to determine which children were discussed in this meeting, and which were managed more solely by the surgeon. Most cases in the craniofacial MDT were complex synostotic patients with syndromes, or severe craniofacial microsomia / Tessier facial cleft patients. Single

suture cases / Pierre Robin sequence were managed almost exclusively by the surgical/paediatric team.

Administration, costs and clearances, social aspect

The process of gaining clearance takes a minimum of 6 weeks and includes occupational health, educational and criminal checks. The costs for this are around $800. The clinical observation fee was $750, and was waived in my case by the craniofacial department.

The administrators were very efficient, and there is a dedicated department for processing international observer applications. They also provided me with information about Philadelphia city, and accommodation contacts.

I stayed at Club Quarters Hotel in Central Philadelphia, which was 30 minutes' walk from CHOP, and a great location for accessing all areas of tourism, shops etc…

I socialised with the team on a number of occasions for evening meals, lunches, drinks and even departmental ten pin bowling, which I manged to win!

Summary

I had a fantastic time at CHOP and would highly recommend it to any senior SpR with an interest in craniofacial surgery. However, the costs of the visit are significant, and observing can be frustrating at times.

I learnt a huge amount about the systems in place in the US healthcare system and hospitals, as well as getting good exposure to a wide range of rare conditions and surgery. The department was welcoming and is considered as one of the more prestigious in the country. I have established a good link with CHOP now, and they have expressed their willingness to accept more UK maxillofacial trainees in the future as a result of this.

I am grateful to BAOMS for their financial support of £1000 travelling fellowship grant in order for me to help fund this observership.

I would be happy to be contacted if anyone wishes to have any more information regarding my trip.

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