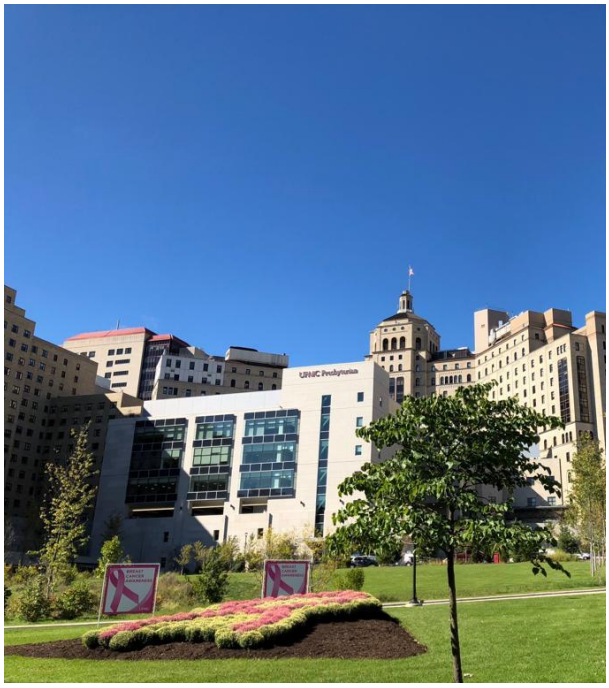
The Ronald Raven Travelling Fellowship, 2018

A Report by Jebet Beverly Cheserem



Visit to Cranial base Center, University Pittsburgh Medical Center (UPMC), October- November 2018

Introduction

It was an honour to receive the 2018 Ronald Raven Travelling scholarship towards my visiting fellowship at the Cranial Base Center at UPMC. It is the first cranial base center in North America and has pioneered in many microsurgical and endoscopic cranial approaches.

UPMC is an integrated global health enterprise founded in 1893. It has 40 hospitals and over 85,000 employees. Neurosurgery is provided in five hospitals by 44 attending neurosurgeons who undertake over 10,000 operations per year. UPMC has 28 neurosurgery residents in their seven year program. This is a large number for one center. In comparison, the United Kingdom recruited 34 year-one residents in 2017 and most UK neurosurgery units have an average of 10 residents.

On average 350 skull-base procedures are undertaken at UPMC Presbyterian for adults and at UPMC Children's Hospital. The cranial base center is jointly headed by Dr Carl Snyderman (ENT) and Dr Paul Gardner (Neurosurgery). Other attendings are Dr Eric Wang (ENT), Dr Tyler-Kabara (Paediatric Neurosurgeon), Dr Tonya Stefko (Ophthalmology), Dr Jenny Yu (Ophthalmology), Dr Barry Hirsch (neuro-otology) and Dr Andrew McCall (Neuro-otology).

Clinical experience:

During my 5week placement, I largely shadowed Dr Gardner, the cranial base neurosurgery fellow and two other senior neurosurgery residents attached to the firm. Tuesday was all day clinic with up to

70 patients being reviewed in the neurosurgical clinic. This comprised of new referrals, follow-ups and those attending for review and consent in advance of surgery. Patients were reviewed either by a resident or physician assistant (PA). The PAs were scheduled purely to undertake clinics and were very experienced in managing complex and sometimes rare skull-base pathologies. All patients were then reviewed by Dr Gardner. All patients who were offered surgery were given a date and a comprehensive list of perioperative tests were arranged. Clinic was followed by the oncology multidisciplinary team (MDT) meeting where all scheduled operative cases for the coming week were discussed. Any of the cranial base Attendings (consultants) would bring interesting cases for discussion of radiology, pathology or surgical plan reviews.

Other days were spent operating with three theatres running in parallel. There were a minimum of 12 skull-base cases per week. I was fortunate to see a very broad variety of cases including chordomas, pituitary functioning and non-functioning adenomas, skull-base metastasis, tegmental defect repairs, sino-nasal malignancies, craniopharyngiomas and pituitocytoma. Dr Gardner's practise also included vascular cases including a novel occipital to internal carotid bypass using a radial artery graft in a patient with cerebral hypoperfusion. This was after a standard STA-MCA (superficial temporal artery to middle cerebral artery) bypass was unsuccessful and the risk of progressive cerebral ischaemia necessitated urgent operative review to improve perfusion. The bypass was an illustration of a collaborative approach between the cranial base, vascular and neurovascular surgeons to modify surgical plans in-vivo with serial on-table angiograms until a viable graft was established. It highlighted to me that I should endeavour to develop cross-speciality links and the learning opportunities they present in developing treatment plans for my patients.

Management of inpatients comprised of a mixture of nurse practitioners and junior residents who often started their reviews at 04.30am and worked till 9pm. All junior residents presented their ward round results to one of the three chief residents at 6am before discussion with the Attending. It was incredible to see how integrated the resident teams were. Accustomed to a large number of clinical observers, they residents were very accommodating and available to answer questions.

Of particular note, I saw many endonasal approaches inclusive of extended clival approaches and transmaxillary transpterygoid approaches. Drs Gardner, Synderman and Wang expertly explained the operative approaches and their respective limitations and pitfalls. It was the first time that I saw extensive use of intravenous Indocyanine Green (ICG) to assess location of the carotid arteries, tumour vascularity and flap vascularisation. Whilst we have a similar approach in my department for raising a nasoseptal flap, I learnt about raising a reverse flap to protect the nasal cartilage. Cerebrospinal fluid (CSF) leaks are a management challenge for any skull-base team and it was enlightening to see a wide variety of flaps raised for closure. This included a standard nasoseptal flap, inferior turbinate flap, free turbinate flaps and galeal flaps. Interestingly there were no sealants used and they had very low CSF leak rates post-operatively. There were various instruments of interest such as use of *spiways*® for turbinate deflection to minimise intranasal trauma, peel-away catheters for peritoneal shunt siting and intraparenchymal ports for evacuating intracerebral haematomas. Vascular cases had on-table angiograms reported in real time by dual qualified neurovascularsurgeons.

The technical and clinical expertise was anchored in a very strong and intergrated team with years of experience. There is a very strong learning culture and as visiting fellows it was humbling to be engaged by Drs Gardner, Synderman and Wang in discussions on patient and service management. I have taken away many pearls of wisdom to adopt in my practise. One recurring piece of advice when I asked what each would recommend for a young consultant was ‘ learn as much as you can, but start off doing less technically complex cases until you have developed the team, experience and reputation that will enable you to take on more complex cases’.

Academic meetings:

Wednesdays were academic days with a 7am presentation of mortality and morbidity meetings. Senior Attendings shared their clinical gems and there were robust discussions on how to improve future management with chief residents interrogated on the basis of their management decisions. At 4pm there was a 30minute resident presentation followed by an attending or visiting scholar lecture.

Cadaveric laboratory:

The cranial base center also has six visiting fellows from across the world, who spend a minimum of one year working in the cadaveric laboratory as well as observing in clinic and in theatre. The laboratory is well equipped with two endoscope and microscope stations. All had neuronavigation and a range of instruments to replicate any of the operative approaches the center undertook or was developing. Most Friday afternoons the fellows held a research meeting where they had 3D presentations of their projects.

Pittsburgh:

Apart from Cranial base center, I immersed myself in the culture and sights of Pittsburgh. Pittsburgh, has a rich history. Initially a trading and industrial hub it is now a modern information technology, health technology, research and education city. I had the opportunity to see the works of Andy Warhol in one of the largest art galleries dedicated to one artist. I also visited various institutions founded on Carnegie philanthropy including the Museum of Natural History, Carnegie Public Library, Carnegie Mellon University and Carnegie Museum of art. Phipps conservatory, with an amazing curation of plants from around the world makes for a wonderful afternoon. The Heinz museum was fascinating with exhibitions that included the history of the Heinz brand, the history of many great Pittsburgh sports teams and personalities and a very poignant exhibition on the history of African Americans in Pittsburgh through the centuries.

Vote of thanks:

Time flew but I will cherish the opportunity to immerse myself in Pittsburgh life and to learn so much from Dr Paul Gardner, Dr Carl Synderman and Dr Eric Wang who were truly inspirational teachers, and were both patient and welcoming. I am also grateful to Mary Tutchko who is a phenomenal administrator, hostess and general hotline throughout the application process and during my stay. Thank you to the residents who spent many hours entertaining my questions. This includes Drs Andrew Venteicher, William Ares, Ezequiel Goldshmidt, Michael McDowell, Christopher Newman, Mathew Pease and Roberta Sefcik. The nurses, theatre staff and PAs were welcoming and very supportive. Thank you to Mr Carl Hardwidge and Mr John Norris my supervising consultants at Brighton and Sussex University Hospital who supported

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