

SBNS Global Neurosurgery Fellowship Report

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Introduction and Institutional Background

The National Neurosurgical Referral Centre (NNRC) at Bir Hospital is the largest and busiest public neurosurgical centre in Nepal. As a government-funded institution, it does not charge for admission and offers heavily subsidised investigations, medications, and surgical treatment. As a result, Bir Hospital serves as the primary destination for neurosurgical care for patients from across Nepal, many of whom travel for days or weeks over challenging mountainous terrain to access specialist services.

Nepal operates a six-day working week, and the clinical volume at NNRC is exceptionally high. The outpatient clinic runs daily (except Saturdays) and reviews approximately 60–80 patients per day. Patients requiring neurosurgical intervention are admitted directly from clinic and scheduled for surgery. Due to limited theatre capacity and resource constraints, inpatient waiting times for surgery may extend to several weeks, depending on clinical urgency.

For many patients, this extended inpatient stay is acceptable, as accommodation, including four meals per day, is provided free of charge. Importantly, provision is also made for patients' families, who remain closely involved throughout the admission and play an important role in the delivery of care.

Families are essential to the functioning of the hospital system. They are responsible for purchasing surgical consumables and medications, retrieving imaging films, transporting blood samples, physically assisting patients, and transferring them between wards or to the operating theatre. Much of what would be considered 'nursing care' in the UK - including washing, repositioning, and feeding patients - is undertaken by family members. Relatives act as logistical coordinators, and without them patients would simply not receive adequate care due to shortage of medical staffing. Prior to discharge, families are trained in tracheostomy care and other aspects of post-operative management, as access to formal rehabilitation and community nursing services is limited.

This highlighted the extent to which neurosurgical care in resource-limited settings depends on family involvement and social structures. It also raised important ethical and systems-based challenges, particularly when delays occur because relatives are unavailable, unable to afford equipment, or struggle to navigate hospital processes. While most families try their best to act rapidly, delays are common due to long queues, financial hardship, or logistical difficulties. For example, one patient requiring an emergency decompressive craniectomy experienced a delay of several hours because the relative sent to purchase the necessary surgical equipment was uncontactable. Due to social and cultural factors, taking the patient for surgery without the relative being updated was simply not an option.

Blood transfusion presents a particular challenge, as there is no central blood bank. Families must source and provide blood products themselves, and sometimes may buy blood from other patients who have the same blood type. In emergency craniotomy cases, surgery cannot proceed without blood unless relatives sign a waiver acknowledging the risk of intraoperative death. Relatives usually refuse to sign this, and as a result life-saving surgery may be delayed for hours.

Departmental Structure and Clinical Responsibilities

The neurosurgery department is comprised of six neurosurgery consultants, led by Professor Rajiv Jha as Head of Department. My weekly timetable was structured as follows:

- **Sunday:** Outpatient clinic | Mandatory academic class at 12
- **Monday:** Theatre
- **Tuesday:** Outpatient clinic
- **Wednesday:** Theatre | Mandatory neuroradiology meeting at 12
- **Thursday:** Theatre
- **Friday:** Outpatient clinic

Neurosurgical training in Nepal is 3 years (following completion of general surgery training) and the department has six residents (two each in years one, two, and three). At the time of my arrival, the second-year residents were undertaking overseas placements in Taiwan, and the third-year residents were on study leave preparing for their final exams. As a result, I joined the on-call rota as the senior resident, covering the first-year resident.

For the first six weeks, I was on call daily. Following the return of the senior residents, my on-call commitment reduced to two to three 24-hour shifts per week. While on call, my role was primarily to support the junior resident, review patients in A&E with them and train them in performing emergency neurosurgical procedures. This role was incredibly rewarding, and I really enjoyed training the juniors. The experience was mutually beneficial as by the end of the fellowship they were confident with the emergency operating and I was able to develop my skills in surgical training and managing the challenges that come with that.



Clinical Exposure and Operative Experience

The pathology encountered during my fellowship was significantly more advanced than that typically seen during my neurosurgical training in the UK. Financial constraints, geographical isolation, and limited access to specialist care result in late presentation. It was common to encounter patients who had been blind for several months due to raised intracranial pressure, or patients with spinal pathology presenting after months of paralysis. For example, we treated a seven-year-old girl with a posterior fossa tumour who had been blind for two months; it had taken her parents that long to save enough money to make the journey to our centre.

Over the 12-week fellowship, I completed 65 operative cases, covering a broad and complex spectrum of neurosurgical pathology. These included:

- Aneurysm clippings, including posterior circulation aneurysms (almost all were ruptured aneurysms)
- Posterior fossa tumours
- Epidermoid cysts
- High- and low-grade gliomas
- Retrosigmoid approaches for meningiomas, vestibular schwannomas and microvascular decompression
- Craniopharyngiomas

- Pituitary adenomas (endoscopic endonasal, transcranial, and translabial approaches)
- Transoral approach for a clival chordoma
- Spinal surgery, including instrumented fusion, intradural tumours, sacrectomy for sacral chordoma and a laparotomy-assisted approach to an L3 nerve sheath tumour

I was actively involved in every case and this fellowship allowed me to significantly broaden my operative experience and confidence in managing complex and late-presenting disease. It also allowed me to see surgical approaches that I had not previously encountered, such as translabial approaches to pituitary adenomas and laparotomy to nerve sheath tumour. Every mass lesion we operated on was significantly larger than those I had seen during my training in the UK, and most patients presented with marked neurological deficits. Furthermore, we often did not have adjuncts such as neuro-navigation, neuro-monitoring or even the CUSA, which allowed me to develop skills in adaptation and versatility.



Expanded Procedural Skillset and Resource-Limited Practice

Due to workforce shortages, neurosurgeons at Bir Hospital possess a much broader procedural skillset than is typical in the UK. Surgeons routinely perform their own intubations, tracheostomies, and central venous line insertions, and independently operate imaging equipment such as the C-arm. These practices significantly improve efficiency and reduce delays to theatre. During my fellowship, I was able to develop these competencies and performed several surgical tracheostomies, central line insertions and intubations. I also gained confidence in providing anaesthetic sedation and managing airway emergencies.

One particularly striking aspect of practice was the extensive use of local anaesthesia. Burr holes and external ventricular drains are routinely performed under local anaesthetic, and during periods of anaesthetic staff shortage more complex procedures are also undertaken in this way. For example, I removed an infected cranial bone flap and performed a several stereotactic biopsies under local anaesthetic. This experience reshaped my understanding of what can be safely achieved with appropriate technique and patient communication (and a good scalp block).

Working in a low-resource environment also highlighted the extent of waste within UK neurosurgical practice. For example, drill pieces are often discarded after minimal use, and haemostatic agents such as Floseal are routinely opened regardless of necessity. In Nepal, I learned techniques to control bleeding without haemostatic agents and saw how many consumables considered disposable in the UK can be safely autoclaved and reused. While there is clearly a balance to be struck between reuse and safety, this experience has made me more conscious of waste, and I hope to address this within my department on my return.



Academic Environment and Teaching

Professor Jha places strong emphasis on academic development, which is reflected throughout the department. Ward rounds are highly structured and educational. As residents, we routinely arrived 90 minutes early to ensure we had studied every patient in detail, including pathology, classification systems, investigations, management options, emerging therapies, and relevant research.

This approach significantly strengthened my academic foundation and reinforced disciplined clinical reasoning. In addition, I was expected to regularly deliver teaching sessions at the weekly academic class. These were often 45-minute lectures requiring substantial preparation and research, which further deepened my understanding of the topics presented.

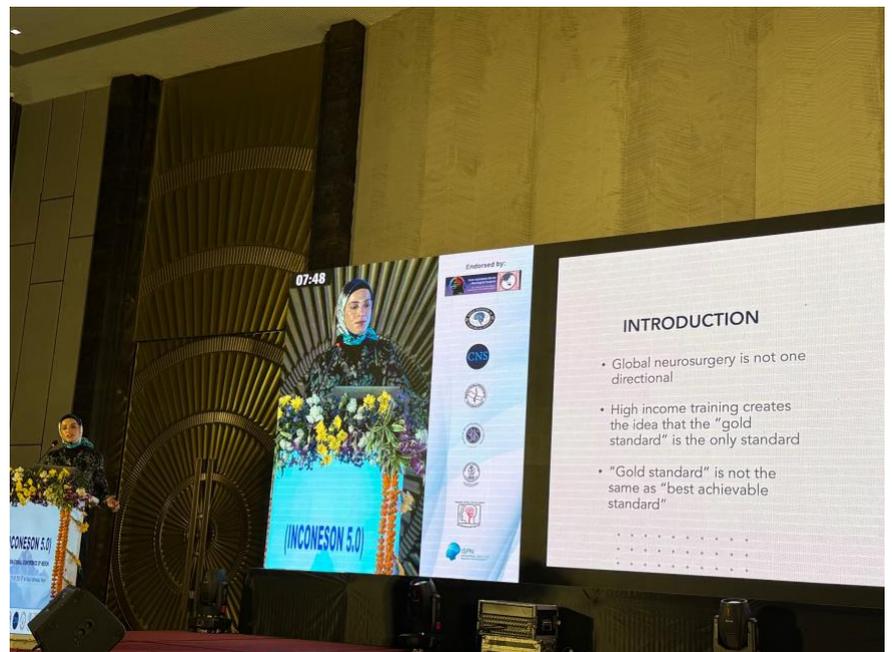


Conferences, Leadership, and Contribution

During my fellowship, I delivered multiple oral presentations at academic meetings, including the monthly Nepalese Society of Neurosurgeons (NESON) meetings and the EANS-NESON conference. I also attended a workshop on vascular anastomosis, led by Professor Sudhir from India, in which I was able to practise my skills on chicken thighs. These meetings provided valuable networking opportunities and reinforced my interest in international neurosurgical collaboration.

I assisted with the organisation of many of these events, including designing the posters and following this, I was invited to develop a departmental website to improve visibility, communication, and international engagement. I successfully designed and launched the website, which is accessible at

www.nnrCBir.com.



Personal Development and Cultural Experience

Outside of clinical work, Nepal is a country of exceptional natural beauty and cultural richness. Prior to commencing my fellowship, I took two weeks of annual leave during which I trekked to Everest Base Camp and summited Island Peak (6,189 m). This was a once-in-a-lifetime experience and a significant personal achievement that complemented the professional intensity of the fellowship.

During my time in Nepal, I was lucky enough to experience several of the big festivals. Including Tihar, where I was able to celebrate with my colleagues and their families whom all welcomed me into their homes. I found Nepalese people to be the kindest and most welcoming of any population I had ever met, and they really made me feel like family.



Reflection, Sustainability, and Future Impact

Overall, my fellowship at Bir Hospital was profoundly enriching both professionally and personally. I developed advanced operative skills, significantly expanded my exposure to complex neurosurgical pathology, and strengthened my academic practice. Equally importantly, I gained deep insight into delivering neurosurgical care in resource-limited settings, including ethical decision-making, systems challenges, and the central role of families in care delivery.

This experience has reinforced my commitment to global neurosurgery and international collaboration. I intend to maintain links with the NNRC through ongoing academic engagement, remote teaching, and future visits, contributing to sustainable capacity building rather than one-off clinical exposure. Furthermore, I hope that the first-year residents whom I was involved in training will have the opportunity to visit my unit as part of the SBNS fellowship programme.

This fellowship has had a lasting impact on my development as a neurosurgeon and will continue to shape my clinical practice, leadership approach, and future career direction. I am forever grateful to the SBNS for providing this opportunity, as the true impact of this experience, on me as a young neurosurgeon, cannot be fully captured in words.

