

Through the generous support of the British Hip Society, I was fortunate to undertake an eight-week surgical elective at the Children's Surgical Centre (CSC) in Phnom Penh, Cambodia during the final year of my graduate-entry medical degree (February- April 2026). This experience re-affirmed my aspiration to pursue humanitarian surgery in future, ideally through a mission focused on sustainable capacity building and community-centered care such as the CSC.

History of the CSC

The CSC was established in 1998 by orthopaedic surgeon Mr Jim Golloghy to care for patients living with disabilities caused by landmines and war-related injuries. Today, it delivers free or affordable surgical treatment to economically disadvantaged Cambodians, helping overcome barriers facing patients who may otherwise be unable to receive treatment. Currently the CSC is based on the Phnom Penh peninsula to where patients journey from across Cambodia and neighbouring countries due to the CSC's international reputation for providing outstanding reconstructive and function-restoring surgery. The CSC provides a range of specialist services, including reconstructive surgery, ENT surgery, and ophthalmology. To support teaching and best practice, surgical teams from around the world regularly visit the CSC to train local surgeons and introduce advanced techniques, helping to build sustainable surgical capacity for disability treatment throughout Cambodia.

Clinical exposure and surgical assistantship

My placement involved exposure to a broad range of both adult and paediatric surgical presentations across clinic appointments, ward rounds, theatre lists and peri-operative care. The entire team took me under their wing and went above and beyond to ensure I had a varied and hands-on experience.

In clinics I examined patients presenting with a range of defects including developmental and traumatic orthopaedic injuries, burns, contractures and cleft lip/ palate. Whilst I was able to lead some of the consultations in a combination of English and basic French (the second language of Cambodia), the team were incredibly supportive in translating my questions into Khmer to facilitate discussions. Compared to UK pre-op consultations, I was struck by the informal nature of the patient-doctor relationship in Cambodia. Whilst medicine was broadly practiced in a more paternalistic way, there was a refreshing warmth and closeness between patient and doctors and a flatter hierarchy between team members throughout different stages of training. This less rigid meant that I was able to gain insights from trainees at the very start of their training who benefit from exposure to a huge case load, all the way up to the nation's leading surgeons who led complex or niche cases. Doctors in Cambodia earn remarkably low wages even when weighted against the lower cost of living, forcing them to work seven days a week across several hospitals. Despite this pressure, there was generosity and enthusiasm amongst the doctors for the patients, each other and for students such as myself which made for a friendly work culture.

Each day I was lucky enough to scrub in and assist in theatre on cases spanning orthopaedics, plastics and ENT. As a member of the British Hip Society, I took a keen interest in the hip theatre lists, particularly in revisions and in patients with complex medical comorbidities such as complex traumas and osteomyelitis (*details below*). Broadly speaking, there were notable differences between the UK and Cambodia in terms of theatre lists. On average patients were much younger than those seen in the UK with a greater representation of traumatic injuries including road traffic accidents (RTAs) and those incurred through manual labour. High costs of medical treatment and a greater trust in traditional medicine meant that the pressure point leading to first presentation was usually when a patient's livelihood was threatened due to severe injury. Second to traumatic injuries, chronic poorly controlled diabetes was a common underlying morbidity necessitating surgery in contrast to the UK where diabetes is well managed. Invariably these patients would experience peripheral neuropathy, ulceration, tissue necrosis secondary to traumatic injuries, often requiring amputation.

Cases of interest

MSK injuries represent a high clinical burden in Cambodia and are disproportionately caused by RTAs and occupational exposure. In this context, where many livelihoods depend on physical labour,

MSK trauma can be financially and emotionally devastating. Most of the injuries I saw were contemporaneous, but the CSC continues to see life-altering disabilities dating back to the Khmer Rouge regime including injuries related to torture, conflict, and landmines.

Hip cases

Hip injury and pathology is common amongst the patients served by the CSC. Presentations included traumatic injuries such as hip fracture and hip dislocation, as well as chronic pathologies including osteoarthritis (OA), avascular necrosis (AVN), osteomyelitis and septic arthritis including numerous cases of tuberculosis infection of the hip (TB hip). Less common presentations included Ankylosing Spondylitis and tumefaction of the hip joint. Congenital presentations included Developmental Dysplasia of the Hip and Arthrogyrosis.

Most of the cases I assisted were Total Hip Arthroplasties (THA) indicated for trauma, AVN and OA (Figure A, B). The CSC is one of only four hospitals in Cambodia offering THA to adults and is a highly productive centre in the region having performed over 250 THAs since 2007. During my placement I assisted with complex THAs in a far younger and comorbid patient demographic than those I have seen in the UK. I was interested to learn about the high incidence of AVN in Cambodia which the surgeons hypothesised was likely due to widespread over-prescribing of steroids, untreated joint and bone trauma and unmoderated alcohol consumption. Most patients presented late, having attempted to compensate at home or seek out traditional treatments first (which often involve steroids), leading to more severe and debilitating injury. Many patients undergoing THA had concurrent infection including systemic or osteomyelitic TB or non-TB septic arthritis which complicated surgical planning, often requiring admission for intensive antibiotic treatment before considering operative intervention. Two causes of poorer long-term outcomes leading to THA revisions in Cambodia is the reliance on sub-optimal stems and acetabular components (mainly UMA) which have been shown to have an early failure rate and loosening, and the lack of continuity of care and follow up in clinic and with physiotherapists to promote good post-operative recovery.



A) XR showing avascular necrosis of right femoral head with femoral head collapse. 39M farmer had initial traumatic fall off of a motor vehicle appx 1 year prior to presentation. Following injury, had been using daily steroid tablets purchased from local pharmacy. Presented due to worsening pain, leg deformity and non-improving limp. On examination the right leg was shortened by appx 5cm with a limited range of motion. Investigations revealed undiagnosed T2DM with severe hyperglycaemia and peripheral neuropathy. Underwent hip biopsy, culture and subsequent THA.



B) XR showing right acetabular defect, reduced joint space and bone resorption. 43F presented with six-year history of stiffness, lower back pain, limited mobility and pain on weight bearing, following a motorcycle accident. Examination revealed >5cm leg discrepancy and Trendelenburg gait. Extent of injury compromised ability to work or leave home. HepB+. DDX: AVN, TB hip, coxarthrosis, ?malignancy Underwent synovial aspirate and trephine biopsy as well as serological testing for TB to inform future surgical approach (likely THA).

The propensity for younger, advanced and complex hip presentations in Cambodia is explained by multifactorial accessibility issues including the increased risk of traumatic injury and infection risks, unattainable costs of healthcare services and a lack of orthopaedic centres in Cambodia (which explains the high burden of cases seen by the CSC). Disparities in post-operative outcomes between the UK and Cambodia were keenly mirrored when comparing the journeys of patients treated at the CSC's sister private clinic — the success and subsidies of which enables the CSC to offer free or low-cost surgeries to the public. It was sobering to hear team members, who work at both sites, describe

the excellence of care that can be offered to a minority of high income patients through advanced surgical hardware, equipment and facilities — altogether leading to vastly different outcomes.

While THAs always aim to restore function, my experience at the CSC highlighted that the stakes are particularly high for younger patients whose livelihoods, as well as parenting and other care-giving responsibilities, hinge on adequate mobility. When extrapolated the disability caused by unaddressed hip pathology in these populations represents a huge economic burden. Hearing real-life patient stories of the impact of these injuries and witnessing the transformative potential of this work was incredibly meaningful and demonstrated that surgery takes on an entirely different magnitude of impact in low-resource settings.

Chronic infections, amputation and multi-centre working

Chronic infections are common in Cambodia, particularly TB which remains a public health challenge especially in rural communities who struggle to reliably access specific medication to complete the long and complex elimination regimens. Moreover, patients explained their begrudging acceptance that the risk of long-term infection is a reality in and that there is less expectation of curative benefit, rather that treatment should aim to help patients manage symptoms to allow them to work and function day-to-day. Antibiotics are easily accessible through supermarkets and even online grocery delivery apps with no need for a prescription, which has created anti-microbial resistance issues.

Infections are exacerbated in individuals with poorly controlled diabetes which is common in Cambodia when compared to the UK. During my elective I encountered several cases of severely destructive chronic osteomyelitis (+/- diabetes) often requiring amputation. These were particularly distressing cases due to the severe pain patients were clearly in during examinations, where even simply sitting in the clinic room could be an ordeal. One memorable case was that of a relatively young patient who underwent hip disarticulation for chronic severe osteomyelitis and a subsequent Marjolin's ulcer to limit pathological spread.

A particularly striking case I assisted with was an osteomyelitis of the calcaneus in a middle-aged patient who was a carrier of TB but not responding to anti-TB drug therapy. Functionally, the patient was unable to bear weight on the infected foot, leaving them bed-bound which severely reduced their income and was putting pressure on other members of the household to work. This patient was determined to have an amputation primarily because it was less expensive than continuing with medical therapy and they felt this would definitively remove the source of their pain and allow them to regain their earning potential through a prosthesis. The team were concerned about performing an irreversible amputation in an otherwise well working-age adult if the infection could be more effectively targeted and the patient subsequently rehabilitated with physiotherapy. I found it striking that amputations were more tolerable to many Cambodian patients than long term medical treatment based on cost and convenience, and that amputations seemed to have less attached stigma when compared to UK. As this patient lived rurally in the countryside and was not improving with anti-TB medications, we began to consider melioidosis as a differential diagnosis. Melioidosis is a chronic infection with *Burkholderia pseudomallei*, a soil-residing bacterial that can be transmitted to humans via abrasions. Unfortunately, melioidosis presents similarly to TB, a confounder that is exacerbated by the fact that both are endemic in the same geographical regions, which is especially challenging to discern in individuals who are already TB carriers (such as this patient). Before resorting to amputation, I helped facilitate multi-disciplinary discussions between surgical staff at the CSC and Infectious Disease consultants at the Cambodia-Oxford Medical Research Unit (COMRU) in Siem Reap and Calmette hospital (Phnom Penh). This was a very valuable learning opportunity as typically the orthopaedic surgeons' remit is stereotypically restricted to surgical intervention and so it was insightful to work on a case where surgery was not deemed to be the most appropriate primary action.

BPI cases

Due to the high incidence of RTAs, another specialist foci of the CSC's orthopaedic and plastics teams are Brachial Plexus injuries (BPI). Despite being commonplace, BPIs have a huge impact on livelihoods which often rely on the ability to drive and manually operate manual machinery. Several

patients also described the impact of these injuries on community integration and the ways in which such a visible injury can lead to stigma or shame, particularly amongst young men. The young working age in Cambodia and poorly enforced driving regulations also means that children riding mopeds through built up urban traffic are also at risk of life-altering BPIs. These injuries often lead children to miss school and their upper limb compromise means writing abilities particularly suffer.

During my placement I was able to shadow several nerve transfer operations to restore brachial plexus function, commonly using the phrenic, accessory phrenic or intercostal nerves. These were highly complex operations that I had not observed in the UK, often involving visiting mission teams. Whilst led primarily by a plastics consultant, these surgeries often involved both plastics and orthopaedic trainees due to co-occurring MSK injuries. As a result, nerve transfer was often accompanied by open fixation, shoulder fusion, isolated muscle transfer (such as Latissimus Dorsi) or full MODQUAD operations. These cases demonstrated the complimentary skillset of these specialisms.

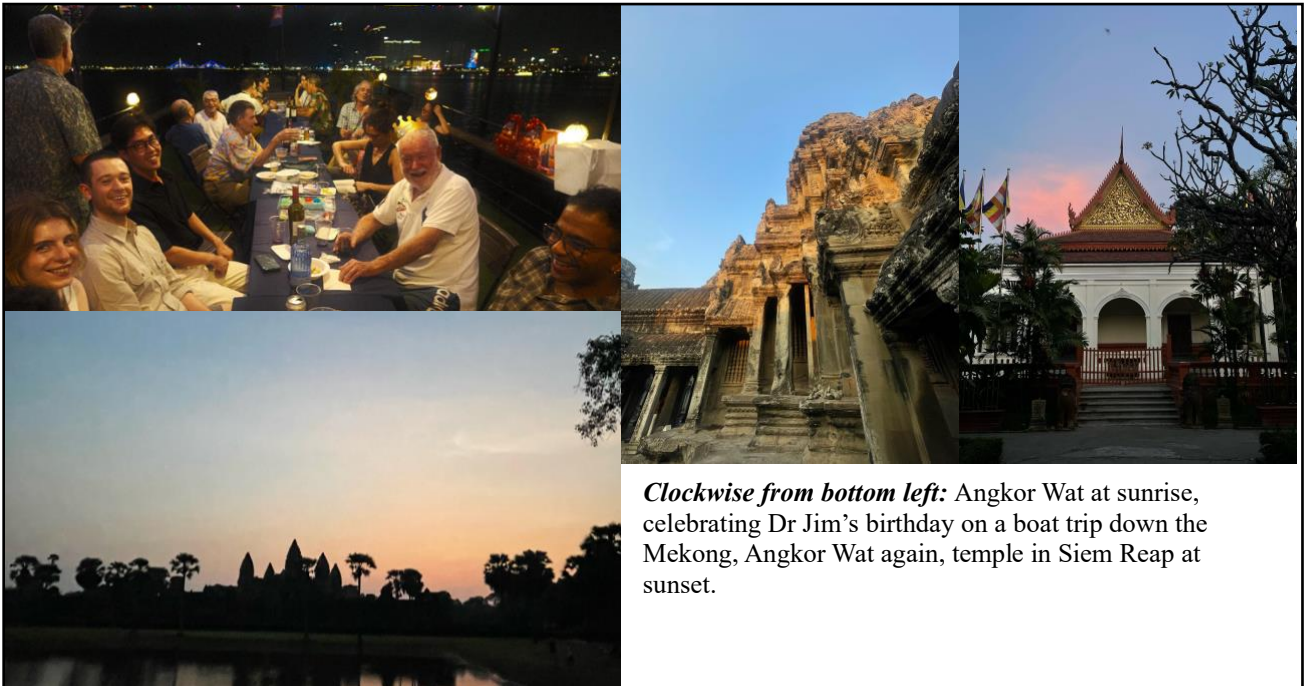
Clerking both BPI and hip injury patients pre-operatively allowed me to hone my upper and lower limb neurovascular examinations by focusing on key muscle groups, isolated movements and asymmetry between the un/affected side. During these exams I was able to identify the level of the nerve lesions and improve my confidence when assessing the major sensory and motor modalities and rating power. During the discussions between the surgeons and BPI patients I was struck by the care the team took to manage patient expectations by emphasising the unpredictability of outcomes for BPI nerve transfer and the crucial role of long-term exercises and strength training in optimising the chances of functional restoration. I witnessed this for myself during follow up appointments with post-op patients which highlighted the massive diversity of outcomes. While a minority of patients regained good shoulder ROM, extensor/flexion function in the forearm and some fine motor movement of the wrist and hand with minimal sensory impairment or pain, most were left with mild but poorly discernible improvement and some degree of paralysis/ limpness and sensory impairment.

Acknowledgements

I owe special thanks to the British Hip Society and University College, Oxford for their generous support of this project. Special thanks to Jim (CEO), Lim Thou, Wee-Leon Lam, Prof Ngiep, Sanpor Oeng, Tho Ly, Makura and the amazing residents who welcomed me into their team and their homes.



Left: The CSC team including visiting missions from UK, Singapore, France, USA. I can be seen in the pink flowery scrub cap. **Right:** I am assisting with a Syndactyly release and correction.



Clockwise from bottom left: Angkor Wat at sunrise, celebrating Dr Jim's birthday on a boat trip down the Mekong, Angkor Wat again, temple in Siem Reap at sunset.

All patient photos taken with consent.