Asia Pacific Spine Society (APSS)

(Spine Section of APOA)

APSS MEDTRONIC FELLOWSHIP REPORT 2025

Fellow:

Dr. Aayush Aryal

M.B.B.S. (Manipal), M.S. Ortho (AIIMS, New Delhi)

F.N.B. Spine Surgery (ISIC, New Delhi)

Consultant Spine Surgeon, Hospital for Advanced Medicine and Surgery (HAMS), Kathmandu, Nepal

Fellowship Date: 29th May 2025 to 19th June 2025 (3 weeks)

Centre:

National Orthopaedic Centre of Excellence for Research and Learning (NOCERAL)

University Malaya Medical Centre (UMMC)

Kuala Lumpur, Malaysia

Host:

1. Prof. Dato' Dr. Kwan Mun Keong

2. Prof. Dr. Chris Chan Yin Wei

3. Associate Prof. Dr. Chiu Chee Kidd

UNIVERSITY OF MALAYA
FACULTY OF MEDICINE

NOCERAL National Orthopaedic Center of Excellence for Research & Learning

Asia Pacific Spine Society (APSS)

(Spine Section of APOA)

Introduction

I feel incredibly privileged to have participated in the APSS Traveling Fellowship Program, an initiative that has left a lasting impact on my professional development. I am profoundly thankful to the Asia Pacific Spine Society (APSS) for selecting me for this invaluable opportunity, and to the team at the University of Malaya Medical Centre (UMMC) for their exceptional mentorship, hospitality, and academic guidance throughout my fellowship. I was selected for the Asia Pacific Spine Society (APSS)–Medtronic Fellowship scheduled in May/June, 2025 for 3 weeks.

I would first take the opportunity to thank the APSS Fellowship Committee for awarding me this prestigious fellowship. Next, I thank the APSS secretariat, especially Jennifer for her persistent hard work in scheduling my fellowship. She ensured that the entire process right from my fellowship application, visa, travel arrangements and accommodation was smooth. The secretariat worked exceptionally well in arranging everything in time so that I could start my fellowship as planned.

My fellowship was at the University of Malaya Medical Center (UMMC) under the guidance of Dato Prof. Kwan MK, a distinguished figure in the realm of spinal deformities. On my arrival, Siti Mariam from the Spine Research Unit (SRU) at UMMC ensured that my airport transfer was arranged. My accommodation was not only comfortable but also conveniently located, with facilities like gym and swimming pool that supported a balanced and focused routine. Also, it was conveniently located from the university and the local stores and restaurants were within walking distance, ensuring that I devoted maximum time to my training and focused on learning.

This fellowship allowed me to observe and engage in advanced spine surgery practices, particularly in the domain of scoliosis, as this is in one of the highest-volume centres in the Asia Pacific region. My time at UMMC was at the Spine Research Unit (SRU) of the NOCERAL (National Orthopaedic Centre of Excellence for Research and Learning). The Spine Research Unit is comprised of Professor Dato' Dr. Kwan Mun Keong, Professor Dr. Chris Chan Yin Wei, Associate Professor Dr. Chiu Chee Kidd and Dr Saturveithan, Mariam and Josephine.

Orientation and Integration

From day one, I was welcomed with a comprehensive orientation, thanks to the efforts of coordinators Mariam and Josephine, who ensured I had all necessary resources – key to the department, OT locker access, a personalized weekly schedule, and a tour of the hospital facilities. Mariam ensured that my professional visa application was processed at the earliest. I was seamlessly integrated into the Spine Research Unit (SRU), where I was actively involved in academic, clinical, and surgical activities, enriching both my knowledge and hands-on experience.

Spine Team Weekly Roster 2025

Time	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
0700-0800	Ward round	Spine Teaching + Preop Presentation	Preop teaching	Spine Teaching + Preop Presentation	Ward round / Research meeting	
0800-0900	Spine clinic	Long case teaching	OT		Long case teaching	OT
0900-1300		OT		OT	Scoliosis clinic	
1300-1700	Research				Research	
1700-2200					OT	

Clinical Meetings and Academic Activities

Twice-weekly clinical meetings formed the academic backbone of the fellowship. These sessions were dynamic and highly interactive, involving a spectrum of participants from undergraduates to senior consultants and professors. Preoperative planning, especially for Adolescent Idiopathic Scoliosis (AIS) cases, was meticulously presented and discussed in detail. The discussions mainly focused on clinico-radiological evaluation and surgical management options. There were frequent case presentations by postgraduate residents with an important take-home message or highlighting an important rationale. I thoroughly enjoyed these discussions. The professors constantly encouraged me to share my inputs on the cases and always asked me how I would have managed those cases.

I had an amazing opportunity to understand the functioning of a high-volume scoliosis centre, not only in terms of patient screening, assessment and counselling but also surgical execution, post-operative management and rehabilitation. The entire team of SRU ensured that I understood their algorithms for offering conservative and operative management. Access to an integrated and user-friendly EMR system allowed deep dives into long-term outcomes and patients' natural histories.

Spine and Scoliosis Clinic

Monday Spine Clinics and Friday Scoliosis Clinics were key components of the fellowship. We had spine clinics every Monday where the patients were assessed in detail and those requiring surgery were counselled and explained with smart and easy-to-understand audiovisuals and pictorial representations of spine highlighting their pathology depending on its location and explaining the risk-benefit ratio of any intervention that needed to be performed for degenerative, traumatic, infective, tumour and other pathologies.

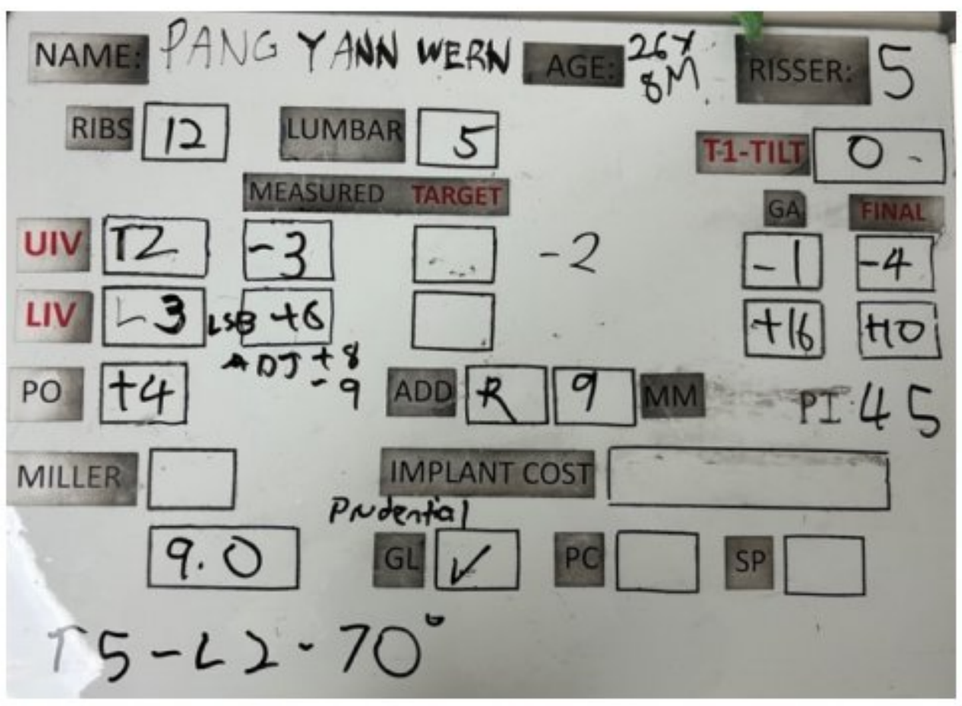
The scoliosis clinic every Friday at UMMC is particularly unique, handling complex and severe deformities including cases with Cobb angles exceeding 150°. I was exposed to a variety of deformity cases both operative and those managed conservatively. The team follows a standardized, evidence-based protocol outlined in their institutionally developed scoliosis handbook, ensuring consistent, high-quality patient care across all providers. I had the opportunity to review and discuss the long-term operative follow-ups, including the progress of growth rod graduates & brace graduates.

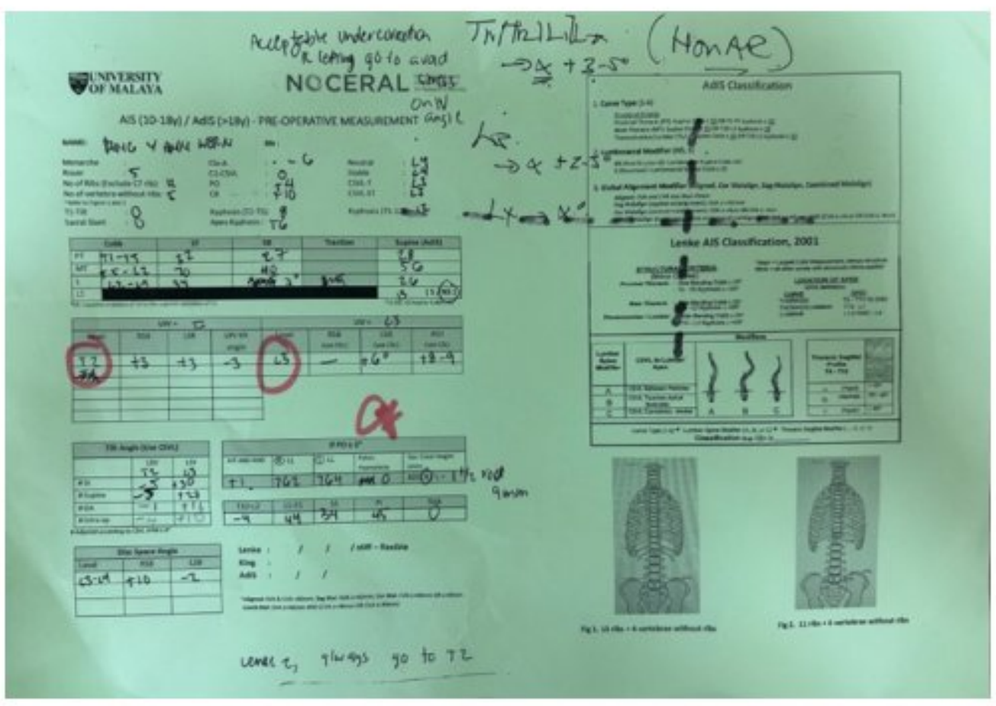
The hospital is also equipped with a brace lab where patient-specific braces are made using 3D printed technology and a dedicated rehabilitation centre comprising of physiotherapists, occupational therapists and nursing staff.

Preoperative Planning and Imaging

UMMC's preoperative planning for spinal deformity surgery is exemplary in its precision and logic. Under physician supervision, patients undergo standardized whole-spine bending X-rays, eliminating variability and ensuring reliable planning for UIV (Upper Instrumented Vertebra) and LIV (Lower Instrumented Vertebra) tilts. In addition, lower limb scannograms are taken for all scoliosis patients to assess pelvic obliquity and limb discrepancies, allowing accurate intraoperative pelvic alignment.

Every element—from UIV tilt correction to alignment of T1 and the head-neck axis—is planned meticulously and executed to match the preoperative strategy, often resulting in excellent postoperative shoulder and spinal balance. I intend to incorporate all these into my practice while planning for AIS cases in future.





In the OR, I was privileged to see a large number of deformity cases including some severe curves (AIS and Congenital) apart from degenerative cases. The team's approach emphasized efficiency, safety, and precision. The use of cross-bar, the concept of two surgeons operating simultaneously on the spine (left side and right side), safety during freehand pedicle screw and extrapedicular screw insertion, cannulated screw placement for difficult pedicles, all lead to significant reduction in the operative time, blood loss and perioperative complications during deformity corrections thus leading to desired outcomes. This centre also stressed the importance of neck tilt and shoulder balance during correction. Their technique of MIS-TLIF with attention to sagittal correction through patient positioning and intra-op lordosis creation by folding the table was impressive as well as inspiring.

All faculties ensured that I am actively involved in various procedures and also encouraged me to spot the difference and discuss them. The dedicated spine team at UMMC—including anesthetists like Prof. Shahnaz, radiographers, and scrub nurses—contributed to seamless intraoperative workflows, greatly enhancing surgical outcomes and learning opportunities. I still remember one of the Wednesdays when the entire team was instrumental in operating 4 AIS cases along with one lumbar canal stenosis. I was privileged to dine in with the entire unit on several occasions.

Academic Activities and Workshops

Apart from the routine weekly clinical meetings and academic teaching, I had the privilege to participate in the 14th combined meeting of Asia Pacific Spine Society, Asia Pacific Pediatric Oprthopaedic Society together with the 12th International Malaysian Spine Society Congress (APSS-APPOS-MSS 2025) held at the Shangri-La Hotel, Kuala Lumpur. I had the opportunity of presenting both my fellowship experience and a scientific paper in the congress. It was a great platform to engage with and learn from distinguished colleagues across the Asia-Pacific region. I also had the opportunity participate in a Saw Bone Workshop Workshop: Mastering Advanced Cervical Spine Surgery Techniques with Prof. Kuniyoshi Abumi & Prof. Dong Ho Lee on 21st June 2025. I got a comprehensive understanding of surgical techniques in advanced cervical spine surgeries. The faculty taught us how to perform accurate and safe placement of cervical pedicle screws. The workshop helped me refine my surgical techniques and develop proficiency in C1-C2 fusion. I got familiarized with the vertebral body sliding osteotomy (VBSO) technique as well. It was a wonderful course combining interactive and didactic lectures with clinical case presentations and saw-bone demonstrations. I thank Professor Dato' Kwan for encouraging me to participate in the worship.

Cultural and Personal Experience

Beyond the operating room, I experienced the warmth and kindness of the Malaysian people. Professors often included fellows in meals and outings. These moments of camaraderie and cultural exchange added tremendous personal value to the fellowship.

Reflections and Future Direction

This fellowship has significantly transformed my approach to spine surgery, particularly in the planning and execution of posterior spinal fusion in scoliosis. I now appreciate the importance of target-based alignment, reliability in imaging, and the role of preoperative planning in achieving optimal outcomes. This broadened my view as a surgeon and I realised that there are many ways to approach any case but the appropriate one is that which is reproducible, safe and works best in your hands thereby leading to an optimum outcome.

The holistic educational environment, combined with exposure to cutting-edge techniques and a dedicated multidisciplinary team, has inspired me to adopt and implement many of these principles at my own institution. Moreover, the emphasis on collaborative learning and generosity in knowledge sharing has deeply influenced how I envision my role as a future educator in spine surgery.

Acknowledgment

I extend my heartfelt gratitude to the **APSS secretariat**, especially **Ms. Jennifer Mathew** for her coordination and support. To the faculty and staff of UMMC—**Professor Dato' Kwan**, **Professor Chris**, **Associate Professor Chiu**, my co-fellow **Dr. Ingrid** and the entire SRU team—thank you for your mentorship, kindness, and commitment to education and for ensuring that I learn, share and make memories that will be cherished for life. This fellowship has truly been a milestone in my surgical journey, and I am committed to carrying forward the skills, values, and insights I have gained.