



Asia Pacific Spine Society (APSS)

(Spine Section of APOA)

APSS MEDTRONIC FELLOWSHIP 2025 REPORT

Fellow :

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Host:

Prof. Seug Woo Suh, M.D, Ph.D
Chief of Scoliosis Research Institute &
Department of Orthopaedics
Korea University, Guro Hospital
Seoul, South Korea



Fellowship Duration:

29th May 2025 – 19th June 2025

I would like to sincerely thank the **Asia Pacific Spine Society (APSS)** for granting me the opportunity to participate in the three-week fellowship in spine deformity. It was an immensely enriching experience that broadened my clinical knowledge and surgical skills. I am truly grateful for the chance to learn from renowned experts and to be part of such a well-structured and inspiring program. This overseas training was not just a chance to advance my skills; it also provided a unique opportunity to gain insights into the forefront of international spinal surgery advancements, greatly broadening my professional and academic perspectives.

Before I arrived in Seoul, I was in continuous contact with Jennifer, Secretary of APSS, and Su Hyun, Secretary to Prof. Suh, regarding my logistics. Hyun was waiting at the airport for my arrival and accompanied me in a cab to the accommodation place, which Korea University had arranged. The accommodation provided to me was pleasant, spacious, conveniently located, and within a short distance from the efficient public transport system of Guro. It was also conveniently located near restaurants and stores.

Su Hyun also took me to the Guro Hospital on the arrival day, which was within walking distance from the accommodation centre, and showed me the orthopaedic department and the doctors' dining area. She was also very kind enough to sponsor me with dinner on my arrival day.

Korea University Guro Hospital:



Korea University Guro Hospital, situated in the vibrant city of Seoul, South Korea, is a premier healthcare facility renowned for its cutting-edge medical treatments and exceptional patient care. The hospital is part of the Korea University Medical Centre, which includes other prestigious institutions, namely Anam and Ansan hospitals. It offers a blend of advanced technology, highly skilled medical professionals, and a commitment to patient-centred care.

Orthopaedic Department:

The Orthopaedic department at Korea University Guro Hospital has 13 specialised staff members offering expert diagnosis and surgical treatment across various subfields. Professor Seung-Woo Seo's Scoliosis Clinic and Professor Jong-Gun Oh's Severe Trauma and Osteomyelitis Clinic are recognised globally for their exceptional medical expertise, as well as outstanding clinical and research achievements.

Korea University Guro Hospital is a designated National Health Care Focused Training Centre for Trauma and serves as a leading referral centre for severe trauma cases in Seoul. The hospital plays a key role in advancing trauma care across Korea. It has trained many international fellows from regions such as the United States, China, India, Malaysia, Singapore, and Saudi Arabia, contributing to the global development of trauma care.

By combining cutting-edge clinical practice with robust research opportunities, the Orthopaedic Surgery Department at Korea University Guro Hospital equips fellows with the expertise needed to excel as global leaders in orthopaedic care.

Scoliosis Clinic:

The Scoliosis Clinic at Korea University Guro Hospital is Korea's first systemised treatment centre for scoliosis. Since its establishment in 2000, the clinic has been at the forefront of scoliosis management, offering early detection, prevention education, and state-of-the-art surgical treatment. With the development of innovative surgical techniques, the clinic treats



over 200 cases annually at a single centre. Additionally, for over 15 years, the clinic has operated a dedicated fellowship program for international trainees, equipping orthopaedic specialists with cutting-edge expertise in spine deformity correction.

Professor **Seung Woo Suh**, MD, PhD, is a leading scoliosis specialist based at Korea University Guro Hospital's Scoliosis Research Institute in Seoul. Prof. Suh is a highly experienced, research-active scoliosis surgeon with global recognition for his skilled surgical techniques, especially in spinal deformity, safety-focused instrumentation, and minimally invasive approaches.

His qualifications and expertise include:

- **Academic credentials:** MD and PhD, affiliated with Korea University College of Medicine, currently serving as Professor in the Department of Orthopaedics at Guro Hospital
- **Clinical expertise:** Recognised for pioneering complex spinal deformity surgeries, including posterior-only corrections, multilevel vertebral osteotomies, and minimally invasive scoliosis surgery (MISS) for adolescent idiopathic and neuromuscular scoliosis
- **Research contributions:** Co-author on numerous influential studies covering freehand pedicle-screw placement, surgical outcomes in cerebral palsy, congenital, and idiopathic scoliosis, and 3D deformity analysis via CT scans
- **Safety and innovation:** His work demonstrates high accuracy and safety in freehand pedicle-screw use in neuromuscular scoliosis (over 90% within safe zones) and he has shown expertise in MISS with comparable outcomes and reduced morbidity
- **Leadership and teaching:** Serving on ethical review boards and leading the Scoliosis Research Institute at Guro Hospital, he plays a key role in educating surgeons and advancing scoliosis care.

My routine schedule:

The weekly routine at Guro Hospital was well structured and planned. Monday starts with wound rounds at 8 am, followed by the scoliosis outpatient clinic in the morning hours (9 am to 1 pm). On Monday afternoon, we had one or two cases scheduled for the operating theatre. Tuesday and Friday were the main OT days, which usually started at 8.30 am, and generally

we used to have two deformity cases posted on the main OT days. Similar to Monday, on Wednesday, we had OPD in the morning and OT in the afternoon. On Thursday, we held a scoliosis outpatient clinic from 9:00 am to 6:00 pm.

Day	Activity
Monday Morning session (9 am to 1 pm) Afternoon session (2pm – 6pm)	Scoliosis outpatient clinic Observation and assessing cases in the operation theatre
Tuesday	Observation and assessing cases in the operation theatre
Wednesday Morning session (9 am to 1 pm) Afternoon session (2pm – 6pm)	Scoliosis outpatient clinic Observation and assessing cases in the operation theatre (OT)
Thursday	Scoliosis outpatient clinic
Friday	Observation and assessing cases in the operation theatre (OT)

Key Learning Points in the Operation Theatre:

The Operating theatre complex in Korea University Guro Hospital is well-equipped with modern technology, including intraoperative neuromonitoring (IONM), a high-quality C-arm, and a Zeiss Pentero microscope, all designed to ensure the highest level of surgical safety. Additionally, due to the high volume of surgeries, every nurse and technician was thoroughly familiar with the surgical procedures, each actively fulfilling their role. The surgeries proceeded very smoothly as a result.

The key learning points in the operating theatre were:

MIS technique in spine deformity correction:

The MIS technique, which Prof. Suh practises, is quite different from that in Western countries, such as the United States.

- The preop position of the patient on the OT table was one of the most important steps in the surgery. The operative table is bent by approximately 40° , which extends the patient's back, allowing the skin to become lax and facilitating skin retraction for screw insertion.

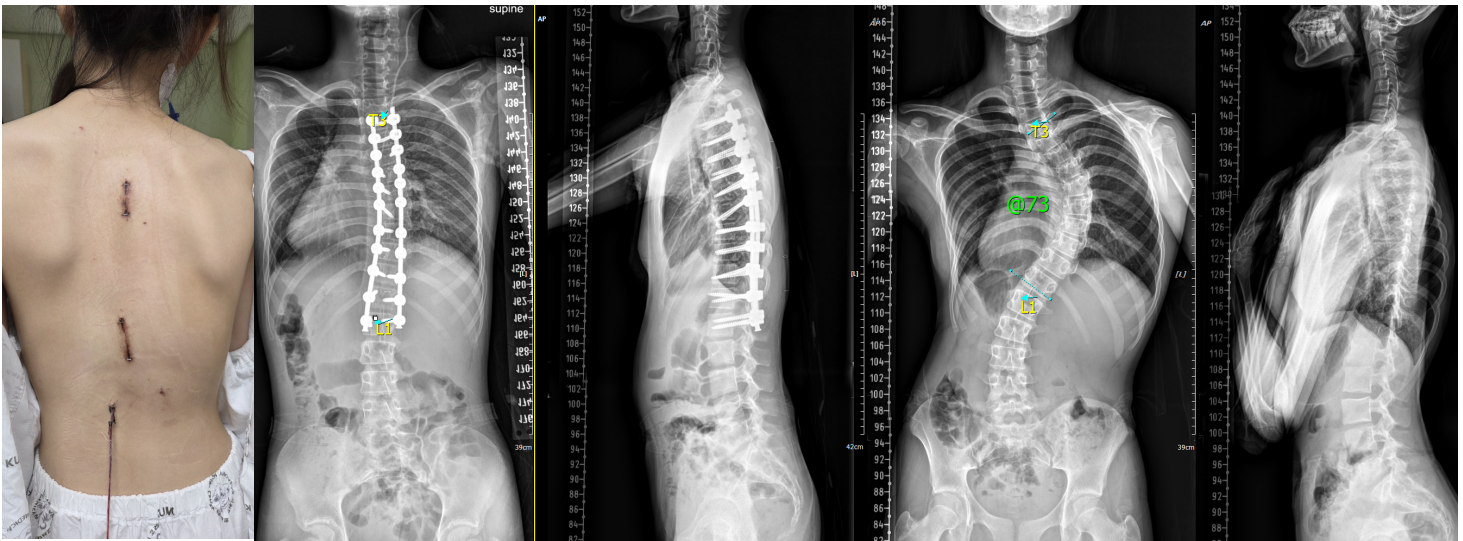


- Pedicle screws are inserted at all levels with just two skin incisions, each measuring 4 cm in size and placed 6 cm apart, which was quite astonishing.
- The free-hand technique of pedicle screw insertion using facet joint orientation, irrespective of the pedicle size and vertebral rotation, was truly a good learning experience.
- Measurement of surface temperature of the foot to detect spinal cord injury during scoliosis correction. It is based on the concept that in SCI, the sympathetic chain is affected, resulting in vasodilatation and an increase in the foot temperature.

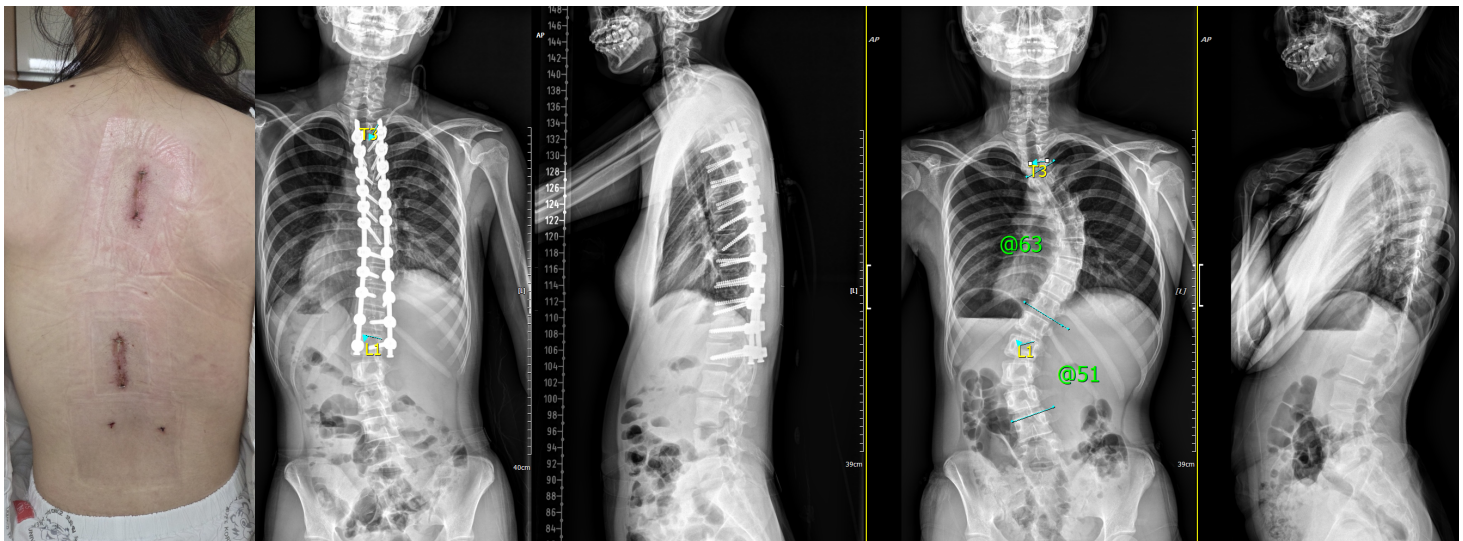
- The role of crack osteotomy, a type of incomplete vertebral body osteotomy, is to correct rigid spinal deformity.



A few case examples that I assessed, Prof.Suh, during my fellowship period :



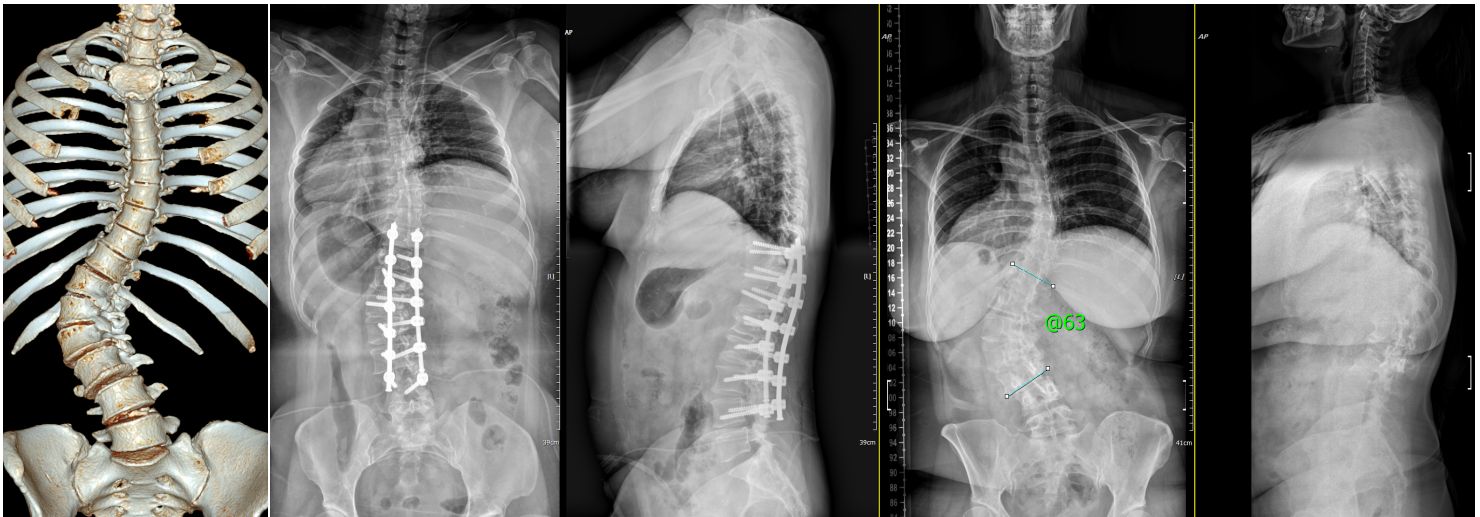
Case 1: 13-year-old female with Lenke Type 1A- with Cobb's angle of 73 degrees, underwent MIS deformity correction from T3 to L1 level.



Case 2: 15-year-old female with Lenke Type 3C- with Cobb's angle of 63 and 51 degrees, underwent MIS deformity correction from T3 to L1 level.



Case 3: 13-year-old female with Lenke Type 2AN with Cobb's angle of 73degrees, underwent MIS deformity correction from T3 to L2 level



Case 4: 35 A 35-year-old female with neglected adolescent idiopathic scoliosis (Lenke 5c) underwent T10-L4 posterior instrumented deformity correction with multiple level osteotomies.

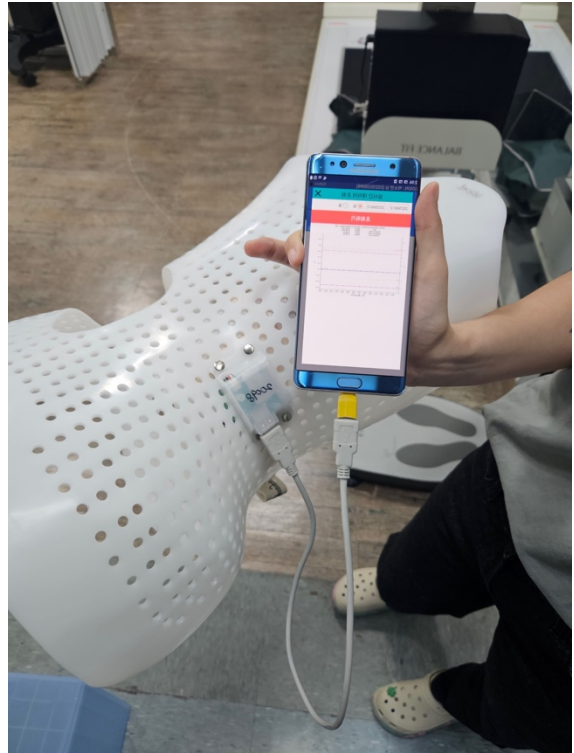
A visit to the Scoliosis brace manufacturing centre :

The most important learning point is the role of bracing in correcting spinal deformity. The technology used for manufacturing the brace in South Korea is highly advanced. I had a visit to the Woonam Medical Co., Ltd in Seoul, where the scoliosis braces are being manufactured. I had a good interaction with Hyeonmin Moon, Assistant Manager of Woonam Medical Co., Ltd, regarding the scoliosis brace manufacturing process. They utilise 3D scanning technology and a 3D printer (Shindoricoh 3DWOX 30X model, an industrial 3D printer).

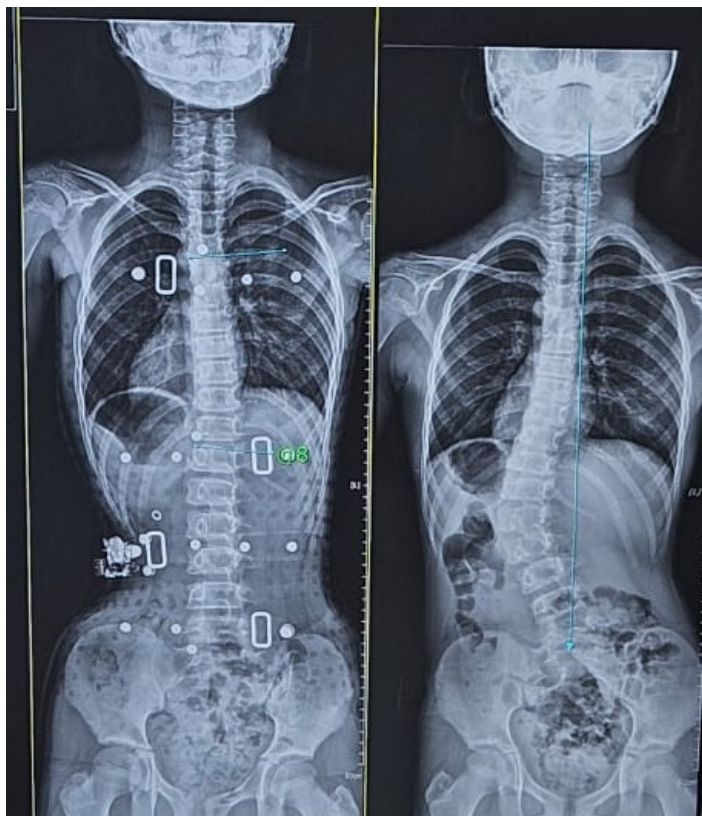


The main feature of the scoliosis brace is the Woonam Spine Check digital measurement sensor, which enables you to visually assess the patient's wearing state at a glance, accompanied by graphical data. With Spine Check, you can verify the presence or absence of the correction effect and the change in correction force, as well as confirm whether the brace is being worn continuously. Gradual wearing is possible with a tighter belt that suits the adaptation stage. There are two types of scoliosis braces, namely:

- The Woonam Spine Check- Active Auxiliary Device: that is worn mainly during the daytime, where there is a lot of activity
- The Woonam Spine Check - Sleep Aid: primarily used at nighttime, when there is no weight-bearing effect. It is suitable for sleeping when growth hormone secretion is the highest and has the maximum corrective effect.



Example of a scoliosis patient corrected with a brace:



Fellowship- friendship memories:

I was lucky enough to have Dr. O.Z.M. Dastagir from Bangladesh, an APSS fellow, for his fellowship training in St. Mary's Hospital, The Catholic University of Korea, under Prof. Young Hoon Kim. We have a wonderful time touring Seoul at weekends

Seoul, the vibrant capital of South Korea, is a city where ancient heritage and cutting-edge modernity coexist in perfect harmony. Getting around Seoul is convenient and tourist-friendly. The extensive and efficient subway system, coupled with the use of T-money transportation cards, makes it easy to explore even the farthest corners of the city.

One of the most captivating aspects of Seoul is its deep-rooted history. We had a good time exploring majestic royal palaces such as **Gyeongbokgung** Palace, where traditional architecture and ceremonial rituals vividly bring Korea's dynastic past to life. The towering **Seoul Tower** on Namsan Mountain provides panoramic views of the sprawling cityscape, especially stunning at night. Neighbourhoods like **Gangnam**, **Hongdae**, and **Itaewon** pulse with youthful energy, boasting trendy cafes, street art, fashion boutiques, and a thriving nightlife.



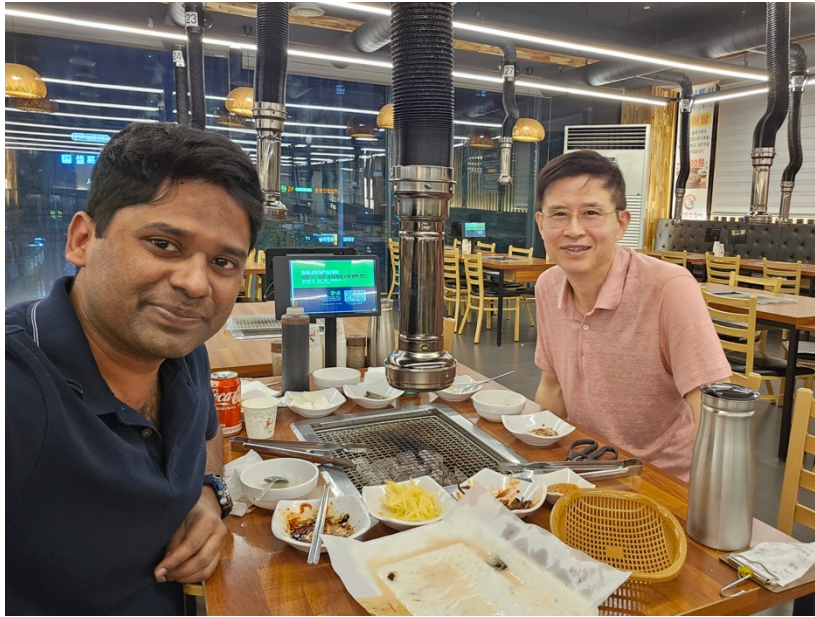
Memories with Prof.Suh:

Over the three weeks of my fellowship, I had the invaluable opportunity to learn under the guidance of Prof.Suh in the field of spine deformity. This experience has been nothing short of transformative, both professionally and personally. I want to express my sincere gratitude to the professor for enriching my knowledge, shaping my clinical perspective, and inspiring a deeper interest in the complex world of spinal disorders.

Spine deformity is a field that demands precision, critical thinking, and a strong foundation in both anatomy and biomechanics. Through detailed lectures, hands-on clinical exposure, and thoughtful case discussions, the professor conveyed complex concepts with remarkable clarity and depth. What stood out was not just the knowledge shared, but the passion and commitment with which it was delivered. Every clinical encounter became a learning moment, every case review a window into refined decision-making.

Beyond the scientific and technical aspects, the professor emphasised patient-centred care—an approach that considers the individual, not just the deformity. From understanding the psychosocial impact of scoliosis in adolescents to evaluating surgical indications in adults, I learned the importance of empathy and holistic evaluation. This perspective will remain central to my practice.





Remembrance from my mentor:

I was truly moved by the generous gift (a headlamp and a clinometer) from my mentor—it's far more than a token; it's a reminder of all the insight, encouragement, and wisdom he has shared throughout my fellowship. I would like to thank my mentor not just for the thoughtful gift, but for believing in me, challenging me, and helping me grow. I feel incredibly grateful to have Prof.Suh as a mentor.



A perfect ending at APSS 2025 Malaysia:

My wonderful fellowship in South Korea had a perfect ending in APSS 2025, Malaysia, where I presented six research papers and won two prestigious APSS awards, APSS-ASJ Best Basic Science Award and Congress Best Paper Award (Basic Science Category) on the topic “Unlocking the IVD: Unveiling its microbial landscape with Shotgun metagenomics”. The study deals with a comprehensive understanding of the bacterial population in intervertebral disc degeneration using shotgun metagenomics.



I sincerely thank the Asia Pacific Spine Society (APSS) for providing me with the valuable opportunity to participate in the spine fellowship program. The experience has greatly enhanced my understanding of spine deformity, surgical techniques, and patient care. I am truly grateful for the exposure, mentorship, and academic enrichment this fellowship has offered.