LIFE AS A SPINE SURGEON

a guide for Medical Students

BASS

British Association of Spine Surgeons

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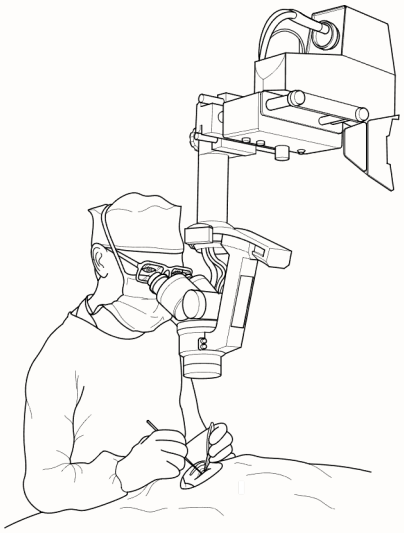
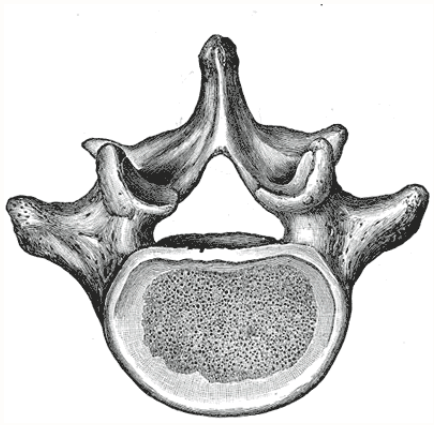
What is spine surgery?

Spine surgery is one of the most intriguing, clinically complex and technically challenging surgical fields. Being a Spine Surgeon is fulfilling and spine surgeons are deemed a cut above the rest, dealing with the most challenging cases.

Spinal surgery corrects structural abnormalities in the back, as a result of injuries or disease





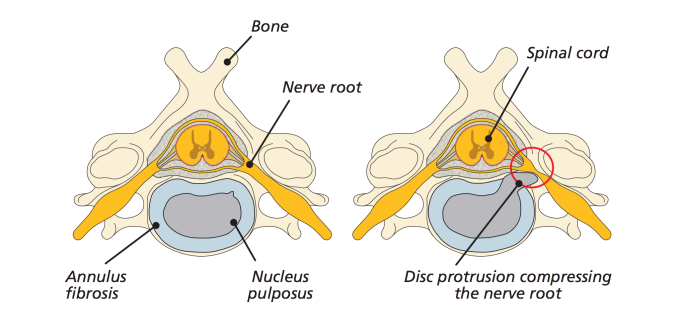
Being a good spine surgeon combines astute clinical history and examination skills, attention to diagnostic detail and sound operating ability. For the properly selected patient, spine surgery provides the opportunity to dramatically improve a person's quality of life by applying innovative surgical techniques.

Spine surgery is performed on patients of all age groups and activity levels. Dealing with a broad spectrum of disease processes such as trauma, tumour, infection, degenerative and deformity. Hence the challenges posed by the clinical variability makes each working day different from any other.

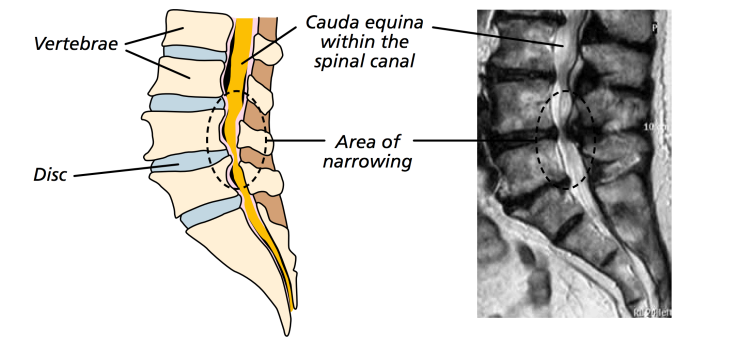
Common operations

Spine surgery allows surgeons to decompress, move and fix vertebral structures, and replace them if necessary. Common procedures include:

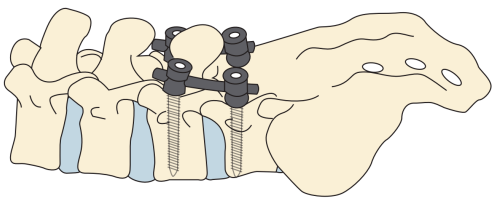
Discectomy: removal of a herniated part of a vertebral disc to access a swollen nerve and relieve nerve irritation.



Laminectomy: the bone covering the vertebrae is removed and enlarged to relieve pressure from a stenosis.

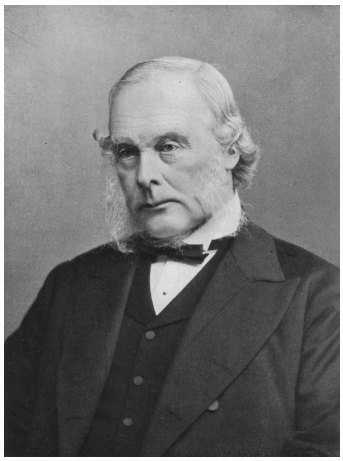


Fusion: the joining two or more vertebra. This can relieve pain by giving stability to a fracture or simply eliminate pain associated with movement of the vertebrae, which can degenerate or injure some of the vertebral discs.

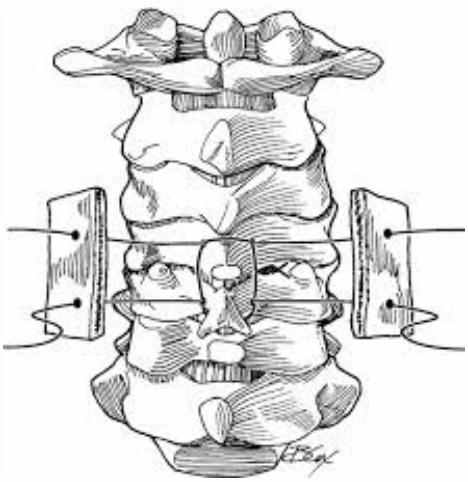


Martinique Vella-Baldacchino

A Brief History of Spine Surgery



Like other forms of surgery, the era of successful spine surgery began with operations performed in aseptic conditions, famously pioneered by Joseph Lister, and general anaesthesia.



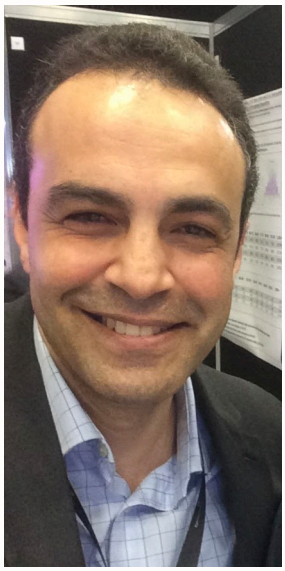
In 1891: Dr. Berthold Hadra became the first surgeon to successfully fuse the spine in a patient with a fracture dislocation; which he accomplished by wrapping wires around the spinal column for stabilization.

By 1932, the first operation carrying a preoperative diagnosis of "ruptured intervertebral disc" was carried out by Mixter, a neurosurgeon, and Barr, an orthopaedic surgeon. An L2 to S1 laminectomy was performed on a 28-year-old who exhibited "classic" signs of nerve root compression: limited motion at the lumbosacral junction, positive straight leg raise on the affected side, and an absent ankle reflex. A 1-cm mass was removed, and the patient recovered from surgery with complete resolution of his radicular symptoms.

Advances in spinal imaging, such as MRI which was introduced in 1990 has markedly impacted the evolution of our understanding of intervertebral disc herniation pathoanatomy

A day in the life of a spine surgeon

First things first. The day must start with a nice cup of coffee.



The daily schedule differs slightly according to the rota. It usually starts with a team meeting to go through the overnight admissions. We review notes, radiological investigations and lab results. This is a great opportunity for teaching: every individual in the team, regardless of their seniority level, learns something from these daily briefings. We continue with a team ward round to review patients and plan next management steps.

Daily duties can vary between outpatient clinics, operating theatres, admin work or teaching duties.

Clinic days

As a spine surgeon, variability is the most attractive part of my role. I see patients of different ages, and with different spinal pathologies. Each requires different approach, so we need to adopt multiple thinking hats in each clinic.

Scope of work varies between trauma, degenerative problems as well as spinal deformities (paediatric and adult). Each consultation results in either a schedule for surgery, prescription of medicines or referral for further investigation/trial of treatment. On these days, I also review patients whom I have operated on previously to gauge their progression.

Ahmed Abdelaal

Operating days

A rewarding part of the week for any surgeon. I operate on various conditions, including fractures, spinal stenosis, prolapsed discs, spinal degeneration-related conditions and spine tumours. Each condition has different preoperative preparation and surgical approaches.
Operating starts by reviewing the patients' scans and lab investigations, followed by a briefing in the operating theatre with the theatre team to discuss the list and the plan for the day. At the end of the day, I review all patients that I have operated on that day to give them a brief of their operation and their expected post-operative recovery schedule.

During on-call duties, emergencies might require me to go back to the hospital, even at odd times of the night. One of the latest emergencies I was involved in was an accident casualty who needed immediate surgery at 2 am in the night!

I believe spine surgery is fun, exciting and very satisfying. If I were to go back to medical school, I would make the same choice again.

Subspecialist areas in Spine Surgery

Spinal Surgery is a specialist area of both neurosurgery and orthopaedics. However, it is Increasingly becoming a separate speciality with a separate on-call rota, irrespective of the origins of the surgeon.

This has been promoted by the development of the regional spine networks, linking spinal surgeons in major trauma centres/tertiary referral centres (spine hubs) with those in district general hospitals (partner hospitals). Spinal networks aim to provide optimal care for spinal patients at the best location depending on the complexity of their condition, and support spinal surgeons working as a solo or dual surgical pair within a department.

There is significant overlap in practice between neurosurgical and orthopaedic spinal surgeons, however, certain spinal subspecialty surgeries are performed predominantly by one speciality or the other.

British Orthopaedic Association

SOCIETY OF BRITISH NEUROLOGICAL SURGEONS
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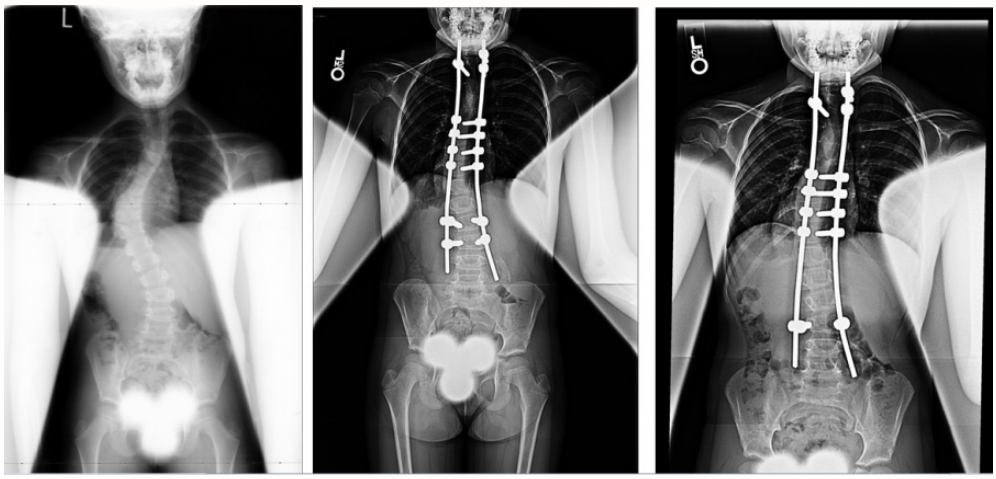
Most spinal surgeons will perform **emergency, trauma and degenerative disease-related surgery**. Trauma surgery will consist of the treatment of fractures, dislocations and spinal cord injuries. Emergency spinal conditions consist of the treatment of cauda equina syndrome, infection (often in consultation with microbiology, medical, and infectious disease teams) and metastatic spinal cord compression (in consultation with oncology).

Deformity surgery relates to correction of the alignment of the spine in conditions such as scoliosis and kyphosis. This subspeciality can be further subdivided into **adult** and **paediatric deformity**. Generally, this subspeciality is predominately performed by orthopedically trained spinal surgeons.

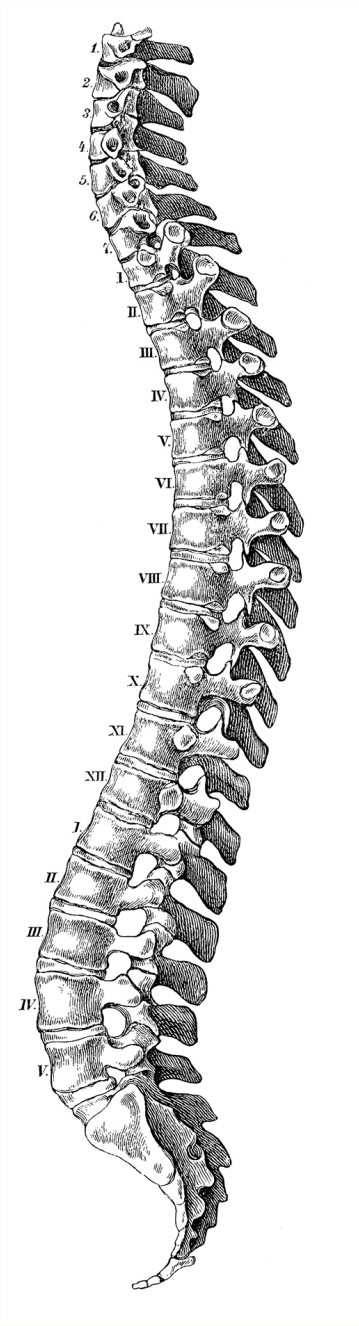


Spinal oncology relates to the management of tumours within the spinal column. The management of metastatic disease that will not be curative is generally managed by all spinal surgeons. **Intradural tumours** are a subspeciality of neurosurgical spinal surgeons. **Primary bone tumours** in the spinal column are usually a subspecialty of orthopaedic spinal surgeons at one of the 5 regional bone tumour units within the country.

Spinal surgeons may also specialise in a type of approach or spine surgery performed - for example minimally invasive surgery or anterior lumbar surgery in addition to more common surgical approaches (posterior cervical/thoracic/lumbar surgery and anterior cervical surgery).

Preparing for a career in spine surgery

It is possible to become a spinal surgeon via a **neurosurgical** or **orthopaedic training route** and whilst there is significant overlap in practice performed by both types of spinal surgeon, some areas are performed predominantly by one speciality and this may influence your choice.



The decision to become a spine surgeon does not need to be made as a medical student, and there is plenty of opportunity within the early years of your medical career to make this decision, change your mind and even change it again. It is important to gain experience in lots of different specialities and make the most of any opportunities and experiences possible during your training. You might be surprised at how much your experience in other specialities will help you throughout your specialist training.

Talk to doctors further through their training, from foundation doctors to consultants. Ask them about their experience, what they love and what they hate, what their training was like and what their daily activities consist of. If they are too busy to discuss it with you at the time, ask if there is another time that would suit them to discuss it. Most surgeons love what they do and if you show genuine interest, they will happily spend time discussing it.

Whatever speciality you chose, and we do hope it is spinal surgery, you will be asked to demonstrate specific transferable skills and skills specific to your speciality. These are accumulated over your time in your early training years and include:

- surgical operative experience
- academic credentials
- courses and conferences
- audit
- research
- publications and presentations
- teaching
- leadership and management skills

You will also be asked to write or discuss scenarios that demonstrate non-clinical skills. For example: a time when you demonstrated leadership, dealt with a difficult situation, worked as part of a team or improved the way a service is provided. You should record any situations that occur during your training that could be useful to you.

Find out the entry criteria for every step in your career progression; foundation, core and specialist training and start working towards them as soon as possible. Audits and academic activities take time and required courses often need to be booked well in advance. Online spinal webinars are frequently held by BASS and other speciality associations and will not only help you learn more about your chosen speciality but will also look great on your CV.

Finally, do not leave interviews to chance; prepare for your interviews by practising with a friend or senior colleague and consider going on an interview course. It is a wonderful speciality. Good luck.

Antonia Isaacson & Claire Grange

The spinal training pathway

Spinal Surgery is not, an isolated training programme or field in the UK. To become a Spine Surgeon, candidates must enter either a Neurosurgery or Trauma and Orthopaedics specialist training programme.

After undergraduate qualification, the Foundation programme commences. The Foundation training programme is designed to offer breadth of experience to juniors in a variety of specialities amongst primary, urgent and secondary hospital care. For the potential Spine surgeon, whilst this may not offer the specific experience that they would choose it does deliver on offering time with aspects of care, pathology and management in different facets that will create a hopefully rounded Core trainee.

Competitive application into Core training takes place after FY2 or after the increasingly popular “F3” year. For surgically inclined doctors this provides the bedrock of experience and knowledge for the early part of Specialist training. Rotations may be 3,4 or 6 months and generally (if full-time) will last 2 years. Less than full time (LTFT) training is increasingly popular and recognised by the Royal College or Surgeons and this would mean taking more time than the original 2-year period to allow the gathering of experience, knowledge and competency in Surgery. There are numerous “themed” Core Surgical training programmes focused on a single speciality although providing breadth of experience in others. Generally, there will be surgical placements in General surgery, Vascular, Urology, Breast, Neurosurgery Trauma and Orthopaedics amongst others. It is generally common at this stage to undertake the MRCS examination allowing the trainee to apply for their National training number (NTN) or ST3 post if not in a “run through” programme.

At this stage once an ST3 position has been secured in either Trauma and Orthopaedics or Neurosurgery programme training will be more specialised and more technically based with the acquisition of operative skills crucial. In Trauma and Orthopaedics experience amongst the subspecialties will be provided in Trauma, Hand, Upper limb, Hip, Knee, Foot and Ankle, Paediatric and of course Spinal Surgery. This experience amongst the other subspecialties is crucial in terms of the knowledge base and technical skills required of the trainee both from an operative "logbook" point of view and knowledge base as the FRCS exam looms ever closer. Of course this is crucial in terms of context when evaluating a Spinal patient in terms of identifying pathology and formulation of management plans. Its is important to remember that the level of Spinal surgery experience gathered in your Speciality programme will depend on the deanery in which you work and the number of "Spinal firms" available. Keeping in contact with Spinal seniors in your area or deanery and the Training Programme Director with regards to your training requirements and needs is crucial.

Once the FRCS is navigated successfully, the focus will be on senior training. Certainly in Trauma and Orthopaedic training the amount of time spent in Spinal surgery in your speciality training may not offer the experience required to transition from trainee to Consultant at the end of your time. Post FRCs fellowship training is generally sought and may be over a few years prior to application to a Consultancy. There are JCST and Royal College of Surgeons approved Fellowships available nationally including the Spinal Trainee Interface Group.

Opportunities during orthopaedic training

The opportunities are endless! When you first decide you want to be a spinal surgeon you will probably find yourself overwhelmed with enthusiasm. You will want to get to theatre and wield the knife. However as with any surgery, spinal surgery requires a lot of trust. Firstly, the patient must trust the consultant surgeon and if you are to be given any cutting opportunities- the surgeon must trust you! Initially, this can be demoralising as you'll often find yourself watching and at best assisting, outranked by 2-3 team members above you. However, the more you seize opportunities and put yourself out there, you will start to feel more a part of the team, more acknowledged, respected and trusted and this is typically rewarded with surgical opportunities.

Opportunities can be clinical, academic or managerial. Start thinking early about how you can demonstrate a commitment to the specialty under these headings. List them, then execute.

Clinical opportunities include choosing spinal firms to get earlier clinical exposure- this may require speaking to your training programme director to be allocated to a unit with a spinal department, then speaking to the clinical lead and a spinal surgeon in the department you are particularly keen to work for. Be actively involved- as a junior there will be emphasis on rounding and caring for inpatients and knowing how they are daily is essential. However, organise yourself so you can be available for MDTs, clinics and theatres. See patients, examine them, learn how to read a scan, make diagnoses, present your findings, present at MDTs, recognise patterns of decision making, read up on words you didn't understand, ask questions in theatres (intelligent ones) and just be involved.

Kiran Divani

Research, in my opinion is something you either love or hate. Everyone should be encouraged to partake in some form of academia, after all evidence-based medicine is something we all practice and therefore something we should contribute towards. It's an opportunity to present data from your department, discuss a novel technique and put yourself on the map via conferences and meetings at regional and national level. The same applies for management and leadership duties- leading and implementing change via audit, being a spine trainee committee member and improving service is essential. It's an opportunity to showcase your ethos of good clinical practise and something you can discuss with pride in interviews, all of which help in the development of a spine career.

Finally, attending courses and conferences are a great opportunity to learn about spinal surgery and keep up to date with surgical advances and political hot-topics, but probably more importantly at a junior level, is that it enables you to meet like-minded individuals, make friends, a support network and feel part of the community. Again, all these things will tremendously help your spinal career. Good luck!

Kiran Divani

Opportunities during neurosurgical training

Throughout your registrar training in neurosurgery you will have the opportunity to undertake rotations in spinal surgery. These are usually 4-6 month blocks working for a consultant that specialises in complex spine. In addition, many neurosurgeons with a cranial subspecialty interest continue to do simple degenerative spinal surgery as part of their practice and hence the opportunities for training in spinal surgery are excellent.

It is expected that by ST5/6 most neurosurgical trainees will be competent to do a lumbar decompression, lumbar microdiscectomy and ACDF. Depending on your interest and which consultants you work for by ST7/8 you will also likely have the chance to do cervical lateral mass screws and thoracolumbar pedicle screws (open and MIS). By ST8 if you have an interest in spinal surgery you will be assisting in, if not becoming the lead surgeon on many parts of lumbar fusion surgery.
Intradural work is another area where there is ample opportunity. By ST7/8 you will have developed the microsurgical skills to undertake an excision of an intradural extramedullary spinal tumour as primary surgeon (STS, STU or P).

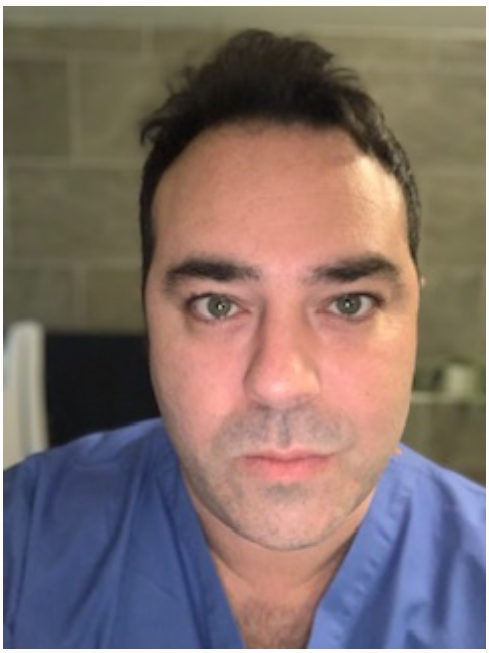
Increasingly spinal departments involve joint neurosurgical and orthopaedic spinal experience and MDTs are often an excellent educational experience. These can be attended as a junior trainee and with increasing seniority trainees should be encouraged to take a more active role in MDTs.

Academic opportunities are also available and largely rely on the trainee and trainer identifying suitable spinal projects that can have an impact. These can be done from a junior stage and developed throughout training.

Fahid Rasul

My Training Experience

Alex Goubran



“My training began with the Foundation programme in the London area. At this stage a choice of firms and placements were available. My ambition as a potential Trauma and Orthopaedic surgeon was to gain experience in acute care, surgery and care of the surgical patient in the intensive setting as well as experience in Trauma and Orthopaedic surgery. Over my two years I undertook placements in both general surgery and medicine as well as Intensive care, Accident and Emergency, Vascular surgery and Orthopaedic surgery. I felt this gave me a fantastic basis and foundation for my continued education and training.

I undertook an Orthopaedic themed Core surgical training programme over two years gaining experience in General surgery and 12 months in Trauma and Orthopaedic surgery. During this time I began to bolster and strengthen my CV, passed my MRCS examinations and undertook time performing audit, research and management projects.
I undertook a LAT post prior to obtaining my NTN at ST3 level. It was in this period that I was part of the Spinal surgical firm and knew within 2 weeks that Spinal surgery was to be my future speciality. I ensured that I discussed my progression, development and plans with the Spinal surgical Consultants and mentors. This was crucial and gave me direction, focus and planning for my future career. Once I obtained my ST3 number I ensured that I made myself known to all the Spinal Surgical Consultants in the region and my desire to become a Spinal surgery Consultant in the future. I also ensured that my Training Programme director was aware of my career ambitions.

It is important to remember that as an Orthopaedic trainee, the Spinal surgery orientated trainee will be in the vast minority as things stand and the path to become a Spinal surgeon may not be well trodden.
I ensured that my experience in the other facets of Orthopaedic surgery were structured well and I gained all the competency and experience required, not just for the forthcoming FRCS exam but for my own experience moving forward as a clinician and surgeon. Courses run by the specialist organisation such as BASS, AO spine and the BOA ensured that continued to gather further experience and knowledge in Spinal surgery.
I believe it was crucial to immerse myself in Spinal surgery as much as possible throughout my training programme, so I ensured that I kept abreast of developments in the speciality and training. I ensured that I attended Spinal meetings and conferences, not only to gain experience and knowledge and to meet Spinal surgeons to ask for their counsel, advice and guidance. This directly lead to my interest and subsequent success in obtaining my Spinal Trainee Interface Group fellowship.

Al Durst

“I first contemplated spines as a career during my Core Surgical Training in Norwich, at which stage I had already committed to an orthopaedic career. Before this placement I had little to no spine experience except the perception that all orthopods hated back pain and “?Cauda equina” referrals. Exposure to a centre with a spinal on call and an MSCC service changed my perspective, as did clinical research into paediatric deformity.

After attending BASS and BSS to present our work, I became enamoured with the subspecialty and scope of a career I knew little about before. By the time I received my ST3 national training number, I was strongly considering a Spinal career however needed definitive experience.

After completing the majority of my core competencies and indicative numbers through ST6 I received my first spinal placement as a registrar, again at Norwich (cumulatively 12 months, split over 3 placements; involving swaps). Despite having a focused interest in spines, like many orthopaedic trainees, my spinal logbook was small in comparison to my trauma and appendicular operative experience. In a unit with a senior fellow gaining this operative experience was difficult, however managing the on call, clinic and ward patients was an extremely valuable exercise. I also knew from the day-to-day work that I wanted to continue with my pursuit of a spinal career. It was at this stage that I started attending courses and investigating fellowships, including the rumoured STIG.

At the start of my ST8 year, the pilot STIG fellowship was advertised. I was fortunate enough to be successful in my application and have found this fellowship to be a good consolidation of clinical acumen, knowledge and experience. As per AG's recommendation, I would advise any budding spinal surgeons to maintain focus on gaining their T&O experience and working towards their FRCS before concentrating on spines. We both found attending Britspine, BSS and BASS, as well as local and regional MDTs and meetings, piqued our interest regardless of our training placements. They were also good opportunities to meet others in the same boat; Alex and I actually met at BSS."

Additional Resources

British Association of Spine Surgeons
https://spinesurgeons.ac.uk

British Orthopaedics Trainee Association
http://www.bota.org.uk

British Orthopaedic Association
https://www.boa.ac.uk/

British Neurosurgical Trainees Association
https://e1v1m1.co.uk/?page_id=4

BASS
British Association of Spine Surgeons

Life as a spine surgeon: a guide for medical students

Brought together by Martinique Vella-Baldacchino
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