Perioperative Spinal Medicine –
Combined Anesthesia / Spinal Fellowship

Name of Co-Program Director: **Dr Francisco Asenjo**
Dr Jean A Ouellet

Name of Institution: **McGill University Health Centre**

Location: **Montreal General Hospital**
Montreal Children Hospital
Shriners Hospital

Type of Fellowship: Training program in minimally invasive & perioperative management of patients (adults and children) with spinal ailment

Point Form Program Information:

- Number of fellowship positions: **1**
- Academic affiliation: **McGill Orthopedic & Anesthesia Department**
- Name of hospitals involved in training:

Montreal General Hospital:	**50%**
Montreal Children Hospital:	**25%**
Shriners Hospital:	**25 %**

- Research activity: **Mixed of Fundamental Research & Clinical Research**
- Mission:

  The fellowship will ensure that Trainees will master, in an incremental fashion, over a 12-month period: the fundamentals sciences, clinical and therapeutic knowledge required to manage patients undergoing major spinal surgery. The trainees will also acquire the clinical & therapeutic skills and knowledge to manage pain originating from the spine.
- Outline how intended fellowship will enhance residency training

  The first role of the fellows will be to enhance the teaching of residents, both from a didactic point of view and from a hands on teaching approach in the OR and clinics. The fellow will be responsible for the implementation of pre-operative spine rounds held one week prior to the scheduled surgeries. We expect the fellow to contribute to the already Friday morning didactic lecture series, as well as, quarterly spine journal clubs. This fellowship is not designed to acquire open surgical techniques but rather to acquire non-operative techniques to manage spinal pathologies in a multidisciplinary manner. The second role of the trainees is not only to supplement education, but also to advance research endeavors at McGill Scoliosis and Spine Centre as well in the department of anesthesia. We expect the trainees to complete a clinical or a basic science research project, which will be publishable material with in the year of completion.

- Eligibility

Candidates from a surgical background must have completed a one-year spine fellowship (orthopedics or neurosurgery training). Candidates from a anesthesia program must have completed an accredited anesthesia program. The candidates will be expected to possess basic technical affinity, as this fellowship is a hand on fellowship. This fellowship is mainly designed as a second year fellowship to expand ones skills by acquiring skills from the other key member of the surgical team on the other side of the "sterile field".

- Details of the Program

  This is a 12 months training fellowship. The fellow will spend the period in the following areas:

  Adult spine surgery - Operating Room* (30% of the time)
  Children's spine surgery Operating Room* (20% of the time)
  Pre anesthesia assessment,
  pre-habilitation and optimization (10 % of the time)
  Acute/Chronic spinal Pain management (20% of the time)
  Intra operative spinal cord monitoring (embedded
  with its Electrophysiologie Adult & Children OR time)
  Vacations (8%)
  meetings and non-clinical days for research (12%)
  * The fellow will most often not be scrub in for the case but rather managing the anesthesia, spinal monitoring…

  The Adults spine period rotation will include cancer surgery, spine trauma, degenerative diseases and infected spines. Because of the volume of trauma at the MGH, the fellow will cover the weekly Friday emergency spine cases. Pediatric cases and perioperative pediatric issues will be done at the MCH and the Shriners under the supervision of Dr Fiset, Dr Bu and Dr Ouellet. Pre anesthesia assessment in adults and pre-rehabilitation in adults will be done with Dr Asenjo and Dr Carli.
  Chronic spine pain training will be supervised by Dr Asenjo and the Acute pain component will be under the Acute Pain Team at the MGH and MCH. Electrophysiological training will be done at each site with Dr Ouellet, Asenjo, Hemmerling and Mme Bouchard

- Funding

  Financial support for this fellowship will be provided through an unrestricted educational grant from DePuy Spine Canada that will cover a salary of C$ 60.000. The institution sending the fellow to train at McGill will cover the McGill tuition fee.

Names of the Teaching Faculty

Dr Francisco Asenjo: Anesthesiologist -Interventional Spinal
Dr Thomas Hemmerling Anesthesiologist
Dr Franco Carli Prof of Anesthesiologist
Dr Yoram Shear Clinical Director MUHC Pain Centre, Anesthesia

Dr Pierre Fiset:	Chief Pediatric Anesthesiologist
Dr Nathalie Boo:	Pediatric Anesthesiologist
Dr Peter Jarzem:	Orthopedic Spine Surgeon Director of Spinal Research Specializing in degenerative spinal surgery
Dr Rudy Reindl:	Orthopedic spine surgeon Specializing in spinal trauma
Dr Jeff Golan:	Neurosurgeon Specializing in degenerative spinal surgery

Academic Facilities

- Outline facilities for clinical and academic pursuit:

The spine service's current clinical activities and its manpower across the MUHC and its affiliated hospitals are as follows:

Staff:

Six anesthesiologists
Four spine surgeons; two spine fellows
One designated spine resident at MGH
Three pediatric residents spread across the MCH & Shriners
(Residents cover all pediatric cases and activities which include the spinal activities)
There is no spine resident at JGH
There is an Inconsistent presence of residents on the spine service at the MNH

Activities

OR Days:	**Mondays**	**MCH, MGH**
	Tuesdays	**MCH,**
	Wednesdays	**Shriners, MNH**
	Thusdays	**MGH, JGH**
	Fridays	**MNH**

CLINICS	**Wednesday**	**MGH multidisciplinary , Shriners Scoliosis**
	Thursday	**MCH spine, MNH spine**
	Fridays	**MCH scoliosis, JGH degenerative**

(Average wait list to see spine specialist is 9 months)

SPINE ROUNDS

Monday 7:00 - 8:00
Friday 7:00 – 9:00

MULTIDISCIPLINARY SPINE ROUNDS

Wednesday 7:00-8:30 am research rounds
Wednesday 12:00-13:00

- Outpatient clinic responsibilities need to be outlined

The Fellow will attend spine clinics and spine OR's to gain knowledge as well as to share their knowledge with residents attending the clinics and OR.
The Fellow will attend the pain clinic as well as the day surgery procedural rooms to gain knowledge and technical skill to manage pain originating from the spine

- Library access to materials relevant to fellowship training

  Access to McGill's library and AO spine literature forum is made available to the fellow

- Multimedia learning materials available

  The spine component of the fellowship is acknowledged by AO Spine North America, which is an organization axed on education and development of spine surgeons. Via the AO website, fellows have access to DVD instruction, surgical techniques, and free access to online Spine journals.

- Availability of a skills lab if applicable

  Three times a year, local faculty provides a cadaveric spinal seminar allowing for acquisition of new technology in a safe and controlled educational fashion at the McGill University Simulation Center.

Fellow Duties and Responsibilities

- on-call responsibilities to cover service

  It is expected that fellow will take call in his or hers discipline (anesthesia vs surgical) Call will not exceed Quebec's recommendation of 1:4 call. The fellows will be responsible with the respective residents on either service to ensure that daily tasks, notes and orders are covered

- Include whether the fellow is the senior supervisor of residents

  The fellows will function both as junior staff, but also as senior residents coordinating management of emergency cases; emergency consults, as well as managing supervised first line screening clinics. We expect that all preoperative spine consult be completed by the fellow.

- Outline whether there are fixed rotations at various institutions

  The general template of the fellow's assignment will divide his time as illustrated bellow. Depending on fellow's interest, he could also rotate for a short interval at the JGH with Dr. Golan. Schedules and assignments of the fellow will remain flexible and remain at the discretion of the fellowship director; however it must all be kept in coordination with the program director in order to coordinate with residents' assignments. The assignment to adult sites versus pediatric sites, as well as the assignment to protected research time, would also remain flexible to ensure the needs of the residents, the fellows and the staff is met.

- Proposed meetings to be attended by the fellow

  Fellows must attend the annual Fellows forum where they present their research project to the balance of the AO Spine Faculty. Fellows are also expected to attend an AO Spine course of their choice.

- Research productivity and publications expected by the Fellow

  As stated earlier, the fellow is expected to publish a paper at the end of their fellowship

Curriculum

- Intended case load

  The Fellow is expected to be involved in the perioperative management of 200 spine cases . We expect the fellow to be managing over 200 patient with spinal pain using different medical and interventional modalities.

- Intended Percentage of varieties of cases

Adult reconstructive (include adult deformity)	**35**	**%**
Trauma	**15**	**%**
Neoplasia and Infection	**15**	**%**
Pediatric Deformity	**35**	**%**

McGill's Combined
Anesthesia & Spine Fellowship
- Goals & Objectives -

General Objectives

Trainees should master in an incremental fashion over a 12 month period: the fundamentals sciences, clinical and therapeutic knowledge required to manage patients undergoing major spinal surgery. The trainees will also acquire the clinical & therapeutic knowledge as well as the technical skills to manage pain originating from the spine.

Introduction

Spine surgery has evolved from a small component of the orthopedic and neurosurgery practice to a major sub specialty that has its own requirements in order to get the best outcomes. Spine surgery covers many different areas with a variety of patients. The anesthesiologist taking care of these patients must deal with spine malformations, with neurogenic scoliosis, with idiopathic scoliosis, trauma and cancer in the spine as well as with degenerative pathology. Let alone the vast list of pathologies coming along with those individuals (cardiovascular, infectious, respiratory, airways issues and so on). Anesthesia, preparation for surgery ("pre-habilitation"), peri-operative management, post-operative pain control and long term management of complications are all part of the team effort between surgeons, nurses, physical therapist, social workers, pain specialist, internist/pediatricians and anesthesiologist.

The complexity of the care involved is such that it seems visionary to train anesthesiologists with a special interest in spine perioperative medicine and pain to became leaders in their institutional anesthesia departments in managing these patients, in teaching new generations of spine perioperative physicians integrating in spine teams. There is not a program like this in the world right now that can offer this opportunity. This is a new McGill original contribution to better patient care.

An evolving minimalist approach to spine surgery is also emerging which is currently redefining the spine specialist which includes other specialities such as interventional radiologist and anesthetist. Among its many goals, this new program will develop new treatment concepts and modalities to treat patients with spinal ailments. It will train these new spine specialist the newer minimalist techniques and modalities.

Basic scientific knowledge to be acquired:

1. Detailed knowledge of anatomy, embryology and physiology of the spine
2. Congenital, developmental and acquired non-traumatic conditions of the spinal column
3. Musculo-skeletal anatomy of Cervical, thoracic, lumbar spine; osseous ligamentous and neural elements including Inter vertebral disc morphology
4. Biomechanical and functional anatomy of the spine
5. Natural degeneration of the spine
6. Systemic inflammatory illness affecting the spine

Basic clinical knowledge:

1. Appreciation of Classification (discal, degenerative disorders, mechanical instabilities, spinal deformities).
2. Display knowledge of appropriate investigative techniques
3. Interpretation of advanced investigative techniques:
   Computerized axial tomography.
   CT Myelography.
   Magnetic resonance imaging.
4. Display a detailed knowledge of minimal invasive approaches to the spinal column.

These factors are judges using standardized rating system described bellow.

A low rating indicates the trainee shows serious gaps in his/her knowledge of clinical sciences or that he/she does not apply this knowledge correctly. A satisfactory rating indicates that the trainee has a good knowledge of clinical sciences that he/she applies well in problem- solving and other aspects of patient care. This factor should also consider the trainee's knowledge of current scientific literature and his/her application of this knowledge to case presentation and daily patient management.

History & physical examination:

1. Display clinical competence in evaluation spinal disorders:
   Relevant history taking to all spinal disorders
   Relevant physical exam assessing for spinal deformity, spinal instability
   Relevant neurological exam
2. Display clinical competence in evaluation peri-operative co-morbidities and their implication when undertaking spinal surgery

This factor judges whether or not a trainee takes a complete medical history and performs an adequate physical examination to permit a valid formulation of the patient's problem. The factor should also judge whether or not the information elicited and observed is recorded in an organized and sequential manner which permits a clear definition of the problem and a rational approach to differential diagnosis and management.

Interpretation and utilization of information:

The trainee must master:

Adult and pediatric spine anesthesia

1. Airway special issues in spine patients
2. Blood preservation and transfusions
3. Blood pressure considerations in the compressed spinal cord

4. Positioning, hemodynamic impact and support
5. Vision preservation in the face-down positioned patient
6. Antibiotic prophylaxis
7. Lung management in VATS thoracic spine surgery
8. Combined anterior/posterior procedures
9. Anesthetic techniques: TIVA-TCI, gases, regional
10. Early post operative issues.
11. Pre-habilitation of the deconditioned patient, medical optimization and assessment.
12. Intra operative spinal cord multimodality monitoring
13. Who need ICU post surgery?
14. Display competence in knowledge of operative and non operative options, when managing spinal disorders in respect to indications, contraindications and complications related to surgical intervention

Pain management in the acute and chronic phases

1. Post operative pain control
2. The spine patient opiod/drug dependent
3. Controversial issues around the spine surgical period: NSAIDs, steroids, smoking, etc
4. Regional techniques/systemic approaches
5. Multimodal analgesia
6. Complications
7. Assessment of the chronic spine pain patient who is not a candidate for surgery
8. Conservative and interventional approach to the chronic spine pain patient
9. Minimally invasive techniques in chronic spine pain: vertebroplasties, kyhoplasties, intrathecal analgesic pumps, spinal cord stimulators.

This factor judges whether or not the trainee is able to interpret correctly the information gathered and shows discrimination in identifying the important and less important information that will allow the identification of the problems affecting the health of the patient. The trainee's concern for the cost of unnecessary investigation and sensitivity to patient inconvenience and discomfort should also be considered.

Clinical judgment & decision making:

1. Display competence in anesthetic factors affecting outcome of spinal surgery.
2. Display adequate knowledge in assessing perioperative risk for spinal surgery.
3. Appreciate indications for surgery for spinal disorders
4. Appreciate value of minimal invasive spinal interventional anesthetics.
5. Recognize and manage postoperative complications.

This factor judges the trainee's ability to effectively and efficiently establish a program of investigation and management adapted to the patient's condition, recognizing the limits of his/her ability, the hazards of drugs and other therapy and the need to modify therapy when indicated. The trainee should also demonstrate his/her appreciation for the total needs of the patient, recognizing factors that may limit compliance with prescribed therapy and the non-medical (socio-economic and other) factors that may affect the patient's health.

Technical skills required in the specialty:

1. Display technical competence in the following areas:
   Difficult intubation, invasive intraoperative cardiovascular monitoring, multimodality spinal cord monitoring, epidural & foraminal blocks, Vertebroplasty, Kyphoplasty.

This factor judges if the trainee can carry out professional techniques correctly and efficiently.

Communicator

Interprofessional relationships with physicians:

This factor judges if the trainee can work effectively with other physicians in the healthcare team, shows consideration and tact for junior members of the team and is respectful of team members.

Communications with other allied health professionals:

This factor judges the trainee's ability to communicate and work effectively with the other members of the healthcare team.

Communications with patients:

This factor judges if the trainee is able to communicate easily with patients, showing respect for his/her patients and gaining their cooperation and confidence.

Communications with families:

This factor judges if the trainee is able to communicate easily with patients' families, showing respect for his/her patients and gaining their cooperation and confidence.

Written communication and documentation:

History, physical, diagnostic formulation, progress notes, plans, discharge summaries and consultation reports are complete and accurate with satisfactory organization and assessment.

Collaborator

Interacts and consults effectively with all health professionals by recognizing and acknowledging their roles and expertise

Delegates effectively:

This factor judges that the trainee delegates effectively to other members of the healthcare team.

Manager

Understands & uses information technology:
This factor judges if the trainee is able to use current information technology in the course of their professional life.
Uses health care resources cost-effectively:
This factor judges that the trainee has concern for the cost of unnecessary investigation and sensitivity to patient inconvenience and discomfort in the course of their professional duties.
Organization of work & time management:
This factor judges whether or not the trainee effectively organizes his/her work in such a way that priorities are established and that coordination occurs with the other members of the team ensuring total, acute, and continuing care of his/her patients.

Health advocate

Advocates for the patient:
This factor judges the trainee's ability to advocate for the patient.
Advocates for the community:
This factor judges the trainee's ability to advocate for society and the community.

Scholar

Motivation to read and learn:
This factor judges the trainee's knowledge of current scientific literature and his//her application of this knowledge to case presentation and daily patient management.
Critically appraises medical literature:

This factor judges the trainee's ability to critically-appraise research methodology and medical literature.
Teaching skills:
This factor judges whether the trainee takes the initiative and develops the ability to teach other health care professionals and/or patients about specific relevant health care issues.
Completion of research/project:
This factor judges that the trainee is able to organize and complete successfully a research, or a project.

Professional

Integrity & honesty:
This factor judges whether the trainee is dependable, reliable, honest and forthright in all information and facts.
Sensitivity & respect for diversity:
This factor judges that the trainee is able to understand and be sensitive to issues related to age, gender, culture and ethnicity.
Responsible and self-disciplined:
This factor judges whether the trainee adequately accepts professional responsibilities, placing the needs of the patients before the trainee's own, ensuring that the trainee or his/her replacement are at all times available to the

patients, recognizing the limits of competence, and seeking and giving assistance when necessary. The trainee is punctual, and respects local regulations relating to the performance of his/her duties.

Communicates with patients with compassion and empathy

Recognition of own limitations, seeking advice when needed:

This factor judges that the trainee is able his/her limits of competence, and is able to seek and give assistance when necessary.

Understands principles of ethics; applies to clinical situations:

This factor judges the trainee's ability to understand the principles and practice of biomedical ethics as it relates to the specific specialty or subspecialty, and to practice medicine in an ethically responsible manner.

Global evaluation of competence and progress

The trainee will be evaluated quarterly in a informal fashion. At mid rotation and at the termination of his fellowship a formal written evaluation will be completed judging his performance and on completion of his objectives. This factor judges the total professional competence and progress of the trainee in consideration of his/her stage of training in his/her specialty. This judgement synthesizes the assessments given in the above criteria, keeping in mind their relative importance and indicating the degree to which the trainee has shown progress and diligence during his/her rotation.

Explanation of Ratings:

Please assess the trainee's overall clinical competence using the following ratings:

Superior: Far exceeds reasonable expectations.

Satisfactory: Meets reasonable expectations.

Borderline: Often falls short of reasonable expectations.

Unsatisfactory: Falls far short of reasonable expectations.

"**Reasonable expectations**" should be appropriate to the level of training of the candidate.

"**Could not judge**" in the global evaluation of competence and progress: This means that the trainee did not complete the rotation.