

## **Advanced Aortic and Peripheral Endovascular Surgery Fellowship**

**Name of Institution:** MUHC

**Location:** MUHC and JGH

**Number of fellowship positions:** one position per year.

**Academic affiliation:** McGill University

**Name of hospitals involved in training:** RVH 50%; JGH 50%.

### **Background:**

Endovascular therapy is now the first line therapy for the majority of vascular pathologies. The Vascular Surgery Division at McGill is very active in endovascular treatment of vascular diseases and has become nationally known for their pioneering efforts in endovascular surgery, particularly in regards to EVAR for pararenal aortic aneurysms and thoracoabdominal aortic aneurysms. McGill Vascular Surgery is a major referral site in the province of Quebec for complex vascular surgery cases of all types, including cases requiring complex endovascular reconstruction. The knowledge base and skill set required for expertise in advanced endovascular aortic reconstruction goes beyond both the training requirements for Vascular Surgery at the level of the Royal College of Surgeons of Canada as well as the expertise of most vascular surgery training programs in Canada. A postgraduate fellowship in endovascular therapy with exposure to all aspects of endovascular arterial intervention, including peripheral and aortic pathology, provides an opportunity for skill acquisition which can facilitate expertise in advanced endovascular therapy.

### *Research Activity:*

The McGill Division of Vascular Surgery maintains an active clinical research program across the two training sites. We have participated in several multicenter clinical trials pertaining to endovascular therapy and are currently awaiting approval for other industry-sponsored clinical trials. Our vascular surgery trainees consistently carry our clinical research projects during the course of their training and have seen these through to completion, presentation at national meetings and publication in peer-reviewed journals. In addition, we supervise medical students and surgery residents in ongoing clinical research projects.

Included below is a list of selected publications from our Faculty over the past several years:

Hanley SC, Steinmetz OS, Mathieu ES, Obrand DI, Mackenzie KM, Abraham CA, Gill HL. Safety and Feasibility of Endovascular Aortic Aneurysm as Day Surgery.

Herman CR, Charbonneau P, Hongku K, Dubois L, Hossain S, Lee K, Steinmetz OK. Any IFU nonadherence to instructions for use predicts graft-related adverse events in

patients undergoing elective endovascular aneurysm repair. *J Vasc Surg*. 2017 Jul 28. pii: S0741-5214(17)31609-9. doi: 10.1016/j.jvs.2017.05.095. [Epub ahead of print]

Drudi LM, Phung K, Ades M, Zuckerman J, Mullie L, Steinmetz OK, Obrand DI, Afilalo J. Psoas Muscle Area Predicts All-Cause Mortality After Endovascular and Open Aortic Aneurysm Repair. *European Journal of Vascular and Endovascular Surgery* 2016; 52(6):764–769.

Davis L, Dardachli F, Turcotte R, Steinmetz OK. Limb-sparing surgery with vascular reconstruction for malignant lower extremity soft tissue sarcoma. *J Vasc Surg* 2017 Jan;65(1):151-156.

Doonan RJ, Gorgui J, Veinot JP, Lai C, Kyriacou E, Corriveau MM, Steinmetz OK, Daskalopoulou SS. Plaque echodensity and textural features are associated with histologic carotid plaque instability. *J Vasc Surg* 2016 Sep; 64(3):671-677.

Drudi L, Hossain S, Mackenzie KS, Corriveau MM, Abraham CZ, Obrand DI, Vassiliou M, Steinmetz OK. A National Survey on Teaching and Assessing Technical Proficiency in Vascular Surgery in Canada. *Annals of Vascular Surgery* 2016 May; 33: 220-6.

Hanley SC, Neequaye SK, Steinmetz OK, Obrand D, MacKenzie KS, Abraham CZ. Sheath-shunt technique for avoiding lower extremity ischemia during complex endovascular aneurysm repair. *J Vasc Surg* 2015 Sept;62(3):762-766.

Hossain S, Steinmetz OK, Corriveau, MM, **MacKenzie KS**. Patency of the contralateral internal iliac artery in aortouniliac endografting. In Press. Available online 19 November 2015.

Gill HL, Ladowski S, Sudarshan M., Mackenzie KS, Corriveau MM, Abraham CZ, Obrand DI, Steinmetz OK. The Predictive Value of Negative Initial Postoperative Imaging Post Endovascular Aortic Aneurysm Repair. *J Vasc Surg*. 2014 Aug;60(2):325-9.

Tang A, Kauffmann C, Tremblay-Paquet S, El Kouri S, Steinmetz OK, Morin-Roy F, Lam S, Cloutier-Gill L, Chagnon M, Soulez G. Morphologic Evaluation of Ruptured Abdominal Aortic Aneurysm by 3D Modeling: A Pilot Case-Control Study. *J Vasc Surg*. 2013. accepted for publication October 17, 2013.

Lioupis C, Corriveau MM, MacKenzie KS, Obrand DI, Steinmetz OK, Ivancev K, Abraham CZ. Paraplegia prevention branches: A new adjunct for preventing or treating spinal cord injury after endovascular repair of thoracoabdominal aneurysms. *J Vasc Surg*. 2011; 54:252-7.

Lioupis C, Corriveau MM, Mackenzie KS, Obrand DI, Steinmetz OK, Abraham CZ .Treatment of Aortic Arch Aneurysms with Modular Transfemoral Multibranched Stent Graft: initial experience. *Eur J Vasc Endovasc Surg*. 2012. 43(5): 525-32.

Lioupis C, Mackenzie KS,Corriveau MM, Obrand DI, Abraham CZ, Steinmetz

OK. Mid-term results following endovascular repair of blunt thoracic aortic injuries.. Vasc Endovascular Surg. 2012. 46(2): 109-16.

KE Kvinlaug, DK Lawlor, TL Forbes, Rod Willoughby, KS MacKenzie, G DeRose, MM Corriveau, OK Steinmetz. Early Results From a Canadian Multicenter Prospective Registry of the Endurant Graft for Endovascular Treatment of Abdominal Aortic Aneurysms. *Journal of Endovascular Therapy*. 2012. 19(1): 58-66 .

Albacker TB\*, Nouh TA, Alabbad SI, Corriveau MM, Mackenzie KS, Obrand DI, Steinmetz OK, Abraham CZ. Carotid artery angioplasty and stenting: introduction of a new technique into an established vascular surgery center. Vasc Endovascular Surg. 2009 Apr-May;43(2):144-9.

Yin T, Guidoin R, Corriveau MM, Nutley M, Xu L, Marinov GR, Wang L, Merhi Y, McGregor R, Zhang Z, Douville Y, Turgeon S, King M, Steinmetz OK. Specific shortcomings of endograft design. J Long Term Eff Med Implants. 2008;18(3):181-204.

Midgley PI, MacKenzie KS, Corriveau MM, Obrand DI, Abraham CZ, Fata P, Steinmetz OK. Blunt thoracic aortic injury: a single institution comparison of open and endovascular management. *J Vasc Surg*. 2007 Oct;46(4):662-8. Epub 2007 Aug 30.

Iyer VS, MacKenzie KS, Corriveau MM, Steinmetz OK. Reversible endotension associated with excessive warfarin anticoagulation. *J Vasc Surg*. 2007 Mar;45(3):600-2.

Aljabri B, Al Wahaibi K, Abner D, MacKenzie KS, Corriveau MM, Obrand DI, Meshefedjian G, Steinmetz OK. Patient-reported quality of life after abdominal aortic aneurysm surgery: a prospective comparison of endovascular and open repair. *J Vasc Surg*. 2006 Dec;44(6):1182-1187.

Iyer VS, MacKenzie KS, Tse LW, Abraham CZ, Corriveau MM, Obrand DI, Steinmetz OK. Early Outcomes After Elective and Emergency Endovascular Treatment of the Thoracic Aorta. *J Vasc Surg*. 2006 Apr; 43(4):677-83.

Aljabri B, Al-Wahaibi K, Abner D, MacKenzie KS, Corriveau MM, Obrand DI, Meshefedjian G, Steinmetz OK. Quality of life after abdominal aortic aneurysm surgery: A prospective comparison of endovascular and open repair. *J Vasc Surg* 2006;44:1182-7.

Peppelenbosch N, Geelkerken RH, Soong C, Cao P, Steinmetz OK, Teijink JA, Lepantalo M, De Letter J, Vermassen FE, De Rose G, Buskens E, Buth J. Endograft treatment of ruptured abdominal aortic aneurysms using the Talent aortouniiliac system: an international multicenter study. *J Vasc Surg*. 2006;43(6):1111-1123.

Tse L, MacKenzie KS, Montreuil B, Obrand DI, Steinmetz OK. The proximal landing zone in endovascular repair of the thoracic aorta. *Ann Vasc Surg*. 2004 Mar; 18(2): 178-85.

Tse L, Steinmetz OK, Abraham CZ, Valenti DA, MacKenzie KS, Obrand DI, Chuter TA. Branched Endovascular Stent Graft for Suprarenal Aortic Aneurysm: The future of aortic stent grafting? *Can J Surg* 2004 Aug; 47(4).

Aljabri B\*, Obrand DI, Montreuil B, MacKenzie KS, Steinmetz OK. Early Vascular Complications after Endovascular Repair of Aortoiliac Aneurysms. *Annals of Vascular Surgery* 2001. 15(6) : 608-14.

### ***Mission***

The mission of the advanced aortic and peripheral endovascular surgical fellowship is to provide a stimulating environment for vascular surgeons to acquire the clinical, cognitive and technical skills required to incorporate cutting-edge endovascular techniques into their clinical practice. We aim specifically to train surgeons to become experts at the techniques of standard abdominal and thoracic aortic procedures as well as fenestrated and branched endovascular aortic stent grafts, stenting and peripheral arterial angioplasty, sub intimal angioplasty and stenting.

*Name of the Fellowship Program Director:*

### **Dr. Oren Steinmetz**

Dr. Steinmetz is the Chief of the Division of Vascular Surgery at McGill University and a Past President for the Canadian Society for Vascular Surgery. He completed his general surgery residency at McGill University in 1992 and his Vascular Surgery training at the University of Ottawa in 1993. He began treating aneurysm patients with endovascular stent grafts in 1998 and since that time has been instrumental in developing the endovascular program at the RVH into one of the largest and most well-known in the country. In addition to his busy clinical practice at McGill, Dr. Steinmetz has proctored and mentored many vascular surgeons across the country as they have developed their own endovascular programs for the treatment of abdominal and thoracic aortic pathology. Dr. Steinmetz also has an active peripheral arterial practice which incorporates a high volume of percutaneous peripheral angioplasties.

*Names of the Other Teaching Faculty:*

### **Dr. Daniel I Obrand**

After finishing his vascular surgery fellowship at McGill, Dr. Daniel Obrand trained at UCLA in endovascular surgery, specializing mostly in EVAR of abdominal and thoracic aneurysms. He was the first vascular surgeon in Canada to engage in a fellowship of this kind. In 1998, Dr. Obrand began performing EVAR at the JGH, and was one of the first surgeons in Canada to do so. Under his leadership, the Division of Vascular Surgery at McGill University became a national leader in endovascular repair of thoracic and abdominal aortic aneurysms. Percutaneous vascular intervention is now a significant part of his vascular surgery practice

### **Dr. Marc M Corriveau**

Dr. Corriveau is currently on staff at McGill University and holds an appointment as Assistant Professor of Surgery. He completed his General Surgery residency as well as his Vascular Surgery Fellowship at the University of Montreal. Dr. Corriveau then completed a twelve-month clinical fellowship at the University of Toronto in non-invasive vascular testing and vascular interventional radiology. His current medical practice comprises a mix of open and endovascular techniques for the treatment of various vascular pathology. He is currently the Director of the Non-invasive Vascular Laboratory at the McGill University Health Center. He is the President of the Association des Chirugiens Vasculaires du Quebec

### **Dr. Kent M MacKenzie**

Dr. MacKenzie has been on faculty at McGill University since July 2001 and is currently Associate Professor of Surgery at McGill University and was a Program Director for the McGill Vascular Surgery Residency. He completed his General Surgery residency at McGill University and his Vascular Surgery Fellowship at the University of Chicago during which time he spent 6-months as an Endovascular Surgery and Interventional Radiology Fellow. His current clinical practice incorporates both open and endovascular techniques for the elective treatment of aneurysms of the abdominal and thoracic aorta, abdominal and thoracic aortic emergencies as well as peripheral arterial pathology. He is currently an Osler Fellow in the Faculty of Medicine of McGill University.

### **Dr. Heather Gill**

Dr. Gill completed her General Surgery training at McGill University in 2012. During her residency she earned a Masters Degree in Public Health from Harvard University. She went on to complete her Vascular Surgery Fellowship at Columbia University Medical Center and Weill Cornell Medical College in 2014 where she had exposure to all advanced endovascular treatments including those for aortic pathology as well as carotid, mesenteric and peripheral arterial disease. She trained at one of the highest volume centers for complex endovascular aortic interventions and is certified in the use of fenestrated and branched devices to treat complex aortic pathology. Her clinical practice includes advanced endovascular treatment of aortic pathology as well as peripheral and mesenteric vascular disease. She also has a strong interest in vascular access. Dr. Gill in charge of research for the division of vascular surgery with interests in prehabilitation in vascular surgery and geriatric vascular surgery.

## **Dr. Jason Bayne**

Dr. Bayne is originally from Manitoba, completing his undergraduate medical training at the University of Manitoba, his General Surgery Residency at the University of Calgary, and his Vascular Surgery fellowship at McGill University. He was in practice in Edmonton, from 2010 - 2015 at the Grey Nuns Hospital and the Northern Alberta Vascular Centre as an assistant professor with the University of Alberta. He has since returned to McGill and the JGH as an assistant professor of surgery. He has taken on the additional roles of Program Director for the McGill Vascular Surgery Residency Program, and the Assistant Director of the Noninvasive Vascular Laboratory at the Jewish General Hospital.

Doctor Bayne takes a special interest in advanced aortic endovascular repair as well as all peripheral endovascular intervention. As such, Doctor Bayne leads McGill's advanced aortic program with the assistance of the advanced endovascular fellow. He is a routine presenter at national conferences and is an international proctor for advanced endovascular cases. He brings a wealth of experience from his practice in Edmonton where he started the complex aortic and peripheral endovascular operating room programs.

Doctor Bayne's research interests include endovascular outcomes, peri-operative care, and vascular surgery education. He has taken over as the Vascular Surgery Residency Program Director at McGill and is the Assistant Director of the Vascular Laboratory at the Jewish General Hospital. He currently sits on the Canadian Society for Vascular Surgery Education and Specialty Committees. He was also the Vascular Surgery Clerkship Director, and won an award for the Clerkship Preceptor of the Year while at the U of A.

### ***Academic Clinical Facilities***

- RVH: Hybrid OR, Operating room
- JGH: Hybrid OR, Operating room
- MGH: Operating room

### ***Office Space:***

An office space with computer/internet access will be provided to the fellow.

### ***Library access:***

Access is available at MUHC and JGH.

**Skills lab:**

McGill Medical Simulation Center -Vascular Interventional Simulator is currently available in the Skills Center.

**Fellow Duties and Responsibilities :**

The fellow will be the primary operator and will work across all hospital sites for all advanced cases under the supervision of active staff members of the division.

The Fellow will be responsible for preoperative ambulatory, perioperative and postoperative care of all advanced cases under the supervision of active MUHC staff members of the Division of Vascular Surgery.

**Call responsibilities:**

The fellow will be responsible for sharing vascular surgery fellow call duties for one weekend per month and one day per week when necessary.

**Rotations at various institutions:**

There will not be fixed rotations at various sites. The members of the Division of Vascular Surgery will decide schedule based on scheduling of cases.

**Clinic responsibilities Outpatient:**

Outpatient clinic responsibilities will be under the supervision of the program director but generally will consist of outpatient clinics conducted for pre and post operative care of advanced cases only.

**Teaching responsibilities towards residents**

During advanced cases, and when appropriate, the fellow will act as senior supervisor of vascular residents. An active staff member of the Division of Vascular Surgery will supervise this activity at all times.

**Participation in academic activities involving the residents:**

Once every two months, the fellow will be responsible for didactic teaching sessions on advanced endovascular surgery topics during the Vascular Surgery Academic Rounds. These rounds are attended by both active staff members and house staff on the clinic teaching units. The topics will be chosen in discussion and consultation by the program director. The Fellow will participate in the weekly Vascular Surgery teaching rounds schedule at a frequency similar to the attending surgeons.

The fellow will attend monthly morbidity and mortality rounds and be expected to contribute when relevant advanced cases are presented and discussed.

***Staff support available to the fellow:***

The fellow will have administrative support from the secretary of the Fellowship program director as well as from the office of the Program Director of the Vascular Surgery Residency.

***Proposed meetings to be attended by the fellow:***

The fellow is expected to present at least one national meeting during the year in addition to resident research day at McGill University.

The fellow is encouraged to attend and/or submit abstracts to other meetings as appropriate, including:

1. The Canadian Society for Vascular Surgery
2. The Society for Vascular Surgery
3. The Peripheral Vascular Surgery Society
4. Les Entretiens Vasculaires
5. The European Society for Vascular Surgery
6. International Society for Endovascular Specialists
7. International Symposium of Endovascular Therapy

***Research productivity and publications:***

The fellow will be expected to conduct clinical and/or basic science research pertaining to advanced endovascular surgery. Members of the Division of Vascular Surgery will supervise this research. The fellow will be expected to present their work at national and/or international vascular surgical meetings. The fellow will be expected to submit relevant projects for publication in a peer reviewed journal. The fellow is expected to complete any ongoing research that was not completed during the academic year and to ultimately present this at a national meeting.

***Case load and operative exposure:***

The fellow is expected to be prime operator on endovascular fenestrated aortic stent grafts, endovascular thoraco-abdominal branched stent grafts. All other endovascular aortic and peripheral endovascular interventions are available for the Fellow to participate as senior supervisor to Vascular Surgery residents or as 1<sup>st</sup> assistant in the absence of a Vascular Surgery resident.



***Regular reading materials:***

A required reading program of relevant endovascular textbooks and papers will be suggested by the program director.

***Evaluation:***

Progress reports based on the fellows standing will be evaluated and discussed with the fellow at regular intervals during the fellowship.

The fellow will be expected to complete an evaluation of each of the clinical faculty members at the completion of the fellowship.