

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.

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.

Fellowship Program Director:

Dr. Oren Steinmetz

Dr. Steinmetz was the Chief of the Division of Vascular Surgery at McGill University from 2002-2019 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.

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. 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 is currently the Chief of the Division of Vascular Surgery. 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 is 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 Directory 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.

Dr. Elie Girsowicz

Dr Girsowicz originates from Paris, France where he completed his undergraduate medical training at University Paris Diderot. He completed his General Surgery and Vascular Surgery training in Strasbourg, France (Louis Pasteur University) as a resident between 2009 and 2015. During this period, he earned a Master's degree in Surgical Sciences from Paris-Est University, investigating the biomechanical aspects of nitinol stents used in peripheral vascular disease. He completed further fellowship training in Vascular Surgery and kidney transplantation between 2015 and 2017 in Strasbourg, came to Montreal in 2018 and graduated from the McGill Advanced Aortic and Peripheral Endovascular Fellowship program in June 2019.

His clinical practice incorporates advanced endovascular treatment of aortic pathology, open and endovascular management of peripheral, carotid and mesenteric vascular disease as well as vascular access creation and maintenance. Dr. Girsowicz has a special interest in vascular surgical education with a focus on simulation in surgical residency training. He also has a strong interest in technology acquisition and surgical innovation.

Dr. RJ Doonan

Dr. Doonan completed his MD-PhD degree at McGill University, investigating methods to identify the unstable carotid plaque under the supervision of Dr. Stella Daskalopoulou. He completed his Vascular Surgery Residency at McGill in 2021. Following this he went on to complete a combined cardiac-vascular surgery complex aortic fellowship in Liverpool, UK. During this time he trained in open and endovascular treatment of arch and thoracoabdominal aortic pathologies at the Liverpool Heart and Chest and Royal Liverpool Hospitals.

Dr. Doonan's has a special clinical interest in complex open and endovascular reconstruction of aortic dissections and aneurysms. His research program is focused on using a multi-modal approach to understanding and improving aortic disease outcomes.

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:

Vascular Interventional Simulator is currently available at the JGH. The fellow will be expected to participate in regular endovascular training sessions with faculty and more junior trainees.

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 be no fixed rotations at the two sites. The members of the Division of Vascular Surgery will decide schedule based on scheduling of cases. The fellow will participate in endovascular cases across sites depending on the operating room schedule.

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 be expected to supervise formal endovascular training sessions with more junior trainees using the endovascular simulator.

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 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.

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.

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

Naiem AA, Doonan RJ, Steinmetz OK. Hybrid Repair of a Thoraco-abdominal Aortic Aneurysm Associated with Loeys-Dietz Syndrome. *EJVES Vasc Forum*, 2021 May 6;51:23-26.

Girsowicz E, Steinmetz O. A Challenging Proximal Aortic Arch Endovascular Repair. *Eur J Vasc Endovasc Surg.* 2021 Feb;61(2):190. doi: 10.1016/j.ejvs.2020.08.020. Epub 2020 Sep 11.

Doonan RJ, Girsowicz E, Dubois L, Gill HL. A systematic review and meta-analysis of endovascular juxtarenal aortic aneurysm repair demonstrates lower perioperative mortality compared with open repair. *J Vasc Surg.* 2019 Jul 18. pii: S0741-5214(19)31131-0. doi: 10.1016/j.jvs.2019.04.464. [Epub ahead of print] Review

Charbonneau P, Hongku K, Herman CR, Habib M, Girsowicz E, Doonan RJ, Dubois L, Hossain S, Gill HL, Mackenzie KS, Bayne JP, Obrand D, Steinmetz OK. Long-term survival after endovascular and open repair in patients with anatomy outside instructions for use criteria for endovascular aneurysm repair. *Vasc Surg.* 2019 Dec; 70(6):1823-1830.

Doonan RJ, Abdullah A, Steinmetz-Wood S, Mekhaieel S, Steinmetz OK, Obrand DI, Corriveau MM, Mackenzie KS, Gill HL. Carotid Endarterectomy Outcomes in the Elderly: A Canadian Institutional Experience. *Ann Vasc Surg* 2019; accepted for publication.

Drudi LM, Ades M, Landry T, MacKenzie KS, Steinmetz OK, Gill HL, Tat J, Mata J. Preoperative exercise rehabilitation in cardiac and vascular interventions. *J Surg Res* 2019; 237:3-11.

Drudi LM, Ades M, Landry T, Gill HL, Grenon SM, Steinmetz OK, Afilalo J. Scoping Review of Frailty in Vascular Surgery. *J Vasc Surg* 2019 Jun;69(6):1989-1998.

Gill HL, Al Toirjry M, Doonan RJ, Obrand DI, Mackenzie KS, Steinmetz OK. Early North American Experience with the INCRAFT Device. *J Vasc Surg* 2019 Jul;70(1):102-106.

Drudi LM, Ades M, Mancini R, Boudrias C, Obrand DI, Steinmetz OK, Afilalo J. Frailty Assessment in Older Adults Undergoing Interventions for Peripheral Arterial Disease. *J Vasc Surg* 2019 Nov;70(5):1594-1602.

Brailovski E, Steinmetz OK, Weber C. Renal Artery Re-Construction and Kidney Auto-Transplantation for Takayasu Arteritis-Induced Renal Artery Stenosis. *J Vasc Surg* 2019; 5: 156-9.

Hanley SC, Steinmetz O, Mathieu ES, Obrand DI, Mackenzie KS, Coriveau MM, Abraham CZ, Gill HL. Safety and Feasibility of Endovascular Aortic Aneurysm Repair as Day Surgery. *J Vasc Surg.* 2018; 67(6): 1709-15.

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 aortouniiliac 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.

Caseload and operative exposure:

The fellow is expected to be prime operator on endovascular fenestrated aortic stent grafts, endovascular thoracoabdominal 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 1st 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.