

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:

In the mid 1990's, endovascular aneurysm repair (EVAR) i.e. intraaortic exclusion of aortic aneurysms was championed as a less invasive method of treating patients with aortic aneurysms resulting in less morbidity and mortality in patients deemed high risk for open aneurysm repair. In addition, it resulted in reduced length of stay in hospital and little or no requirement for postoperative ICU or PACU care. By the year 2000, these procedures (EVAR) were the treatment of choice for elderly and high-risk patients with aneurysms of the thoracic and abdominal aorta. As vascular surgeons became more proficient in interventional/endovascular techniques in EVAR, some made the natural step forward and began performing percutaneous procedures either with a fixed angi suite or with a portable C-arm fluoroscopy unit in the operating room. Endovascular therapy is now the first line therapy for the majority of vascular pathology. The vascular surgery department at McGill is one of the most active departments in Canada for endovascular treatment of vascular diseases and has become nationally known for their pioneering efforts in endovascular surgery. Advanced endovascular techniques are now being used to treat patients with more complex pathology such as EVAR for para renal aortic aneurysms and thoracoabdominal aortic aneurysms. In addition, more complex interventional techniques such as sub intimal angioplasty for peripheral arterial occlusions or carotid angioplasty/stenting with neuro protection are being used to further the scope of endovascular surgery. McGill University is now a major referral site in the province of Quebec for complex cases such as those described. The knowledge base and skill set required for these types of advanced endovascular treatments 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 in most vascular surgery training programs in Canada, hence the need for an advanced aortic and peripheral endovascular fellowship.

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 clinical vascular surgery fellows 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:

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 Assistant Professor of Surgery at McGill University and 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 is in charge of research for the division of vascular surgery with interests in prehabilitation in vascular surgery and geriatric vascular surgery.

Academic Facilities

- RVH: The Operating room, Hybrid OR.
- JGH: The Operating room, Hybrid OR.
- 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.

Availability of a skills lab if applicable

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 no more than one weekend per month and no more than one day per week.

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 advanced 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.

Outline 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 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.

Intended case load and varieties:

The fellow is expected to be prime operator on endovascular fenestrated aortic stent grafts, endovascular thoraco abdominal branched stent grafts, carotid stents, sub intimal peripheral angioplasties.

Regular reading materials:

A required reading program of relevant endovascular textbooks and papers will be set forth 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.