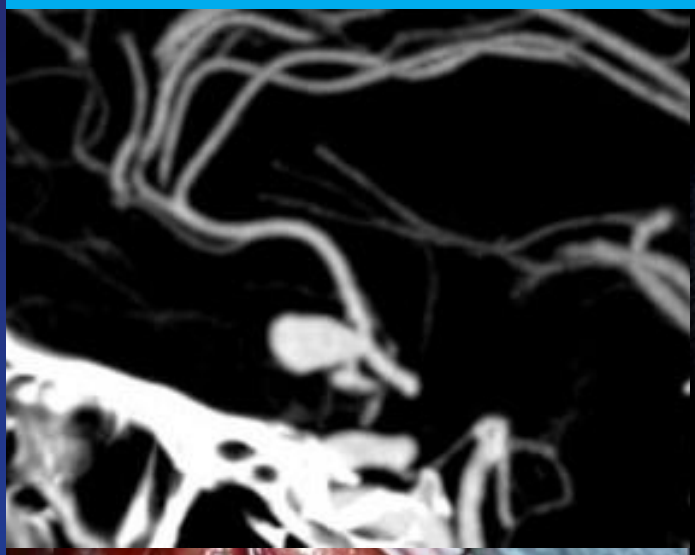
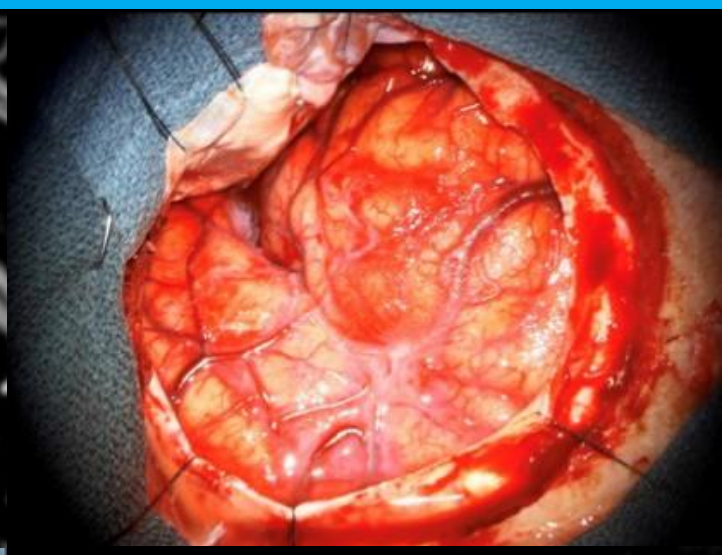
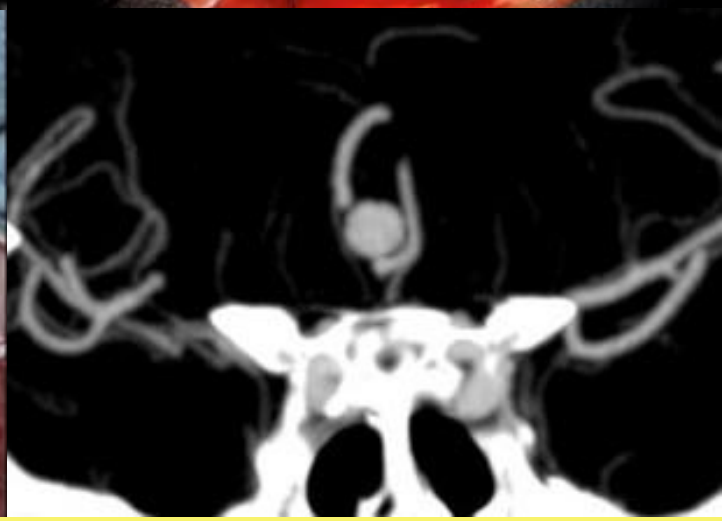
Cerebrovascular Surgery International Course

Program



Monday, September 12, 2022 - Friday, September 16, 2022

The Temerty Advanced Surgical Education and Simulation Centre

222 St. Patrick Street, Toronto Ontario Canada

Program Co-Chairs: Dr. Ivan Radovanovic & Dr. Joao Paulo Almeida

TEMERTY CENTRE Advanced Surgical Education and Simulation

THE Michener INSTITUTE of Education at UHN

In collaboration with Surgery UNIVERSITY OF TORONTO

Course Overview

Cerebrovascular diseases represent a significant cause of morbidity and mortality in our modern society. Ischemic cerebrovascular disease, following cancer and ischemic heart disease, represent one of the most common causes of death in our society (1, 2). Additionally, hemorrhagic strokes, secondary to hypertension and/or ruptures of intracranial aneurysms, arteriovenous malformations (AVMs) or cavernomas are associated with high rates of morbidity and mortality, leading to impacts on quality of life, loss of productivity, and increased costs in health care.

There have been major developments in the care of cerebrovascular diseases in the last 20 years. New technology and better understanding of the disease process has led to a revolution in the care of ischemic and hemorrhagic diseases of the brain and spine. Endovascular surgery / Interventional Neuroradiology has shifted the paradigm of the management of cerebrovascular diseases (3, 4). Currently, most aneurysms and dural fistulas are good candidates for endovascular management; additionally, endovascular thrombectomy for stroke management has revolutionized the treatment of patients with ischemic strokes. Another important treatment modality, radiosurgery, has advanced and represents a useful option in the management of intracranial AVMs (5), and therefore, should be incorporated in the armamentarium of modern cerebrovascular surgeons.

Surgery has also advanced and adapted to play an increasing role in the management of complex cases, in combination with endovascular and radiosurgery. Surgery has been improved with the better understanding of microsurgical anatomy (6), development of new minimally invasive techniques (7,8), introduction of modern microscopes, new methods to intraoperatively assess flow vascular flow, further development of bypass techniques and new tools to be applied for decision-making process in the selection of approaches.

Training of surgeons to properly perform open cerebrovascular surgery is one of the most significant challenges in neurosurgery today. Although the expansion of other modalities has been beneficial for patient care, open surgery has been progressively reserved for more complex cases, which are not suitable for less invasive modalities, and therefore surgical volume has decreased in most centers which has impacted the training of future surgeons and also the maintenance of expertise in cerebrovascular surgery. There is a growing need for new modalities of training in this surgical field and the CSIC is designed with the goal to provide such an opportunity.

The coordinators of the course have experience with development of surgical education courses, well exemplified by the traditional Lougheed Neurosurgical Course, which takes place in Toronto twice a year. The CSIC is subset to this course, and draws specific focuses on theoretical and hands-on training modalities directed to cerebrovascular surgery.

This course will take place at the Temerty Advanced Surgical Education and Simulation Centre at the Michener Institute of Education at the University Health Network (Michener). As Canada's first school embedded within a hospital, The Temerty Centre supports

surgical and medical professionals in the design, development and execution of forward thinking education by collaborating with experts in surgical education, adult education, research and technology.

During this five day course, attendees will be exposed to various training in open cerebrovascular surgery, and exposure to endovascular modalities and radiosurgery. Faculty and participants will discuss how these modalities can be incorporated in the armamentarium of the modern cerebrovascular surgeon. The CSIC is intended to provide a blended approach to learning, making this course available to surgeons worldwide, with offerings both in-person and virtually. The Temerty Centre boasts expertise in online programming, interprofessional education, personalized learning, international education, and conference planning. In addition, the Centre supports in the issuance of Maintenance of Certification (MOC) credits (i.e. professional development credits for physicians) as a Royal College Accredited Provider of Continuing Professional Development.

Learning Objectives

Overall Course Learning Objectives

At the end of the course, participants will be able to:

1. Make evidence-based recommendations for the management of cerebrovascular diseases including treatment selection of surgery, endovascular, radiosurgery or conservative management.
2. Combine clinical, anatomical, and radiological data to formulate a surgical treatment plan for specific case-based scenarios in cerebrovascular surgery.
3. Apply technical nuances and surgical techniques in a hands-on simulated wet lab to enhance workflow, and address both perceived and unperceived intra-operative challenges.

Session Learning Objectives

Day 1:

Angiographic Anatomy: Arteries and Veins

1. To review the angiographic anatomy of the intracranial vessels
2. To understand the anatomical relationship of the intracranial vessels with the surrounding brain parenchyma.

Surgical Approaches: Pterional / Pretemporal / OZ Approaches

1. To review anatomical nuances related with pterional approach and its variations.
2. To discuss technical nuances related with each of those approaches.
3. To discuss indications and limitations of those approaches.

Surgical Approaches: Minipterional

1. To review anatomical nuances related with minipterional approach.
2. To discuss technical nuances related with each of those approaches.
3. To discuss indications and limitations of those approaches.

Surgical Approaches: LSO
1. To review anatomical nuances related with lateral supraorbital approach (LSO).
2. To discuss technical nuances related with each of those approaches.
3. To discuss indications and limitations of those approaches.

Surgical Approaches: Eyebrow
1. To review anatomical nuances related with eyebrow approach and its variations.
2. To discuss technical nuances related with each of those approaches.
3. To discuss indications and limitations of those approaches.

Surgical Approaches: Endoscopic Pterional
1. To review anatomical nuances related with endoscopic pterional approach and its variations.
2. To discuss technical nuances related with each of those approaches.
3. To discuss indications and limitations of those approaches.

Day 2:

Surgical Strategies and Results: Aneurysms
1. To present an overview of the state-of-the-art of the surgical management of intracranial aneurysms.
2. To discuss technical nuances of the surgical treatment of intracranial aneurysms.
3. To discuss clinical outcomes and complication of aneurysm surgery.

Hands-on: Approaches (LSO, minipterinal, eyebrow, transcavernous to basilar tip)
1. To practice approaches applied in the surgical management of anterior circulation aneurysms: lateral supraorbital approach (LSO), minipterional approach, eyebrow approach and pretemporal and orbitozygomatic approaches (OZ).
2. To review technical nuances related with each of those approaches.
3. To discuss indications and limitations of those approaches.

Endovascular Treatment of Intracranial Aneurysms
1. To present an overview of the state-of-the-art of the endovascular management of intracranial aneurysms.
2. To discuss technical nuances of the endovascular treatment of intracranial aneurysms.
3. To discuss clinical outcomes and complication of endovascular techniques.

Hands on: Endovascular Simulation
1. To practice approaches applied in the endovascular management of intracranial aneurysms and technical nuances related with different treatment modalities (coiling, balloon assisted, flow diverter), indications and limitations.

Day 3:

Endarterectomy / Carotid Stenting: Indications and Results
1. To review and discuss the indications of the surgical and endovascular management of carotid stenosis.
2. To discuss technical nuances of the carotid endarterectomy and stenting techniques.
3. To discuss clinical outcomes and complication of carotid endarterectomy and endovascular techniques.

Hands on: Transcavernous and Neck Dissection
1. To practice the transcavernous and its variations to approach paraclinoid basilar tip aneurysms.
2. To review technical nuances related with each of those approaches.
3. To practice neck dissection for exposure of the carotid bifurcation and simulation of carotid endarterectomy.

Cerebral Revascularization
1. To present an overview of the state-of-the-art of the surgical treatment for cerebral revascularization, such as for Moya-Moya disease and intracranial stenosis.
2. To discuss indications and technical nuances of bypass surgery for cerebral revascularization.
3. To discuss clinical outcomes and complication of bypass surgery.

Hands on: Bypass Technique (Turkey Wing Model)
1. Practice microsurgical vascular dissection techniques using the Turkey Wing Model.

2. Practice bypass (end-to-end; and side-to-end) techniques using the Turkey Wing Model.

Day 4:

Surgical Strategies and Results: AVMs
1. To present an overview of the state-of-the-art of the surgical management of intracranial AVMs.
2. To discuss technical nuances of the surgical treatment of AVMs.
3. To discuss clinical outcomes and complication of AVM surgery.

Radiosurgical Treatment of AVMs
1. Present an overview of the state-of-the-art of the radiosurgical management of intracranial AVMs.
2. Discuss technical nuances of the radiosurgical treatment of AVMs.
3. Discuss clinical outcomes and complication of AVM radiosurgery.

Endovascular Treatment of AVMs
1. Present an overview of the state-of-the-art of the endovascular management of intracranial AVMs.
2. Discuss technical nuances of the endovascular treatment of AVMs.
3. Discuss clinical outcomes and complication of endovascular treatment of AVMs.

Management of Dura Arteriovenous Fistulas (DAVF)
1. Present an overview of the state-of-the-art of the management of DAVF.
2. Discuss technical nuances of the surgical, endovascular and radiosurgical treatment of DAVFs.
3. Discuss clinical outcomes and complication of DAVFs.

Surgical and Endovascular Simulators
1. Practice surgical approach in neurosurgical simulation models.
2. Practice microsurgical dissection and clipping of aneurysms in a neurosurgical simulation model.
3. Practice microsurgical resection of AVMs in a neurosurgical simulation model.

Day 5:

Management of Ischemic Stroke
1. To present an overview of the state-of-the-art in the clinical, endovascular and surgical management of ischemic stroke.
2. To discuss the current indications of endovascular thrombectomy.
3. To discuss the role and indications of decompressive craniectomy.

Management of Intracerebral Hemorrhages
1. Present an overview of the state-of-the-art of the clinical and surgical management of hemorrhagic stroke.
2. Discuss results of recent trials focused on the surgical management of ICH
3. Discuss the role of minimally invasive approaches.

Surgical Strategies and Results: Supratentorial & Infratentorial Cavernomas
1. Present an overview of the state-of-the-art of the management of cavernomas.
2. Discuss indications of surgery and technical nuances of the surgical treatment of supratentorial cavernomas.
3. Discuss indications of surgery and technical nuances of the surgical treatment of posterior fossa cavernomas.
4. Discuss clinical outcomes and complication of surgical treatment of cavernomas.

Hands on Posterior Fossa (Far Lateral and Midline Suboccipital)
1. To practice approaches applied in the surgical management of posterior circulation aneurysms and brainstem cavernomas: far lateral approach and midline suboccipital approach.
2. To review technical nuances related with each of those approaches.
3. To discuss indications and limitations of those approaches.

Program Co-Chairs

Ivan Radovanovic

Joao Paulo Almeida,

International Faculty

Dr. Luca Regli
Neurosurgery

Dr. Michael Lawton
Neurosurgery

Rabih G. Tawk, M.D.
Neurosurgeon

Local Faculty and Organizing Committee

Dr. Ashish Kumar
Neurosurgery

Dr. Hugo Andrade
Neurosurgery

Dr. Joanna Schaafsma
Neurovascular

Dr. Julian Spears
Neurosurgery

Dr. Leodante da Costa
Cerebrovascular and Endovascular Neurosurgery / Spine Surgery

Dr. Michael Schwartz
Neurosurgery

Dr. Patrick Nicholson
Neurosurgery

Dr. Timo Krings
Diagnostic and Interventional Neuroradiologist

Dr. Ronit Agid
Diagnostic & Interventional Neuroradiologist

Dr. Vitor Pereira
Neurosurgery

Course Agenda

Cerebrovascular Surgery International Course Monday, September 12, 2022	
Date/Time	**Surgical and Angiographic Anatomy**
07:00 – 08:00	**Registration, Breakfast + Exhibitor Booths**
08:00 – 08:15	**Opening Remarks**
08:15 – 09:00	**Introductory Concepts of Surgical Anatomy Applied to Cerebrovascular Surgery** **Faculty: Dr. Joao Paulo Almeida**
09:00 – 09:45	**Surgical Anatomy Applied to Cerebrovascular Diseases** **Faculty: Dr. Wen Hung Tzu**
09:45 – 10:15	**Break + Exhibitor Booths**
10:15 – 11:00	**Angiographic Anatomy: Arteries and Veins** **Faculty: Dr. Patrick Nicholson**
11:00 – 12:00	**Surgical Approaches: Pterional / Pretemporal / OZ Approaches** **Faculty: Dr. Joao Paulo Almeida**
12:00 – 13:00	**Lunch + Exhibitor Booths**
13:00 – 13:45	**Surgical Approaches: Minipterional** **Faculty: Dr. Hugo Andrade**
13:45 – 14:30	**Surgical Approaches: LSO** **Faculty Dr. Hugo Andrade**
14:30 – 15:00	**Break + Exhibitor Booths**
15:00 – 15:45	**Surgical Approaches: Eyebrow** **Faculty: Dr. Rabih Tawk**
15:45 – 16:30	**Surgical Approaches: Endoscopic Pterional** **Faculty: Dr. Ivan Radovanovic**
16:30 – 16:45	**Closing Remarks**
17:30	**Happy Hour**

Cerebrovascular Surgery International Course Tuesday, September 13, 2022	
Date/Time	**Aneurysm**
07:00 – 08:00	**Breakfast + Exhibitor Booths**
08:00 – 09:00	**Surgical Strategies and Results: Aneurysms** **Dr. Luca Regli**
09:00 – 11:30	**Hand on: Approaches (LSO, minipterional, eyebrow, transcavernous to basilar tip)**
11:30 – 12:00	**Exhibitor Booths**
12:00 – 13:00	**Lunch + Case Discussion/Videos** **Dr. Julian Spears**
13:00 – 14:00	**Endovascular Treatment of Intracranial Aneurysms** **Dr. Vitor Pereira**
14:00 – 14:15	**Break + Exhibitor Booths**
14:15 – 17:00	**Hands on: Endovascular Simulation** **Drs. Ashish Kumar and Vitor Pereira**
17:00 – 17:15	**Closing Remarks**

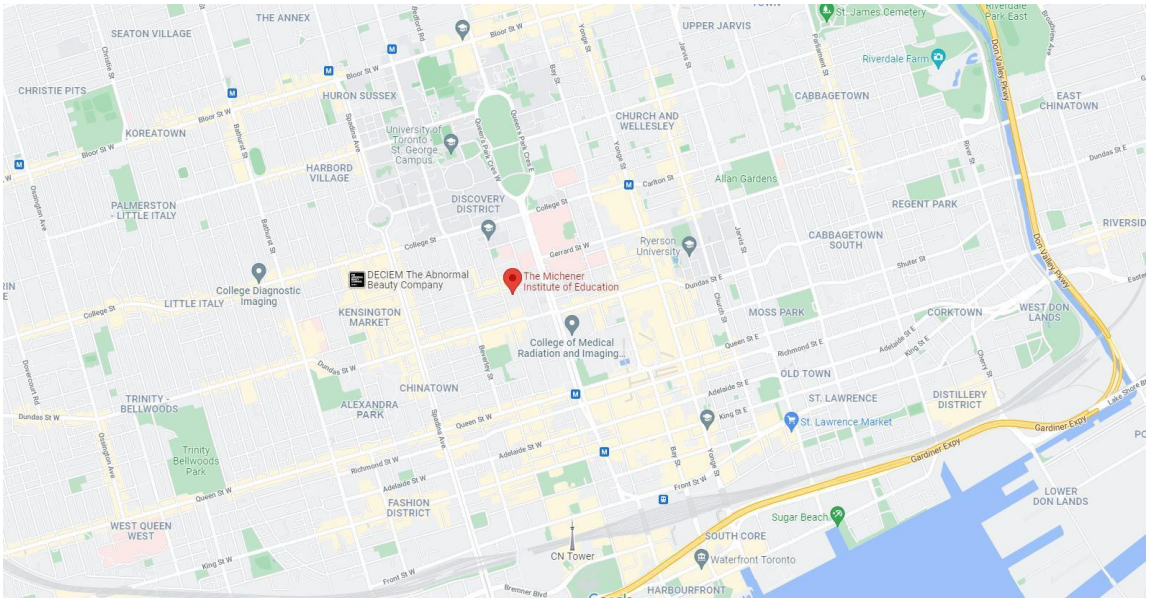
Cerebrovascular Surgery International Course Wednesday, September 14, 2022	
Date/Time	**Revascularization: Grandrounds Bypass for Aneurysms**
07:00 – 08:00	**Breakfast + TWH Rounds with Dr. Michael Lawton**
08:00 – 09:00	**Endarterectomy : Indications and Results** **Dr. Ivan Radovanovic**
09:00 – 09:30	**Break + Exhibitor Booth**
09:30 – 11:00	**Hands on: Transcavernous and Neck Dissection** **Drs. Hugo Andrade, Ivan Radovanovic, and Joao Paulo Almeida**
11:00 – 12:00	**Cerebral Revascularization** **Dr. Michael Lawton**
12:00 – 13:00	**Lunch + Case Discussion / Video Session** **Drs. Hugo Andrade, Ivan Radovanovic, Ann Mansur, and Spyros Karadimas**
13:00 – 17:00	**Hands on: Bypass Techniques (Turkey Wing Model)** **Drs. Hugo Andrade, Ivan Radovanovic, and Joao Paulo Almeida**
17:00 – 17:15	**Closing Remarks**

Cerebrovascular Surgery International Course Thursday, September 15, 2022	
Date/Time	**AVM**
07:00 – 08:00	**Breakfast + Exhibitor Booths**
08:00 – 09:00	**Surgical Strategies and Results: AVMs** **Dr. Michael Lawton**
09:00 – 10:00	**Radiosurgical Treatment of AVMs** **Dr. Michael Schwartz**
10:00 – 10:30	**Break + Exhibitor Booths**
10:30 – 11:30	**Endovascular Treatment of AVMs** **Dr. Timo Krings**
11:30 – 12:30	**Lunch + Case Discussions/Videos** **Drs. Ronit Agid, Ann Mansur, and Spyros Karadimas**
13:00 – 14:00	**Management of Dura Arteriovenous Fistulas (DAVF)** **Dr. Timo Krings**
14:00 – 17:00	**Hands on: UpSurgOn Simulators**
17:00 – 17:15	**Closing Remarks**
18:30	**Social Event at The Carbon Bar**

Cerebrovascular Surgery International Course Friday, September 16, 2022	
Date/Time	**Stroke / Cavernoma**
07:00 – 08:00	**Breakfast + Exhibitor Booths**
08:00 – 09:00	**Management of Ischemic Stroke** **Dr. Joanna Schaafsma**
09:00 – 10:00	**Management of Intracerebral Hemorrhages** **Dr. Rabih Tawk**
10:00 – 10:30	**Break + Exhibitor Booths**
10:30 – 11:15	**Surgical Strategies and Results: Supratentorial Cavernomas** **Dr. Ivan Radovanovic**
11:15 – 12:00	**Surgical Strategies and Results: Infratentorial Cavernomas** **Dr. Ivan Radovanovic**
12:00 – 13:00	**Lunch + Case Discussions/Videos** **Dr. Rabih Tawk**
13:00 – 17:00	**Hands on: Posterior Fossa (Far Lateral and Midline Suboccipital)** **Drs. Hugo Andrade, Ivan Radovanovic, and Joao Paulo Almeida**
17:00 – 17:15	**Closing Remarks + Sponsor Recognition**

Location

We are pleased to host the Cerebrovascular Surgery International Course at the Temerty Advanced Surgical Education and Simulation Centre located within the Michener Institute of Education at UHN in the heart of Downtown Toronto.



222 St. Patrick Street, Level 12
Toronto, ON Canada

COVID-19 Protocols

This course has been designed to ensure the safety of all participants with appropriate IPAC practices given the current state of the pandemic. The Scientific Planning Committee will assess COVID-19 protocols and regulations as they change leading up to the launch of this course. All participants will be updated on any changes to the delivery of this course which may include postponement. Please keep us updated on any changes to your email address so we can keep in touch with you.

References

1. GBD 2016 Stroke Collaborators. Global, regional, and national burden of stroke, 1990-2016: a systematic analysis for the Global Burden of Disease Study 2016. Lancet Neurol. 2019 May;18(5):439-458. doi: 10.1016/S1474-4422(19)30034-1

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6. Almeida JP, Reghin Neto M, Chaddad Neto F, DE Oliveira E. Anatomical considerations in the treatment of intracranial aneurysms. J Neurosurg Sci. 2016 Mar;60(1):27-43.

7. Wong JH, Tymianski R, Radovanovic I, Tymianski M. Minimally Invasive Microsurgery for Cerebral Aneurysms. Stroke. 2015 Sep;46(9):2699-706.

8. Andrade-Barazarte H, Patel K, Turel MK, Doglietto F, Agur A, Gentili F, Tymianski R, Mendes Pereira V, Tymianski M, Radovanovic I. The endoscopic transpterional port approach: anatomy, technique, and initial clinical experience. J Neurosurg. 2019 Feb 22;132(3):884-894.