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Global Vascular Institute: The Cross-Platform Interchange of Vascular Highways

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The Western New York region has an abundance of patients with vascular diseases, and substantial efforts have been made over the past decade to improve the clinical and research efforts to treat these patients. Catheter-based, minimally invasive endovascular therapy is rapidly evolving and increasingly used to treat vascular diseases. Many of the physicians and researchers from this region have been involved in the development of endovascular technologies and treatment paradigms that are being widely used throughout the world.

Although there are many similarities in vascular pathologies, treatment philosophies, and the endovascular tools used to navigate and tackle problems in the cardiovascular, neurovascular, and peripheral vascular highways, the medical field is divided into cardiologists, neurointerventionists, and peripheral vascular interventionists who separately try to analyze the inroads into treating vascular pathologies and developing endovascular toolkits. The downside of physicians and researchers who try to specialize in treating organ-specific vascular disease, rather than specializing in treating the global (body) vascular disease processes, include 1) duplication of expensive services within the same facility; 2) fragmentation of patient care; 3) development of separate institutional databases that deal with parts of the same patient but do not “talk to” each other, making analysis of patient outcomes difficult; 4) diffusion of the responsibility for patient care with the potential that important details go either unrecognized or not performed; and 5) the lack of experience sharing, complication/problem solving, and communication, resulting in the potential for errors (1).

Given the fact that these vascular territories are part of the same system, there needs to be a collective effort among these disciplines to understand, treat, and develop the technology for managing these vascular diseases. This concept was increasingly realized during the course of the annual Global Endovascular Complications Multidisciplinary Peer Review Seminar where neurovascular, cardiovascular and peripheral vascular interventionists, biomedical engineers, and basic scientists were brought together to openly share the complica-

tions they had encountered related to procedures, devices, and drug therapies used in the diagnosis and treatment of vascular disease, primarily via the endovascular route. This led to discussions about the need for collective understanding of these pathologies in order to develop common treatment paradigms and endovascular techniques and technologies to deal with these similar problems, which ultimately fostered the inception of The Global Vascular Institute (GVI) in Western New York.

The GVI is a new, first-of-its-kind, \$300-million, 10-story facility (**Figure 1**) that is being integrated into the existing Buffalo-Niagara Medical Campus. The concept and physical design of the GVI are unique, aimed at uniting vascular physicians and researchers from multiple disciplines and promoting a collective effort toward the common goal of understanding and facilitating treatment of vascular conditions primarily by endovascular approaches. A common emergency room integrates the telemedicine efforts of channeling stroke, myocardial infarction, and other vascular emergencies into the same receiving area. GVI houses 30 operating rooms and 17 interventional laboratories for cardiac, vascular, and neurosurgical procedures. These operating rooms and interventional labs are situated around a common workspace that will facilitate interaction among treating physicians and lead to collective efforts at solving common problems. The architecture of the building has been designed to foster interplay and exchange of ideas between clinicians and researchers of multiple disciplines on a regular, daily basis.

The top four floors of the GVI will bring together the existing Toshiba Stroke Research Center and the Center for Research in Cardiovascular Medicine and will house 30 laboratories for vascular biomedical research, an outpatient research center to facilitate enrollment of patients in clinical trials, a medical imaging research center, and a biospecimen repository for storing blood and patient tissue samples. Vascular researchers and vascular physicians will share the same facility and have the infrastructure for clinical and translational research. This will create unique opportunities for vascular physicians from multiple disciplines



Figure 1. Architectural 3D renderings of the proposed GVI. ©Cannon

to collaborate on a regular basis with their counterparts in vascular research and guide the researchers toward the clinical necessities. The GVI and Translational Research Center will also encourage the development and testing of research ideas generated by these interactions, leading to innovations in patient care and medical technology.

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An International Initiative to Define the Role for Surgery for Spinal Metastases: The GSTSG

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The incidence of cancer metastasis to the spine is increasing with the growing aging population and improvements in chemotherapeutic

and radiation therapy. Currently, as many as 60% of cancer patients will have spinal metastases, with the most common primary tumors