Title: Vascular Surgery Tissue Biobanking for the Analysis of Human Peripheral Arterial Atherosclerotic Occlusive Disease



Mohamed A. Zayed[1,2], Uzma Naim[1], Malik Darwech[1], Jaime Jung[1], Ronnie Eugea[1], Theresa Belgeri[1], Luis Sanchez[1]

[1] Washington University School of Medicine, Department of Surgery, Section of Vascular Surgery, St. Louis, MO
[2] Veterans Affairs St. Louis Health Care System, Department of Surgery, Division of Vascular Surgery, St. Louis, MO

Objectives: Over 3 million Americans have advanced peripheral arterial occlusive disease leading to significant patient morbidity and mortality. The lack of well-preserved human peripheral arterial tissue substrate has limited scientific exploration of this disease process and development of impactful targeted molecular therapies. To address this, we developed an integrative biobanking strategy to collect peripheral arterial tissue specimens from patients undergoing vascular surgery.

Methods: Over 22 months we harvested vascular specimens from consenting patients undergoing open arterial endarterectomy and revascularization procedures. All patients were enrolled in an IRB approved protocol. A biobank infrastructure was developed to manage logistics, funding, collection, and real-time processing of harvested arterial tissue.

Results: 356 patients were enrolled in the vascular surgery biobank prior to the index operation. Forty-two clinical variables were evaluated for each patient during the perioperative period. Vascular specimens were successfully collected for 54% (193) of patients who enrolled in the biobank. The majority of specimens collected were retrieved from the peripheral arterial system (50% carotid artery, 15% anterior or posterior tibial arteries, and 12% femoral or popliteal arteries). Each arterial specimen was sub-divided into maximally and minimally diseased portions to facilitate intra- and inter-patient biochemical and molecular analyses.

Conclusions: An integrative biobanking approach in vascular surgery patients is feasible and provides a highly unique peripheral arterial substrate for molecular and biochemical analyses. Biobanking management and daily operations requires a dedicated team approach to insure proper patient consenting, specimen collection, and subsequent experimental analysis.

Biography

Dr. Zayed is surgeon-scientist at Washington University School of Medicine, Department of Surgery, Section of Vascular Surgery. He completed his medical training at Stanford University, and earned his doctoral degree in pharmacology at the University of North Carolina at Chapel Hill. He previously served as Cheif Medical Officer for a software start-up company, and has published over 25 research articles in reputable journals. His current clinical and research interests focus on the influences of diabetes on peripheral arterial disease. This field provides a unique appreciation of the complexity and potential gaps of knowledge in vascular pathophysiology and its end-stage complications.

Presenting author details

Full name: Mohamed A. Zayed, MD PhD
Contact number: 314-362-5648
Category: Oral Presentation