International College of Angiology

54th Annual World Congress

Innsbruck Convention Centre

Innsbruck ~ Capital of Tyrol ~ Austria

September 14-16, 2012



Prof. John B. Chang, MD, FACS, FICA, *Program Chairman*

Local Organizing Committee

Prof. Otmar M. Pachinger, MD, FESC, FIHA, FICA, *Chairman*

Prof. Manfred Deutsch, MD

Prof. Gustav Fraedrich, MD

Prof. Michael Grimm, MD

Prof. Werner Jaschke, MD

Prof. Choi-Keung Ng, MD, FICA

Scientific Program Abstracts

International College of Angiology
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Responsible for review and selection of all scientific papers proffered for the Annual World Congress within budgetary and space limitations, responsible for the organization of special symposia and workshops.

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We welcome you to the 54th Annual World Congress of the International College of Angiology at the Innsbruck Congress Centre, Innsbruck, Austria.

Evaluation and CME Information

The abstracts have been prepared as an adjunct to the oral presentations. Program evaluation forms are provided with your registration packet. We value your input, which allows us to continually improve the program to meet your educational needs. Additional forms are available at our Registration Desk.

At the conclusion of the program please be prepared to hand in your completed evaluation form when you pick up your CME Certificate.

Those attendees who attend the entire program will be given their CME Certificate on-site at the conclusion of the program. Those who arrive late or depart early will have their certificates mailed to them within 3 weeks of the conclusion of the program. Any questions regarding your CME Certificate should be directed to the Executive Office of the ICA at 802.988.4065.

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This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Medical Society of the State of New York (MSSNY) through the joint sponsorship of MSSNY and the International College of Angiology, Inc. MSSNY is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to sponsor continuing medical education for physicians.

The Medical Society of the State of New York (MSSNY) designates this educational activity for a maximum of 18.5 AMA/PRA (Physician's Recognition Award) Category 1 Credits™. Physicians should claim commensurate with the extent of their participation in the activity.

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- If the product he/she will be discussing is not labeled for the use under discussion and the product is still investigational.

54th Annual World Congress

Innsbruck, Austria
September 14-16, 2012

Scientific Program

Friday, September 14, 2012
09.00 h. – 09.30 h.
Innsbruck Convention Center

Opening Remarks and Introductions

Introduction By:

President

Takao Ohki, MD, PhD, FICA
Professor of Surgery, Albert Einstein School of Medicine, Bronx, New York; President and Member, Board of Directors, International College of Angiology; Editor, *International Journal of Angiology;* Chairman, Department of Surgery, Jikei University School of Medicine, Tokyo, Japan.

Program Chairman

John B. Chang, MD, FACS, FICA
Professor of Clinical Surgery, Hofstra North Shore-LIJ School of Medicine, New York; Adjunct Professor, Clinical Surgery, Albert Einstein School of Medicine, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology;* Director, Long Island Vascular Center, Roslyn, New York; Attending Surgeon, North Shore-Long Island Jewish Healthcare System, New Hyde Park, New York, USA.

Vice Chairman, Board of Directors

John A. Elefteriades, MD, FICA
William W.L. Glenn Professor of Cardiothoracic Surgery; Vice Chairman and Member, Board of Directors, International College of Angiology; Co-Chairperson, Scientific Committee, International College of Angiology; Senior Editor, *International Journal of Angiology;* Member, International Steering Committee, ICA Research and Education Foundation; Chief, Section of Cardiothoracic Surgery, Yale University School of Medicine, New Haven, Connecticut, USA.

Chairman, Scientific Committee

Kailash Prasad, MBBS(Hons), MD, PhD, FRCPC, FACC, FICA, FIACS
Professor Emeritus of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Canada; Member, Board of Directors, International College of Angiology; Chairman, Scientific Committee, International College of Angiology; Consulting Editor, *International Journal of Angiology;* Member, International Steering Committee, ICA Research and Education Foundation; Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

Local Organizing Committee

O.Univ.-Prof. Dr. Otmar M. Pachinger, MD, FESC, FIHA, FICA, *Chairman*
President-Elect, International College of Angiology; Senior Editor, *International Journal of Angiology;* Head, Department of Internal Medicine and Director, Medical University of Innsbruck, Internal Medicine III-Cardiology, Innsbruck, Austria.

Prof.Dr. Manfred Deutsch, MD

Prof. Dr. Gustav Fraedrich, MD
President, European Society of Vascular Surgery; Medical University of Innsbruck, Innsbruck, Austria.

Prof. Dr. Michael Grimm, MD
Honorary Fellow, International College of Angiology; Professor of Surgery, Chief, Department of Cardiac Surgery, Medical University of Innsbruck, Innsbruck, Austria.

Prof. Dr. Werner Jaschke, MD
Medicine, University of Indonesia, RSCM Hospital, Jakarta, Indonesia.

Prof. Dr. Choi-Keung Ng, MD, FICA
Professor of Surgery; Vice President, Scientific Council, International College of Angiology; Co-Chairperson, Scientific Committee, International College of Angiology; Editor, *International Journal of Angiology;* Innsbruck, Austria.

Welcome Address

O.Univ.-Prof. Dr. Otmar M. Pachinger, MD, FESC, FIHA, FICA, *Chairman*
President-Elect, International College of Angiology; Senior Editor, *International Journal of Angiology;* Head, Department of Internal Medicine and Director, Medical University of Innsbruck, Internal Medicine III-Cardiology, Innsbruck, Austria.

Friday, September 14, 2012 (Continued)

09.00 h. – 09.30 h.

Opening Address

John B. Chang, MD, FACS, FICA, *Program Chairman*
Professor of Clinical Surgery, Hofstra North Shore-LIJ School of Medicine, Uniondale, New York; Adjunct Professor, Clinical Surgery, Albert Einstein School of Medicine, Bronx, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology;* Director, Long Island Vascular Center, Roslyn, New York; Attending Surgeon, North Shore-Long Island Jewish Healthcare System, New Hyde Park, New York, USA.

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09.30 h. – 10.00 h.

First Scientific Session

Professor John B. Chang Research Achievement Award
The Impact of Interventional Cardiology on Outcomes of Coronary Artery Disease

O.Univ-Prof. Dr. Otmar M. Pachinger, MD, FESC, FAHA, FICA
Professor of Medicine; President-Elect and Member, Board of Directors, International College of Angiology; Senior Editor, *International Journal of Angiology;* Chief of Cardiology, Medical University of Innsbruck, Innsbruck, Austria.

Coronary artery disease is the single largest killer of men and women worldwide.

In the last decades, important advances have been made, which have provided patients with coronary artery disease with effective drugs able to improve significantly their prognosis, such as antiplatelet agents, statins, beta-blockers, and angiotensin-converting enzyme inhibitors.

In 1977, when Andreas Gruentzig introduced the concept of percutaneous transluminal coronary angioplasty: the most feared enemy of the operators was acute occlusion of the dilated lesion due to a combination of elastic recoil and intimal and medial dissection, sometimes aggravated by intraparietal hematoma.

Since then four revolutions took place in the development of coronary interventions and improved outcomes.

Percutaneous coronary interventions (PCIs) are increasingly being used in patients with various manifestations of coronary artery disease. They represent an established treatment strategy that improves survival and survival free of recurrent myocardial infarction in patients with ST-segment elevation myocardial infarction. Early invasive therapy also improves long-term survival and reduces late myocardial infarction in patients with non–ST-segment elevation acute coronary syndromes. Although PCI reduces symptoms in patients without acute coronary syndromes, its effects on the prognosis of these patients are still not defined. The assessment of this issue has been difficult for at least 2 reasons. First, patients with stable coronary artery disease have a very good prognosis and large sample size studies are required to assess potential differences in treatments regarding rare events. All studies performed to date were far from having sufficient power to assess mortality. Second, there is a certain risk associated with PCI, which leads to aggregation of events in a relatively short period after the procedure. Any potential beneficial effect of PCI compared with medical treatment alone may require time to offset this early excess risk, so that an extended follow-up may enable a more unbiased evaluation of the relative merits of these treatment strategies.

Compared with an initial management strategy of OMT alone, addition of PCI did not decrease the incidence of major cardiovascular outcomes including cardiac death or the composite of cardiac death/MI/ACS/stroke in patients with stable coronary artery disease.

"Does percutaneous coronary intervention (PCI) reduce mortality among patients with stable coronary artery disease?" Very few questions have been so hotly debated within the medical literature over the past decade. Invasive treatment with PCI has figured prominently in the treatment of patients with coronary artery disease in the acute setting.

Proponents of PCI argue that improved blood flow leads to reduced ischemic substrate and improved overall prognosis, whereas opponents claim that patients with stable coronary artery disease have coronary plaques that are less likely to result in an acute coronary syndrome. Therefore, intervening focally on a coronary lesion via PCI is unlikely to alter their overall prognosis.

Bioresorbable scaffolds – **the 4th Revolution of interventional cardiology**—may allow a permissive and extensive paving of large areas of atherosclerosis in order to reduce cardiac morbidity and mortality associated with plaque rupture. A dream could be reality as next step!

Friday, September 14, 2012
10.00 h. – 10.30 h.
Second Scientific Session

International College of Angiology Honorary Fellowship Presentation

Univ.Prof. Dr. Michael Grimm, MD, FICA
Director, Department of Heart Surgery, University Medical School Innsbruck, Innsbruck, Austria.

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10.45 h. – 12.30 h.
Third Scientific Session

Latest Development in Aortic Aneurysms

10.45 **Why Does Aortic Dissection Occur? From Molecular Biology to Clinical Presentation:** John A. Elefteriades, MD, FICA, William W.L. Glenn Professor of Cardiothoracic Surgery; Vice Chairman and Member, Board of Directors, International College of Angiology; Co-Chairperson, Scientific Committee, International College of Angiology; Co-Editor-in-Chief, *International Journal of Angiology;* Member, International Steering Committee, ICA Research and Education Foundation; Chief, Section of Cardiothoracic Surgery, Yale University School of Medicine, New Haven, Connecticut, USA.

Aortic dissection is associated with many conditions, genetic or acquired. It was thought that occurrence of acute aortic dissection, in susceptible patients, occurred with random timing. We now feel the onset of dissection is not at all random.

The following schema for the timing of acute aortic events can be inferred from accumulated data:

1. A *genetic diathesis* sets the stage for development of aneurysm or dissection.
2. Through the mechanisms of inflammation and matrix injury, as well as smooth muscle cell loss and action of cytokines—*the aortic wall is injured*.
3. The injured *aortic wall dilates*.
4. The dilatation causes *excess mechanical stress on the aortic wall*.
5. At a moment of *extreme exertion or emotion, a spike in blood pressure leads the aortic wall stress to exceed the tensile strength of the aortic tissue.*
6. *Rupture or dissection* eventuates.

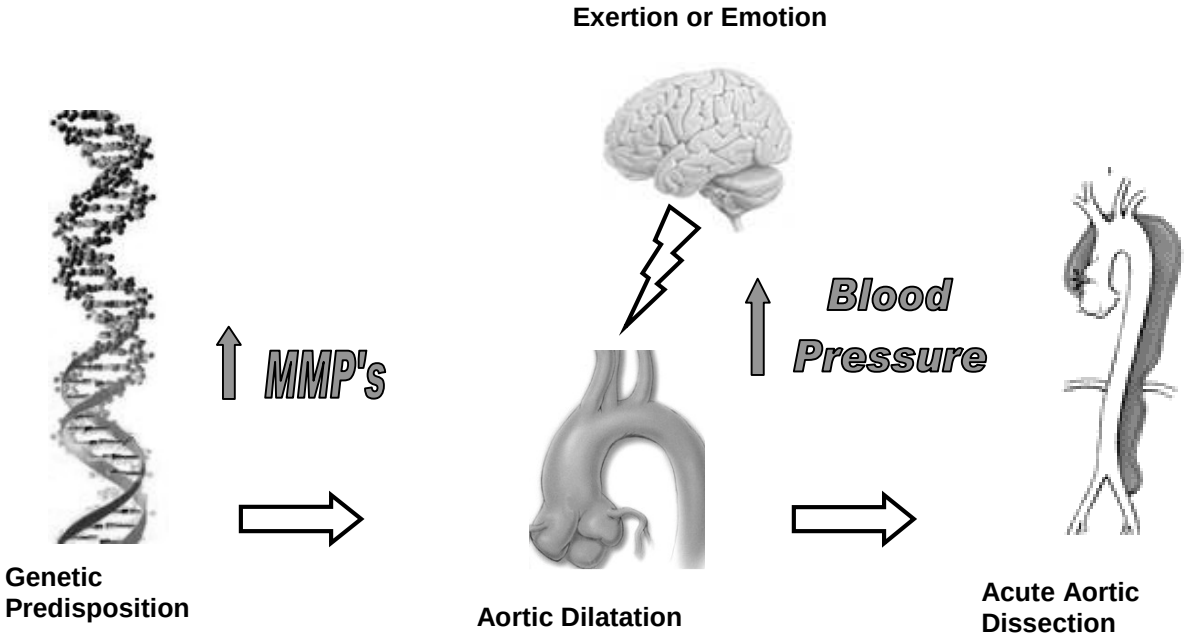
We believe that this novel understanding sets the stage for medications and life-style changes to prevent the abrupt blood pressure changes that so often instigate aortic dissection.

Genetic Predisposition
Aortic Dilatation
Acute Aortic Dissection

Exertion or Emotion

Genetic Predisposition
Aortic Dilatation
Acute Aortic Dissection

Exertion or Emotion


Exertion or Emotion
MMP's
Blood Pressure
Genetic Predisposition
Aortic Dilatation
Acute Aortic Dissection

Friday, September 14, 2012

10.45 h. – 12.30 h.

Third Scientific Session

Latest Development in Aortic Aneurysms (Continued)

11.05 **Modern Strategies in Acute Type-A Dissection:** Prof. Dr. Christian Hagl, MD, Klinikum Grosshadern, Munich, Germany.

11.25 **Management of Acute Type-B Dissection:** Univ.Prof. Dr. Michael Grimm, MD, FICA, Director, Department of Heart Surgery, University Medical School Innsbruck, Innsbruck, Austria.

11.45 **Role of Endovascular Therapy in Thoracic Aortic Disease:** Prof. Dr. Ernst Weigang, MD, MBA, Professor of Cardiovascular Surgery, Head, Endovascular Surgery, Department of Cardiothoracic and Vascular Surgery, University Medical Center, Mainz, Germany.

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12.30 h. – 13.30 h.

Fourth Scientific Session

Update on the Status of Antiplatelets

A Luncheon Symposium

12.30 **The Role of Ticagrelor in the Treatment of Acute Coronary Syndrome: What do the Guidelines Recommend?** PD Dr. Hannes Alber, MD, FESC, Associate Professor of Medicine, Department of Cardiology, Medical University of Innsbruck, Innsbruck, Austria.

12.42 **Antithrombotic Management of A-Fib in PCI Patients:** PD Dr.med. Jolanta Siller-Matula, MD, PhD, Department of Cardiology, Medical University of Vienna, Vienna, Austria.

12.54 **Ticagrelor vs. Prasugrel in ACS Following PCI:** PD Dr. Matthias Frick, MD, FESC, Department of Cardiology, Medical University of Innsbruck, Innsbruck, Austria.

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13.30 h. – 15.00 h.

Fifth Scientific Session

Role of Interventional Therapy in Heart Valve Disease

13.30 **TAVI Patient Selection and Recent Clinical Status:** PD Dr. Thomas Bartel, MD, Department of Cardiology, Medical University of Innsbruck, Innsbruck, Austria.

13.50 **Patient Selection for Surgical Aortic Valve Replacement in Germany:** Prof.Dr. Theodor Fischlein, Department of Cardiac Surgery, University of Nürnberg, Nürnberg, Germany.

14.10 **MitraClip—State of the Art:** Christian Ebner, MD, Elisabethinen Hospital Linz, Linz, Austria.

Friday, September 14, 2012
13.30 h. – 15.00 h.
Fifth Scientific Session

Role of Interventional Therapy in Heart Valve Disease (Continued)

14.30 **Modern Mitral Valve Surgery:** Prof. Dr. Ludwig Müller, MD, Deputy Director; Julia Dumfarth, MD, Herbert Hangler, MD, Nicolaos Bonaros, MD, Thomas Bartel, MD, Silvana Müller, MD, Anni Heinz, MD, Michael Grimm, MD, FICA; Department of Heart Surgery, University Hospital Innsbruck, Innsbruck, Austria.

Background
Treatment of mitral valve disease has changed dramatically since valve replacement with either mechanical or biological valve prosthesis has become standard of surgical therapy. While valve repair for severe regurgitation has permeated the cardiac surgical community and has become standard in most departments worldwide, minimally invasive surgery has developed during the last decade as a method applicable in most cases with unprecedented advantages regarding cosmesis and surgical trauma without loss of surgical precision and short- and long-term results. Percutaneous valve plasty, however, is an additional measure for patients presenting with certain forms of mitral incompetence inoperable.

Objectives
Aim of the study was to investigate the role of minimally invasive mitral valve operations in comparison to interventional valve therapy.

Methods
Patients who received minimally invasive surgery or interventional valve therapy in our institution were prospectively documented since implementation of the program and analyzed retrospectively.

Results
Since 2001 out of 490 patients who had minimally invasive access surgery through a right lateral mini-thoracotomy, 427 patients received mitral valve operations, 377 patients (88%) had valve repair and 50 (12%) valve replacement. 30 day and hospital mortality was 3 (0.7%). Additionally, since May 2011, 22 patients not amenable for the lateral mini-thoracotomy access received mitral valve surgery through partial upper sternotomy. Mortality in this group was none. Since October 2010 Mitraclip® therapy for inoperable cases was introduced in our hospital. Twelve12 patients were treated, 1 patient died perioperatively, in 1 patient the intervention could not be completed successfully and he received successful minimally invasive valve repair.

Conclusion
Modern treatment of mitral valve disease comprises effective measures for nearly every patient and every pathology. Minimally invasive access surgery is the standard of care in our institution. In the era of highly successful minimally invasive operations interventional techniques should reserved for excessive risk patients.

Friday, September 14, 2012

15.00 h. – 15.30 h.

Sixth Scientific Session

Dr. Jose Alemany Oration Lecture

Ankle Brachial Index in a Cardiovascular Risk Population

A Special Lecture

Pertti Aarnio, MD, PhD, FICA

Professor of Surgery; Member, Board of Directors and Co-Chairperson, Scientific Committee, International College of Angiology; Senior Editor, *International Journal of Angiology;* Member, International Steering Committee, ICA Research and Education Foundation; Chief, Department of Surgery, Satakunta Central Hospital and University of Turku, Pori, Finland.

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15.30 h. – 16.00 h.

Seventh Scientific Session

Distinguished Service Award

Does Vitamin E Suppress, Regress, and Slow Progression of Hypercholesterolemia-Induced Oxidative Stress in the Heart?

Kailash Prasad, MBBS(Hons), MD, PhD, FRCPC, FACC, FICA, FIACS

Professor Emeritus of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Canada; Member, Board of Directors, International College of Angiology; Chairman, Scientific Committee, International College of Angiology; Consulting Editor, *International Journal of Angiology;* Member, International Steering Committee, ICA Research and Education Foundation; Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

Background

Hypercholesterolemia increases the generation of reactive oxygen species (ROS) through various mechanisms. Increases in ROS could be due to decreases in antioxidants. ROS causes peroxidation of unsaturated fatty acids of cell membrane phospholipids resulting in loss of cellular activity. Lipid peroxidation results in the formation of malondialdehyde (MDA), an index of oxidative stress.

Objectives:

The objectives were to investigate: i) if hypercholesterolemia induces oxidative stress in the heart; ii) if the extent of oxidative stress is dependent upon duration of hypercholesterolemia; and iii) if vitamin E, an antioxidant, suppresses, regresses, and slows the progression of hypercholesterolemia-induced cardiac oxidative stress.

Methods

The studies were carried out in New Zealand white rabbits. Cardiac MDA, antioxidant enzymes, and antioxidant reserve [cardiac tissue chemiluminescence (cardiac–CL)] were measured.

Results

Hypercholesterolemia increased the cardiac MDA but has no effect on the cardiac–CL activity. It increased glutathione peroxidase (GSH-Px) activity and decreased superoxide anion activity but had no effect on catalase activity. The extent of oxidative stress was dependent upon duration of hypercholesterolemia. In the suppression study, vitamin E reduced cardiac MDA and cardiac–CL and GSH-Px activities. It had no effect on superoxide anion and catalase activity. In the progression study, vitamin E reduced cardiac MDA but had no effect on cardiac-CL activity. In the regression the study, vitamin E did not reduce the hypercholesterolemia-induced rise in cardiac MDA and cardiac-CL activity.

Conclusion

In conclusion, i) hypercholesterolemia increased the oxidative stress in the heart; ii) the extent oxidative stress is dependent upon the duration of hypercholesterolemia; iii) vitamin suppresses and slows the progression but has no effect on regression of hypercholesterolemia induced oxidative stress in the heart.

Friday, September 14, 2012
16.00 h. – 17.00 h.
Eighth Scientific Session

Anticoagulant Therapy in Specific Diseases

16.00 **A Cohort Study to Analyze Hypercoagulable State in HIV Seropositive Patients—Is It Difficult to Treat with Therapeutic Anti-Coagulation?** Ashish Anil Sule, MBBS, MD, MRCP, FAMS, FICA, FRCP(UK), Nihar Pandit, MD, Prof. Tay Jam Chin, MBBS; Tan Tock Seng Hospital, Singapore.

Background
HIV patients are at risk of developing thrombosis, and are at 8-10 times more likely to develop thrombosis than the general population. Moreover, if they are in a hypercoagulable state, they can have severe thrombosis and life threatening thrombotic events.

Objectives
To analyze the venous thromboembolism (VTE) in HIV seropositive patients who have been diagnosed with hypercoagulable states.

Methods
This study is a sub-group study of a larger cohort group of HIV seropositive patients with venous thromboembolism (VTE) followed up with our Vascular Medicine outpatient clinic.

The patients included for this study were HIV seropositive patients, and diagnosed with hypercoagulable states, analyzed over the last 3 years and followed prospectively. HIV seropositive patients with arterial thrombosis were excluded.

These patients had minimum, regular follow up of 3 months, with a Doppler scan in the beginning and at the last follow-up. All the patients were analyzed for hypercoagulable state, and the patients selected in this study were those were tested positive for hypercoagulable state. All patients were analyzed for age, gender, race, site of thrombosis, coagulation factors, lipid panel, type of antiretroviral treatment, past or present history of infections or malignancy, CD4 absolute and helper cell counts at the beginning of thrombosis, response to treatment and outcome. HIV patients with arterial thrombosis were excluded. This study was approved by Ethics Committee.

Results
There are 5 patients included in this study from a larger group of 8 patients. The study is still ongoing. The mean age was 47.8 years (range 38-58 years). All were male patients with lower limb thrombosis. Most common venous thrombosis was popliteal vein thrombosis, followed by common femoral, superficial femoral, and external iliac thrombosis. Two patients had deficiency of protein S, two had high homocysteine levels, one had deficiency of antithrombin 3, and one had an increase in anticardiolipin IgG antibody. All patients were taking nucleoside and non-nucleoside inhibitors but only 1 patient was taking protease inhibitors. There was no history malignancy. However, two patients had past history of tuberculosis. The mean absolute CD4 counts were 244 cells/UL (range 103 – 392 cells/UL) and helper CD4 counts were 19.6 cells/UL (range 15-30 cells/UL). All were anticoagulated with warfarin or enoxaparin. There was complete resolution of deep vein thrombosis in only 1 patient on long-term anticoagulation without resolution of thrombosis in the other 4 patients despite therapeutic anticoagulation for more than 6 months. All the patients are alive and on regular follow-up.

Conclusion
Thrombosis in HIV patients occurs more commonly in middle aged, community ambulant male patients. The popliteal vein is most commonly involved. Hypercoagulable state noted with deficiency of protein S and hyperhomocystenaemia are the most common factors. Despite therapeutic anticoagulation, most of these patients did not respond.

Friday, September 14, 2012
16.00 h. – 17.00 h.
Eighth Scientific Session

Anticoagulant Therapy in Specific Diseases (Continued)

16.10 **Rivaroxaban for Prevention of Stroke and Systemic Embolism in Patients with Non—Valvular Atrial Fibrillation—The Pros and Cons of Direct Factor Xa Inhibitors:** Tahir Tak, MD, PhD, FICA, Charles Cagin, DO, Ahmed Aslam, MD; Division of Cardiovascular Diseases, Mayo Clinic Health System, La Crosse, Wisconsin, USA.

Background
Warfarin reduces the rate of ischemic stroke in patients with atrial fibrillation. However, it requires frequent monitoring. Rivaroxaban is a Factor Xa inhibitor and, unlike warfarin, does not require frequent monitoring or adjustment of dose. However, in contrast to warfarin, there is no antidote for reversal of rivaroxaban therapeutic effect.

Objectives
The ROCKET trial was designed to evaluate non-inferiority of rivaroxaban compared to Warfarin in treatment of patients with non-valvular atrial fibrillation in the prevention of stroke or systemic embolism.

Methods
The trial was a double blinded prospective randomized trial which studied 14, 264 patients with non-valvular atrial fibrillation who were at increased risk of stroke. The patients were randomized to receive either rivaroxaban (20 mg daily dose) or dose adjusted Warfarin. The study was designed to determine whether rivaroxaban was non-inferior to warfarin for primary end point of stroke or systemic embolism.

Results
The primary end point occurred in 188 patients in the rivaroxaban group (1.7 % per year) and in 241 patients in the warfarin group (2.2% per year); $p< 0.0001$ for non-inferiority. In the intention-to-treat analysis the primary end-point occurred in 269 patients in the rivaroxaban group (2.1 percent per year) and in 306 patients in warfarin group (2.4 % per year); $p<0.001$ for non-inferiority. Major and non-major clinically relevant bleeding occurred in 1475 patients in the rivaroxaban group (14.9 % per year) and in 1449 in the warfarin group (14.5 % per year), $p=0.44$, with significant reductions in intracranial hemorrhage (0.5 % vs. 0.7 %, $P=0.02$, and fatal bleeds 0.2% vs. 0.5 percent, $P=0.003$, in rivaroxaban group.

Conclusion
In patients with non-valvular atrial fibrillation, rivaroxaban was non-inferior to warfarin for the prevention of stroke or systemic embolism. There was no significant difference between the two treatment groups in the risk of major bleeds, although, intracranial and fatal bleeding occurred less frequently in the rivaroxaban group.

Friday, September 14, 2012
16.00 h. – 17.00 h.
Eighth Scientific Session

Anticoagulant Therapy in Specific Diseases (Continued)

16.20 **Tumor Thrombus—How Is It Treated?** Nihar Pandit, MD, Associate Consultant; Veerendra M. Chadachan, MD, MRCP, FAMS, Adjunct Assistant Professor of Medicine, Yong Loo Lin School of Medicine, National University of Singapore, Singapore; Consultant; J.C. Tay, MBBS, Senior Consultant; Department of General Medicine, Vascular Medicine, and Hypertension, Tan Tock Seng Hospital, Singapore.

Background
Development of a bland thrombus in a patient with malignancy is well known. However 'tumor thrombus' which is composed of tumor cells rather than blood cells is uncommon. We report a case of an unusual thrombus in a patient with a primary lung malignancy.

Case Report
An elderly gentleman underwent a biopsy of a left lower lobe pulmonary mass and it was confirmed it to be Non-Small Cell Lung Cancer (NSCLC). A CT of the thorax performed two months after the initial diagnosis showed an incidental finding of tumor extension in the left lower pulmonary vein, with abnormal arterial vascularity within the thrombus and an irregular venous lumen, suggestive of tumor thrombosis.

Discussion
Malignancy is associated with an increased risk of venous thromboembolism by a factor of six and low molecular weight heparin (LMWH) is the treatment of choice in these patients. However, tumor thrombus differs from a bland thrombus and is uncommon in primary lung malignancies. Most cases of tumor thrombus have been reported in the inferior vena cava from renal cell carcinoma and in the portal vein from hepatocellular carcinoma. Within the vessel lumen, malignant cells activate the coagulation cascade (Virchow's triad - venous stasis, release of prothrombotic factors and inflammation), resulting in an increased incidence of a thrombosis.

There are no defined guidelines for management of a tumor thrombus. In addition to chemotherapy and/or radiotherapy for the primary malignancy, it seems prudent to anticoagulate these patients with LMWH to prevent formation of a bland thrombus over and above a tumor thrombus.

Progress
Our patient underwent chemotherapy and radiotherapy in addition to LMWH. Due to a poor response to treatment and disease progression, he succumbed to the NSCLC in 8 months.

Conclusion
Involvement of the vasculature by tumor thrombosis is associated with a worse outcome not only because of advanced malignancy but also due to predisposition to bland thrombus formation. We recommend treating these patients with anticoagulation in addition to primary cancer treatment.

Saturday, September 15, 2012
08.30 h. – 09.00 h.
Ninth Scientific Session

Endovascular Thrombectomy

Dinker B. Rai, MD, FACS, FRCS(C), FICA
Editor, *International Journal of Angiology;* Visiting Clinical Associate Professor of Surgery; SUNY, New York; Visiting Professor Rajiv Gandhi, University of Bangalore, Bangalore, India; Chief, Vascular Surgery; Rafique Muffid, MD, Attending in Vascular Surgery; Marjouri Paul, PA; Interfaith Medical Center, Brooklyn, New York, USA.

Objective
This is a video tape presentation of the technique of endovascular thrombectomy.

Material
Patients underwent radiocephalic, brachiocephalic, brachiobrachial (in translocation) A-V fistula procedures. The study includes 135 A-V fistulas followed by 574 endovascular procedures. The study included fistulogram, maturation, surveillance balloon angioplasties, and thrombectomies. Twenty procedures were thrombectomies. Fifteen of the thrombectomies were done for immediate post-operative fistula failure.

Method
These patients underwent endovascular exploration within a week's period. Thrombectomy was followed with fistulogram and balloon angioplasty of the stenotic vein segments.

Conclusion
In each case, immediate recirculation was established and function of the fistula restored. Two of the 15 post-operative thrombectomies had permanent failure and required a new AV fistula. Endovascular thrombectomy in post-op cases has a failure rate of 13.3%. We compared these results to the past experience of open thrombectomies done in AV fistula post failures, and determined it is more than 65%. Endovascular balloon angioplasty has remarkably changed the patency of AV fistula both during the post-operative, and follow-up period.

Saturday, September 15, 2012

09.00 h. – 10.30 h.

Tenth Scientific Session

Vascular Surgery in Europe
Carotid Artery Stenosis

09.00 **European RCTs—The Carotid Stenting Trialists Collaboration:** Barbara Rantner, MD, PhD, Department of Vascular Surgery, Medical University of Innsbruck, Innsbruck, Austria.

09.12 **Clinical Practice—The VASCUNET Registry:** Professor Gabor Menyhei, MD, PhD, Department of Vascular Surgery, University of Pecs, Pecs, Hungary.

Abdominal Aortic Aneurysms

09.24 **Updates on Small Abdominal Aortic Aneurysms: Effect on Aneurysm Screening:** Professor Janet T. Powell, PhD, MD, FRCPath, Professor of Surgery, Imperial College, London, UK.

09.36 **Management Guidelines from the European Society for Vascular Surgery:** Ingrid Gruber, MD, Department of Vascular Surgery, University Hospital Innsbruck, Innsbruck, Austria.

09.48 **Follow-Up after EVAR—Incidence and Relevance of Endoleaks:** Professor Andreas Chemelli, MD, Department of Radiology, Medical University Innsbruck, Innsbruck, Austria.

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10.45 h. – 12.00 h

Eleventh Scientific Session

Complex Coronary Revascularization: Geographic Variations in Practice

A Round Table Discussion

This program will discuss geographic variations in the management of a complex revascularization case. We have an international panel of interventional cardiologists from Indonesia, Germany, and Austria, who are going to talk about a case of complex revascularization, and explore how doctors in each of the different parts of the world might approach this patient.

Moderator:

O.Univ.-Prof. Dr. Otmar M. Pachinger, MD, FESC, FIHA, FICA, *Chairman*

President-Elect, International College of Angiology; Senior Editor, *International Journal of Angiology;* Head, Department of Internal Medicine and Director, Medical University of Innsbruck, Internal Medicine III-Cardiology, Innsbruck, Austria.

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Panelists:

PD Dr. Hannes Alber, MD, FESC

Associate Professor of Medicine, Department of Cardiology, Medical University of Innsbruck, Innsbruck, Austria.

Iwan Dakota, MD, FICA, FACC, FESC, FSCAI

Regional Secretary, International College of Angiology; Director of General Affairs and Human Capital, National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia.

Univ. Prof. Dr. Christian Kupatt Jeremias, MD, FESC

Medizinische Klinik und Poliklinik I der Ludwig-Maximilians-Universität München, Klinikum Großhadern, Munich, Germany.

Saturday, September 15, 2012
13.00 h. – 13.30 h.
Twelfth Scientific Session

Professor Albert Senn Memorial Lecture
Lower Extremity Revascularization

John B. Chang, MD, FACS, FICA, *Program Chairman*
Professor of Clinical Surgery, Hofstra North Shore-LIJ School of Medicine, New York; Adjunct Professor, Clinical Surgery, Albert Einstein School of Medicine, New York; Chairman, Board of Directors, International College of Angiology; Editor-in-Chief, *International Journal of Angiology;* Director, Long Island Vascular Center, Roslyn, New York; Attending Surgeon, North Shore-Long Island Jewish Healthcare System, New Hyde Park, New York, USA.

Background
The incidence of claudication from peripheral arterial disease (PAD) is related to progression of age of the population, ranging about 17% in the age group of 55-74 years. Most patients with mild symptoms indicating claudication can be treated medically with a risk modification management plan. However, significant ischemic deterioration is a major issue in the vascular surgical field for limb and life preservation efforts.

Objectives
On the basis of 3,000 procedures for lower limb ischemic problems and long term follow-up, this presentation formulates current practices using standard bypass procedures, endovascular techniques and/or a combination of both. In some incidences, when a patient develops severe complications due to failure of an open or endovascular procedure, those problems were met with complex reconstructive procedures. The author formulates the strategy for this management plan and different clinical aspect.

Method
A retrospective analysis of the long-term outcome of standard procedures including aorto-bi-femoral bypass procedures, axillo-bilateral femoral artery bypasses, femoral popliteal, and tibial artery bypasses were analyzed. Endovascular procedures of the complex issues are reviewed.

Result
Fourteen year follow-up graft patencies were tabulated in femoral-femoral artery bypass, aorto-femoral bypass graft, femoral popliteal, and distal bypasses. The long-term limb salvage rate was evaluated using 12 years of data on different types of femoral-tibial bypass using a vein, sequential bypasses, and composite graft.

Conclusion
With optimization of patient's medical/cardiac conditions, control of local sepsis, the application of a variety of complex reconstructive procedures give reasonable outcome to those otherwise unsalvageable problems. Some unusual cases will be presented during this lecture.

Saturday, September 15, 2012
13.30 h. – 14.45 h.
Thirteenth Scientific Session
Cardiovascular Disease

13.30 **Cardiovascular Involvement in Behçet's Disease—Clinical Implications:** Malka Yahalom, MD, DSc, FICA, Co-Chairperson, Membership Committee, International College of Angiology; Editor, *International Journal of Angiology;* Lev Bloch, MD, Suleiman Khaled, MD, Heart Institute, HaEmek Medical Center, Afula, Israel; Bar Rosh, Paramedic, Israeli Defense Force; Yoav Turgeman, MD, Heart Institute, HaEmek Medical Center, Afula, Israel; Rappaport School of Medicine, Technion, Haifa, Israel.

Background
Behçet's Disease (BD), is a multisystem disorder. Vasculitis is the underlying pathological process, in contrast to the classic triad of recurrent uro-genital ulcerations, with uveitis. Vascular involvement in BD includes venous thrombosis, arterial occlusion, pulmonary artery, and aortic aneurysm formation. Cardiac involvement is rare, and often obscure. It includes intracardiac thrombi formation, and is associated with poor prognosis.

Objectives
To raise awareness to cardiovascular (CV) involvement in BD, and emphasize the importance of routine surveillance for CV involvement, to prevent serious outcome, inappropriate interventions, and mortality.

Methods & Results
We described two Mediterranean patients with BD and CV involvement. The first was diagnosed early as a BD patient; the second was diagnosed as such at the time of CV involvement.

Case 1
A 65 year-old male, known to suffer from BD, who needed permanent pacemaker (PPM) therapy, for complete heart block. Two attempts to implant an endocardial PPM via the upper thoracic veins failed due to an old obstruction.

Case 2
A 22 year-old male, with severe clinical and chest x-ray findings, suspected of bilateral pneumonia. CT angiogram documented pulmonary embolism (PE), and an echocardiogram revealed a large thrombus in the right atrium. Therapy with steroids, immunosuppressive and anticoagulant therapy was initiated. His past history included recurrent epididymitis and aphthous stomatitis, compatible with BD diagnosis. Two months later, a recurrent PE was diagnosed.

Conclusion
We recommend that patients diagnosed, or even suspected as suffering from BD should be followed routinely for CV involvement, thus treated early, preventing death and unnecessary or faulty interventions.

Saturday, September 15, 2012
13.30 h. – 14.45 h.
Thirteenth Scientific Session
Cardiovascular Disease (Continued)

13.40 **Long-Term Effects of Varying Alcohol Dosing in Percutaneous Septal Ablation for Obstructive Hypertrophic Cardiomyopathy—A Randomized Study with a Follow-up of up to 11 Years:** Josef Veselka, MD, PhD, FICA, Professor of Medicine; Vice President, International College of Angiology; Editor, *International Journal of Angiology*, Pavol Tomašov, MD, David Zemánek, MD; Department of Cardiology, University Hospital Motol, 2nd Medical School, Charles University, Prague, Czech Republic.

Background
Highly symptomatic patients with obstructive hypertrophic cardiomyopathy (HCM) are candidates for alcohol septal ablation (ASA). We wanted to determine long-term (>60 months) clinical and echocardiographic outcomes of patients treated with low (1-2 ml) or high (>2 ml) doses of ethanol.

Methods
Seventy-six patients were randomized into two arms in a 1:1 ratio, and subsequently were treated by ASA with a low (1-2 ml) or high (>2 ml) dose of ethanol. Clinical and echocardiographic examinations were performed at baseline, 1 year after the procedure and at the end of follow-up (at least 60 months after ASA).

Results
Both groups of patients matched in all baseline clinical and echocardiographic data. In a total of 76 patients, 86 septal branches were ablated in 80 ASA procedures (2 repeat procedures in each group). There were no differences in post-procedural complications. Seven patients (4 vs 3 patients; NS) died during follow-up (60-138 months; median 85 months). Pressure gradients decreased significantly in both groups (from 74±36 to 24±32 mmHg in the low-dose group and from 74±39 mmHg to 18±20 mmHg in the high-dose group). There were no significant differences between the groups, and all main hemodynamic and echocardiographic changes occurred in the first post-procedural year. At final examination, there were no patients with NYHA class >2 dyspnea in either group.

Conclusions
This study demonstrates that ASA for obstructive HCM is safe and effective in long-term follow-up. No differences in long-term efficacy and safety were found between low and high doses of alcohol.

Saturday, September 15, 2012
13.30 h. – 14.45 h.
Thirteenth Scientific Session
Cardiovascular Disease (Continued)

13.50 **Secretory-Phospholipase A-2 is Associated with the Risk of Acute Coronary Syndrome Through Activation of Serum Amyloid-A:** Anwar Santoso, MD, PhD, FIHA, FAsCC, FICA, Department of Cardiology-Vascular Medicine, Faculty of Medicine, University of Indonesia, Harapan Kita Hospital, National Cardiovascular Center, Jakarta, Indonesia; Marita Kaniawati, School of Pharmacy, Bandung Institute of Technology, Bandung, Indonesia; Syakib Bakri, Irawan Yusuf; Faculty of Medicine, University of Hasanuddin, Makassar, Indonesia.

Purpose
In coronary heart disease (CHD), levels of secretory phospholipase A2 (sPLA2) is commonly increased. Serum amyloid A (SAA) is expressed in acute coronary syndromes (ACS), which is needed to verify the hypotheses that sPLA2 is associated with risk of ACS through activation of SAA.

Methods
We conducted a case-control study with 57 male patients with ACS, and 30 controls matched by gender category. Levels of sPLA2, SAA, and myeloperoxidase (MPO) were measured by immunoreactive assay on the basis of a double-antibody sandwich technique.

Results
Levels of sPLA-2, MPO and SAA were significantly higher in patients than those in the control group (11359.0 ± 10372.4 pg/ml *vs.* 1320.5 ± 654.5 pg/ml, $P = 0.00$; 438.6 ± 310.7 ng/ml *vs.* 271.1± 176.8 ng/ml, $P = 0.01$; 10995.2 ± 2842.6 ng/ml *vs.* 3861.7 ± 3173.5 ng/ml, $P = 0.00$). There were significant correlations between ages, visceral obesity, MPO, sPLA2 and SAA ($r = 0.43$; $P = 0.00$; $r = 0.30$; $P = 0.00$; $r = 0.28$; $P = 0.00$ and $r = 0.53$; $P = 0.00$). On multivariate logistic regression analyses, there were significant and independent associations between sPLA2 and SAA with risk of ACS [OR (95% CI) = 14.2 (2.1 – 98.6), $P = 0.00$; OR (95% CI) = 44.9 (6.9 – 328.4), $P = 0.00$].

Conclusions
sPLA2 is a significant and independent predictor of ACS compared to controls through activation of inflammation, represented by elevated SAA.

Saturday, September 15, 2012
13.30 h. – 14.45 h.
Thirteenth Scientific Session

Cardiovascular Disease (Continued)

14.00 **Acute Pulmonary Embolism Mimicking Acute Non-STEMI:** Taofan Siddiq, MD, FIHA, FICA, Ismoyo Sunu, MD, FICA; National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia.

A 40 year-old male was referred to the Emergency Room of Harapan Kita Hospital with the diagnosis of Acute NSTEMI. The ECG showed T wave inversion on V1 to V4 and Troponin T was elevated. The patient was then hospitalized the ICCU and intravenous heparin and dual anti-platelets were immediately started.

Following hospitalization, the next day the patient continued to complete of chest discomfort, which was not alleviated, despite optimal anti-ischemic treatment.

After a more careful look on the EKG, we found an S1, Q3, T3 pattern. Laboratory examinations showed an increase in D-Dimer and the echo study revealed the presence of right ventricular overload, strongly suggesting the presence of pulmonary artery occlusion. CT angiography confirmed the presence of a massive thrombus in the left pulmonary artery. We tried to perform manual thrombo-suction with a 20 ml syringe through MP guiding catheter. However, the result was not that satisfactory. Therefore, we decided then to leave a pigtail catheter in the LPA and start intra-arterial thrombolysis with r-TPA. Although the thrombus in the LPA could not be completely cleared by thrombolysis, the patient subjectively felt much better, and was subsequently discharged with oral anticoagulation therapy.

We learned from this case, pulmonary emboli is one of the differential diagnoses that has to be considered in patients with chest discomfort.

Saturday, September 15, 2012
13.30 h. – 14.45 h.
Thirteenth Scientific Session
Cardiovascular Disease (Continued)

14.10 **The Diagnostic Significance of PAPP-A for Patients with Acute Chest Pain:** Petr Hájek, MD, Milan Macek Sr., MD, PhD, Associate Professor; Martina Pešková, Marie Hladiková, Eva Hansvenclová, Martin Malý, MD, PhD, Josef Veselka, MD, PhD, FICA, Professor of Medicine; Vice President, International College of Angiology; Editor, *International Journal of Angiology;* Departments of Cardiology, Biology and Medical Genetics, Charles University and University Hospital Motol, Prague, Czech Republic; Alice Krebsová, MD, PhD; Department of Internal Medicine and Cardiology, Virchow Klinikum, Humboldt University, Berlin, Germany.

Background
Pregnancy-associated plasma protein-A (PAPP-A) was studied as a marker of acute coronary syndrome (ACS). It has been shown that its levels are increased by heparin administration.

Objectives
The aim of our study was to ascertain the diagnostic significance of PAPP-A in heparin-naïve patients and compare it with troponin I.

Methods
We prospectively studied 67 heparin-naïve patients with acute chest pain. The patients were independently grouped according to the presence or absence of ACS. All patients underwent coronary angiography.

Results
PAPP-A levels were significantly increased in ACS patients (8.6 vs. 7.3 mIU/L; P=0.006) with high positive (95.7%) and lower negative predictive values (47.7%). The combination of PAPP-A and troponin I increased negative predictive value to 58.3 %. In multivariate analysis, PAPP-A levels were strongly predictive of a final diagnosis of ACS (OR 41.8; 95th CI 2.64–662.6; P=0.008). The diagnostic significance of troponin I was higher than PAPP-A even within 6 hours after the onset of chest pain [the area under the ROC curve (AUC) was 0.69 for PAPP-A and 0.91 for TnI, respectively; P=0.08]. We observed no difference in the AUC in NSTE-ACS patients [0.73 for PAPP-A and 0.79 for TnI (P=0.5)].

Conclusion
PAPP-A levels were an independent predictor of ACS diagnosis in heparin-naïve patients. The diagnostic significance of TnI was higher even within a short period after the onset of chest pain. In troponin-negative NSTE-ACS patients, PAPP-A helped make the correct final diagnosis.

Saturday, September 15, 2012
13.30 h. – 14.45 h.
Thirteenth Scientific Session
Cardiovascular Disease (Continued)

14.20 **Thoracoabdominal Ectopic Cordis:** Hananto Andriantoro, MD, FICA; Department of Cardiology and Vascular Medicine, Faculty of Medicine, University of Indonesia, National Cardiovascular Centre, Harapan Kita Hospital, Jakarta, Indonesia.

Ectopic cordis is a rare congenital malformation with prevalence of 5.5-7.9 per million live births, and may occur more in females. This malformation is classified into 4 types according to the position of the heart;

1) Anterior to the sternum (thoracic: 65%)
2) Between the thorax and abdomen (thoracoabdominal: 20%)
3) Within the abdomen (abdominal: 10%)
4) In the neck (cervical: 5%)

A full-term female baby of 3,05 kg was born to a gravida I para 0, 24-year-old mother. The pregnancy and hospital delivery were uneventful. There was no history of infection, intake of any teratogens, drugs, or exposure to radiation in the anti-natal period. She was brought to our center one day after birth.

Clinical examination revealed oral and peripheral cyanosis with a heart rate of 140/min and respiratory rate of 40/min. Her heart was lying outside the thoracic cavity and showed thoraco-abdominal type without pericardium. The coronary vessels were seen clearly. ECG resembled sinus rhythm and echocardiography study revealed situs solitus with normal systemic and pulmonary veins drainage, tetralogy of fallout with normal aortic arch. The patient underwent surgical intervention by covering the naked heart with bovine pericardium. There was not enough space in the thoracic cavity to support the lung, therefore, one third of the heart was placed inside the thoracic cavity, while two thirds of the heart remained outside. The intra-cardiac defect was unable to be corrected. Unfortunately, infection cannot be controlled in such instances, and the patient died forty days after birth.

Saturday, September 15, 2012
14.45 h. – 15.15 h.
Fourteenth Scientific Session

Professor Hans J. Hachen Memorial Lecture
Flaxseed and Slowing of Progression of Hypercholesterolemic Atherosclerosis

A Special Lecture

Kailash Prasad, MBBS(Hons), MD, PhD, FRCPC, FACC, FICA, FIACS
Professor Emeritus of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Canada; Member, Board of Directors, International College of Angiology; Chairman, Scientific Committee, International College of Angiology; Consulting Editor, *International Journal of Angiology;* Member, International Steering Committee, ICA Research and Education Foundation; Department of Physiology, College of Medicine, University of Saskatchewan, Saskatoon, Saskatchewan, Canada.

Background
Flaxseed contains 32% to 45% of its mass as oil, of which 51% to 55%is alpha-linolenic acid. Flax lignin complex (FLC) and secoisolariciresinol diglucoside (SDG) have been isolated from flaxseed. Flaxseed, FLC and SDG suppress hypercholesterolemic atherosclerosis. The objectives are to determine if a) FLC slows the progression of atherosclerosis, and; b) slowing of progression of atherosclerosis is associated with reduction in oxidative stress and serum lipids.

Methods:
The studies were carried out in New Zealand white rabbits. Oxidative parameters [malondildehyde (MDA)] and antioxidant reserve [chemiluminescent activity (CL)] of the aorta were measured. Extent of atherosclerosis in the aorta was measured.

Results:
FLC slowed the progression of atherosclerosis by 31% and this effect was associated with reduction in the MDA levels by 42% and aortic –CL by 43%. There were no alterations in oxygen radical generation by polymorphonuclear leicocytes and serum levels of lipids.

Conclusion
FLC slows the progression of hypercholesterolemic atherosclerosis and this effect was associated with reduction in oxidative stress.

Saturday, September 15, 2012
15.15 h. – 16.15 h.
Fifteenth Scientific Session
Valvular Surgery

15.15 **Reversal of Severe Tricuspid Insufficiency by Switching from Right to Left Ventricular Pacing:** Wolfgang Dichtl, MD, PhD, Florian Huintringer, Otmar M. Pachinger, MD, FICA; Division of Cardiology, Department of Internal Medicine III, Medical University, Innsbruck, Austria.

Purpose
Tricuspid insufficiency due to a right ventricular electrode is an underreported clinical problem. Here we report a case of a 80-year old female in whom removal of a right ventricular lead and implantation of a single left ventricular electrode resolved severe tricuspid incompetence and symptomatic right heart failure.

Case report
A 80-year old female received a VVIR pacemaker due to bradycardiac atrial fibrillation. In the weeks after the implantation she developed progressive shortness of breath and peripheral edema. Transthoracic echocardiography showed new-onset severe tricuspid regurgitation caused by the right ventricular electrode, along with an increase in the estimated systolic pulmonary artery pressure of 55 mmHg. Thoracic computed tomography excluded pulmonary embolism. Right ventricular lead was removed and a single left ventricular lead with 4F diameter was implanted through the coronary sinus into an anterolateral vein. After left ventricular lead implantation, tricuspid regurgitation decreased to grade I and estimated pulmonary artery pressure normalized. Accordingly, the patient no longer suffered from heart failure symptoms.

Conclusion
Placement of a pacing electrode in the right ventricle across the tricuspid valve worsens tricuspid insufficiency in around 20%. In up to 4% of all patients, even severe valve incompetence occurs after implantation, leading to right heart failure. Here we report a possible treatment option for these patients, namely removal of the right ventricular lead and implantation of a single left ventricular lead through the coronary sinus into a left ventricular vein, as established in cardiac resynchronization therapy.

Saturday, September 15, 2012
15.15 h. – 16.15 h.
Fifteenth Scientific Session
Valvular Surgery (Continued)

15.25 **The MitraClip System in Patients after Resynchronization Therapy and Persistent Significant Mitral Regurgitation and Concomitant Heart Failure:** C. Ebner, MD, T. Sturmberger, MD, W. Tkalec, MD. J. Aichinger, MD, R. Steringer-Macherbauer, MD. G. Kabicher, MD, J. Niel, MD, H.J. Nesser, MD, Associate Professor of Medicine, Tufts University Medical School, Boston, Massachusetts, USA; Director, 2nd Department of Medicine, Cardiology-Angiology-Intensive Care, Public Hospital St. Elizabeth, Academic Teaching Hospital, University of Vienna and Innsbruck, Linz, Austria.

Background
Despite cardiac resynchronization therapy (CRT) significant functional mitral regurgitation (FMR) frequently persists and may lead to sustained heart failure (HF) symptoms. Surgery in most of these patients is of limited value due to high perioperative risks whereas medical treatment may fail to compensate HF symptoms. The percutaneous repair with the MitraClip system offers an additonal therapeutic option in selected CRT-patients.

Objectives
To show improvement of mitral regurgitation and NYHA class in symptomatic elderly patients with heart failure after resynchronization therapy.

Methods and Results
Between August 2009 and March 2012 MitraClip treatment was performed in 16 patients after previous device implantation (CRT-P or CRT-D). Indication of percutaneous catheter-based mitral valve repair with the MitraClip system was significant MR ≥grade 3 and persistent symptoms of Heart Failure NYHA ≥3. Patients mean age was 72.5 yrs. (IQR:67-76) and 62.5% were male. Median time after resynchronization therapy was 57 months (IQR: 27-67). In 8/16 patients a CRT-D system was in place and in 31.3% an ischemic cardiomyopathy was the underlying pathology of mitral regurgitation. LVEF was markedly reduced in all patients (mean LVEF 24.7±6.4%) and 6/16 patients even had a LVEF ≤25%. Accordingly the log. Euroscore was markedly elevated (mean 29.5 ±14.4%).

A single clip was succsessfully implanted in 11 patients, 3 patients got 2 clips, whereas, 1 patient received three clips. In one patient the clip could not be positioned appropriately, so treatment was feasible in 15/16 patients. In all successfully treated patients we could significantly reduce the mitral regurgitation intensity from grade 3.5±0.35 to grade 1.4±0.38. Stage of heart failure could be reduced from mean NYHA class 3.7±0.31 to 2.4±0.5. Significant improvements in the Kansas City Cardiomyopathy Questionnaire (KCCQ) and the 6 minute walk test and significant reduction in the NT proBNP test and the left atrial Index could be achieved at 6 month.

We had no major complications, only one patient developed cardiac tamponade treated succesfully by conservative means. One patient underwent successful heart transplantation due to deterioration of heart failure even reduction of mitral regurgitation was consistent.

In-hospital and 30-day mortality was zero. Despite multiple co-morbidities the 6 month mortality was 8.3% and 12 month mortality was only 20% in this sick group of patients. ICU mean duration was 2 days and total hospitalitzation was median 8.5 days (IQR; 6.25-11days).

Conclusion
Mitral valve repair with the MitraClip system can be an an attractive option in patients with significant mitral regurgitation and continous heart failure symptoms despite cardiac resynchronization therapy.

Saturday, September 15, 2012
15.15 h. – 16.15 h.
Fifteenth Scientific Session
Valvular Surgery (Continued)

15.35 **Single Center Experience with Paravalvular Leak Closure after Recurrent Mitral Valve Surgery:** Christian Ebner, MD, W. Tkalec, MD, J. Aichinger, MD, R. Steringer-Mascherbauer, MD, T. Sturmberger, MD, V. Eder, MD, H.J. Nesser, MD, Associate Professor of Medicine, Tufts University School of Medicine, Boston, Massachusetts, USA; 2nd Department of Internal Medicine, Cardiology-Angiology-Intensive Care, Elisabethinen Hospital Linz GmbH, Linz, Austria.

Background
Paravalvular leak (PVL) is a common complication after surgical valve replacement with reported incidence up to 17% for prosthetic valves in the mitral position. Although most of these leaks are clinically silent, in up to 3% of these patients reoperation is needed due to heart failure symptoms or hemolysis. Percutaneous closure of periprosthetic paravalvular leaks has been proposed as an attractive alternative to surgical closure particularly in high risk patients. Herewith we present our experience using this technique.

Objectives
Feasibility and safety to close paravalvular leakages in symptomatic patients after surgical mitral valve procedures

Methods and Results
The first procedure, was the first in Austria, and performed in our institution in June 2010. As of November 2011 we performed 5 procedures in 4 patients (50% male) with a mean age of 65 ± 8.8 years. All of them had bileaflet mechanical prostheses and signs and/or symptoms of heart failure. Additionally, hemolysis criteria were evident: hemoglobin ≤ 10 g/dl (mean 8.5±1), Lactate Dehydrogenase: ≥ 600 mg/dl (median 2114, IQR 1275-4495), and haptoglobin: ≤ 10 mg/dl (mean 1±1.7). All had at least ≥2 previous redo-operations of their prostheses due to paravalvular leaks and ≥2 blood transfusions in the past to correct anemia.

The procedure was performed under fluoroscopy and guided by 2D/3D transesophageal echocardiography (Philips IE 33) to determine the size and location of the PVL's. Duration of the procedure was mean 165 ± 49 minutes, and 4 of the 5 procedures were done using an antegrade approach via the V.fem. dext. with consecutive transseptal puncture. In 1 procedure a retrograde approach via the A.fem. dext. was choosen and passing the aortic valve. In all of the patients 2 Amplatzer Vascular Plugs III were placed followed by significant reduction of the regurgitant flow in 3/4 patients. No periprocedural complications occurred and all patients are still alive. In one of the patients a second PVL could not be closed due to anatomic conditions (introduction of the guidewire but not catheter passage). Nevertheless, the for blood transfusions could be reduced. Two of the 4 patients had an excellent result disclosing only trivial residual paraprosthetic regurgitation, significant reduction of hemolysis criteria, and clinical improvement. In 1/4 patients significant paravalvular regurgitation remained, and finally this patient underwent a redo mitral valve replacement at risk due to symptomatic heart failure.

Conclusion
Transcatheter closure of PVL after previous valve surgery can be attempted with acceptable success rates in our series without complications. This procedure seems to be an attractive alternative in patients after previous surgical valve procedures, complicated by paravalvular leaks combined with distinct hemolysis or significant mitral regurgitation. In our series this technique was exclusively performed in patients with distinct comorbidites or high surgical risk of a redo operation due to failed previous leak repair.

Saturday, September 15, 2012
15.15 h. – 16.15 h.
Fifteenth Scientific Session
Valvular Surgery (Continued)

15.45 **Minimally Invasive Double Valve Surgery: Five-Year Experience:** Julia Dumfarth, MD, Anneliese Heinz MD, Herbert Hangler, MD, Juliane Kilo, MD, Severin Semsroth, MD, Michael Grimm, MD, FICA, Ludwig Müller, MD; Department of Cardiac Surgery, Innsbruck Medical University, Innsbruck, Austria.

Background
Minimally invasive techniques for valve surgery have emerged as a safe and efficient approach in many institutions. Based on data and growing experience of minimally invasive mitral valve procedures, the technique was extended to double valve surgery. The aim of this study was to evaluate immediate and mid-term outcome in patients receiving minimally invasive double valve surgery with or without additional atrial ablation or closure of atrial septal defect.

Methods:
Consecutive patients undergoing minimally invasive double valve surgery were retrospectively analyzed. Patient data, intra-operative course, post-operative outcome as well a follow-up data were collected.

Results:
From 2006-2011 a total of 95 patients underwent minimally invasive double valve surgery through a mini-thoracotomy. Mean patients age was 67.4 years (range 38-86), 52% were female. In 80 patients (84.2%) mitral valve repair could be performed, all patients received tricuspid valve repair. In hospital mortality was 2.1%. During a mean follow-up period of 25.5 months (range 1 – 72) the reoperation rate was 5.4% (n=5). Mean survival rates at 1, 3 and 5 years were 96.1% ± 2.2% and 93.1% ±3% and 88.4% ± 5.4%.

Conclusion
Minimally invasive tricuspid valve repair indicated for severe tricuspid regurgitation or annular dilatation can be added safely to mitral valve surgery with or without atrial ablation. Neither mortality nor major complications related to the combined procedures were increased.

Sunday, September 16, 2012
09.00 h. – 09.30 h.
Sixteenth Scientific Session

Professor Kailash Prasad Oration Lecture
The Aortic Wall: Four New Insights

A Special Lecture

John A. Elefteriades, MD, FICA
William W.L. Glenn Professor of Cardiothoracic Surgery; Vice Chairman and Member, Board of Directors, International College of Angiology; Co-Chairperson, Scientific Committee, International College of Angiology; Co-Editor-in-Chief, *International Journal of Angiology;* Member, International Steering Committee, ICA Research and Education Foundation; Chief, Section of Cardiothoracic Surgery, Yale University School of Medicine, New Haven, Connecticut, USA.

Background
In this didactic talk, four specific questions regarding the aortic wall are addressed with new data.

Methods
We address the following questions:

1) Can the aortic wall communicate with us?
2) What happens anatomically when the aortic wall thins?
3) Do the mechanics of the aortic wall correlate with its clinical behavior?
4) How can we monitor the pathophysiology of the aortic wall?

Question 1 is addressed by careful analysis of aortic findings in the operating room; Question 2 by light microscopy; Question 3 by novel bi-axial engineering studies; and Question 4 by large throughput RNA analysis.

Results
1) The aortic wall does communicate with us: Patients with pain undergoing surgery often have positive physical findings in and around the aorta: adhesions, injection, extreme thinning, or irregular contour.

2) Aortic wall thinning is accompanied histologically by loss of bulk and number of medial lamellae.

3) In novel bi-axial stretch experiments, we find that mathematical modeling predicts rupture at precisely the same 5.5 to 6 cm diameter that this occurs clinically.

4) A novel blood RNA Signature test, gleaned by isolating the 41 most up- or down-regulated of 33,000 RNAs studied allows us to diagnose aneurysm disease non-invasively and promises to give glimpses into the real-time aortic wall pathophysiology.

Conclusions
1) It is imperative to pay attention to pain symptoms in aneurysm patients.
2) A very thin aorta wall or a localized aortic "bubble" has lost its vital medial layers and consists largely of intima and media.
3) Mathematical modeling thoroughly endorses current clinical size criteria for aortic resection.
4) We may soon be able to "biopsy" pathophysiological conditions in the aortic wall by a simple blood test.

Sunday, September 16, 2012
09.30 h. – 10.00 h.
Seventeenth Scientific Session

Kidney Transplant and Cytokines

09.30 **A Role for Inflammatory Cytokines, as Surrogate Markers in Kidney Transplant Recipients:** Ahmed S. Shoker, MD, FICA, Professor of Medicine and Nephrology, University of Saskatchewan College of Medicine; Saskatchewan Transplant Program, St. Paul's Hospital, Saskatoon, Canada.

Inflammation is known to play a central role in cardiovascular disease and in rejection. Transplant patients are at high risk to develop CVD and chronic rejection. In an attempt to predict these detrimental events, many investigators developed interest to develop surrogate markers. Immunological markers such as T-helper cell frequency, ELOSPOT, and proteomic analysis remain investigational tools.

Inflammatory cytokines (Chemokines, CCL) are appealing markers. Their role in other diseases is well established. Many markers of inflammations are elevated in transplant patients and patients with CVD. None is yet known to serve as a potential marker for transplant health.

Therefore, we aimed our research to determine which inflammatory cytokine better fit as the surrogate marker for both CVD and transplant function in kidney recipients.

We use Luminex procedure to study over 30 inflammatory markers in our transplant patients. We correlate levels of plasma cytokines with cardiovascular clinical scoring system like the Framingham score system.

So far, we found different patterns of elevated CCLs. Some correlated with GFR and others correlated with FRS. Of importance, Chemokines 8 and 27 were the only two CCLs that correlated with both GFR and FRS. We propose that these two CCLs are potential markers because they correlated with both GFR and at the same time the Framingham Cardiovascular Risk Score (FRS). Thus, these two chemokines may act as surrogate markers for kidney transplant health.

Sunday, September 16, 2012
09.30 h. – 10.00 h.
Seventeenth Scientific Session

Kidney Transplant and Cytokines (Continued)

09.45 **Lack of an Association between Inflammatory Cytokines and Framingham Risk Scores in a Kidney Transplant Population:** Jonathan Dean, BSc, College of Medicine, University of Saskatchewan, Saskatoon, Canada; Holly Mansell, BSP, PharmD, Nicola Roassen, BSC, BSP, Saskatchewan Transplant Program, St. Paul's Hospital, Saskatoon, Canada; Ahmed S. Shoker, MD, FICA, Professor of Medicine and Nephrology, Department of Medicine, University of Saskatchewan, Saskatoon, Canada.

Background
Inflammation plays a central role in cardiovascular disease. The Framingham Cardiovascular Risk Score (FRS) predicts cardiovascular events. This study examined whether FRS correlates with inflammatory cytokines (CCL family) in a stable kidney transplant population.

Methods
Seventy-nine transplant recipients were enrolled in this prospective study. Fourteen CCLs (1, 2, 3, 4, 5, 8, 11, 13, 17, 15, 21, 26, and 27) were measured in patient plasma by Luminex technique. The 10-year probability of developing cardiovascular disease was estimated by modified FRS (2009). Study subjects were sorted according to FRS: low risk (<10%), moderate risk (10-19%), and high risk (≥20%). Standard statistical analyses were performed between FRS, patient demographics, eGFR, immunosuppressants, and CCLs. Luminex plasma samples were also analyzed on a control group of 26 normal subjects.

Results
In this study, 36.7% of patients were classified as low FRS, 11.4% as moderate FRS, and 51.9% as high FRS. Height, weight, BMI, and transplant duration were not significantly different between the high- and the low-risk groups, while in the multivariate analysis, age, and diabetes were significantly higher in the high-risk group. Estimated GFR in high- and low-risk groups were similar, [(49.9±24.4) mL/min, and (58.7±34.0) mL/min, respectively; p=0.3] and did not correlate with FRS, as measured by IDMS (r=0.01, p=0.3). All CCL levels were similar between the high- and low-risk groups. Five CCLs (1, 4, 8, 15, and 27) were significantly elevated (p≤0.04) in all transplant patients groups above the control group. Linear correlation between FRS and all CCLs had an r of less than 0.2 (p=n.s.). Estimated GFR correlated significantly with CCLs 2, 5, 8, 15, and 27 in all transplant patients.

Conclusion
One-half of kidney transplant recipients have a high FRS. While CCL levels are increased in all kidney transplant patients, there is a discordant relationship between FRS and inflammatory cytokine levels. Increased CCL levels and, therefore, inflammation found in the low-risk FRS group may explain why FRS underestimates CV events in kidney transplant recipients.

Sunday, September 16, 2012
10.00 h. – 10.30 h.
Eighteenth Scientific Session

Professor John B. Chang Oration Lecture
Serial Doppler Studies and Selective Angiographic Interventions to Address Early Transplant Renal Artery Flow Abnormalities

A Special Lecture

Ernesto P. Molmenti, MD, PhD, MBA, FICA
Professor of Surgery, Departments of Surgery and Medicine, Hofstra North Shore-LIJ School of Medicine, Uniondale, New York, USA; Vice Chairman, Department of Surgery, Director, Transplant Program, North Shore-LIJ Health System, Manhasset, New York, USA; Editor, *International Journal of Angiology.*

Background
Arterial thrombosis of renal allograft results in loss of function, which is likely permanent. Hence, interventions that predict and prevent this are of significant value to prevent such catastrophe. We routinely do immediate postop and 1 month follow up ultrasound Doppler examination of the allograft kidney and address any suspicion of significant stenosis with a follow up Doppler and angiogram. Angiographic abnormalities are addressed appropriately based on the degree of severity. Angiogram with appropriate intervention of persistent Doppler abnormalities may be important to prevent allograft dysfunction.

Objectives
To evaluate the role of angiogram and need for interventions on early sonographic flow abnormalities (EFA) detected in adult kidney allograft renal arteries.

Methods
Retrospective data collected on 96 consecutive kidney recipients were reviewed for EFA, and angiogram and intervention.

Results
More than 85% of recipients showed EFA in the form of elevated velocity or abnormal resistive indices (RI). Of these 95% EFA resolved or improved by 4 weeks after transplantation. In 5.6% cases angiogram was performed to evaluate persistent or progressive significant abnormality. Only 1.4% required angioplasty and stent placement at 6 months of follow up. Persistently diminished RI of less than 0.6 and tardus parvus wave form (TP) were present when intervention was required. No allografts were lost to thrombosis or ischemic nephropathy during the follow up.

Conclusion
EFA are common in renal allograft recipients but most resolve on follow up. RI of less than 0.6; Persistent TP and persistent or progressive elevated flow velocities even 1month after transplant may indicate need for an angiographic evaluation and intervention.

Sunday, September 16, 2012
10.45 h. – 12.00 h.
Nineteenth Scientific Session
Peripheral Vascular Diseases

10.45 **Ins and Outs of Our Simplified Subfascial Endoscopic Perforating Veins Surgery (SEPS)—Differences from Original Gloviczki's Method:** Naoki Haruta, MD, FICA, Editor, *International Journal of Angiology;* Departments of Vascular Surgery and Endoscopic Surgery, Takanobashi Central Hospital, Jinyoukai Medical Corporation, Hiroshima, Japan.

Background
In Japan, SEPS was authorized by the Ministry of Health, Labor, and Welfare in May of 2009. Therefore, there were some reports about technical difficulties concerning the SEPS techniques, and complications such as subcutaneous emphysemas from facilities where SEPS was tried for the first time.

Objectives
Our SEPS procedures have been so simplified over the last 10 years, with the most important key point was to change the access port. The name of this port is Endo TIP® cannula, which was developed by the Karl Storz Company in Germany. All of the installments, which we use for our Two Port System SEPS, were originally designed for laparoscopic cholecystectomy. The features of this new access port include:

1) It is made of metal, and therefore, reusable.
2) It maintains air tightness very well.
3) It is very easy to change the depth of the port during the operation.
4) The access port can easily be moved in any direction.

Results
We will show our SEPS operation procedures, and point out the differences from the original method by Peter Gloviczki. SEPS can be accomplished without:

1) The inflation of an air tourniquet at the thigh
2) A dissection balloon catheter
3) A CO_2 gas injection at a high pressure

There were no complications such as subcutaneous emphysema, and it took an average of 18.3 minutes to complete a SEPS procedure in our recent series of 40 cases.

Conclusion
Our SEPS procedures are simplified—so it is easy to use in any hospital, even by surgeons with no prior knowledge of the SEPS procedures.

Sunday, September 16, 2012
10.45 h. – 12.00 h.
Nineteenth Scientific Session

Peripheral Vascular Diseases (Continued)

10.55 **Subclinical Organ Damage Among Hypertensive and Non-Hypertensive Risk Subjects in a General Population:** Päivi E. Korhonen, MD, PhD, FICA, Central Satakunta Health Federation of Municipalities, Harjavalta, Finland; Pertti T. Aarnio, MD, PhD, FICA, Professor of Surgery; Member, Board of Directors and Co-Chairperson, Scientific Committee, International College of Angiology; Senior Editor, *International Journal of Angiology;* Member, International Steering Committee, ICA Research and Education Foundation; Chief, Department of Surgery, Satakunta Central Hospital and University of Turku, Pori, Finland.

Background
Hypertension related structural and functional alterations can be detected in several organs before clinical symptoms occur. These target organ damages can be seen as intermediate endpoints for cardiovascular events, and they markedly increase the patient's total cardiovascular risk beyond that caused by the simple presence of risk factors.

Objectives
We assess the impact of high blood pressure *per se* at the vascular, renal, and cardiac level by comparing organ involvement in hypertensive and non-hypertensive risk subjects without established cardiovascular or renal disease or diabetes.

Methods
We compared signs of sub-clinical organ damage in middle-aged subjects with previously undiagnosed hypertension (n = 138) to non-hypertensive risk subjects (n = 440) with metabolic syndrome, newly detected glucose disorders, body mass index ≥30 kg/m^2 or a ten year risk of cardiovascular disease death of 5% or more according to the Systematic Coronary Risk Evaluation (SCORE) system. We measured ankle-brachial index (ABI), estimated glomerular filtration rate (eGFR), electrocardiographically determined left ventricular hypertrophy (ECG-LVH) and cardio-metabolic risk factors including oral glucose tolerance test (OGTT).

Results
Subjects with previously undiagnosed hypertension differed from risk subjects without hypertension only in regard to higher blood pressure levels, higher prevalence of normal OGTT (62% vs. 44%, p <0.001), and lower prevalence of impaired fasting glucose (18% vs. 38%, p <0.001).

Of the subjects with newly diagnosed hypertension, 14% had ECG-detected LVH, 31% had peripheral arterial disease (PAD) or borderline PAD. Among the risk subjects without hypertension, none had ECG-LVH (p <0.001), 17% had PAD or borderline PAD (p <0.001). On the contrary, mean eGFR values or the prevalence of renal insufficiency defined as eGFR <60 mL/min/1.73 m^2, did not differ between the study groups.

Conclusion
Hypertension *per se* seems to play a major role in the development of atherosclerotic lesions in the peripheral arterial tree, while renal function may be more affected by metabolic risk factors. Effective screening methods to identify hypertensive subjects in the general population are warranted.

Sunday, September 16, 2012
10.45 h. – 12.00 h.
Nineteenth Scientific Session

Peripheral Vascular Diseases (Continued)

11.05 **Esthetic Advantage of Cryotherapy in Tributary Varicosity Patients:** Jung Kee Chung, MD, PhD, In Mok Jung, MD, PhD; Boramae Hospital, Seoul National University College of Medicine, Seoul, Korea.

Objectives
Cryotherapy (CA) has recently been introduced as a new treatment modality in varicosity treatment. Cryostripping (CS) is effective in removing saphenous truncal varicosity by small incision and cryoavulsion is also effective to remove tributary varicosity by puncture wound. In using both methods, multiple varicosity patients can be treated through same the puncture wound with a good esthetic outcome.

Methods
During a 2-year period (January 2010 to December 2011) varicosity patients whose clinical class were 2-4 in CEAP class had been treated by CS of the GSV or SSV with 1-2 small incisions, and CA was performed in the same wound with 1-2 more puncture wounds. Complication and satisfaction scores such as VCSS (Venous Clinical Severity Score) and AVVSS (Aberdeen Varicose Vein Severity Score) were evaluated.

Results
1) In 58 patients, male to female ratio was 33:25, mean age was 47.0±13.6 and in CEAP class, C2:31 C3:23 C4 4 patients in each and all patients were As2, 3 and 4.
2) The number of puncture wounds were 2.13±0.85 (except groin incision).
3) Complications of hematoma occurred in 53 cases (91.4%), which subsided within 2 months. Mild neuralgia occurred in 20 cases (34.5%), and were easily controlled with analgesics.
4) Patient's sick leave from work was 4.3±1.7 days.
5) In 55 patients with a follow-up of 2 months, VCSS change were 4.25±1.12 / 0.75±0.69 and AVVSS change were 8.52±0.99 /1.11±0.89 (preop/postop 2 months).

Conclusion
1) Cryoavulsion of tributary varicosity may be combined with cryostripping, thereby, minimizing additional puncture wounds efficiently.
2) Hematoma incidence was high due to incidental subcutaneous fat removal during the early postoperative period.
3) The 2 month post-operative cryotherapy resulted in minimal puncture scars on patient's esthetic aspects.

Sunday, September 16, 2012
10.45 h. – 12.00 h.
Nineteenth Scientific Session

Peripheral Vascular Diseases (Continued)

11.15 **Anatomical Popliteal Artery Entrapment Syndrome Caused by Aberrant Plantaris Muscle:** Yong-Jae Kwon, MD, Tae-Won Kwon, MD, PhD; Division of Vascular Surgery, Department of Surgery, University of Ulsan College of Medicine and Asan Medical Center, Seoul, Korea.

Objective
We report anatomical popliteal artery entrapment syndrome (PAES) caused by aberrant plantaris muscle and emphasize aberrant plantaris muscle as a cause of PAES.

Summary Background Data
Ten anatomical PAES caused by aberrant plantaris muscle in 10 patients among 37 anatomical PAES in 24 consecutive patients with PAES were treated at the Division of Vascular Surgery, Asan Medical Center, Seoul, Korea between 1995 and 2011.

Methods
We retrospectively analyzed patients' records, MRI and/or CT scan of the knee, and Doppler pressure study, CT angiography, and conventional femoral arteriography including forced plantar flexion of the ankle to evoke symptoms.

Results
All aberrant plantaris muscle originated higher and more medial than normal plantaris muscle, and run across the popliteal artery at the level of popliteal fossa. Popliteal artery entrapment happened on provocation test using forced plantar flexion or dorsiflexion of the foot that was proven on angiogram. All patients were male except one with median age of 26.5 years old. Regarding arterial pathology, 5 segmental occlusions of the popliteal artery, 3 patent popliteal arteries with provocation positive, and 2 patent with provocation negative were noted. As for the treatment of non-occlusive popliteal artery lesion, myotomy was performed in all provocative positive patients regardless of symptoms. Observation only was conducted for provocation negative patients regardless of symptom. Regarding popliteal artery occlusions, 3 femoro-below knee popliteal bypasses, 1 thrombectomy with patch angioplasty were performed on each, and conservative treatment was conducted in 1. As a result, all legs were free from symptoms during median 88 (7-148) months follow up period.

Conclusions
Aberrant plantaris muscle would be another mechanism of PAES, and new classification based on axial study using CT scan or MRI, that seems to be more practical than previous classifications based on embryology and operative finding. Treatment should be individualized including myotomy of the plantaris muscle when preoperative provocation examination showed positive results.

Sunday, September 16, 2012
10.45 h. – 12.00 h.
Nineteenth Scientific Session

Peripheral Vascular Diseases (Continued)

11.25 **First Long-Term Experience with Intravenous Treprostinil Administered by the Implantable Infusion Pump LenusPro®: A Single-Center Pilot Study:** Regina Steringer-Mascherbauer, MD, V. Eder, MD, Ch. Huber, MD, S. Wittrich, MD, R. Függer, MD, U. Fröschl, MD. H.J. Nesser, MD; Departments of Cardiology and Surgery, Public Hospital Elisabethinen Linz, Academic Teaching Center, Linz, Austria.

Introduction

Pulmonary arterial hypertension is a progressive fatal disease. Despite advances in pharmacological treatment prognosis in severe PAH, especially in New York Heart Association (NYHA) functional class III and IV remains poor. Parenteral prostanoids are considered to be the most potent agents in the treatment of pulmonary arterial hypertension (PAH). Beneficial long-term effects indicating a survival benefit for both i.v. Epoprostenol and Treprostinil–administered either intravenous (i.v.) or subcutaneous (s.c.). Treprostinil is a stable long-acting prostacyclin analogue which can be administered as continuous s.c or i.v. infusion. However, administration of prostanoids with external pump systems is technically challenging and associated with side effects such as infusion site pain with s.c., and possibly life-threatening catheter-related infections with i.v. administration. The Lenus Pro® implantable infusion pump was specifically developed to overcome the drawbacks of s.c. administration of Treprostinil. In 2010, we reported the first implantation of a Lenus Pro® pump with a filling interval of 28 days (CHEST 2010).

Methods

A retrospective chart review was performed to assess safety and efficacy of i.v. Treprostinil delivered by Lenus Pro®. The study was approved by the local ethics committee.

Results

The study group evaluated 15 consecutive patients, who were transitioned from s.c. to i.v. Treprostinil delivered by the implantable infusion pump Lenus Pro® between September 2010 and May 2012. We performed a retrospective single-center study, the follow up until now being 150 treatment months. This was the first clinical study with the implantable pump Lenus Pro®. No intraoperative complications were observed. So far 160 refill procedures have been performed without any complications. No local or systemic infections occurred. All patients reported a dramatic increase in quality of life. The mean dose of s.c. Treprostinil at the time of implantation was 21.9 ng/kg/min (range 16.25 -32.5 ng/kg/min). To further improve hemodynamics the Treprostinil dose was increased to a mean dose of 33 ng/kg/min (17,5 – 50 ng/kg/min) during follow up.

Conclusions

This first pilot study demonstrates that i.v. Treprostinil, delivered by the implantable pump Lenus Pro® is safe, effective and feasible in PAH patients transitioned from s.c. Treprostinil. Filling intervals of 28 days ensure optimal compliance and long-term patient management. The absence of side effects such as infusion site pain is associated with a dramatic increase in quality of life.

Sunday, September 16, 2012
13.00 h. – 15.00 h.
Twentieth Scientific Session
Vascular Surgery

13.00 **A Dual Incision Approach for Complete First Rib Resection to Prevent Injuries and Recurrence in Thoracic Outlet Syndrome (TOS):** J. Ernesto Molina, MD, PhD, FICA, Professor of Surgery; Co-Chairperson, Scientific Committee, International College of Angiology; Editor, *International Journal of Angiology,* Official Journal of the International College of Angiology; Division of Cardiovascular and Thoracic Surgery, Department of Surgery, University of Minnesota, Minneapolis, Minnesota, USA.

Background
Often enough resection of the first rib is done incompletely, leading to failure or recurrence of symptoms.

Objective
Design a new modified technique to achieve complete removal of the first rib without leaving a posterior stump, or causing vascular and/or neurogenic injuries or pneumothorax.

Methods
The operation uses two incisions: One transaxillary to dissect the anterior portion of the first rib and a second one posteriorly behind parallel to the trapezius ridge. For the first stage, a mechanical arm holder maintains the arm abducted at 90 degrees while a single Omnitrack* blade retracts the pectoralis major muscle anteriorly. Pneumothorax is totally prevented by subperiosteal dissection of the rib creating an extrapleural space before dividing the anterior scalene muscle. Once completed, the arm is taken down. A second incision is made behind the trapezius ridge. The *levator scapulae* retracted laterally and the posterior end of the rib exposed. Medial scalene muscle is divided. The rib is transected flush to the spine level. A series of 203 consecutive patients were operated. Ages 12 to 65 years: 144 females, and 59 males. TOS was bilateral in 8 (4%). Cervical rib was found in 13 (6.5%). Subclavian artery impingement was preoperatively diagnosed by duplex-ultrasound in 96 (48%). Congenital fusion of the 1^{st} and 2^{nd} ribs was found in 3 (1.3%).

Results
No deaths or bleeding occurred. Hospitalization averaged 3.2 days. Recurrence of symptoms was observed in 3 (1.3%), and 194 (97%) returned to their usual occupations and have been followed from 6 months to 24 years.

Conclusions
A dual approach as described is safe and accomplishes complete removal of the first rib without risking pneumothorax, vascular or neurogenic injuries and precludes reoperations due to incomplete rib removal.

Sunday, September 16, 2012
13.00 h. – 15.00 h.
Twentieth Scientific Session
Vascular Surgery (Continued)

13.10 **Complex Infrapopliteal Reconstructions in the Interventional Era:** Manfred M. Deutsch, MD, J. Meinhart, PhD, M. Grabenwöger, MD, N. Howanietz, MD, G. Mertikian, MD, C. Vordermeier, MD, P. Zilla, MD, PhD; Departments of Cardiovascular Surgery and Radiology, Hietzing Hospital, Vienna, Austria; Christian Barnard Cardiothoracic Department, Groote Schuur Hospital, University of Cape Town, Cape Town, South Africa.

Introduction
In the treatment of atherosclerotic occlusive disease the frequency of peripheral endovascular interventions continues to rise (1). Concomitantly, surgical infra-popliteal reconstructions remain on the decline. It is evidence based knowledge that in case of failing endovascular interventions, the outcome of subsequent open repairs is significantly worse than in primary reconstructions (2). This implies that standard surgical bypass procedures have become more demanding and less effective in the wake of an altered and impaired post-interventional infra-popliteal vasculature. This is particularly the case if dependent on prosthetic vascular grafts. Addressing these increasingly challenging framework conditions for distal reconstructions, we applied the more complex methods of sequential- and jump-grafts and introduced the technique of bridge grafts (3).

Materials and Methods
We report on 136 infra-popliteal surgical reconstructions whereby 55 procedures have been done as sequential and jump graft bypasses and 81 as so-called "bridge grafts" (3) using a venous bridge between two distal segments and PTFE as inflow conduit from the groin. As the availability of a suitable saphenous vein was a prerequisite for sequential grafts, bridge grafts were the treatment of choice in the absence of suitable autologous bypass conduits.

Sequential and Jump Grafts
We report on a consecutive series of patients (39 males; 12 females; 4 bilateral procedures; mean age was 67.6 ± 11.2 years in whom the distal anastomoses were either sequential *[to two crural arteries; one crural and the popliteal artery or two crural arteries and 5 times as third anastomosis the popliteal artery; (34 reconstructions)]* or in anatomical downstream continuity *[jump grafts; 21 reconstructions]* extending an infrapopliteal bypass to a crural artery. In sequential grafts the side-to-side anastomosis was performed 17 times to an isolated popliteal segment, 12 times to the peroneal and 4 times to the posterior tibial artery and once to the tibio-fibular trunk. In 5 procedures 2 side-to-side anastomoses were performed with the most proximal one being to the popliteal segment. The distal end-to-side anastomosis was in 13 cases to the posterior tibial artery, in 12 to the peroneal artery, in 7 to the anterior tibial artery and in 2 to the dorsal pedal artery.

In jump grafts there were 7 femoro-popliteal bypasses which continued as jump graft to the posterior tibial (3 times), to the anterior tibial (2 times) and the peroneal artery (2 times). Jump grafts on the basis of a femoro-crural bypass were anastomosed to the anterior tibial artery in 10, to the peroneal artery in 2 and to the dorsal pedal artery in 2 procedures 47 procedures were primary procedures and 8 were re-operations. In 81 **Bridge Graft** procedures a small piece of vein (GSV or LSV) was used to connect two crural arterial segments, a concept first described by Frank Veith in 1985. The length of the vein bridge (tibio-tibial in all cases) varied from 5 to more than 20 centimeters. In order to allow blood flow in both directions, venous valves - if present - were made incompetent. A PTFE graft was used as the inflow vessel from the groin, and anastomosed close to the proximal anastomosis of the bridge. All patients were operated for critical limb ischemia (CLI) (n = 37) or tissue loss (n = 44). The mean age was 70.58 +-8.7 years, 53 patients were males and 28 females. In all patients intra-operative completion angiography as well as control angiography prior to discharge was mandatory. Ultrasound follow-up screening was done after 3, 6, 12 months and twice a year thereafter. Kaplan-Meier analysis was used to determine actuarial graft patency.

In only 32 patients the bridge graft reconstruction was a primary procedure while in 49 patients it was the second or third vascular procedure.

Results
The in-hospital 30-day mortality was 3.7%

Sequential and Jump Grafts
The primary assisted patency after 1, 3, and 5 years was 91, 79, and 74 %, respectively. The secondary patency after 1, 3 and 5 years was 96, 87 and 80%. The limb salvage rate was 61% at 5 years.

Bridge Graft Reconstructions
The overall assisted primary patency after 1, 3, and 5 years was 64, 57, and 45%. For the subgroup of primary procedures the corresponding numbers were 69, 65, and 65%. The limb salvage rate was 53% at 5 years.

Conclusion
The interventional era diminishes the need for open surgical procedures while presenting new challenges to open vascular surgery. Experience shows that these difficult indications increasingly become part of daily surgical practice. Adopting the more complex procedures described will not only allow vascular surgeons to overcome limitations of conventional bypass surgery but also strengthen the surgeon´s position in the team approach to treat end stage peripheral atherosclerotic occlusive disease.

Literature
1. National trends in lower extremity bypass surgery, endovascular interventions and major amputations. Goodney PP, Beck AW, Nagle J, Welch HG, Zwolak RM (2009) J. Vasc Surg; 50:54-60.

2. Early Surgical Outcome After Failed Primary Stenting for Lower Limb Occlusive Disease Böckler D, Blaurock P, Mansmann U, Schwarzbach M, Seelos R, Schumacher H, Allenberg JR. Journal of Endovascular Therapy 2005;12:12-21.

3. The bridge graft: a new concept for infrapopliteal surgery. Deutsch M, Meinhart J, Howanietz N, Fröschl A, Heine B, Moidl R, Mendel H, Sisel A, Stümpflen A, Zilla P. Eur J Vasc Endovasc Surg. 2001 Jun;21(6):508-12.

Sunday, September 16, 2012
13.00 h. – 15.00 h.
Twentieth Scientific Session

Vascular Surgery (Continued)

13.20 **Hybrid Therapy of Laser Ablation and Phlebectomy—Our Experience at National Cardiovascular Center Harapan Kita Hospital, Indonesia:** Ismoyo Sunu, MD, PhD, FIHA, FICA, National Cardiovascular Center, Harapan Kita Hospital, Jakarta, Indonesia.

Varicose veins are often considered solely a cosmetic problem. In reality, this condition does not only influence physical performance, but the quality of life and productivity of patients complaining from the results of its appearances. In the last 10 years, the trend towards varicose vein therapy is minimal invasive techniques such as endovenous ablation, promoting a shorter recovery period, and a reduction in complications previously caused by surgical stripping.

At our hospital, beginning with 2011, endovenous ablation of 39 cases with truncal varicose veins combined with chronic venous insufficiency were performed with endovenous laser therapy (EVLT). These patients were diagnosed by using CEAP classification and Duplex ultrasound. Nine EVLT cases were performed and phlebectomy (hybrid) on a unilateral great saphenous vein. Two of them used below knee puncture sites, and the other 7 used above knee puncture sites. The hybrid procedure was done 1.5 hours after infiltration of tumescent anesthetic and under spinal anesthesia. Eight patients were successfully treated without complications. One patient with a below knee puncture site appeared to have a difficult recovery, with a skin wound complication, that may have been caused by insufficiency infiltration of tumescent anesthetic.

In conclusion, the hybrid therapy combined with EVLT and phlebectomy for truncal varicose veins, can be safely used as an alternative to surgical stripping.

Sunday, September 16, 2012
13.00 h. – 15.00 h.
Twentieth Scientific Session
Vascular Surgery (Continued)

13.30 **Ten Cases of Aortic Saddle Emboli Treated with Percutaneous Rheolytic Thrombectomy:**
Suko Adiarto, MD, PhD, FICA, Department of Cardiology and Vascular Medicine, University of Indonesia, Harapan Kita Hospital, National Cardiovascular Center, Jakarta, Indonesia.

Aortic saddle embolus represents a life-threatening condition in which the whole lower part of the body below the aorto-iliac bifurcation is severely ischemic, and failure to revascularize frequently resulted in fatality. Surgical embolectomy with a Fogarty Catheter used to be the first option of revascularization. Here, we report 10 cases of aortic saddle emboli treated with Angiojet Percutaneous Rheolytic thrombectomy.

All 10 patients have concomitant cardiac problems, confirming the previous knowledge that the majority of arterial emboli originate from cardiac thrombus. The cardiac problems of these patients are as follows: Mitral stenosis (8), atrial fibrillation (8), chronic heart failure with low ejection fraction (1), CAD post-CABG (1). Angiographically documented successful revascularization was achieved in 9 patients. Additional procedures were required in two patients: 1 conversion to surgical embolectomy due to failure of percutaneous rheolytic thrombectomy, and 1 PTA/stenting of left common iliac artery due to reocclusion of this artery after intravenous heparin was stopped earlier due to gross hematuria.

There were 2 mortalities: one patient had severe gastrointestinal bleeding after we perform an intra-arterial thrombolysis, due to the presence of residual thrombus despite restoration of extremity flow, and the other had severe sepsis several days following surgical embolectomy.

In conclusion, we report 10 cases of aortic saddle emboli treated with percutaneous rheolytic thrombectomy with an acceptable success rate.

Sunday, September 16, 2012
13.00 h. – 15.00 h.
Twentieth Scientific Session
Vascular Surgery (Continued)

13.40 **Endovascular Treatment of Lower Extremity Non-Common Femoral Artery Pseudoaneurysms:** Rajinder P. Sharma, MD, FICA, Treasurer and Member, Board of Directors, International College of Angiology; Co-Chairperson, Scientific Committee, International College of Angiology; Editor, *International Journal of Angiology;* Chairman, International Steering Committee, ICA Research and Education Foundation; Division of Vascular and Interventional Radiology, Henry Ford Hospital, Detroit, Michigan, USA; Rajiv Sharma, MD, P.C. Shetty, MD, FICA, Department of Radiology, Hurley Medical Center, Flint, Michigan, USA.

Purpose
We report seven cases of non-common femoral artery lower extremity pseudoaneurysms secondary to penetrating trauma and iatrogenic causes with subsequent endovascular management.

Materials and Methods (Background)
Pseudoaneurysms arise from a disruption in one or more of the arterial wall layers and can occur from inflammation, infection, connective tissue disorders, trauma, or iatrogenic causes. Involvement of the peripheral arteries is rare and most commonly a result of traumatic penetrating or blunt injuries, such as gunshot or stab wounds, and iatrogenic arterial injuries. Surgery has been the traditional treatment of choice for pseudoaneurysms and, depending on the location, surgical management may include resection with a bypass procedure or arterial ligation. Over the past few years, minimally invasive and endovascular techniques have proven to be a viable alternative to the surgical approach. These include transcatheter coil embolization, stent-graft placement, and ultrasound guided percutaneous thrombin injection.

Results
Clinical Findings/Procedure Details: Of the seven cases reviewed from our institutions, all were successfully treated utilizing endovascular techniques, with post-embolization images demonstrating cessation of sac filling and resolution of the arteriovenous fistulas in those select cases.

Conclusion
Endovascular management of non-common femoral artery lower extremity pseudoaneurysms is a successful, minimally invasive, and cost-effective therapeutic option in comparison to the traditional surgical option, with a marked decrease in morbidity and mortality.

Sunday, September 16, 2012
13.00 h. – 15.00 h.
Twentieth Scientific Session
Vascular Surgery (Continued)

13.50 **Experience and Outcomes After a Decade of Endovascular Abdominal Aortic Aneurysm Repair:** Manfred Kalteis, MD[1], Florian Haller, MD[1], Andreas Artmann, MD[2], Markus Ratzenböck, MD[2], Peter Hartl, MD[1], Herbert Lugmayer, MD[3], [1]Departments of Cardiac, Vascular and Thoracic Surgery, Klinikum Wels-Grieskirchen, Wels, Austria; [2]Institute of Digital Radiology, GHZ, Wels, Austria; [3]Department of Interventional Radiology, Klinikum Wels-Grieskirchen, Wels, Austria.

Purpose
To report the results of endovascular abdominal aortic aneurysm treatment based on the Zenith stent graft from a community-based single center over a period of nine years.

Methods
We retrospectively analyzed immediate technical and clinical results as well as long-term outcomes in patients treated with endovascular aneurysm repair between 2001 and 2010. In addition, procedures including hypogastric artery occlusion were compared with standard procedures.

Results
One hundred six patients were included. A Zenith stent graft was used in 95% of cases. No deaths occurred during the first 30 days post-surgery. The overall clinical and technical success rate at 30 days was 92.5%.

After a mean follow-up period of 52 months (range, 13-112 months), the overall mortality rate was 25.4%. Aneurysm-related mortality was 2.1%. Rupture rate was 4.3%. The final clinical failure rate was 13.8%. During the follow-up period, the mean diameter of the aneurysm decreased from 58.0 mm to 52.3 mm. However, expansion of the aneurysm was registered in 10 cases. Fifteen patients had an endoleak. The re-intervention rate was 16.3%. Graft migration occurred in 3% of cases. A negative impact on sexual function after endovascular repair was reported by 20% of patients.

In procedures including hypogastric artery occlusion, operative complications were more likely (12.5% vs. 2.4%; p=.04). Short- and long-term clinical success rates were similar compared to standard procedures. However, late ruptures were significantly increased after hypogastric artery occlusion (12.5% vs 1.2%; p=.036) as were subjective symptoms of buttock claudication (43.8% vs. 8.6%; p=.001) or erectile dysfunction (42.9% vs 17.3%; p=.043).

Conclusion
Endovascular repair is the treatment of choice for high-risk patients. A small but significant number of clinical failures were observed during the long-term follow-up.

Sunday, September 16, 2012
13.00 h. – 15.00 h.
Twentieth Scientific Session
Vascular Surgery (Continued)

14.00 **Xenograft Root Replacement for Excavating Aortic Root Endocarditis:** Anneliese Heinz, MD, Julia Dumfarth, MD, Michael Grimm, MD, FICA, Ludwig Müller, MD; Department of Cardiac Surgery, University Hospital Innsbruck, Innsbruck, Austria.

Introduction
The optimal conduit for aortic root replacement in destructive endocarditis is still undefined. Homografts, pericardial patch repair with prosthetic valve replacement, prosthetic valved conduits, and xenografts may be used. Since 1998 xenografts were used systematically for this purpose in our institution if there was no contraindication for a biological conduit.

Objectives
The aim of our study was to investigate perioperative complications owing to technical failure of the conduit, recurrence of endocarditis and long term outcome in patients who had a freestyle aortic root implantation for severe excavating aortic valve endocarditis.

Material and Methods
Patients requiring left ventricular outflow tract (LVOT) and/or aortic root replacement for severe, excavating native or prosthetic valve endocarditis (NVE or PVE) who received a xenograft full root (Medtronic Freestyle®) from 1998 to 2012 were studied retrospectively. Peri-operative complications, recurrence of endocarditis and long term outcome were analyzed.

Results
Thirty-one patients received a 21–29 mm Freestyle® aortic root replacement including 17 additional procedures: 9 CABG, 3 mitral valve repair or replacements, 1 tricuspid valve repair, 6 patch repair of the left ventricular outflow tract, 2 ascending aorta replacement and 4 ascending aorta reduction plastic. We operated on 22 patients for prosthetic valve endocarditis with annulus destruction.

The 30-day hospital mortality was 6 (19.4%). Long-term mortality was three (9.7%). There were no instances of technical failure requiring modification of the surgical strategy or reoperation for anastomotic bleeding. Three patients were reoperated: one after 3, and one after 12 years for xenograft degeneration, and one after 3 years for reinfective endocarditis. There were no cases observed for relapsed endocarditis.

Conclusion
The Freestyle® aortic root was used successfully with no technical complications in all patients. One reinfective endocarditis, but no relapse endocarditis occurred. Long-term results were as expected after biological AVR.

Sunday, September 16, 2012
13.00 h. – 15.00 h.
Twentieth Scientific Session
Vascular Surgery (Continued)

14.10 **Multidisciplinary Treatment for Critical Limb Ischemia—Experiences from Jikei University:** Atsushi Ishida, MD, PhD, FICA, Lecturer; Y. Kanaoka, MD, FICA, K. Kurosawa, MD, M. Sumi, MD, FICA, K. Kaneko, MD, K. Maeda, MD, M. Hara, MD, K. Shukuzawa, MD, Y. Uchida, MD, S. Hagiwara, MD, Takao Ohki, MD, PhD, FICA, Professor of Surgery, Albert Einstein School of Medicine, Bronx, New York; President and Member, Board of Directors, International College of Angiology; Editor, *International Journal of Angiology;* Department of Surgery, Division of Vascular Surgery, Jikei University School of Medicine, Tokyo, Japan.

Background
Main purposes of treatment for critical limb ischemia (CLI) are pain control, limb salvage, and improvement of prognosis. To complete these purposes, multidisciplinary treatment including proper vascular reconstruction surgery, endovascular treatment (EVT), evaluation of wound infection, wound care, and general care are required. Angiography, vascular reconstruction surgery, EVT and wound care for CLI are conducted by our vascular surgeons' team at Jikei University. We present our strategy and outcomes of CLI along this fashion.

Objectives
For 60 months from July 2006 to June 2011, we treated 24 limbs (Fontaine class 3) (19%), 106 limbs (Fontaine class 4) (81%), 118 patients (88 men/30 women), total 130 limbs, 158 vascular reconstructions. A mean age was 71 years (43-89 years), a mean observation period 888 days (16-1,774 days). Comorbidity of diabetes mellitus and hemodialysis due chronic renal failure are 53 patients (45%) and 36 patients (31%), respectively. Except infectious wound care before surgery or EVT, wound care of Fontaine class 4 patients is performed at the time of surgery or EVT, and additional wound care is timely conducted if needed in our institution.

Results:
Eighty-nine vascular reconstruction surgery cases, 69 EVT cases were performed. Vascular reconstructions of ilio-femoral region, groin to above knee region and below knee region were 27 cases (17%) and 10 cases (6%), total 37 cases (23%); 5 cases (3%) and 22 cases (14%), total 27 cases (17%); and 57 cases (36%) and 37 cases (23%), total 94 cases (60%), respectively. Limb salvage ratios were 86% in 1 year, 82% in 2 year, 80% in 3 year. Prognoses were 95% in 1 year, 94% in 2 year, 93% in 3 year. Only 1 patient died after major amputation in 1,141 days after vascular reconstruction.

Conclusion:
CLI treatment including bypass surgery or EVT for below knee lesions and proper wound care should be performed timely by the same vascular surgeons' team, even at a busy, acute care hospital to improve limb salvage. General care for CLI patients contributed to a better prognosis.

Sunday, September 16, 2012
15.00 h. – 16.00 h.
Twenty-First Scientific Session
Poster Presentations

15.00 **Syncope as Initial Presentation of Kommerell's Diverticulum:** Ronny Cohen, MD, FACC, Pablo Loarte, MD, Lizmer Diaz, MD, Mirrer Brooks, MD; Department of Medicine, Division of Cardiology, Woodhull Medical Center, Brooklyn, New York, USA; New York University School of Medicine, New York, New York, USA.

Background
Kommerell's Diverticulum (KD) is an aortic arch diverticulum at the origin of an aberrant subclavian artery. Dr. Friedrich Kommerell made the first description in 1936. KD is a rare anatomical anomaly that embryologically represents the persistent distal end of the interrupted fourth aortic arch between the carotid and subclavian arteries. We report a case of KD associated with a right-sided aortic arch (RAA) and an aberrant left subclavian artery (ALSA) who was diagnosed incidentally after patient had a syncopal episode.

Case Report
A 47-year-old female with history of hypertension presented to the emergency department after having an acute syncopal episode. She initially felt dizzy, described as "lightheadedness" for a few seconds and then, passed out shortly after. Her vitals were stable at presentation and there was no presence of orthostasis. On physical examination, there were no abnormal neurological findings and cardiovascular system was unremarkable. Laboratory evaluation did not revealed abnormalities and cardiac biomarkers were negative. The electrocardiogram showed sinus rhythm with borderline left axis deviation. Initial chest radiograph was significant for a right-sided aortic arch. Head CT was normal. Echocardiogram showed a normal left ventricular systolic function with an ejection fraction of 63%. Chest Computed Tomography identified a right-sided aortic arch with a dilated retro-esophageal vascular diverticulum causing a mass effect in the esophagus and a left subclavian artery arising from the diverticulum. The size of the diverticulum was 47 mm in its larger diameter and the descending aorta was following a course from the right to left side when approaching the abdominal cavity.

Surgical repair of the anomaly was an option offered to the patient. However, after full discussion of the benefits and risks, she opted for conservative management despite the risk of complications.

Discussion
In our case, we have a KD with ALSA, a very rare finding. An ALSA is found only in about 0.1% of the population and is the most commonly anomaly in patients with RAA. The diagnosis of KD can be made incidentally or depending of the presenting symptoms. Most of the patients are asymptomatic and the presence of symptoms is related to the compression of surrounding structures. Syncope is not a symptom of presentation and there is only one reported case in the literature where the patient had a similar anatomic anomaly with a history of three previous syncopal episodes. The syncopal episode could be explained by a transient subclavian steal like syndrome cause by compression of the aberrant subclavian by any adjacent structure. Orthostatic hypotension was excluded due to patient's age and lack of reproducibility in the emergency room.

Several imaging techniques can be used to confirm the diagnosis of KD; the most widely used are computerized axial tomography angiography and magnetic resonance angiography. The major complications are related to rupture of the diverticulum. The mean size associated with rupture was 5.8 cm in one case series report and another serious complication is embolization.

Conclusion

Standard surgical management has not been established yet due to the rarity of this condition and the surgical approach varies according to the anatomy of the anomaly and this can influence also in the mortality rate. Due to its rareness and other superimposed associated anomalies, there is no standard indication for surgical management, either in symptomatic or asymptomatic patients. In a recent study, surgical repair was recommended in lesions of 5 cm or greater. We recommend assessing every patient with KD putting special attention to the size of the lesion. The chances of rupture were more common in lesions equal or above 50 mm with or without symptoms.

Sunday, September 16, 2012
15.00 h. – 16.00 h.
Twenty-First Scientific Session
Poster Presentations (Continued)

15.07 **Trends of Surgical Treatment for Peripheral Arterial Disease in an Endovascular Era:** Sang Jung Park, MD, Jae Chol Hwang, MD, Eun Kyong Kwon, MD, Sang Jin Kim, MD, Hong Rae Cho, MD; Departments of Surgery and Radiology, University of Ulsan College of Medicine and Ulsan University Hospital, Ulsan, Korea.

Background
Treatment options for peripheral arterial disease are changing with the development of endovascular methods.

Objectives
This study aims to review the trends of surgical treatment for peripheral artery disease in a middle volume hospital of Korea.

Methods
From 2006 to 2011, 111 cases were enrolled prospectively. The cases were divided to two groups by the time of treatment. One is surgical era, and the other is endovascular era. From 2009, the number of endovascular cases had been more than that of surgical cases. We analyzed the type of surgery, location of surgery, clinical characteristics, and results.

Results
Fifty-three cases were included in the surgical era, and 59 cases in the endovascular era. It is found that demographic features of both groups were similar, and their distribution of atherosclerosis major risk factors was similar as well. Technical and functional success rates were similar in both groups. Acute cases were more in the endovascular era than those in the surgical era. The cases in need of suprainguinal or below knee exposures were similar in both groups. In hybrid cases, the cases which need suprainguinal or below knee exposures were more in the surgical era than in the endovascular era. The cases of simple thromboembolectomy or endarterectomy rather than bypass were more in the endovascular era than in the surgical era.

Conclusion
Along with the development of endovascular methods, the necessity of surgical treatment for chronic limb ischemia is decreasing, and yet thrombectomy or endarterectomy is more preferred to bypass. However, the surgical treatment still plays a critical role in case of acute limb ischemia.

Sunday, September 16, 2012
15.00 h. – 16.00 h.
Twenty-First Scientific Session
Poster Presentations (Continued)

15.14 **Buttock Claudication after Hypogastric Artery Interruption Required During Aortoiliac Aneurysm Repair:** Shin Hagiwara, MD, Atsushi Ishida, MD, FICA, Y. Kanaoka, MD, FICA, H. Tachihara, MD, K. Kurosawa, MD, M. Sumi, MD, K. Kaneko, MD, K. Maeda, MD, M. Hara, MD, K. Shukuzawa, MD, Y. Uchida, MD, Takao Ohki, MD, PhD, FICA, Professor of Surgery, Albert Einstein School of Medicine, Bronx, New York; President and Member, Board of Directors, International College of Angiology; Editor, *International Journal of Angiology;* Department of Surgery, Division of Vascular Surgery, Jikei University School of Medicine, Tokyo, Japan.

Background
Hypogastric artery interruption, coil embolization, is sometimes required during aortoiliac endovascular aneurysmal repair (EVAR). However, these aortoiliac aneurysm cases are not suitable for EVAR based on "Instruction for Use (IFU)" of EVAR. We evaluated the outcomes of hypogastric artery coil embolization at the time of EVAR including bilateral hypogastric artery interruption.

Objectives and Methods
We performed 928 EVARs from July 2006 to December 2011. Out of 928 cases, 269 cases were aortoiliac aneurysms, and concomitant hypogastric artery coil embolization was performed at the time of EVAR. We evaluated these 269 cases (unilateral: 192 cases, bilateral: 77 cases). In the cases of abdominal aortic aneurysms (AAA) without hypogastric aneurysm, hypogastric artery coil embolization was performed to preserve the pelvic collateral vessels to minimize pelvic ischemia.

Results
The mean age, gender, and comorbidity in the unilateral and bilateral group were no statistical difference. Operative time was 205 min and 248 min in unilateral and bilateral group, respectively. There were no life-threatening complications of pelvic ischemia. All patients were discharged without major adverse events including pelvic ischemia. The appearance ratio of the buttock claudication after EVAR was 63/192 (33%), 24/77 (32%) in unilateral and bilateral group, respectively. The retaining ratio of the buttock claudication in 1, 6, and 12 months after EVAR was 56/63 (89%), 25/42 (60%), 8/25 (32%) in unilateral group, and 20/24 (83%), 11/18(61%), 5/10(50%) in bilateral group (no statistical differences).

Conclusion
The complication of buttock claudication after concomitant hypogastric artery coil embolization at the time of EVAR was seen in one third of the cases in both unilateral and bilateral hypogastric artery interruption. There was no statistical difference of the appearance ratio of buttock claudication between unilateral and bilateral hypogastric artery interruption. It took time to recover from buttock claudication in the bilateral group, but buttock claudication was improved in half of the bilateral cases in one year after EVAR. From these results, bilateral hypogastric artery coil embolization can be indicated during aortoiliac aneurysm repair for high-risk patients.

Sunday, September 16, 2012
15.00 h. – 16.00 h.
Twenty-First Scientific Session
Poster Presentations (Continued)

15.21 **Short-Term Outcome of 56 Patients with Visceral Artery Aneurysms Treated at Jikei University:** Masayuki Hara, MD, Atsushi Ishida, MD, FICA, Y. Kanaoka, MD, FICA, H. Tachihara, MD, K. Kurosawa, MD, M. Sumi, MD, FICA, K. Kaneko, MD, K. Maeda, MD, K. Shukuzawa, MD, S. Hagiwara, MD, Y. Uchida, MD, Takao Ohki, MD, PhD, FICA, Professor of Surgery, Albert Einstein School of Medicine, Bronx, New York; President and Member, Board of Directors, International College of Angiology; Editor, *International Journal of Angiology;* Department of Surgery, Division of Vascular Surgery, Jikei University School of Medicine, Tokyo, Japan.

Background
The aim of this study is to evaluate the short-term outcome of 56 patients who underwent open surgery or endovascular treatment for visceral artery aneurysms (VAA) during a 40-month period.

Objectives and Methods
We reviewed pre-operative data, operative records, and short-term outcomes of 56 patients (25 men/31 women). The average size of aneurysm was 22.7mm in diameter. The origin of aneurysm was splenic artery in 20 cases (35.7%), superior mesenteric artery in 3 (5.36%), celiac artery in 6 (10.7%), hepatic artery in 4 (7.1%), and renal artery in 23 (41.1%). Among the patients, only one patient received emergency treatment for rupture of splenic artery. Elective treatment was applied to the remaining 55 patients; coil embolization in 23 cases (41.8%), stent replacement and coil embolization in 2 (3.6%), covered stent replacement in 9 (16.4%), open surgery in 19 (34.5%) and laparoscopic surgery in 2 (3.6%).

Results
Coil embolization was performed in 23 splenic artery cases except for 2 laparoscopic surgery, while all superior mesenteric aneurysms required open surgery. For 6 patients with celiac artery aneurysm, covered stent replacement was used in 4, and open surgery was performed in 2. For 4 patients with hepatic artery aneurysm, covered stent replacement was used in 3 and stent replacement with coil embolization was used in 1. For 23 patients with renal artery aneurysm, coil embolization was used in 6, stent replacement with coil embolization in 1, covered stent replacement in 3, and open surgery was performed in 13. The average operative duration and the length of post-operative stay are 127 min and 4.9 days in endovascular treatment group, while 406 min and 13.6 days in surgical treatment group. Neither major morbidity nor mortality was observed in any case.

Conclusion
Our treatment strategies exhibited excellent short-term outcomes of VAAs.

Sunday, September 16, 2012
15.00 h. – 16.00 h.
Twenty-First Scientific Session

Poster Presentations (Continued)

15.28 **Evaluation of the Safety Aspects for Patients Undergoing Live Surgery at Jikei University:** Yoshihiro Uchida, MD, Atsushi Ishida, MD, FICA, Y. Kanaoka, MD, FICA, H. Tachihara, MD, K. Kurosawa, MD, M. Sumi, MD, FICA, K. Kaneko, MD, K. Maeda, MD. M. Hara, MD, K. Shukuzawa, MD, S. Hagiwara, MD, Takao Ohki, MD, PhD, FICA, Professor of Surgery, Albert Einstein School of Medicine, Bronx, New York; President and Member, Board of Directors, International College of Angiology; Editor, *International Journal of Angiology;* Department of Surgery, Division of Vascular Surgery, Jikei University School of Medicine, Tokyo, Japan.

Background
Live surgery is a good educational tool for surgical training, but safety for patients must be considered during live surgery. In last 6 years, 122 live surgery cases were performed in Japan Endovascular Symposium (JES) at Jikei University. A total of 4,500 medical doctors, mainly vascular surgeons, attended JES at Jikei University.

Objectives and Methods
During the last 6 JES, we performed 122 live surgery cases on 91 patients, of which were endovascular aneurysmal repair (EVAR): 21 cases, thoracic endovascular aneurysmal repair (TEVAR): 14 cases, bypass or endovascular treatment (EVT) for peripheral arterial disease (PAD): 30 cases, EVT for renal artery stenosis (RAS): 12 cases, carotid endarterectomy (CEA) and carotid artery stenting (CAS) for carotid artery stenosis: 14 cases, angiography only: 7 cases, and others (visceral artery aneurysm, etc.): 24 cases. We evaluated the outcome of complications of these live surgery cases (JES group), comparing the to complications of regular surgery cases (control group).

Results
There was no operational death, 88 patients discharged without major adverse event during the procedure in JES group. There were complications in 3 patients with thrombosis of left carotid artery in TEVAR, bleeding in EVT for PAD, and ophthalmic artery infarction in CAS. There were no statistical differences between two groups, namely, 0/21 (0%) vs 19/704 (2.7%) in EVAR, 1/14 (7.1%) vs 25/250 (10%) in TEVAR, 1/30 (3.3%) vs 11/352 (3.1%) in PAD treatments, and 1/14 (7.1%) vs 3/90 (3.3%) in CEA & CAS in JES group and control group, respectively.

Conclusion
Safety for patients was secured during our live surgery, and this gave us an opportunity to offer new surgical techniques and information of new devices in the field of vascular surgery to a total 4,500 doctors in last 6 years.

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