

AMERICAN ASSOCIATION OF ENDOCRINE SURGEONS

Twenty-Eighth Annual Meeting



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*American Association of Endocrine Surgeons
World Wide Web Home Page
<http://www.endocrinesurgery.org>*

AAES FUTURE MEETINGS

April 7-9, 2008
Monterey, California
Quan-Yang Duh, MD

May 2-5, 2009
Madison, Wisconsin
Herbert Chen, MD

April 18-20, 2010
Pittsburgh, Pennsylvania
Sally E. Carty, MD

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OFFICERS AND COMMITTEES

The Executive Council

Officers

Christopher R. McHenry, President
Geoffrey B. Thompson, President-Elect
John B. Hanks, Vice President
Sally E. Carty, Secretary-Treasurer
Douglas B. Evans, Recorder

Council

Peter Angelos
Herbert Chen
Alan P.B. Dackiw
Thomas J. Fahey
John S. Kukora
Steven K. Libutti
Robert Udelsman
Ronald J. Weigel

Local Arrangements Chair

Michael J. Demeure

Publication and Program Committee

Francis D. Moore, Chair	Sonia L. Sugg
Julie Ann Sosa	Douglas B. Evans
Carmen C. Solarzano	Sally E. Carty
Christopher R. McHenry	

Membership Committee

Ronald J. Weigel, Chair	
Thomas J. Fahey III	Alan P.B. Dackiw

Committee on Education and Research

Steven K. Libutti, Chair	Walter E. Pofahl
Richard E. Goldstein	Ashok R. Shaha
William B. Inabnet	Martha A. Zeiger

Fellowship Committee

Allan B. Siperstein, Chair	John B. Hanks
Steven K. Libutti	Richard A. Prinz
John S. Kukora	Ronald J. Weigel

AACE Representative

Martha A. Zeiger

Nominating Committee

Christopher R. McHenry
John S. Kukora

Robert Udelsman

**SOAC Representative of the
American Board of Surgery**

Richard A. Prinz

PAST OFFICERS

1980-1981

Norman W. Thompson.....President
Orlo H. Clark.....Vice President
John M. Monchik.....Secretary-Treasurer

1981-1982

Norman W. Thompson.....President
Orlo H. Clark.....Vice President
John M. Monchik.....Secretary-Treasurer

1982-1983

Edwin L. Kaplan.....President
Blake Cady.....Vice President
John M. Monchik..... Secretary-Treasurer

1983-1984

Stanley R. Friesen.....President
John A. Palmer.....Vice President
John M. Monchik.....Secretary-Treasurer

1984-1985

Leonard Rosoff.....President
John M. Monchik.....Vice President
Stuart D. Wilson.....Secretary-Treasurer

1985-1986

Chiu-An Wang.....President
Edward Paloyan.....Vice President
Stuart D. Wilson.....Secretary-Treasurer

1986-1987

Oliver Beahrs.....President
Robert C. Hickey.....Vice President
Stuart D. Wilson.....Secretary-Treasurer

1987-1988

Edward Paloyan.....President
Caldwell B. Esselstyn.....Vice President
Stuart D. Wilson.....Secretary-Treasurer
Jon A. van Heerden.....Recorder

1988-1989

John R. Brooks.....President
Melvin A. Block.....Vice President
Richard A. Prinz.....Secretary-Treasurer
Jon A. van Heerden.....Recorder

1989-1990

Colin G. Thomas, Jr.....President
Carl R. Feind.....Vice President
Richard A. Prinz.....Secretary-Treasurer
Jon A. van Heerden.....Recorder

1990-1991

Caldwell B. Esselstyn.....President
Brown M. Dobyns.....Vice President
Richard A. Prinz.....Secretary-Treasurer
Robert D. Croom, III.....Recorder

1991-1992

Stuart D. Wilson.....President
Joseph N. Attie.....Vice President
Blake Cady.....Secretary-Treasurer
Robert D. Croom, III.....Recorder

1992-1993

Robert C. Hickey.....President
Patricia J. Numann.....Vice President
Blake Cady.....Secretary-Treasurer
Robert D. Croom, III.....Recorder

1993-1994

Orlo H. Clark.....President
Glen W. Geelhoed.....Vice President
Blake Cady.....Secretary-Treasurer
George L. Irvin, III.....Recorder

1994-1995

John M. Monchik.....President
Jon A. van Heerden.....Vice President
Jay K. Harness.....Secretary-Treasurer
George L. Irvin, III.....Recorder

1995-1996

Richard A. Prinz.....President
Jeffrey A. Norton.....Vice President
Jay K. Harness.....Secretary-Treasurer
George L. Irvin, III.....Recorder

1996-1997

Jon A. van Heerden.....President
George L. Irvin, III.....Vice President
Jay K. Harness.....Secretary-Treasurer
Quan-Yang Duh.....Recorder

1997-1998

Blake Cady.....President
E. Christopher Ellison.....Vice President
Paul LoGerfo.....Secretary-Treasurer
Quan-Yang Duh.....Recorder

1998-1999

George L. Irvin, III.....President
Barbara K. Kinder.....Vice President
Paul LoGerfo.....Secretary-Treasurer
Quan-Yang Duh.....Recorder

1999-2000

Jay K. Harness.....President
John Kukora.....Vice-President
Paul LoGerfo.....Secretary-Treasurer
Michael J. Demeure.....Recorder

2000-2001

Barbara K. Kinder.....President
Martha A. Zeiger.....Vice-President
Christopher R. McHenry.....Secretary-Treasurer
Michael J. Demeure.....Recorder

2001-2002

Clive S. Grant.....President
Miguel F. Herrera.....Vice-President
Christopher R. McHenry.....Secretary-Treasurer
Michael J. Demeure.....Recorder

2002-2003

Quan-Yang Duh.....President
Gary B. Talpos.....Vice-President
Christopher R. McHenry.....Secretary-Treasurer
Geoffrey B. Thompson.....Recorder

2003-2004

Paul LoGerfoPresident
Ashok R. Shaha.....Vice-President
Janice L. Pasieka.....Secretary-Treasurer
Geoffrey B. Thompson.....Recorder

2004-2005

John Kukora.....President
Andrew Saxe.....Vice-President
Janice L. Pasieka..... Secretary-Treasurer
Geoffrey B. Thompson.....Recorder

2005-2006

Robert Udelsman.....President
Collin J. Weber.....Vice-President
Janice L. Pasieka..... Secretary-Treasurer
Douglas B. Evans.....Recorder

2006-2007

Christopher R. McHenry.....President
John B. Hanks.....Vice-President
Sally E. Carty.....Secretary-Treasurer
Douglas B. Evans.....Recorder

THE OLIVER COPE MERITORIOUS ACHIEVEMENT AWARD

In April of 1984 at the American Association of Endocrine Surgeons Meeting in Kansas City, Drs. Edward Kaplan, Jack Monchik, Leonard Rosoff, Norm Thompson and Stuart Wilson proposed to the Council a new achievement award. This award is to be given to a member of the AAES in recognition for contributions in the field of endocrine surgery as an investigator, teacher and clinical surgeon. It is not an annual award but is to be given to members of our Association who truly aspire to the spirit of this award.

On April 15th, 1985 at the annual meeting of the AAES in Toronto, our President Leonard Rosoff announced the first member to receive this award, Dr. Oliver Cope. In giving this award to Dr. Cope the decision of the Council was that from this day forward the award would be known as the Oliver Cope Meritorious Achievement Award for the American Association of Endocrine Surgeons.

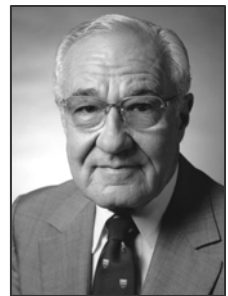


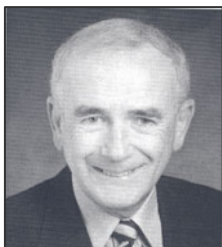
Stanley R. Friesen, MD, PhD

Professor of Surgery, University of Kansas
Awarded in Detroit, MI. in April 1994.
Dr. Friesen served as the President of our
Association in 1983.

Oliver Cope, MD

Professor of Surgery,
Harvard University and the
Massachusetts General Hospital
Awarded in Toronto in April 1985.





Norman W. Thompson, MD
Henry King Ransom Professor of Surgery, University of Michigan. Awarded in Atlanta, GA in April 2001. Dr. Thompson served as our inaugural President in 1980 and 1981.

Jon A. van Heerden MD

Professor of Surgery Mayo Clinic, Rochester, MN.
Awarded in Charlottesville NC in April 2004.
Dr. van Heerden served as our Recorder from 1987-89, as our Vice-President in 1994, and as President in 1996.



Orlo H. Clark MD
Professor of Surgery, UCSF Mount Zion Medical Center.
Awarded in New York, New York in May 2006.
Dr. Clark served as our Inaugural Vice President in 1980 and 1981, and as President in 1993.

HONORARY MEMBERS

Individuals who have made outstanding contributions to the
discipline of Endocrine Surgery

John L. Doppman	Radiologist
J. Aidan Carney	Pathologist
Stuart D. Flynn	Pathologist
Ian D. Hay	Endocrinologist
Virginia A. LiVolsi	Pathologist
Ronald H. Nishiyama	Pathologist
A. G. E. "Ace" Pearse	Endocrinologist
Thomas S. Reeve	Endocrine Surgeon
F. John Service	Endocrinologist
Britt Skogseid	Endocrinologist
William F. Young	Endocrinologist

RESIDENT/FELLOW RESEARCH AWARD WINNERS

The AAES Resident/Fellow Research Award was established in 1990 to encourage interest in endocrine surgery by those training as students and residents in general surgery. Presented work may be honored in either the Clinical or Basic Research categories

1990

Michael J. Demeure San Francisco, California
"Actin architecture of cultured human thyroid cancer cells:
Predictor of differentiation?"

Gerard M. Doherty Bethesda, MD
"Time to recovery of the hypothalamic-pituitary-adrenal axis
after curative resection of adrenal tumors in patients with
Cushing's syndrome."

1996

Jennifer Meko St. Louis, Missouri
"Evaluation of Somatostatin Receptor Scintigraphy in Detecting
Neuroendocrine Tumors"

Beth A. Ditkoff New York, NY
"Detection of Circulating Thyroid cells in Peripheral Blood"

1997

Herb Chen Baltimore, MD
"Implanted Programmable Insulin Pumps: 153 Patient Years of
Surgical Experience"

K. Michael Barry Rochester, MN
"Is Familial Hyperparathyroidism a Unique Disease"

1998

Julie Ann Sosa Johns Hopkins
"Cost Implications of the different management strategies for
primary hyperparathyroidism in the US"

David Litvak Galveston, TX
"A novel cytotoxic agent for human carcinoid"

1999

Andrew Feldman National Institutes of Health
"Results of Heterotrophic Parathyroid Autotransplantation: A 13 Year Experience"

Alan Dackiw Houston, TX
"Screening for MEN1 Mutations in Patients with Atypical Multiple Endocrine Neoplasia"

2000

Electron Kebebew San Francisco, California
"ID1 proteins expressed in Medullary Thyroid Cancer"

2001

Nestor F. Esnaola Houston, Texas
"Optimal treatment strategy in patients with papillary thyroid cancer: A decision analysis".

Katherine T. Morris Portland, Oregon
"High dehydroepiandrosterone-sulfate predicts breast cancer progression during new aromatase inhibitor therapy and stimulates breast cancer cell growth in tissue culture: A renewed role for adrenalectomy".

2002

Rasa Zarnegar University of California, San Francisco
"Increasing the Effectiveness of Radioactive Iodine Therapy in the Treatment of Thyroid Cancer Using Trichostatin A (TSA), A Histone Deacetylase (HDAC)"

Denise M. Carneiro Miami, Florida
"Rapid Insulin Assay for Intraoperative Confirmation of Complete Resection of Insulinomas"

2003

Petra Musholt Hanover, Germany
"RET Rearrangements in Archival Oxyphilic Thyroid Tumors: New Insights in Tumorigenesis and Classification of Hürthle Cell Carcinoma".

Tina Yen Houston, Texas
"Medullary Thyroid Carcinoma: Results of a Standardized Surgical Approach in a Contemporary Series of 79 Consecutive Patients from the University of Texas, MD Anderson Cancer Center in Houston".

2004

Rebecca Sippel* University of Wisconsin
"Does Propofol Anesthesia Affect Intra-Operative Parathyroid Hormone Levels During Parathyroidectomy?: A Randomized Prospective Trial"

David Finley Cornell University
"Molecular Analysis of Hürthle Cell Neoplasms by Gene Profiling"

2005

Mark Cohen* Washington University
"Long-Term Functionality of Cryopreserved Parathyroid Autografts: A 13-Year Prospective Analysis".

Kepal N. Patel Memorial Sloan-Kettering Cancer Center
"MUC1 Plays a Role in Tumor Maintenance in Aggressive Thyroid Carcinomas"

2006

Kyle Zanocco* Northwestern University
"Cost-Effectiveness Analysis of Minimally Invasive Parathyroidectomy for Asymptomatic Primary Hyperparathyroidism"

Abram Vaccaro University of Wisconsin
"Lithium Ions: a Novel Agent for the Treatment of Pheochromocytomas and Paragangliomas"

NEW MEMBERS

Active/Standard Members

Atul Gawande
Boston, MA

Bruce Hall
St. Louis, MO

Richard Harding
Phoenix, AZ

Kent Kercher
Charlotte, NC

Lee Pederson
Charlotte NC

Doris Quintana
Albuquerque NM

1

Gregory Stanislav
Papillon, NE

Tina Yen
Milwaukee, WI

Corresponding Members

Theresia Weber
Heidelberg, Germany

Mark Sywak
St. Leonards, Australia

Didier Mutter
Cedex, France

J.L. Peix
Cedex, France

CONTRIBUTORS TO THE PAUL LoGERFO EDUCATIONAL RESEARCH FUND

Dr. Paul LoGerfo passed away September 16, 2003 during his tenure as esteemed President of the AAES. Dr. LoGerfo was very much interested in education and clinical research, and in his honor the AAES established an Educational Research Fund to provide support, for future educational and research activities of the Membership. The following organizations and AAES members have contributed, to date:

**Menelaos Aliapoulios
David Albertson
Frederico Aun
Denny Brown
Mike Brunt
Samuel Bugis
Sally Carty
John Chabot
Herb Chen
Peter Czako
Alan Dackiw
Lawrence Danto
Ruth Decker
Steve DeJong
Gerard Doherty
Meté Duren
Doug Evans
David Farley
Roger Foster
Doug Fraker
Andrea Frilling
Paul Gauger
GENZYME
Clive Grant**

**John Hanks
Richard Harding
Jay Harness
Rich Hodin
Mark Horattas
Ted Humble
Masayuki Imamura
Barry Inabnet
George Irvin
Electron Kebebew
Barbara Kinder
Chung-Yau Lo
Dougald MacGillivray
David McAneny
Chris McHenry
Alberto Molinari
Jack Monchik
Bruno Niederle
Ron Nishiyama
Pat Numann
Fiemu Nwariaku
John Olsen
Janice Pasieka
Doris Quintana**

**Melanie Richards
Drew Ridge
Michael Roe
Irv Rosen
Bernadette Ryan
JM Sanchez-Blanco
Frederic Sebag
Britt Skogseid
Dietmar Simon
Renu Sinha
Carmen Solorzano
Kathryn Spanknebel
Sonia Sugg
Mark Sywak**

**Colin Thomas
Geoffrey Thompson
Norman Thompson
Douglas Trostle
Jon van Heerden
Rob Udelsman
James Vopal
Martha Zeiger**



PAST MEETINGS

1980 **Ann Arbor, Michigan**

Local Arrangements Chair: Norman Thompson

1981 **Washington, DC**

Local Arrangements Chair: Glenn Geelhoed

1982 **Houston, Texas**

Local Arrangements Chair: Robert Hickey

1983 **San Francisco, California**

Local Arrangements Chair: Orlo Clark

1984 **Kansas City, Kansas**

Local Arrangements Chair: Stanley Friesen

1985 **Toronto, Ontario, Canada**

Local Arrangements Chair: Irving Rosen

1986 **Rochester, Minnesota**

Local Arrangements Chair: Jon van Heerden

1987 **Chicago, Illinois**

Local Arrangements Chair: Ed Kaplan

1988 **Boston, Massachusetts**

Local Arrangements Chair: Blake Cady

1989 **Chapel Hill, North Carolina**

Local Arrangements Chair: Robert D. Croom

1990 **Cleveland, Ohio**

Local Arrangements Chair: Caldwell B. Esselstyn

1991 **San Jose, California**

Local Arrangements Chair: Maria Allo

1992 **Miami, Florida**

Local Arrangements Chair: George L. Irvin

- 1993 **Williamsburg, Virginia**
Local Arrangements Chair: H. Heber Newsome
- 1994 **Detroit, Michigan**
Local Arrangements Chair: Gary B. Talpos
- 1995 **Philadelphia, Pennsylvania**
Local Arrangements Chair: John Kukora
- 1996 **Napa, California**
Local Arrangements Chair: Quan-Yang Duh
- 1997 **Baltimore, Maryland**
Local Arrangements Chair: Robert Udelsman
- 1998 **Orlando, Florida**
Local Arrangements Chair: Peter J. Fabri
- 1999 **New Haven, Connecticut**
Local Arrangements Chair: Barbara Kinder
- 2000 **Joint Meeting: London, United Kingdom/Lille, France**
Local Arrangements Chair: John Monchik
- 2001 **Atlanta, Georgia**
Local Arrangements Chair: Collin Weber
- 2002 **Banff, Alberta, Canada**
Local Arrangements Chair: Janice L. Pasioka
- 2003 **San Diego, California**
Local Arrangements Chair: Jay K. Harness/John Kukora
- 2004 **Charlottesville, Virginia**
Local Arrangements Chair: John B. Hanks
- 2005 **Cancun, Mexico**
Local Arrangements Chair: Miguel F. Herrera
- 2006 **New York, New York**
Local Arrangements Chair: Ashok R. Shaha

INVITED LECTURES AT RECENT MEETINGS

1991 - Gregory B. Bulkley MD, Johns Hopkins University, Baltimore, Maryland

Endothelial Xanthine Oxidase: a Radical Transducer of Signals and Injury

1992 - Donald Coffey, PhD, Johns Hopkins University, Baltimore
New Concepts Concerning Cancer

1993 - John L. Doppman MD, National Institutes of Health, Bethesda Maryland

Recent Advances in Endocrinologic Imaging

1994 - Gordon J. Strewler MD, San Francisco, California

The Parathyroid Hormone Related Protein: Clinical and Basic Studies of a Polyfunctional Protein

1995 - Ivor M.D. Jackson MD, Providence, Rhode Island

Regulation of TSH Secretion: Implications for Disorders of the Thyroid Function

1996 - Victor E. Gould MD, Rush-Presbyterian-St. Lukes' Medical Centre, Chicago, Illinois

The Diffuse Neuroendocrine System: Evolution of the Concept and Impact on Surgery

1997 - Bertil Hamberger, Karolinska Institute, Stockholm

The Nobel Prize

1998 - Susan Leeman PhD, Boston University, Boston

The NeuroPeptides: Substance P and Neurotensin

1999 - James Hurley MD - Cornell University, New York, New York

Post-Operative Management of Differentiated Thyroid Cancer

2000 - James Shapiro MD, University of Alberta, Edmonton,
Alberta: Millennium Meeting of Endocrine Surgeons, London-Lille
Pancreatic Islet Cell Transplantation

2001 - Andrew F. Stewart MD, University of Pittsburgh,
Pittsburgh, Pennsylvania
*Parathyroid Hormone-Related Protein: From Hypercalcemia of
Malignancy to Gene Therapy from Diabetes*

2002 - William F. Young Jr. MD, Mayo Clinic, Rochester,
Minnesota
Adrenal-Dependent Hypertension: Diagnostic Testing Insights

2003 - Sissy M. Jhiang, MD, Ohio State University,
Columbus, Ohio
Lessons From Thyroid Cancer: Genetics and Gene Therapy

2004 - Edward R. Laws Jr, MD, University of Virginia,
Charlottesville, Virginia
The Diagnosis and Management of Cushing's Disease

2005 - David Duick, MD, Phoenix, Arizona
*Thyroid Nodules and Mild Primary Hyperparathyroidism:
examples of clinical perplexities or unresolvable conundrums*

2006 - Michael Bliss MD, University of Toronto, Toronto
Harvey Cushing and Endo-Criminology

CONFERENCE
INFORMATION

Objectives

This program is designed for all surgeons seeking the latest developments in endocrine surgical care, technique and research. Through educational sessions and participation in discussions, members and guests attending will be able to explain current developments in research and clinical practice of endocrine surgery as well as explain practical new approaches and solutions to relevant concepts and problems in endocrine surgical care.

CME Accreditation

This activity has been planned and implemented in accordance with the Essential Areas and Policies of the Accreditation Council for Continuing Medical Education through the joint sponsorship of the American College of Surgeons and the American Association of Endocrine Surgeons. The American College of Surgeons is accredited by the ACCME to provide continuing medical education for physicians.

AMA PRA Category 1 Credits™

The American College of Surgeons designates this educational activity for a maximum of 12 *AMA PRA Category 1 Credits™*. Physicians should only claim credit commensurate with the extent of their participation in the activity.



Division of Education

Registration

The Twenty-Eighth Annual Meeting of the AAES will take place at the Westin La Paloma Resort in Tucson, Arizona. Registration fees are as follows (postmarked before March 23, 2007): \$495 for AAES members, \$545 for non-members, \$350 for residents and fellows, and \$200 for spouses/guests. To register, visit the AAES Website at www.endocrinesurgery.org. You may either register online, or download and Fax the completed registration form to ACS Management Services, Fax: 800-682-0252 (US only) or 312-202-5003 (all other locations.) The registration fee covers expenses for all scientific and social functions. For on-site registration, an additional \$25 per person will also be assessed.

For your convenience, we have reserved enough rooms for AAES members and guests however, it is very important to make your hotel reservation early in order to assure yourself of available rooms. Reservations at a per night rate of \$199 may be made prior to March 23, 2007 by calling the Westin La Paloma at (800) WESTIN1.

Meeting Format

The venue for this year's meeting is the Westin La Paloma Resort and Spa in Tucson, Arizona. **The Scientific Sessions and accompanying meetings will commence at 8:00am on Sunday April 29, 2007 and extend through midday on Tuesday May 1,** using the AAES Resort Format which allows afternoon time off for enjoyment of the beauties of the resort.

The **Welcome Reception** will take place Sunday evening April 29, and the **Gala Dinner** will be held Monday evening April 30.

There will be an **Annual AAES Golf Tournament** the afternoon of Monday April 30, 2007. You must preregister for the tournament by March 23, 2007 by contacting Ms. Melissa Martin at martin@surgery.wisc.edu.

Ground Transportation

Taxi service is available from the Tucson AZ airport.

Driving From the airport: Drive north straight out of the airport, cross Valencia and keep on same road staying in right lane and looking for "City Center" signs. Turn right onto Kino Boulevard and follow this road for 12-14 miles, passing the University of Arizona. As you cross River Road you enter the foothills and the road begins winding. Turn right onto Skyline Road, staying in right lane. Turn right onto Via Palomita (stoplight). At top of road turn right into the La Paloma Resort.

Driving From Phoenix/Freeway: Take I-10 East from Phoenix towards Tucson Exit east on Ina Road (left off freeway). Drive east approximately 8 miles as Ina Road turns into Skyline Drive. Cross Campbell Avenue and then the road name become Sunrise Drive. Stay in the right lane and turn right onto Via Palomita (stoplight). Resort is on right at top of hill.

Contacts

Dr. Michael J. Demeure
Local Arrangements Chair
Phone: 520-977-9074
Fax: 520-626-9338
Email: mdemeure@email.arizona.edu

**American Association of Endocrine Surgeons
Twenty-EIGHTH Annual Meeting
PROGRAM OVERVIEW**

Saturday, April 28, 2007

1500-1900

**AAES Council Meeting
(Council and Guests only)
IRONWOOD**

Sunday, April 29, 2007

0730-1700

**Registration for AAES meeting
GRAND FOYER**

0800-0815

**Welcoming Remarks
Christopher A. McHenry MD,
President
GRAND BALLROOM**

**Michael J. Demeure MD,
Local Arrangements Chair**

Introduction of New Members

0815-0945

**Scientific Session I
Papers #1-#6
(Resident/Fellow Papers)**

0945-1030

**Coffee Break
GRAND FOYER**

**Poster Session A
(Poster Competition)
GRAND BALLROOM**

1030-1200	Scientific Session II Papers #7-#12 (Resident/Fellow Papers)
1200-1300	Luncheon ARIZONA DECK & FOYER
1315-1430	AAES Business Meeting (AAES Members only) GRAND BALLROOM
1430-1530	Endocrine Surgery Fellowship Directors Meeting (Current and Future Program Directors, Education and Fellowship Committee Members, Council) ASTER ROOM
1600-1800	Interesting Case Presentations John B. Hanks MD Vice President GRAND BALLROOM
1800-1830	New Members Reception (By Invitation only) MESA VERDE
1830-2000	AAES Welcome Reception WATERFALL

Monday, April 30, 2007

0745-1700

Registration
GRAND FOYER

0745-0900

Scientific Session III
Papers #13-#17
(Resident/Fellow Papers)
GRAND BALLROOM

0900-1000

Invited Lecturer
Virginia A. Livolsi MD
Introduction by Dr. Chris McHenry

1000-1030

Coffee Break
GRAND FOYER

Poster Session B
(Poster Competition)
GRAND BALLROOM

1030-1115

Scientific Session IV
Papers # 18-20
(Resident Competition)

1115-1215

Presidential Address
Christopher A. McHenry MD
Introduction by Dr. John Hanks

1300-onwards

Annual AAES Golf Tournament
LA PALOMA PRO SHOP

1900

Western Barbeque Gala Dinner
CATALINA BASIN
RESIDENT/FELLOW AWARDS
POSTER AWARDS
ASTRONOMY VIEWING

Tuesday May 1, 2007

0800-0915

**Scientific Session V
Papers # 21-25
GRAND BALLROOM**

0915-0945

**Coffee Break
GRAND FOYER**

0945-1100

**Scientific Session VI
Papers #26-30**

1115

Adjournment

SCIENTIFIC PROGRAM

SUNDAY, APRIL 29, 2007

Scientific Session I

Moderator: Christopher A. McHenry

*Denotes Resident/Fellow Paper

- 0815 **Paper 1***
THE CONSEQUENCES OF PARATHYROIDECTOMY IN
PATIENTS WITH "MILD" SPORADIC PRIMARY
HYPERPARATHYROIDISM
Denise M. Carneiro-Pla, George L. Irvin III and
Herbert Chen. *University of Miami, Miami FL and
University of Wisconsin, Madison WI*
- 0830 **Paper 2***
PHEOCHROMOCYTOMA PENETRANCE VARIES BY
RET MUTATION IN MEN 2A
Frank J. Quayle, Ronald Benveniste, Mary K.
DeBenedetti, Samuel A. Wells and Jeffrey F. Moley.
Washington University, St. Louis MO
- 0845 **Paper 3***
INCREASED PREVALENCE OF BREAST CANCER
AMONG PATIENTS WITH THYROID AND
PARATHYROID DISEASE
Carolyn Garner, Rebecca Ganetzky, Jennifer Brainard,
Eren Berber, Allan Siperstein and Mira Milas.
Cleveland Clinic, Cleveland OH

0900

Paper 4*

CLINICAL, GENETIC AND RADIOGRAPHIC
ANALYSIS OF 108 PATIENTS WITH VON HIPPLE-
LINDAU DISEASE (vHL) MANIFESTED BY
PANCREATIC NEUROENDOCRINE TUMORS (PNETs)

Joseph A. Blansfield, Lynda Choyke, Shane Morita,
Peter L. Choyke, James F. Pingpank, H. Richard
Alexander, Geoffrey Seidel, Yvonne Shutack, Nargiza
Yuldasheva, Michelle Eugeni, David L. Bartlett, Gladys
M. Glenn, Lindsay Middleton, W. Marston Linehan and
Steven K. Libutti.

*National Cancer Institute, Bethesda, and University of
Maryland, Baltimore, MD*

0915

Paper 5*

LONG TERM FOLLOW UP AFTER
PARATHYROIDECTOMY FOR RADIATION-INDUCED
HYPERPARATHYROIDISM

G. Ippolito, F. F. Palazzo, F. Sebag and J.F. Henry
La Timone Hospital, Marseille, France

0930

Paper 6*

DEMOGRAPHIC TRENDS IN THYROID CANCER
INCIDENCE AND SURGICAL THERAPY IN THE
UNITED STATES

Ian Mitchell, Shelby Holt, William H. Snyder III,
Edward H. Livingston and Fiemu Nwariaku.

*University of Texas Southwestern Medical Center,
Dallas, TX*

0945-1030

**Coffee Break and Poster Session A
(Poster Competition)**

Scientific Session II

Moderator: Francis D. Moore MD

*Denotes Resident/Fellow Paper

1030

Paper 7*

SEVERE OSTEOPOROSIS: A CHARACTERISTIC OF
NORMOCALCEMIC PRIMARY
HYPERPARATHYROIDISM

L. Ahmed, J. Lee, A. Turza, J. D. Allendorf, J. A. Chabot, S. Silberberg and W.B. Inabnet.
Columbia University, New York, NY

1045

Paper 8*

LONG-TERM FUNCTION AND QUALITY OF LIFE
AFTER PANCREATODUODENAL SURGERY IN
PATIENTS WITH MULTIPLE ENDOCRINE
NEOPLASIA SYNDROME TYPE 1 (MEN 1)

Y. Nancy You, Geoffrey B. Thompson, William F. Young, Dirk Larson, David R. Farley, Melanie L. Richards and Clive S. Grant. *Mayo Clinic, Rochester, MN*

1100

Paper 9*

THE INCIDENCE OF CANCER AND RATE OF FALSE
NEGATIVE CYTOLOGY IN THYROID NODULES ≥ 4
CENTIMETERS IN SIZE

Kelly L. McCoy, Noel Jabbour, Jennifer B. Ogilvie, Sally E. Carty and John H. Yim
University of Pittsburgh, Pittsburgh, PA

1115

Paper 10*

INTERPRETATION OF INTRA-OPERATIVE PTH
CHANGES IN PATIENTS WITH MULTI-GLANDULAR
PRIMARY HYPERPARATHYROIDISM (pHPT)

Giorgos C. Karakousis, Dale Han, Robert E. Roses, Deepika Neemani, Jagajaran Karmacharya, Rachel Rapaport-Kelz and Douglas L. Fraker.
University of Pennsylvania, Philadelphia, PA

1130

Paper 11*

DOES THE PRESENCE OF ADDITIONAL THYROID NODULES ON ULTRASOUND ALTER THE RISK OF MALIGNANCY IN PATIENTS WITH A FOLLICULAR NEOPLASM OF THE THYROID?

Rebecca S. Sippel, Dina M. Elaraj, Electron Kebebew, Quan-Yang Duh and Orlo H. Clark.

University of California, San Francisco, CA

1145

Paper 12*

LARYNGOSCOPY IN THYROID SURGERY - ESSENTIAL STANDARD OR UNNECESSARY ROUTINE?

K. Schlosser, K. Maschuw, M. Wagner and

M. Rothmund. *University Hospital Giessen and Marburg GmbH, Marburg, Germany*

1200 - 1300

AAES LUNCHEON

MONDAY APRIL 30, 2007

Scientific Session III

Moderator: John B. Hanks MD

***Denotes Resident/Fellow Paper**

0745

Paper 13*

RESPONSE TO MITOTANE PREDICTS OUTCOME IN PATIENTS WITH RECURRENT ADRENAL CORTICAL CARCINOMA

Ricardo J. Gonzalez, Eric P. Tamm, Chaan Ng, Alexandria T. Phan, Rena Vassilopoulou-Sellin, Nancy D. Perrier, Douglas B. Evans and Jeffrey E. Lee.

University of Texas M.D. Anderson Cancer Center, Houston, TX

- 0800 **Paper 14***
HOW MANY ENDOCRINE SURGEONS DO WE NEED?
Tracy S. Wang, Julie Ann Sosa, Heather Yeo, Robert Udelsman and Sanziana Roman.
Yale University, New Haven, CT
- 0815 **Paper 15***
SURGEON VOLUME AS A PREDICTOR OF
OUTCOMES IN INPATIENT AND OUTPATIENT
ENDOCRINE SURGERY
A. Stavrakis, P. Ituarte, C.Y. Ko and M. W. Yeh.
University of California, Los Angeles, CA
Sponsor: Quan-Yang Duh
- 0830 **Paper 16***
SUBCLINICAL CUSHING'S SYNDROME: IS IT
REALLY SUBCLINICAL? PRELIMINARY OUTCOMES
FOLLOWING LAPAROSCOPIC ADRENALECTOMY
Ian Mitchell, Kavita Juneja, Richard Auchus and
Fiemu Nwariaku. *University of Texas Southwestern
Medical Center, Dallas, TX*
- 0845 **Paper 17***
UNDERUTILIZATION OF TOTAL THYROIDECTOMY
FOR PAPILLARY THYROID CANCER IN THE UNITED
STATES: ANALYSIS OF 67,294 PATIENTS
Karl Y. Bilimoria, David J. Bentrem, Clifford Y. Ko,
Andrew Freel, JenJen Yeh, Andrew K. Stewart,
Mark S. Talamonti and Cord Sturgeon.
*Northwestern University, Chicago, IL; American College
of Surgeons Cancer Programs, Chicago, IL, and
University of North Carolina, Chapel Hill, NC*
Sponsor: Quan-Yang Duh

0900

Invited Lecturer

Virginia A. Livolsi MD

Professor of Pathology, Laboratory Medicine, and
Otolaryngology Head and Neck Surgery
University of Pennsylvania

**"Thyroid Nodule FNA and Frozen Section:
Partners or Adversaries"**

Introduction by Dr. Christopher McHenry

1000

**Coffee Break and Poster Session B
(Poster Competition)**

Scientific Session IV

Moderator: Julie Ann Sosa MD

***Denotes Resident/Fellow Paper**

1030

Paper 18*

RISING PARATHYROID HORMONE (PTH) AFTER
GASTRIC BYPASS SURGERY APPEARS TO BE OF A
SECONDARY NATURE

Judy Jin, Ann V. Robinson, Peter T. Hallowell, John J.
Jasper, Thomas A. Stellato and Scott M. Wilhelm.
Case School of Medicine, Cleveland, OH
Sponsor: Richard A. Prinz MD

1045

Paper 19*

GOOD BLOOD PRESSURE CONTROL ON ANTI-
HYPERTENSIVES, NOT ONLY RESPONSE TO
SPIRONOLACTONE, PREDICTS IMPROVED OUTCOME
AFTER ADRENALECTOMY FOR ALDOSTERONOMA

R. Zarnegar, J. Lee, L. Burnaud, S. Lindsay, E. Kebebew,
O. H. Clark and Q-Y Duh.
University of California, San Francisco CA

1100

Paper 20*

CAN HISTOPATHOLOGY PREDICT HYPERSECRETION OF PARATHYROID GLANDS AND CORRECTLY INFLUENCE THE EXTENT OF PARATHYROIDECTOMY IN PATIENTS WITH SPORADIC PRIMARY HYPERPARATHYROIDISM (SPHPT)?

Denise M. Carneiro-Pla, Rita Romaguera, Mehrdad Nadji, Carmen C. Solorzano, John L. Lew and George L. Irvin III. *University of Miami, Miami, FL*

1115

Presidential Address

Christopher A. McHenry MD

Professor and Vice-Chair of Surgery,
Case Western Reserve University

"The Illicit Use of Hormones for Enhancement of Athletic Performance: a Major Threat to the Integrity of Organized Athletic Competition"

Introduction by Dr. John B. Hanks

TUESDAY MAY 1, 2007

Scientific Session V

Moderator: Michael J. Demeure MD

0800

Paper 21

FUNCTIONAL PARATHYROID CANCER: LONG-TERM OUTCOME AND RISK FACTOR ANALYSIS

Masatoshi Iihara, Takahiro Okamoto, Rumi Suzuki, Akiko Kawamata, Yoko Omi, Hitomi Kodama, Kiyomi Horiuichi, Masako Kanbe, Yukio Ito and Takao Obara
Tokyo Women's Medical University, Tokyo, Japan

- 0815 **Paper 22**
REPORT ON AN EIGHT YEARS EXPERIENCE WITH
VIDEO-ASSISTED THYROIDECTOMY FOR
PAPILLARY THYROID CARCINOMA
Celestino P. Lombardi, Marco Raffaelli, Carmela De
Crea, Pietro Princi, Paolo Castaldi, Antonio Spaventa,
Massimo Salvatori and Rocco Bellantone.
University Cattolica del S. Cuore, Rome, Italy
- 0830 **Paper 23**
THERAPEUTIC IMPACT OF ¹⁸ FDG PET/CT IN THE
MANAGEMENT OF IODO-NEGATIVE RECURRENCE
OF DIFFERENTIATED THYROID CARCINOMA
Eric Mirallie, Thomas Guillan, Boumediene Bridji,
Isabelle Resche, Caroline Rousseau, Catherine Ansquer,
Chantal Curtet, Bruno Carnaille, Arnaud Murat, Bernard
Charbonnel and Francoise Kraeber-Bodere.
*Centre Rene Gauducheau, Saint Herblain; Hotel Dieu and
INSERM UMR 601, Nantes; and Hopital Huriex, CHU
Lille, France*
- 0845 **Paper 24**
NEUROENDOCRINE TUMOR CELL GROWTH
INHIBITION BY ZM336372 THROUGH ALTER-
ATIONS IN MULTIPLE SIGNALING PATHWAYS
Muthusamy Kunnimalaiyaan, Mary A. Ndiaye and
Herbert Chen. *University of Wisconsin, Madison, WI*
- 0900 **Paper 25**
ULTRASOUND GUIDANCE IN REOPERATION FOR
LOCALLY RECURRENT THYROID CANCER
K. L. McCoy, J. H. Yim, M. E. Tublin, L. B.
Burmeister, J. B. Ogilvie and **S. E. Carty**.
University of Pittsburgh, Pittsburgh PA

Scientific Session VI

Moderator: Geoffrey B. Thompson MD

0945

Paper 26

TREATMENT OF ANAPLASTIC THYROID
CARCINOMA WITH A MUTANT VACCINIA VIRUS

Shu-Fu Lin, Zhenkun Yu, Christopher Riedl, Yanghee Woo, Qian Zhang, Yong A. Yu, Tatyana Timiryasova, Aladar A. Szalay, Nanhai Chen, Jatin P. Shah, Yuman Fong and Richard J. Wong.

Memorial Sloan Cancer Center, New York NY; Chang Gung Memorial Hospital, Taoyuan Taiwan; Beijing Tongren Hospital, Beijing, China; San Diego Science Center, San Diego CA and University of Wurzburg, Am Hubland, Wurzburg, Germany

1000

Paper 27

PARAFIBROMIN EXPRESSION, SINGLE-GLAND
INVOLVEMENT AND LIMITED PARATHYROID-
ECTOMY IN FAMILIAL ISOLATED
HYPERPARATHYROIDISM

Maurizio Iacobone, Luisa Barzon, Andrea Porzionato, Giulia Masi, Giorgio Palu, Veronica Macchi, Raffaele De Caro, Anna Parenti, Filippo Marino, Giovanni Viel and Gennaro Favia. *University of Padua, Padua, Italy*

Paper 28

THE PREOPERATIVE EXCLUSION OF THE
DIAGNOSIS OF THYROID CARCINOMA IN
MULTINODULAR GOITER: DYNAMIC CONTRAST
ENHANCED MAGNETIC RESONANCE IMAGING
VERSUS ULTRASONOGRAPHY GUIDED FINE NEEDLE
ASPIRATION BIOPSY

Fatih Tunca, Yasemin Giles, Artur Salmaslioglu, Arzu Poyanli, Dilek Yilmazbayhan, Tarik Terzioglu and Serdar Tezelman. *Istanbul University, Istanbul, Turkey*

1030

Paper 29

MEDULLARY THYROID MICROCARCINOMA-
RECOMMENDATIONS FOR TREATMENT- A SINGLE
CENTER EXPERIENCE

Chr. Scheuba, K. Kaserer, R. Asari, Chr. Bieglmayer and
B. Niederle.

Medical University of Vienna, Vienna, Austria

1045

Paper 30

THE RELATIONSHIP OF HOSPITAL VOLUME AND
PROVIDER VOLUME IS INVERSELY CORRELATED TO
ADVERSE OUTCOMES IN A STATEWIDE ANALYSIS
OF 1,816 ADRENALECTOMIES

Scott Gallagher, Kathryn Baksh, Monica Wahl, Krista
Haines, Andy Lee, Jon Enriques, Michel Murr, Jeff

Fabri. *University of South Florida, Tampa, FL*

ABSTRACTS

* Denotes Resident/Fellow Research Paper

THE CONSEQUENCES OF PARATHYROIDECTOMY IN PATIENTS WITH "MILD" SPORADIC PRIMARY HYPERPARATHYROIDISM

Denise M. Carneiro-Pla, George L. Irvin III and Herbert Chen.

University of Miami, Miami FL and University of Wisconsin, Madison, WI

Background: With the evolution of parathyroidectomy to a focused, short and safe operative procedure, the results of parathyroidectomy in patients with classic SPHPT are excellent. The use of this less extensive operative approach is changing the indications for parathyroidectomy. Patients with "mild" forms of hyperparathyroidism(HPT) are now being offered definitive treatment. However, the operative findings in these patients alone are rarely described and are usually reported combined with patients with classic SPHPT. The purpose of this study is to evaluate the differences between "mild" and "classic" SPHPT regarding incidence of multiglandular disease(MGD) and operative results.

Methods: 346 patients who underwent limited parathyroidectomy guided by intraoperative PTH monitoring (IPM) were divided in 2 groups: 301 patients with classic SPHPT(hypercalcemia and elevated PTH) and 45 with "mild" HPT. The mild HPT group consisted of 30 patients with inappropriate secretion of PTH(ISP) with hypercalcemia and normal, non-suppressed PTH, and 15 with normocalcemic HPT(NCHPT) presenting with eucalcemia and elevated PTH. Abnormal parathyroid glands were determined by the intraoperative PTH dynamics pointing out one(single-gland disease) or more(MGD) hyperfunctioning glands. Operative failure was defined as any of the preoperative biochemical abnormalities that persisted postoperatively. The 2 groups of patients selected by preoperative biochemical diagnosis were compared to evaluate the incidence of MGD and operative failure.

Results: In the 301 patients with classic SPHPT, 39(13%) had MGD with an operative failure rate of 2%(5/301). In the group of 45 patients with mild HPT, 15(33%) had MGD found at parathyroidectomy (30% ISP and 40% NCHPT) and an operative failure rate of 9%(4/45). When the incidence of MGD and operative failure between the "classic" and "mild" HPT were compared, these differences were statistically significant ($p<0.005$).

Conclusion: The incidence of multiple gland involvement and operative failure are significantly higher in patients with "mild" hyperparathyroidism when compared with patients with classic SPHPT. Patients and surgeons should be aware of these expected consequences

when parathyroidectomy is offered to patients with inappropriate secretion of PTH or normocalcemic HPT.

Notes:

Paper 2* (0830)

**PHEOCHROMOCYTOMA PENETRANCE VARIES BY RET MUTATION
IN MEN 2A**

Frank J. Quayle, Ronald Benveniste, Mary K. DeBenedetti, Samuel A. Wells, and Jeffery F. Moley
Washington University, St. Louis MO

Introduction: The penetrance and expression of pheochromocytoma (PC) in multiple endocrine neoplasia type 2A (MEN 2A) is variable. This study aims to characterize the relationship between penetrance and expression of PC and specific RET mutations in MEN 2A.

Methods: Charts of patients with MEN 2A enrolled in our Multiple Endocrine Neoplasia program from 1990 to 2001 were retrospectively reviewed. Statistical analysis was performed using SAS software.

Results: Genotyping and PC data were complete for 327 patients. The overall penetrance of PC was 103/327 (31%), the mean age at presentation was 35, and there was no significant difference in rates of PC between men and women (28% vs. 33%). Bilateral PCs were observed in 68 patients (67%). The following codon-specific penetrance of PC was observed: 1/24 (4%) codon 609, 0/5 (0%) codon 611, 23/105 (22%) codon 618, 4/45 (9%) codon 620, and 74/149 (50%) codon 634 ($p < .001$). Codon-specific means (and ranges) of age at presentation were 45 (na) codon 609, 38 (19-73) codon 618, 36 (19-54) codon 620, and 33 (15-57) codon 634 ($p = ns$). At codons 618 and 634 we observed statistically significant differences in PC penetrance with different amino acid substitutions: 0/7 C618F, 5/21 (24%) C618G, 11/27 (41%) C618R, 7/41 (17%) C618S, and 0/9 C618Y ($p = .05$); and 0/0 C634F, 0/3 C634G, 49/103 (48%) C634R, 4/4 C634S, 4/5 (80%) C634W, and 17/34 (50%) C634Y. In our cohort there were no deaths attributable to pheochromocytoma with a median follow up of 9 years.

Conclusions: The penetrance of PC is significantly different between MEN 2A-causing RET mutations at different codons, ranging from 4% for codon 609 to 50% for codon 634. Furthermore, we observed statistically different PC penetrance with different amino acid substitutions at the same codon. These results offer prognostic information for patients with MEN 2A and may help guide screening and therapy.

Notes:

INCREASED PREVALENCE OF BREAST CANCER AMONG PATIENTS
WITH THYROID AND PARATHYROID DISEASE

Carolyn Garner, Rebecca Ganetzky, Jennifer Brainard, Eren Berber,
Allan Siperstein and Mira Milas
Cleveland Clinic, Cleveland OH

Background: We elicited breast cancer (BC) history more frequently than expected among patients referred for thyroid and parathyroid surgery, prompting us to investigate risks of non-endocrine malignancies in these patients.

Methods: From a cohort of 94,939 patients with breast, thyroid, or parathyroid disease registering at a tertiary referral center from 2000-2006, those with more than one tumor type were identified. Observed rates of BC, thyroid cancer (TC), and hyperparathyroidism (HPT) were calculated in patients with multiple diagnoses, and compared to expected rates for age, race, and sex-matched populations using Surveillance, Epidemiology, and End Results (SEER) data.

Results: The cohort included 1604 TC, 12,440 BC and 1352 HPT patients. Sixty (3.7%) TC and 70 (5.2%) HPT patients also had BC. Of 820 who underwent total thyroidectomy at our institution for goiter or cancer, 26 (3.2%) had BC before TC, whereas only 1.6% would have been expected from a Monte Carlo sampling distribution using SEER data ($p=0.001$). Breast and thyroid cancers occurred within 5 yrs in 90% patients. Women with both were older at each diagnosis, compared to patients with one cancer (BC: 60 vs 56 yrs, $p=0.61$; TC: 62 vs 48 yrs, $p=0.004$). Papillary TC occurred less frequently (76% vs 98%, $p=0.02$) and sporadic medullary TC more frequently (19% vs 2.5%, $p=0.04$) when associated with BC vs benign breast disease. Physicians uninvolved in BC follow-up initiated 71% TC diagnoses; patients or mammography detected all BC cases. Prevalent in 0.2% adults, HPT affected 0.6% BC, 6% TC, and 7% of patients with both malignancies. In patients who had both BC and TC, no additional types of malignancy were identified.

Conclusion: Risk of developing either breast or thyroid cancer after initial diagnosis of the other malignancy is increased and tends to occur within the first 5 yrs of diagnosis. Underlying genetic or environmental risk factors need to be elucidated. HPT occurs considerably more often in women with either malignancy. Vigilant screening for these associated disorders should accompany initial diagnosis of breast or thyroid cancer.

Notes:

Paper 4* (0900)

CLINICAL, GENETIC AND RADIOGRAPHIC ANALYSIS OF 108 PATIENTS WITH VON HIPPLE-LINDAU DISEASE (vHL) MANIFESTED BY PANCREATIC NEUROENDOCRINE TUMORS (PNETs)

Joseph A. Blansfield, Lynda Choyke, Shane Morita, Peter L. Choyke, James F. Pingpank, H. Richard Alexander, Geoffrey Seidel, Yvonne Shutack, Nargiza Yuldasheva, Michelle Eugeni, David L. Bartlett, Gladys M. Glenn, Lindsay Middleton, W. Marston Linehan, and Steven K. Libutti

BACKGROUND: vHL is an autosomal dominant syndrome associated with renal cell carcinoma, pheochromocytoma, hemangioblastomas of the CNS, retinal angiomas, endolymphatic sac tumors and pancreatic lesions. Most of the pancreas lesions are cystic however, patients can also develop PNETs which can be malignant. Here we report on the largest single center experience with the diagnosis and management of vHL PNETs.

METHODS: Between December 1988 and November 2006, 633 patients with vHL were evaluated by a multidisciplinary team. Those with evidence of PNETs were enrolled on a prospective protocol. All patients undergo history and physical examination, CT scan and MRI imaging of the liver and pancreas as well as laboratory and genetic testing.

RESULTS: One hundred eight patients with vHL had PNETs (17%). None of the tumors were functional. Nine patients had metastatic disease (8.3%) confirmed to be from their PNET. Patients with primary lesions >3 cm (n=25) were more likely to develop metastases than patients with lesions <3 cm (n=83)(p<0.0046). Thirty-nine patients underwent resection and none of these patients has developed metastases after instituting size criteria. Germline sequence analysis showed that 78% (7/9) of patients with metastatic disease had exon 3 missense mutations compared with 46% (32/98) of patients without metastatic disease (p<0.01). Tumor doubling time was calculated by measuring the largest primary PNET tumor in the group with metastases and the group without. In 7/9 patients with metastases and 54/99 patients without metastases, measurements were performed on 2 or more CT scans. The group with metastases had a doubling time of 337 days (range:180 to 449) compared with 2628 days (range: 103 to 9614) for the group without metastatic disease (p<0.0001).

CONCLUSIONS: By implementing a system of selective surgical resection based on defined criteria, vHL patients with PNETs can be safely managed. For patients with small primary lesions (<3 cm), without a mutation of exon 3 and slow tumor doubling times (>500 days), a non-operative approach may be appropriate for these non-functional tumors.

Notes:

LONG TERM FOLLOW UP AFTER PARATHYROIDECTOMY FOR
RADIATION-INDUCED HYPERPARATHYROIDISM

G. Ippolita, F.F. Palazzo, F. Sebag, J.F. Henry
La Timone Hospital, Marseille, France

Background: External beam radiation is associated with an increased risk of hyperparathyroidism: *radiation-induced hyperparathyroidism* (R-HPT). The aim of this study is to review the histological findings and long term outcomes after surgery for R-HPT.

Methods: A retrospective review was performed on all cases of R-HPT operated from 1980 to 2003 in our department. Inclusion criteria were hyperparathyroidism preceded by a history of neck irradiation and a minimum of 3 years follow-up after surgery. Calcium and PTH levels were measured post-operatively and yearly thereafter.

Result: Between 1980-2003 1932 patients underwent surgery for primary hyperparathyroidism (pHPT) in our department. Thirty-seven (1.92%) patients had a history of neck irradiation. Thirty-two of these underwent a bilateral exploration (BE) and 5 underwent a focused approach (FA). At initial surgery 35 patients presented a single adenoma and 2 presented a double adenoma.

In the BE group one persistence requiring re-operation was reported due to a third adenoma in a supernumerary parathyroid gland. After a median follow-up of 10.3 years(3-21ys) 26 patients remained biochemically cured and 6 had recurrences which occurred after a median of 13.2 years(7-22ys).

In the FA group there has been no recurrence to date in the 5 pts, after a median follow-up of 6.4 years(3-8 ys).

Conclusion: In R-HPT, the incidence of multiglandular disease at the time of diagnosis is comparable to sporadic HPT. A focussed or minimal access approach therefore appear to be a satisfactory approach when appropriate pre-operative localisation is positive and there is no evidence of thyroid disease. BE does not appear to reduce the incidence long-term recurrence. The variable rate of induction of R-HPT in different parathyroids and therefore the late recurrences may be due to differing radiosensitivity of parathyroid glands.

Notes:

Paper 6* (0930)

DEMOGRAPHIC TRENDS IN THYROID CANCER INCIDENCE AND SURGICAL THERAPY IN THE UNITED STATES

Ian Mitchell, Shelby Holt, William H. Snyder, III, Edward H. Livingston, and Fiemu Nwariaku

University of Texas Southwestern Medical Center, Dallas, TX

Background: The incidence of thyroid cancer is rising. Our objective was to characterize the demographic pattern of this change and determine the rate of total thyroidectomy as primary surgical therapy for thyroid cancer.

Methods: Analysis of the National Hospital Discharge database was performed from 1979 to 2004. All thyroid related diagnoses were extracted and thyroid cancer (ICD 193.X) were analyzed using the SAS statistical package. We compared the population-adjusted (per 100,000 population) incidence of thyroid cancer in four areas of the United States (Northeast (NE), South, Midwest and West). We next examined the rates of surgical therapy (total thyroidectomy, TT and partial thyroidectomy, PT) for thyroid cancer.

Results: The overall incidence of thyroid cancer has increased during the past 26 years, (Table). This increase occurred predominantly in women and in the NE and Southern U.S, whereas there has been a decrease in thyroid cancers in the Midwest. Concomitantly the use of TT for thyroid cancer has increased in women compared to men (2.5 fold vs 1.9 fold). No differences in the use of TT were observed based on hospital size, or insurance status.

Period	1979-84	1985-89	1990-94	1995-99	2000-04
Incidence	7.4	6.9	8	7.8	8.9
NE	6.7	6.9	7.3	9.1	11.6
South	6.32	6.48	7.50	7.74	9.29
Midwest	9.52	7.59	8.30	7.4	5.54
TT(male)	0.72	0.86	1.01	1.09	1.37
TT(female)	1.76	1.98	3.12	3.19	4.44
PT (male)	0.96	1.50	1.35	0.86	0.73
PT(female)	3.99	3.33	3.21	3.36	2.73

Conclusion: The rising incidence of thyroid cancer in the United States is predominantly in women and may not be due to the increased use of screening ultrasonography. These results suggest that women may be

considered a high-risk group for thyroid cancer and argue for the development of screening protocols targeted towards women.

Notes:

SEVERE OSTEOPOROSIS: A CHARACTERISTIC OF
NORMOCALCEMIC PRIMARY HYPERPARATHYROIDISM

Ahmed L, Lee J, Turza A, Allendorf JD, Chabot JA,
Silberberg S, Inabnet, WB
Columbia University, New York, NY

Background: With the widespread use of bone densitometry (BMD), the diagnosis of osteoporosis has become a common means of uncovering primary hyperparathyroidism (PHP). Increasingly, patients with severe osteoporosis, elevated PTH levels but normal to mild elevations in calcium are coming to attention. We hypothesize that patients with severe osteoporosis and PHP are more likely to present with an atypical biochemical profile.

Methods: 342 consecutive patients were operated on for PHP between December 2003 and November 2006 at our institution. All patients with pre-operative BMD results were included in this analysis (n=184), which grouped patients based on their lowest pre-operative BMD T-score at the lumbar spine, total hip or distal 1/3 radius site (normal > -1 [n=30]; osteopenia -1 to -2.5 [n=65]; osteoporosis: -2.5 to -3.0 [n=41]; and severe osteoporosis \leq -3.0 [n=48]). Between groups differences in pre-operative, operative and post-operative variables were determined using ANOVA and chi-square analysis (p-value <.05 was considered significant).

Results: Increasingly severe bone disease was associated with advancing age (mean age 59.1, 64.0, and 70.3 years respectively for normal, osteopenia, osteoporosis, and severe osteoporosis patients, p=0.0001). Patients with severe osteoporosis were more likely to have normal levels of serum calcium at presentation compared to the other groups (3.7%, 18.3%, 13.9%, 32.6%, p=0.02) as well as a less pronounced decrease in IOPTH values 10 minutes following gland(s) resection (76.3%, 60.7%, 73.9%, 71.4%, p=0.003). There was no difference in preoperative and postoperative PTH levels, accuracy of imaging studies, type of anesthesia, operative approach (focused versus bilateral), number of glands resected, gland weight, pathology (adenoma versus multigland disease), length of stay, or cure rate.

Conclusion: In addition to the expected association of severe osteoporosis with advanced age, we found that PHP patients with severe osteoporosis were more likely to present with normal serum calcium levels than did patients with normal bone mass. The diagnosis of primary hyperparathyroidism should be considered in patients with severe osteoporosis even if the serum calcium concentration is normal.

Notes:

Paper 8* (1045)

LONG-TERM FUNCTION AND QUALITY OF LIFE AFTER
PANCREATODUODENAL SURGERY IN PATIENTS WITH MULTIPLE
ENDOCRINE NEOPLASIA SYNDROME TYPE 1 (MEN1)

Y. Nancy You, Geoffrey B. Thompson, William F. Young, Dirk Larson,
David R. Farley, Melanie L. Richards, Clive S. Grant
Mayo Clinic, Rochester, MN

Background: Pancreatoduodenal (PD) neoplasms constitute the principal disease-specific lethality in MEN-1. Operative management must balance oncologic benefits versus perioperative morbidity and compromise in pancreatic function and quality of life (QOL).

Methods: Between 1984 and 2004, 50 MEN-1 patients (48% female) undergoing PD surgery were reviewed for demographics, operative morbidity, and clinical outcomes. At 5.4 years (mean, range:0.2-20.1) postoperatively, patients were surveyed for function and QOL using the validated EORTC QLQ-C30 as well as a disease-specific questionnaire (response rate: 78%).

Results: Twelve (24%) patients had asymptomatic disease detected during screening, and 38 (76%) were symptomatic (most commonly: hypoglycemia, abdominal pain, ulcers). Metastases were found in 2 (17%) asymptomatic and 11 (29%) symptomatic patients ($p=0.48$). Operations (enucleation only, 18%; partial pancreatectomy +/- enucleation, 72%; completion or total pancreatectomy, 6%; biopsy only, 4%) resulted in R0/R1 resection in 80%. There were no deaths; 21 (42%) patients experienced complications with only 2 (4%) requiring re-operation. At 5.0 years (mean) postoperatively, 30 patients (60%) were alive without clinically-evident disease, and 12 (24%), with disease. Five (10%) patients died of PD tumors, 2 (4%) of other MEN-1-related tumors, and 1 (2%) of unknown cause. Ten (20%) patients developed diabetes requiring insulin (8) and oral hypoglycemics (2). Most (77%) maintained weight. Frequent (>once/week) steatorrhea occurred in 28%, early dumping, 28%; bloating, 28%; late dumping, 7%; hypoglycemia, 7%; vomiting, 4%, and jaundice, 0%. The global QOL score (72.8) did not differ from that of the reference normal population (75.3; $p=0.58$), and was superior in asymptomatic patients (85.4) over symptomatic ones (67.9; $p=0.05$).

Conclusion: While operative intervention of PD disease in MEN-1 is associated with perioperative risks and altered pancreatic function, the minimal compromise in patients-perceived QOL suggests that most have accepted the trade-off between operative morbidity with the potential for minimizing PD tumor-related deaths.

Notes:

THE INCIDENCE OF CANCER AND RATE OF FALSE NEGATIVE
CYTOLOGY IN THYROID NODULES ≥ 4 CENTIMETERS IN SIZE

KL McCoy, N Jabbour, JB Ogilvie, SE Carty, JH Yim
University of Pittsburgh, Pittsburgh, PA

Background: Because high false negative rates for fine needle aspiration biopsy (FNAB) of thyroid nodules ≥ 3 cm were previously reported, we considered the presence of a ≥ 4 cm palpable or imaged dominant nodule to be an indication for thyroidectomy regardless of FNA results.

Methods: Under an IRB approved protocol, we reviewed the data of all consecutive patients with thyroid nodules ≥ 4 cm operated upon from 7/03-11/06. Micropapillary carcinoma (< 1.0 cm) was considered clinically relevant when it was multifocal and/or prompted completion thyroidectomy. Mean follow-up was 4.6 months (range 0.2-35.7). Chi square and student's t test were used for statistical analysis.

Results: Of 223 patients who underwent lobectomy or total thyroidectomy for a ≥ 4 cm nodule, 43 patients (19.3%) had thyroid carcinoma of the nodule on final pathology. Seven additional patients had macro-occult (> 1 cm) cancer outside of the ≥ 4 cm nodule. An additional 34/223 (15.7%) patients had micropapillary carcinoma, which in 7/34 cases was considered clinically relevant. When combined, the rate of clinically relevant cancer was 57/223 (26%). Preoperative cytology of the ≥ 4 cm mass was obtained and read as benign in 71/149 patients. Of these, the false negative rate for cancer in the lesion was 9/71 (12.7%). With inclusion of clinically relevant microcarcinomas, the false negative rate in this large series was 15.5%. Among patients with benign cytology, the false negative rate for missed follicular lesions of the ≥ 4 cm mass itself (follicular adenoma, follicular carcinoma and follicular variant of papillary carcinoma) was 33.8%. Among 32 patients with cytology positive for follicular lesion, 34.4% had thyroid cancer on final pathology.

Conclusions: The incidence of cancer in thyroid nodules ≥ 4 cm is high. Benign cytology has an unacceptably high false negative rate in this group, and patients with preoperative FNA showing follicular lesion have quite a high incidence of differentiated thyroid cancer. Thyroid nodules ≥ 4 cm should be managed with, at minimum, diagnostic lobectomy to exclude thyroid malignancy, regardless of FNA results.

Notes:

INTERPRETATION OF INTRA-OPERATIVE PTH CHANGES IN
PATIENTS WITH MULTI-GLANDULAR PRIMARY
HYPERPARATHYROIDISM (pHPT)

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Background: Intra-operative PTH (IOPTH) monitoring is playing an increasingly important role in the surgical management of patients with primary hyperparathyroidism (pHPT). The correct interpretation of IOPTH levels in patients with multi-glandular disease (MGD) as their etiology for pHPT can impact on the success rate of initial parathyroid exploration. We have evaluated the change in IOPTH levels in patients with single adenomas, double adenomas and four-gland hyperplasia.

Methods: 719 patients with biochemical evidence of pHPT underwent surgical exploration by a single surgeon between January 1997 and June 2006. Beginning in April 2002, minimally invasive parathyroidectomy with intra-operative PTH monitoring was used in >95% of procedures. We investigated the incidence of MGD in patients with an appreciable (>50%) drop in IOPTH levels but whose levels failed to return to normal range.

Results: The mean age of patients was 56.2 years with the majority of patients being female (76.4%). A small fraction of the patients (1%) had multiple endocrine neoplastic syndromes (MEN I/IIa). Overall, the incidence of single adenomas, double adenomas, hyperplasia and carcinoma in the series was 87.6%, 6.7%, 4.5% and 0.3% respectively. Of the 486 patients who had intra-operative PTH, there were 18 patients whose PTH decreased by >50% from baseline 10-15 min after single gland excision but failed to normalize. Of these, 9 (50%) ultimately were found to have MGD (6 double adenomas, 3 hyperplasia). The mean drop in PTH values for single adenomas 10 min after gland excision was $81 \pm 10\%$. The corresponding mean drop in PTH values for double adenomas 10 min after first gland excision was $39 \pm 24\%$ (n=26). Of the 9 patients with hyperplasia who had IOPTH levels sent after single gland excision, the mean drop in PTH values was $37\% \pm 20\%$. Overall cure rate was 99%.

Conclusion: Commonly accepted reduction in intraoperative PTH levels (>50%) for patients who undergo minimally invasive parathyroidectomy may lead to an appreciable number of missed parathyroid adenomas or hyperplastic disease.

Notes:

Paper 11* (1130)

**DOES THE PRESENCE OF ADDITIONAL THYROID NODULES ON
ULTRASOUND ALTER THE RISK OF MALIGNANCY IN PATIENTS
WITH A FOLLICULAR NEOPLASM OF THE THYROID?**

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Background: An FNA diagnosis of a follicular neoplasm is associated with approximately a 20% risk of malignancy. There are no clear clinical predictors to identify which patients may actually have a risk of malignancy that is higher or lower than 20%. Pre-operative ultrasounds are routinely done prior to thyroidectomy to look for additional nodules. We sought to determine if the presence of additional thyroid nodules on pre-operative ultrasound decreased the risk of malignancy in a patient with a diagnosis of a follicular neoplasm.

Methods: Between January 2000 and November 2006, 325 patients underwent thyroidectomy, at a single institution, with an FNA diagnosis of either Follicular Neoplasm, Hürthle Cell Neoplasm, or indeterminate (not suspicious for papillary thyroid cancer). Patient histories, FNA reports, ultrasound findings, operative notes, and pathology reports were retrospectively reviewed. Statistical analysis was performed using SPSS.

Results: The overall rate of malignancy in our patient population was 19% (22% in Follicular Neoplasm, 19% in Hürthle Cell Neoplasm, 9% in indeterminate). Malignant tumors were on average larger than benign tumors (3.8 cm vs. 3.1 cm, $p < 0.01$). The risk of malignancy was not associated with either patient age or sex. Pre-operative ultrasounds showed that 57% of patients had multiple thyroid nodules. The risk of malignancy was decreased by 41% in patients with ≥ 1 additional thyroid nodule in comparison to those with a solitary nodule (16.6% vs. 28%, $p = 0.02$). The risk of malignancy was lowest in those with 1-3 additional nodules in comparison to those with ≥ 4 nodules (14.5% vs. 21.7%, $p = 0.04$). Thyroid cysts were present in 10% of benign cases but were not seen in any patient with malignancy (10% vs. 0%, $p < 0.01$).

Conclusions: The risk of malignancy in a follicular neoplasm that is a solitary nodule is 28%. The presence of additional thyroid nodules on pre-operative ultrasound decreases the risk of malignancy in a patient with a follicular neoplasm by 41%. Thyroid cysts are common on thyroid ultrasound and are not associated with malignancy.

Notes:

LARYNGOSCOPY IN THYROID SURGERY-ESSENTIAL STANDARD
OR UNNECESSARY ROUTINE?

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Background: Pre- and postoperative laryngoscopy is recommended as a standard procedure in thyroid surgery by the German Society of Surgeons. By means of a retrospective study we analyzed the incidence of recurrent laryngeal nerve palsy before and after surgery to assess if routinely performed laryngoscopy is really necessary.

Methods: Within 4 years (1995- 1999) 699 patients underwent thyroid surgery in our department. In a retrospective study the incidence of recurrent laryngeal nerve palsy before and after surgery as well as postoperative changes of voice quality were analyzed. In addition we reviewed the influence of possible risk factors either based on the patients condition or the surgical procedure itself.

Results: The incidence of preoperative unilateral recurrent laryngeal nerve palsy was 1,9% (13 patients). 0,4% (4 patients) were asymptomatic and had no history of nerve palsy.

After 6 months the incidence of postoperative transient nerve palsy was 8% (56 patients) and 1% (1 patient) for permanent laryngeal nerve palsy. In all patients with a permanent recurrent laryngeal nerve palsy, changes in voice quality were obvious directly after surgery. In all asymptomatic patients with postoperative recurrent laryngeal nerve palsy paralysis was transient.

Significant influences on the incidence of recurrent laryngeal nerve palsy could be demonstrated for diabetes, extent of resection, weight of resected specimen, histopathological result, reoperation and operation time.

Conclusions: With an incidence of only 0,4% nerve palsies in asymptomatic patients before surgery, routine preoperative laryngoscopy in thyroid surgery seems to be doubtful as a standard procedure.

Postoperative routine laryngoscopy detected a transient asymptomatic nerve palsy in 1% of the patients with no therapeutic consequence. In 7% of the patients with a transient and in 1% with a permanent recurrent laryngeal nerve palsy changes in voice quality were obvious directly after surgery.

A symptomatic approach seems to be reasonable and postoperative laryngoscopy should be preserved for patients with voice changes for diagnostic and therapeutic reasons.

Notes:

RESPONSE TO MITOTANE PREDICTS OUTCOME IN PATIENTS
WITH RECURRENT ADRENAL CORTICAL CARCINOMA

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Background. Adrenal cortical carcinoma (ACC) is a rare condition with a poor prognosis; recurrence following surgical resection is common. Mitotane is the primary systemic treatment for patients with recurrent ACC; however, data regarding the impact of mitotane on the outcome of patients with recurrent ACC are limited. **Methods.** We reviewed the records of all patients who underwent surgery for ACC evaluated at our institution from 1991-2006. Stage at presentation, surgical treatment, recurrence, systemic therapy, treatment response, and survival were recorded. **Results.** 186 patients were identified (Stage I, 9; Stage II, 85; Stage III, 56; Stage IV, 24; Unknown 12). At last follow-up, 93 patients (50%) had died, 61 (33%) were alive with disease and 31 (17%) were alive without disease; the median follow-up of surviving patients was 31 months. The median disease-free survival (DFS) was 12 months and the median overall survival (OS) was 37 months. Higher stage at presentation ($P=0.002$) and the presence of cortisol production ($P=0.007$) were associated with a worse OS. 67 evaluable patients with recurrent ACC received mitotane (mitotane alone, 52; mitotane plus chemotherapy, 15). Response to mitotane-containing therapy was observed in 13 patients (19%), including a complete response (CR) in 4 and a partial response (PR) in 9; stable disease (SD) was seen in 10 and progressive disease (PD) in 44. The median OS of patients who had either SD or a response to mitotane (SD+PR+CR) compared to those with PD was 78 vs. 25 months ($P<0.001$). On multivariate analysis, response to mitotane was an independent predictor of improved OS ($P<0.001$). **Conclusions.** Disease recurrence is common following resection of ACC, and most patients with recurrent disease have a poor prognosis. Patients with recurrent ACC who have either stable disease or a response to mitotane have a more favorable prognosis than those who progress on this treatment. Mitotane should be considered in most patients with recurrent ACC, including as preoperative therapy for those with recurrent disease considered for surgical resection.

Notes:

HOW MANY ENDOCRINE SURGEONS DO WE NEED?

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Background: The recent growth of endocrine surgery has paralleled the increasing incidence of endocrine diseases, especially disorders of the thyroid and parathyroid glands. Higher surgeon volume is associated with improved outcomes. The emergence of fellowship programs will lead to more specialty-trained endocrine surgeons. We examine the balance between anticipated workforce and future demand, considering optimal geographic distribution of endocrine surgeons in the U.S.

Methods: Supply projections are based on physician data collected from the Accreditation Council for Graduate Medical Education (ACGME), the American Association of Endocrine Surgeons (AAES), and a survey of recent graduates of AAES fellowship programs. Demand is estimated based on the Healthcare Cost and Utilization Project National Inpatient Sample (HCUP-NIS) and U.S. Census Bureau population projections.

Results: In 1993, 317,000 thyroid, parathyroid, and adrenal procedures were performed in the U.S. By 2004, this increased by 22%, to 386,000. Projecting a similar increase, more than 470,000 endocrine procedures may be performed by 2015. General surgery chief residents graduate with <30 endocrine cases/5 years, while endocrine surgery fellows perform >300/year. In 2006, there are 180 active U.S. AAES members. The national distribution of endocrine surgeons is clustered around urban and academic centers. Using an estimated annual caseload of 50-300 endocrine procedures/surgeon, AAES members perform 9,000-54,000 procedures, just 2-14% of total cases. With 12 current fellowship programs, we estimate that by 2015, there will be 280 endocrine surgeons. Using the same projected caseload, the total number of procedures performed by the AAES would increase to 14,000-84,000, or 3-18% of total cases.

Conclusion: Despite the increasing number of fellowship-trained endocrine surgeons, demand will continue to exceed supply. Given current geographic clustering, there will continue to be underutilization of endocrine surgeons due to concentration in urban and academic centers and the lack of a perceived need for the specialty among consumers, payers, and referring physicians. Lower-volume surgeons will continue to perform the vast majority of endocrine procedures, suggesting an ongoing disparity in clinical outcomes.

Notes:

Paper 15* (0815)

**SURGEON VOLUME AS A PREDICTOR OF OUTCOMES IN INPATIENT
AND OUTPATIENT ENDOCRINE SURGERY**

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Sponsor: Quan-Yang Duh

Background: Surgeon experience is strongly correlated to outcomes in complex operations. Endocrine operations are increasingly performed in the outpatient setting, where outcomes have not been systematically studied. We examined the effect of surgeon volume (SV) on clinical and economic outcomes for thyroid, parathyroid, and adrenal procedures across inpatient and outpatient settings.

Methods: New York and Florida state discharge data (2002) were studied. Surgeons were grouped by annual endocrine operative volume: Group A, 1-3 operations; B, 4-10; C, 11-25; D, 26-50; E, 51-99; F, ≥ 100 . Outcomes analyzed included length of stay (LOS), technical complications, and hospital charges. Multiple regression analyses were applied to model SV effects while controlling for clinical, economic, and hospital-centric variables.

Results: The New York and Florida samples yielded 8,756 and 5,296 discharges, respectively, with 28.4% of operations performed on an outpatient basis (admission/discharge on same calendar day). Group A surgeons performed 17.6% of all operations; B, 21.6%; C, 20.1%; D, 13.6%; E, 15.7%; F, 11.4%. High SV was associated with incremental decreases in LOS, total hospital charges, and aggregate technical complication rate (16%, 12%, and 13% per echelon, respectively, $p < 0.001$). Comparing Groups A and F, mean absolute figures were: LOS, 3.36 vs 0.96 days; hospital charges \$20,548 vs \$12,741, complication rate 7.2% vs 1.0%. Groups A and B contributed disproportionately more complications (4.3% observed vs 3.0% expected, $p < 0.001$), whereas Groups E and F contributed fewer complications (1.6% observed vs 3.0% expected, $p < 0.001$). For thyroid and parathyroid procedures, high SV was associated with a significant risk reduction in hemorrhagic complication rate (A, 2.93% vs F, 0.87%, $p < 0.001$). Outpatient procedures were more likely to be thyroid-related ($p < 0.001$), non cancer-related ($p < 0.001$), and to involve patients with fewer comorbidities ($p < 0.0001$).

Conclusions: This population-based study demonstrates a strong correlation between surgeon volume and outcomes in inpatient and outpatient endocrine surgery. Economic outcomes improve as a

continuous function of experience, and the lowest complication rates are achieved by surgeons performing >50 endocrine operations yearly.

Notes:

SUBCLINICAL CUSHING'S SYNDROME: IS IT REALLY
SUBCLINICAL? PRELIMINARY OUTCOMES FOLLOWING
LAPAROSCOPIC ADRENALECTOMY

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Background: A subgroup of patients with adrenal cortisol hypersecretion fails to meet biochemical criteria for Cushing's syndrome. This entity, Subclinical Cushing's syndrome (SCS) occurs in 5% to 20% of patients with incidentally discovered adrenal nodules. There are no data supporting either surgical or non-operative therapy for SCS. We examined outcomes for patients who underwent unilateral adrenalectomy for SCS.

Methods: Between 2003-2006 all patients who underwent adrenalectomy for adrenal cortisol hypersecretion and an adrenal mass were examined. We analyzed demographic data, surgical therapy and outcomes, including blood pressure, weight change and resolution of preoperative symptoms and signs.

Results: Twenty-four patients underwent adrenalectomy for adrenal cortisol hypersecretion. Nine patients (8 female, 1 male, mean age 52.2 ± 13.1 yrs) were diagnosed with SCS based on non-diagnostic urinary free cortisol (normal in 8 of 9, <100 mcg/24 h in all). Mean serum cortisol was 2.8 ± 1.9 mcg/dl [range 0.8-6.1] after 1 mg overnight dexamethasone suppression testing. Mean plasma ACTH was 11.4 ± 6.7 pg/ml preoperatively and 32.5 ± 17.9 postoperatively. Mean serum DHEA-S was 39 ± 31 /dl preoperatively and 34 ± 21 postoperatively. Preoperative suspicious clinical findings were present as follows: skin bruising (8), unexplained weight gain (8), proximal muscle weakness (8), abnormal fat pads (7), skin thinning (6), fatigue (5) and facial plethora (3). Mean tumor diameter on preoperative CT scan was 2.9 ± 1.2 cm. Laparoscopic adrenalectomy was performed in 8 patients. One patient required open conversion for bleeding. Pathology showed five patients with cortical adenomas, three with hyperplasia, and one with a mixed lesion. During a mean follow up period of 6 months (range 1 - 30 months), all patients noted resolution of skin bruising. Fatigue improved in 4 of 5 patients (80%), muscle weakness in 6 of 7 patients (86%), weight in 5 of 8 patients (63%) with a mean BMI change of -2.4 kg/m² (range -3.5 to -1 kg/m²).

Conclusion: Adrenalectomy improves symptoms and biochemical parameters for many patients with SCS.

Notes:

UNDERUTILIZATION OF TOTAL THYROIDECTOMY FOR PAPILLARY
THYROID CANCER IN THE UNITED STATES: ANALYSIS
OF 67,294 PATIENTS

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Sponsor: Quan-Yang Duh

Background: Consensus guidelines recommend total thyroidectomy for papillary thyroid cancer (PTC) ≥ 1 cm; however, extent of surgery remains controversial and compliance with these recommendations is unknown. We hypothesized that total thyroidectomy for PTC is underutilized in the United States. We examined surgical practice patterns for PTC ≥ 1 cm and identified factors predicting utilization of total thyroidectomy.

Methods: Of 111,419 patients with PTC in the National Cancer Data Base (1985-2003), 92,564 underwent total thyroidectomy or lobectomy. 67,294 patients (72.7%) had PTC ≥ 1 cm. Utilization of total thyroidectomy was assessed over time. Univariate and multivariate methods were used to identify patient and hospital factors predicting utilization of total thyroidectomy vs. lobectomy.

Results: Utilization of total thyroidectomy increased from 1985 to 1992 (70.8% to 88.8%, $P < .0001$) and remained constant over the next decade (89.2% in 2003). Utilization of total thyroidectomy for PTC ≥ 1 cm was similar regardless of tumor size: 1-2cm 88.0%, 2-4cm 88.7%, ≥ 4 cm 84.7%. Patients were less likely to receive total thyroidectomy if they were black (Odds Ratio [OR] 0.68, 95% Confidence Interval [CI] 0.50-0.91), age >45 years (OR 0.56, CI 0.42-0.77), had no health insurance (OR 0.83, CI 0.70-0.98), had lower household incomes (OR 0.82, CI 0.76-0.88), or had less education (OR 0.86, CI 0.71-0.95). Patients treated at high-volume, academic or metropolitan centers were more likely to receive total thyroidectomy than at low-volume (OR 0.51, CI 0.66-0.77), community (OR 0.81, CI 0.76-0.86), or urban/rural hospitals (OR 0.76, CI 0.68-0.84). Patients were more likely to undergo total thyroidectomy at NCI-designated Cancer Centers (OR 1.43, CI 1.22 - 1.67) and NCCN institutions (OR 1.28, CI 1.08 - 1.52).

Conclusions: Despite guidelines recommending total thyroidectomy for PTC ≥ 1 cm, 13% of patients were treated with lobectomy in 2003. The choice of operation was not related to tumor size. Disparities in

utilization of total thyroidectomy were related to age, race, insurance status, income, education, and hospital factors. This is the first study to demonstrate and characterize the underutilization of total thyroidectomy for PTC.

Notes:

Paper 18* (1030)

RISING PARATHYROID HORMONE (PTH) AFTER GASTRIC BYPASS SURGERY APPEARS TO BE A SECONDARY NATURE

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Sponsor: Richard A. Prinz

Introduction: Endocrine changes, particularly elevated PTH occurring after gastric bypass procedures have been reported but are not well characterized.

Methods: We retrospectively reviewed patients who underwent Roux-en-Y gastric bypass (short limb (SL) = 75 cm, long limb (LL) = 150 cm) procedures at our institution from January-December 2005. Patient demographics, laboratory values of calcium, vitamin D, phosphorous, alkaline phosphate and PTH were followed at quarterly intervals for one year.

Results: One hundred and forty patients were identified. Mean age for the group was 45 ± 10 years old and 90% of patients were female. The average BMI was 49.2. The mean PTH levels increased from 29.4 post-op to 43.1 ng/ml ($p < 0.001$) over one year. Seven percent of the patients had hyperparathyroidism ($PTH > 53$ ng/ml) immediately post-op, the ratio then rose to 29% at one year. Only two patients had evidence of true primary hyperparathyroidism with elevated PTH and hypercalcemia. Sixty percent of patients had at least 10 ng/ml increase in PTH level at the end of one year, reflecting a 30% increase from baseline levels. Low Vitamin D levels < 20 ng/ml were identified in 45 patients (32%) initially post-op and they continued to be low compared to the rest of the population ($p = 0.004$). Vitamin D levels did vary with seasonal sun exposure and were highest in the third quarter (July- September). Sub-analysis of the group showed that patients with LL bypass had lower vitamin D levels (14 vs 22 ng/ml, $p = 0.14$) compared to SL patients.

Conclusion: While pre-operative endocrine abnormalities are present in patients undergoing gastric bypass procedures, the derangements intensify after surgery. A 4-fold increase in patients with elevated PTH deserves special attention. When combined with the concurrent prevalence of low vitamin D and normocalcemia in this population, we propose that this is a disorder of secondary hyperparathyroidism requiring medical treatment with vitamin D supplementation.

Notes:

GOOD BLOOD PRESSURE CONTROL ON ANTI-HYPERTENSIVES, NOT ONLY RESPONSE TO SPIRONOLACTONE, PREDICTS IMPROVED OUTCOME AFTER ADRENALECTOMY FOR ALDOSTERONOMA

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Background: Spironolactone is used frequently prior to adrenalectomy for hyperaldosteronism in order to control blood pressure and hypokalemia. Many investigators have suggested that response to spironolactone predicts improved outcome, but there is no data in the literature that use of other anti-hypertensive medications to control blood pressure predicts outcome. We studied the relationship between preoperative normalization of blood pressure with anti-hypertensive medications and response to adrenalectomy for hyperaldosteronism.

Method: Retrospective cohort study, of 102 adrenalectomies, performed at a tertiary medical center in San Francisco, California for hyperaldosteronism between 1994 and 2006. Inclusion criteria required at least 6-month follow-up postoperatively. Blood pressures were measured at first clinical presentation, preoperatively, postoperatively, 1 month, and 6 months. The primary outcome measure was resolution of Hypertension (SBP<140, DBP<90) and discontinuation of hypertensive medications (Group 1), versus continued hypertension requiring hypertensive medications for control (Group 2).

Results: Forty patients (39%) had a resolution of hypertension and discontinuation of medications (Group 1) compared to 62 patients (61%) who required one or more medications for control of hypertension postoperatively. Seventy patients (68%) used spironolactone preoperatively for blood pressure control. Patients with good blood pressure control on spironolactone had similar clinical outcome when compared to patients whose blood pressure did not respond to spironolactone (Group 1: 39% vs. 40%, Group 2: 61% vs. 60%), respectively. Fifty-three percent of patients that were normotensive compared to 24% that were hypertensive preoperatively on medications other than spironolactone had resolution of hypertension without medications at 6 months postoperatively ($p=0.006$). Forty-five percent of patients that were normotensive compared to 34% of patients that were hypertensive preoperatively on spironolactone, had resolution of hypertension without medications at 6 months postoperatively ($p=0.38$).

Conclusions: Patients with good preoperative control of hypertension on anti-hypertensive medications, irrespective of response to

spironolactone, are more likely to have complete resolution of hypertension and discontinuation of medications after adrenalectomy.

Notes:

CAN HISTOPATHOLOGY PREDICT HYPERSECRETION OF
PARATHYROID GLANDS AND CORRECTLY INFLUENCE THE EXTENT
OF PARATHYROIDECTOMY IN PATIENTS WITH SPORADIC PRIMARY
HYPERPARATHYROIDISM (SPHPT)?

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Background: Some surgeons use the histopathology of excised abnormal parathyroids to predict the secretory function of the remaining glands. The diagnosis of "hyperplasia" implies multiglandular disease(MGD) requiring further parathyroid resection, whereas "adenoma" is associated with single gland involvement. With the increasing acceptance of intraoperative PTH monitoring(IPM) which guides the parathyroidectomy based on gland hypersecretion, the role of histopathology is questioned. The purpose of this study is to explore the role of histopathology in diagnosing single or multiglandular involvement and in predicting the outcome of parathyroidectomy.

Methods: 399 patients with SPHPT who underwent initial parathyroidectomy guided by IPM had their excised parathyroid glands reexamined blindly by two pathologists using well established criteria to diagnose hyperplasia or adenoma. There were three operative failures. The intraoperative findings and postoperative outcome were correlated with the reviewed histopathology of all excised glands. All patients were followed ≥ 6 months(mean 4 years). Operative success was defined as eucalcemia for ≥ 6 months and recurrence was hypercalcemia and high PTH after successful parathyroidectomy.

Results: 383/396 treated patients had only one gland excised resulting in eucalcemia for ≥ 6 months. Although they were cured with single gland excisions, hyperplasia was diagnosed in 243(63%) patients with two developing recurrence. 140(37%) patients with single gland excision were diagnosed with adenomas with one late recurrence. IPM recognized MGD and guided successful parathyroidectomy in 13 patients while histopathology diagnosed hyperplasia in 9 and adenoma in 4 patients. The IPM recognized three operative failures with MGD had hyperplasia. If the histopathology of the excised glands was used to guide the surgeon towards the single or multiple gland excision, 247/399(62%) of the patients would have had inappropriate explorations.

Conclusion: Histopathology of excised abnormal parathyroid glands does not predict the secretory function of the remaining parathyroid glands

left *in situ*. IPM guided these successful operations based on parathormone hypersecretion alone while gland histopathology was inaccurate in predicting MGD and should not be used to guide the extent of parathyroidectomy in patients with SPHPT.

Notes:

FUNCTIONAL PARATHYROID CARCINOMA: LONG-TERM
TREATMENT OUTCOME AND RISK FACTOR ANALYSIS

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Background. Parathyroid carcinoma is a rare cause of primary hyperparathyroidism. The aim of this study was to evaluate the long-term outcome of surgical treatment in patients with functional parathyroid carcinoma and to clarify factors useful for prognostication.

Methods. A retrospective review of clinicopathologic features in 38 patients with pathologically confirmed parathyroid carcinoma treated at our institution was performed. The Ki-67 index (KI) was evaluated in 29 cases for which paraffin blocks of the tumors were available. The mean serum calcium level was 13.8 mg/dl. Initial parathyroid surgery (tumor excision alone in 16 patients, en bloc resection in 22) was performed at a median age of 51 yr. The median weight of the parathyroid tumors was 3275 mg. Disease-free survival and cause-specific survival estimated using the Kaplan-Meier method was analyzed statistically by the log-rank test. Patients were followed for a median of 108 months (range, 13-396 months) after initial surgery.

Results. Fifteen of the 38 patients developed persistent or recurrent parathyroid carcinoma after initial surgery (0-144 months, median 60 months). Of 17 locoregional and 24 thoracic reoperations, 8 and 13 respectively succeeded in normalizing the serum calcium for at least 6 months (range 7- 152 months). Eight patients (3 within 4 years and 5 more than 10 years after initial surgery) died of parathyroid carcinoma. Locoregional macroscopic extension of the tumor, such as invasion to the thyroid gland, recurrent laryngeal nerve or esophageal muscle layer, or regional lymph node involvement, at initial surgery was a significant factor affecting disease-free survival ($p < 0.0001$) and cause-specific survival ($p = 0.008$). Five of 6 patients whose tumors had a $KI \geq 10\%$ developed recurrence within 3 years after initial surgery, and 3 died of disease.

Conclusions. Parathyroid carcinoma with evidence of local invasion or regional lymph node metastasis at initial surgery has a high potential for recurrence. Parathyroid carcinoma with a KI of 10% or more will likely recur in the early postoperative period.

Notes:

REPORT ON AN EIGHT YEARS EXPERIENCE WITH VIDEO-ASSISTED
THYROIDECTOMY FOR PAPILLARY THYROID CARCINOMA

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BACKGROUND. Video-assisted thyroidectomy (VAT) has been validated for the treatment of small thyroid nodules. After an adequate learning period and after standardizing the surgical technique, VAT has been proposed also for small (T1-small T2) papillary thyroid carcinoma (PTC). We evaluated the results of VAT for PTC in a large series of patients, especially in terms of completeness of the surgical resection.

METHODS. Between June 1998 and May 2006, 756 VATs were attempted. 260 patients (226 women, 34 men) had a diagnosis of PTC at final histology and were included. VAT eligibility criteria were: thyroid nodules ≤ 35 mm; thyroid volume ≤ 30 ml; no previous neck surgery. Absolute contraindications were: malignancies other than PTC; preoperative evidence of lymph node involvement.

RESULTS. Two hundred and seventy-four video-assisted (VA) procedures were successfully accomplished: 236 total thyroidectomy, 23 lobectomy and 15 completion thyroidectomy. Eighty-four patients underwent central neck node removal during the same procedure, because of unexpectedly enlarged lymph node. In 18 of these patients a VA complete central neck node clearance was accomplished. Post-operative complications included: 5 transient recurrent nerve palsies, 55 transient hypocalcemia, 3 permanent hypoparathyroidism and 1 postoperative haematoma. Mean postoperative stay was 2.9 ± 1.4 days. Follow-up evaluation was completed in 198 patients. Mean postoperative serum thyroglobulin was 0.1 ± 0.4 ng/ml on levothyroxine (LT4) suppressive treatment and 8.1 ± 13.6 ng/ml off LT4. Post-operative ultrasonography showed no residual thyroid tissue in all patients. Mean post-operative radioiodine uptake was $2.8 \pm 4.6\%$. One patient developed lateral neck metastases two years after surgery and required a conventional lateral neck dissection.

CONCLUSIONS. VAT is feasible and safe in case of PTC. The completeness of the surgical resection seems comparable to that reported for conventional surgery. Longer follow-up is necessary to draw definitive conclusion about the oncological validity of this approach even if preliminary results are encouraging.

Notes:

THERAPEUTIC IMPACT OF ^{18}F FDG PET/CT IN THE MANAGEMENT OF IODO-NEGATIVE RECURRENCE OF DIFFERENTIATED THYROID CARCINOMA

Eric Mirallie, Thomas Guillan, Boumediene Bridji, Isabelle Resche, Caroline Rousseau, Catherine Ansquer, Chantal Curtet, Bruno Carnaille, Arnaud Murat, Bernard Charbonnel, Françoise Kraeber-Bodere
Centre Rene Gauducheau, Saint Herblain; Hotel Dieu and INSERM UMR 601, Nantes; and Hopital Huriex, CHU Lille, France

Background. ^{18}F -fluoro-2-deoxyglucose positron emission tomography (^{18}F FDG PET) appears to be useful in the detection of iodine-negative DTC with sensitivity ranging from 70 to 85%. The aim of this prospective study was to assess therapeutic impact of ^{18}F FDG PET performed using a PET/CT system under recombinant TSH (rTSH) stimulation in patients with iodo-negative recurrence of differentiated thyroid carcinoma (DTC).

Methods. Patients with recurrence of DTC revealed by elevated thyroglobulin (Tg) level and negative whole-body scan obtained after 3.7 GBq of ^{131}I were included. ^{18}F FDG PET imaging was performed 60 to 90 min after iv injection of 5 MBq/kg of ^{18}F FDG, 24 h after 2 injections of rTSH, using a hybrid PET/CT system. Additional conventional imaging procedures (US, CT or MRI) were performed before therapeutic decision.

Results. Forty-five patients (31 F, 14 M), median age of 55 years (14 to 80), with 38 papillary, 3 follicular and 4 Hürthle cell carcinomas, were explored between 2002 and 2006. All patients had previously undergone total thyroidectomy and postoperative thyroid remnant ablation with ^{131}I . Stimulated Tg concentration ranged from 0.4 to 1978 ng/mL. ^{18}F FDG PET/CT showed at least one abnormal focus in 29 patients (64%). In 7 of these 29 patients (24%), a disseminated disease inadequate for surgery was detected by ^{18}F FDG PET/CT, confirmed by conventional imaging (CT or MRI). The 22 other patients had abnormal foci limited in the neck (1 to 5 foci) or in lung and were candidates for surgery. One patient underwent resection of a lung tumor, 17 a cervical lymph node dissection and 1 a cervico-mediastinal dissection. There were neither recurrent nerve palsy nor hypoparathyroidism. After surgery, 6 patients had a Tg concentration under 1 ng/mL (13% of all explored patients and 31% of operated patients).

Conclusion. ^{18}F FDG PET/CT is able to select patients who can benefit from surgery. Normalization of Tg concentration is observed only in one third of patients.

Notes:

NEUROENOCRINE TUMOR CELL GROWTH INHIBITION BY
ZM336372 THROUGH ALTERATIONS IN MULTIPLE SIGNALING
PATHWAYS

Muthusamy Kunnimalaiyaan, Mary A. Ndiaye, and Herbert Chen
University of Wisconsin, Madison, WI

Background: Neuroendocrine tumors (NETs), such as carcinoids and medullary thyroid cancer (MTC), produce excess amount of various bioactive hormones that cause significant symptoms. Although surgery is currently the only potential curative treatment for NETs, most patients present with metastatic disease. Therefore, other forms of therapy are needed. We have previously shown that activation of the Raf-1/MEK/ERK1/2 signaling pathway by ZM336372 inhibits carcinoid cells growth. In the present study, we further characterize the molecular details of the growth inhibition by the signaling-based compound ZM336372 in NETs.

Methods: Human MTC and carcinoid cells were treated with ZM336372 (20-100 μ M) or carrier (DMSO). Western Blot was used to determine the activation of the Raf-1/MEK/ERK, other pathways activation, and cellular bioactive hormone production. Tumor cell growth was assessed by MTT cellular proliferation assay.

Results: Escalating doses of ZM336372 in NET cells resulted in increasing raf-1 activation and inactivation of GSK3 β as measured by phosphorylation of ERK1/2 and GSK3 β respectively. In contrast there was no alteration in the levels of phosphorylated AKT an important mediator of PI3K pathway. Importantly, blocking of raf-1 pathway by U0126, a potent inhibitor, in the presence of ZM336372 did not reduce the levels of p-GSK3 β indicating that GSK3 β inactivation is independent of raf-1 pathway activation. Moreover, the levels of CgA and ASCL1 reductions were persistent even after blocking the raf-1 pathway. Additionally, treatment of NET cells with ZM336372 led to a dose-dependent suppression of cellular proliferation. Furthermore, treatment with ZM336372 in the presence of siRNA against raf-1 resulted in a progressive increase in raf-1 protein production, suggesting that ZM336372 up regulates raf-1 at the transcriptional level.

Conclusions: This is the first description of a novel compound ZM336372 that regulates multiple pathways in NET cells. Furthermore, this new drug pharmacologically blocks bioactive hormone production in a fail-safe manner. Thus, ZM336372 may be a potential therapeutic and palliative treatment for patients with metastatic NETs.

Notes:

ULTRASOUND GUIDANCE IN REOPERATION FOR LOCALLY
RECURRENT THYROID CANCER

McCoy KL, Yim JH, Tublin ME, Ogilvie JB, Carty SE
University of Pittsburgh, Pittsburgh, PA

Background: Reoperation for locally recurrent well-differentiated thyroid cancer (WDTc) is technically difficult and associated with higher morbidity. This study evaluates the use of ultrasound guidance as an adjunct to surgery.

Methods: Under an IRB-approved protocol we compared 2 cohorts of patients with a single impalpable small (0.6-2.4 cm) imaged cervical recurrence of WDTc. In Group I (8/01-1/04) 6 patients were explored by a single experienced surgeon based on the location of the abnormality described on preoperative imaging. In Group II (4/04-10/06) 17 patients explored by one of 2 surgeons underwent an additional same day ultrasound (SDUS) with indelible skin marking directly over the abnormality. Day-of-surgery ultrasound was performed in mild neck extension, in the holding area or the operating room, prior to skin incision, and using a GEEMS Logiq 9 platform (Milwaukee, WI) and a 14 MHz linear probe. Outcome measures included size of the lesion, failure to resect the imaged abnormality, operative time, total anesthesia time, and postoperative change in level of thyroglobulin.

Results: Exploration in 6 Group I patients was based on the reported findings of US (2), CT (5) and/or MRI (2); however in 3/6 patients (50%) the surgeon was unable to find and resect the imaged focus. By contrast, all 17 Group II patients had successful resection of the identified lesion (100%; $p < .01$). Successful Group II resections occurred even though Group II lesions were significantly smaller (mean 1.7 versus 1.2 cm, $p = .039$.) Same-surgeon mean operative and anesthesia times were shorter in Group II (23% and 13%, respectively). Among successfully resected patients with evaluable levels, the initial level of thyroglobulin dropped by 50% in 10/18 (56%). Thyroglobulin dropped to undetectable levels in 5/18 (28%) operated patients.

Conclusions: When focused resection of recurrent WDTc is considered appropriate, SDUS guidance is an efficient and useful adjunct, guiding the resection of lesions as small as 0.6 cm. Use of this technique can safely achieve undetectable thyroglobulin levels in selected patients.

Notes:

TREATMENT OF ANAPLASTIC THYROID CARCINOMA WITH A
MUTANT VACCINIA VIRUS

Shu-Fu Lin, Zhenkun Yu, Christopher Riedl, Yanghee Woo, Quian Zhang,
Yong A. Yu, Tatyana Timiryasova, Aladar A. Szalay, Nanhai Chen, Jatin P.
Shah, Yuman Fong, Richard J. Wong

*Memorial Sloan Cancer Center, New York, NY; Chang Gung Memorial
Hospital, Taoyuan Taiwan, Beijing Tangren Hospital, Beijing, China; San
Diego Science Center, San Diego, CA and University of Wurzburg, Am
Hubland, Wurzburg, Germany*

Background Anaplastic thyroid carcinoma is a fatal disease resistant to all conventional treatments, with a median survival of only 6 months. Novel therapies are needed to improve these dismal outcomes.

Methods A recombinant, replication-competent vaccinia virus (GLV-1h68) was engineered by inserting three expression cassettes encoding *Renilla* luciferase-green fluorescent protein (GFP) fusion, β -galactosidase, and β -glucuronidase into three different loci of the viral genome, respectively. The ability of this virus to infect, replicate within, and kill 6 human anaplastic thyroid carcinoma (ATC) cell lines (8505C, 8305C, KAT4, KAT4C, KAT18, DRO90-1) *in vitro* was assessed. Infection of 6 ATC cell lines by GLV-1h68 was detected *in vitro* by GFP expression, β -galactosidase expression, and luciferase activity at various multiplicity of infection (MOI) at 12, 24 and 36 hours post-infection. Cytotoxicity was measured with LDH assays at MOI 0.01, 0.1 and 1 at daily intervals. Viral proliferation was measured by standard plaque assays using CV1 cells.

Results Twelve hours post-infection with GLV-1h68 at MOI=2, viral infection was detected in all 6 cell lines and showed increased intensities at 24 and 36 hours. At MOI of 1 by day 7, less than 13% cell survival was measured in five cell lines. Only DRO90-1 was partially resistant to GLV-1h68 with 47% cell survival by day 7. Even at MOI=0.1 (one pfu per ten tumor cells), only 20% cell survival was measured in 4 cell lines by day 7. Viral proliferation assays demonstrated logarithmic replication by GLV-1h68 in all 6 ATC cell lines.

Conclusion This study demonstrates that a multi-mutated, replication-competent vaccinia virus has significant infectious and oncolytic activity against a panel of human anaplastic thyroid carcinomas. These results encourage future *in vivo* and clinical studies for this novel agent as treatment for this highly fatal cancer.

Notes:

PARAFIBROMIN EXPRESSION, SINGLE-GLAND INVOLVEMENT AND LIMITED PARATHYROIDECTOMY IN FAMILIAL ISOLATED HYPERPARATHYROIDISM

Maurizio Iacobone, Luisa Barzon, Andrea Porzionato, Giulia Masi, Giorgio Palu, Veronica Macchi, Raffaele DeCaro, Anna Parenti, Filippo Marino, Giovanni Viel, Gennaro Favia
University of Padua, Padua, Italy

Background: Familial Isolated Hyperparathyroidism (FIHP) is a rare inherited syndrome with a variable extent of parathyroid involvement. Extensive Parathyroidectomy is usually indicated, but limited excisions may be performed because a single-gland involvement is often reported. FIHP is caused by inactivating mutations of HRPT2, a suppressor oncogene coding for the Parafibromin, an intracellular protein. Biallelic mutations may inactivate HRPT2 and Parafibromin production; subsequently, loss of Parafibromin expression may be considered a distinctive feature of FIHP. This study was aimed to evaluate the extent of parathyroid involvement and Parafibromin expression in parathyroid tissues in FIHP patients.

Methods: Twelve consecutive patients (median age 31 years, range 11-58) from 3 FIHP families with confirmed HRPT2 mutations underwent bilateral neck exploration, selective excision of the grossly enlarged glands and, when necessary, biopsies of the apparently normal parathyroids. Parafibromin expression was evaluated by immunohistochemical staining in FIHP tissues and compared to 18 adenomas from sporadic hyperparathyroidism and 10 normal parathyroids accidentally removed after surgery for thyroid disease.

Results: Pathology confirmed a single-gland involvement in all cases of FIHP (11 adenomas and 1 parathyroid carcinoma) and the presence of normal tissue in all grossly normal parathyroids. The selective excision of macroscopically enlarged glands achieved the cure of hyperparathyroidism in all cases, except a persistent disease in 1 case of parathyroid carcinoma. After a mean follow up of 10,2 years (range 2-27), all the remaining patients are disease-free, although 3 patients underwent successful reoperations for single-gland recurrence after 5, 9 and 27 years. In specimens from FIHP patients, Parafibromin was absent in all cases of grossly and histopatologically affected glands while it was strongly stained in 100% of cases of normal parathyroid tissue. Parafibromin was also strongly evident in all adenomas from sporadic-Hyperparathyroidism patients and in normal glands ($p < 0,01$).

Conclusions: The loss of Parafibromin expression is the distinctive marker of parathyroid involvement in FIHP. A single-gland involvement may occur often; limited and focused parathyroidectomy may be effective and achieve long-term disease-free periods.

Notes:

Paper 28 (1015)

THE PREOPERATIVE EXCLUSION OF THE DIAGNOIS OF THYROID CARCINOMA IN MULTINODULAR GOITER: DYNAMIC CONTRAST ENHANCED MAGNETIC RESONANCE IMAGING VERSUS ULTRASONOGRAPHY GUIDED FINE NEEDLE ASPIRATION BIOPSY

Fatih Tunca, Yasemin Giles, Artur Salmaslioglu, Arzu Poyanli, Dilek Yilmazbayhan, Tarik Terzioglu, Serder Tezelman
Istanbul University, Istanbul, Turkey

Background: The diagnostic value of dynamic contrast enhanced magnetic resonance imaging (DCE-MRI) and ultrasonography (USG) guided fine needle aspiration biopsy (FNAB) in detection of thyroid carcinoma in multinodular goiter was compared.

Methods: Twenty-six consecutive patients having multinodular goiter with dominant nodules and clinical suspicion of malignancy were included. USG guided FNAB was performed for all dominant nodules and nodules having suspicious findings for malignancy on USG. Contrast enhancement patterns of all nodules having contrast enhancement on DCE-MRI were evaluated. Contrast enhancement patterns on DCE-MRI, cytologic diagnosis and histopathological results of thyroidectomy specimens were correlated. The sensitivity, specificity, diagnostic accuracy, positive (PPV) and negative predictive values (NPV) of DCE-MRI and USG guided FNAB to detect thyroid carcinoma were compared.

Results: USG guided FNAB was performed for 31 nodules in 26 patients. Cytological diagnosis was benign in 24, suspicious for or consistent with malignancy in 6 and inadequate in 1 nodule. Contrast enhancement patterns of 57 nodules showed delayed, plateau and rapid washout patterns in 16, 37 and 4 nodules respectively. Thyroid carcinoma was found in 8 (30.8 %) patients (multicentric in 1). None of the nodules having thyroid carcinoma had plateau or rapid washout pattern. Of 16 nodules having delayed washout pattern, 9 (56.2 %) were malignant and 7 (43.8 %) benign. Delayed washout pattern in a nodule significantly correlated with histologic diagnosis of thyroid carcinoma ($p < 0.001$). Excluding the patient with inadequate cytology, there were two false negative and one false positive results of FNAB. The sensitivity and NPV of DCE-MRI to diagnose thyroid carcinoma were higher compared to USG guided FNAB (100 % vs 71.4 %, and 100 % vs 91.4 % respectively; $p < 0.001$). The diagnostic accuracy of DCE-MRI and USG guided FNAB were 87.7 % and 90 % respectively.

Conclusion: DCE-MRI is superior to USG guided FNAB to exclude the diagnosis of thyroid carcinoma and prevent unnecessary operations in

patients with multinodular goiter having suspicion for malignancy when other diagnostic methods are inconclusive.

Notes:

MEDULLARY THYROID MICROCARCINOMA - RECOMMENDATIONS
FOR TREATMENT - A SINGLE CENTER EXPERIENCE

Scheuba Chr., Kaserer K., Asari R., Bieglmayer Chr.

Medical University of Vienna, Vienna, Austria

Background: "Calcitonin Screening Programs" increase significantly the number of unexpected medullary thyroid carcinoma (MTC) and improve prognosis. While the surgical strategy is well defined in "palpable" tumors (total thyroidectomy, bilateral central and lateral neck dissection), different and misleading recommendations exist in literature concerning lymph node surgery in ("non palpable") microMTC (≤ 10 mm). This prospective single centre study aims to correlate preoperative biochemical and pathohistological findings attempting to define biochemical characteristics of microMTC and therefore allowing recommendations for a less radical lymph node surgery. **Methods:** Patients with elevated basal (bCT; ≥ 10 pg/ml) and Pentagastrin stimulated Calcitonin levels (sCT; >100 pg/ml; ICMA - Nichols-Advantage; USA) were selected for initial surgery. None was a member of a known MTC family. Independent of the preoperative biochemistry in all patients total thyroidectomy, bilateral central and lateral (functional) neck dissection was performed. Biochemical and morphological findings of microMTC were compared to 126 patients with various types of C-cell hyperplasia (CCH). **Results:** In 81 (60%, male:42; female:39; mean age 58.6 ± 13.1 years) of 134 MTC patients microMTC (unifocal: 56; multifocal: 25) was documented. The mean tumor diameter was 4.4 ± 2.6 mm. In 10 (12%) patients one to nine lymph node metastases were demonstrated in the central (n=2), central and lateral (n=4) or lateral neck (n=4). 80 (99%) patients were biochemically cured (b/sCT: <2 pg/ml), 9 of 10 patients with lymph node metastasis. Correlating bCT and sCT levels to N-stage or comparing biochemical findings of microMTC to CCH neither MTC nor lymph node metastases could be predicted. **Conclusions:** Patients with CCH and MTC and MTC with or without lymph node metastasis cannot be discriminated biochemically. Therefore in patients with "mildly" sCT levels (<560 pg/ml) total thyroidectomy and central neck dissection is indicated (lymphnode positive: 1/31 patients; 3%). A lateral functional neck dissection may be added "on demand" (postoperative bCT and/or sCT levels elevated indicating lymph node metastasis outside the central neck). Patients with "high" sCT levels (≥ 560 pg/ml) should be treated as palpable MTC (lymphnode positive 9/50 patients (18%)).

Notes:

THE RELATIONSHIP OF HOSPITAL VOLUME AND PROVIDER VOLUME IS INVERSELY CORRELATED TO ADVERSE OUTCOMES IN A STATEWIDE ANALYSIS OF 1,816 ADRENALECTOMIES

Scott Gallagher, Kathryn Baksh, Monica Wahi, Krista Haines, Andy Lee, Jon Enriques, Michel Murr, Jeff Fabri
University of South Florida, Tampa, FL

BACKGROUND: Adrenalectomy is rarely done after training except in teaching hospitals or surgical endocrinology practices, yet adrenal masses/incidentalomas are increasingly recognized. We hypothesize that hospital volume and physician volume correlate with the rate of adverse surgical outcomes.

METHODS: Prospectively-collected, mandatory-reported, Florida-wide, hospital discharge database was analyzed for adrenalectomies undertaken from 1998-2005. Complications (including in-hospital mortality) and duration of hospital stay (DOS) >90th percentile (L90) were considered adverse outcomes. Increasing adrenalectomy frequency was evaluated using Pearson's correlation and ANOVA. Rates were calculated as number of complications and L90 divided by hospital volume x 100.

RESULTS: 1,816 adrenalectomies were undertaken at 151 hospitals by 575 physicians. Total number of adrenalectomies doubled in 7 years ($r=0.92$, ANOVA $F=34.45$, $p=0.001$) with a 12% average annual increase. Adrenalectomy was done for benign adrenal neoplasm (57%), malignant adrenal neoplasm (11%), secondary malignant adrenal neoplasm (10%), Conn's syndrome (10%), Cushing's syndrome (7%), and adrenal disorder not otherwise specified (3%). Most common complications were hypokalemia (11%), anemia (11%), pulmonary collapse (8%), and paralytic ileus (6%); major complications were low. Mean DOS significantly increased for patients with complications (9 vs. 4 days for no complications, $p < 0.0001$). Overall rate per 100 of complications was 20 patients (95% CI 19-22) and of L90 was 12 patients (95% CI 10-13). Hospital volume (Mean=12, interquartile range 2-14) and physician volume (Mean=3, interquartile range 1-3) were skewed to the right. Hospital volume above the 75th percentile vs. the remainder had a significantly lower rate of complication (16 vs. 24, $p=0.006$) and L90 (8 vs. 12, $p=0.01$). Physician volume above the 75th percentile vs. the remainder had a significantly lower rate of complications (17 vs. 23, $p=0.04$) but not L90 (11 vs. 12, $p=0.47$).

CONCLUSIONS: Adrenalectomy frequency is increasing in Florida. Major complications are low at high volume hospitals and with high volume physicians. Hospital volume and physician volume have an inverse relationship to adverse inpatient outcomes; rate of complications and L90 decrease with increasing hospital and physician volume.

Notes:

POSTER SESSION A

**Sunday April 29, 2007
0945-1030 am**

1. FACILITATED REVIEW OF A COMPREHENSIVE MULTIMEDIA DIGITAL RECORD IN PARATHYROIDECTOMY

Ronald C. Merrell, MD, Francisco Tamariz, MD, Azhar Rafiq, MD, Vladimir Lavrentyev, MD, Cosmin Boanca, and Stephen Cone, MD
Department of Surgery, Virginia Commonwealth University
Richmond, Virginia

2. CAUSES AND OUTCOMES OF PERSISTENT HYPERPARATHYROIDISM IN THE ERA OF FOCUSED EXPLORATION

James Lee, Rasa Zarnegar, Sheila Lindsay, Electron Kebebew, Quan-Yang Duh, and Orlo Clark
Columbia University Medical Center
University of California
San Francisco Medical Center

3. PROVOCATIVE EFFORTS IN SIMULATION TO TEACH ENDOCRINE SURGERY

David R. Farley, MD
Mayo Clinic College of Medicine
Rochester, MN

4. BILATERAL PARATHYROID EXPLORATION UNDER CERVICAL BLOCK ANESTHESIA: PUSHING THE MINIMALLY INVASIVE ENVELOPE?

Christina Maser, MD, Sanziana Roman, MD, Julie Ann Sosa, MD, Patricia Donovan, RN, and Robert Udelsman, MD
Dept. of Surgery, Section of Endocrine Surgery
Yale University
New Haven, Connecticut

5. WHY LOCALIZATION STUDIES FAIL: ANALYSIS OF 1,000 PATIENTS

Eren Berber, MD, Rikesh T. Parikh, MD, Naveen Ballem, MD, Carolyn N. Garner, MD, Mira Milas, MD, and Allan E. Siperstein, MD
Cleveland Clinic, Department of Endocrine Surgery
Cleveland, OH

6. REOPERATIVE PARATHYROIDECTOMY IN 228 PATIENTS DURING THE ERA OF MINIMAL ACCESS SURGERY AND INTRAOPERATIVE PARATHYROID HORMONE MONITORING

Richards ML, Farley DR, Thompson GB, and Grant CS
Department of Surgery, Mayo Clinic
Rochester, MN

7. PERIOPERATIVE PARATHYROID HORMONE KINETICS IN 25-HYDROXYVITAMIN D DEFICIENCY PATIENTS WITH PRIMARY HYPERPARATHYROIDISM

Untch BR, Dixit D, **Olson JA**
Duke University Medical Center
Department of Surgery
Durham, NC

8. CUSHING'S SYNDROME DUE TO MICRONODULAR ADRENAL HYPERPLASIA (MAH): DIAGNOSIS AND SURGICAL MANAGEMENT

Anathea C. Powell, MD, Constantine A. Stratakis, MD, PhD, Nicholas J. Patronas, MD, H. Richard Alexander, MD, James F. Pingpank, MD, Margaret F. Keil, RN, David L. Bartlett, MD, and **Steven K. Libutti, MD**
National Institute of Health, Surgery Branch
Bethesda, Maryland

POSTER SESSION B

**Monday April 30, 2007
1000-1030**

1. **MICROSATELLITE INSTABILITY IN WELL-DIFFERENTIATED THYROID NEOPLASMS**

Elliot J. Mitmaker, Carlos H. Alvarado, Louis R. Begin, and Mark Trifiro
Department of Surgery, Lady Davis Institute-Jewish General Hospital,
McGill University and
Department of Pathology, Sacre-Coeur Hospital, Montreal, QC, Canada

2. **GENETIC BACKGROUND PROVIDING FOR PTC SUSCEPTIBILITY IN BENIGN MULTINODULAR THYROID DISEASE**

Frank Weber, Micheala Aldred, Christoph E. Broelsch,
Andrea Frilling, Charis Eng
Genomic Medicine Institute, Cleveland Clinic, Cleveland, OH, and
Department of General Surgery & Transplantation,
University of Essen, Essen, Germany

3. **AGE AT RECURRENCE IS PROGNOSTIC OF CANCER RELATED DEATH IN RECURRENT DIFFERENTIATED THYROID CANCER**

Bruce Hall, MD, PhD, Jeffrey Moley, MD, Mark Cohen, MD,
Perry Grigsby, MD
Dept. of Surgery, Washington University in St. Louis,
AAES Members, Dept. of Surgery, University of Kansas
Dept. of Radiation Oncology, Washington University in St. Louis

4. **NON-MEDULLARY THYROID CANCER AND RELATIVE RISK OF OTHER MALIGNANCY: AN ANALYSIS OF THE UTAH POPULATION DATABASE AND UTAH CANCER REGISTRY**

RD Matthews, LA Neumayer, LA Cannon-Albright
VA Salt Lake City Health Care System/University of Utah
Health Sciences Center
University of Utah, Dept. of Biomedical Informatics
Division of Genetic Epidemiology
Salt Lake City, Utah

5. ULTRASOUND-GUIDED PERCUTANEOUS ETHANOL INJECTION:
AN EFFECTIVE LONG-TERM SOLUTION FOR SELECTED
PERSISTENT NECK NODAL METASTASES IN PTNM STAGE 1
PAPILLARY THYROID CANCER PATIENTS TREATED BY SURGERY
AND RADIOIODINE REMNANT ABLATION

Hay ID, Reading CC, Lee RA, Gonzalez Losada T, and Charboneau JW
Divisions of Endocrinology and Ultrasonography
Dept. of Internal Medicine and Radiology
Mayo Clinic, Rochester, Minnesota

6. VALPROIC ACID ACTIVATES NOTCH1 SIGNALING AND
INHIBITS GROWTH IN MEDULLARY THYROID CANCER CELLS

David Yu Greenblatt, MD, Max Cayo, Abram Vacarro, BS,
Muthusamy Kunnimalaiyaan, PhD, and Herbert Chen, MD
Endocrine Surgery Research Laboratories, Department of Surgery,
University of Wisconsin and
University of Wisconsin Paul P. Carbone Comprehensive Cancer Center,
Madison, WI

7. INTEREST OF FDG-PET/CT IN THERAPEUTIC STRATEGY OF
ADRENAL UNILATERAL LESION

Catherine Ansquer, **Eric Mirallie**, Laurent Brunaud, Emeric Abet, David
Taieb, Frederic Sebag, Lucy Chaillous, Marc Klein, Olivier Mundler, Jean
Francois Henry, Françoise Kraeber-Bodere, Pierre Olivier

Medecine Nucleaire, Hotel Dieu, France
Clinique de Chirurgie Digestive et Endocrineienne, Hotel Dieu, France
Chirurgie Generale et Endocrinienne, France
Medecine Nucleaire, Hopital La Timone , France
Chirurgie Generale et Endocriniene, Hopital La Timone, France
Endocrinologie, Hotel Dieu, France
Endocrinologie, CHU, France
Medecine Nucleaire, Centre Rene Gauducheau, France
INSERM UMR, France
Medecine Nucleaire, CHU, France

Constitution and Bylaws

CONSTITUTION

Article I - Name

The name of this organization shall be: the AMERICAN ASSOCIATION OF ENDOCRINE SURGEONS.

Article II - Objects

The objects of this Association shall be (1) advancement of the science and art of endocrine surgery, and (2) maintenance of high standards in the practice and art of endocrine surgery.

Article III - Membership

- 1a) Membership in this Association shall be limited to surgeons of good professional standing, who have a major interest and devote significant portions of their practice or research to endocrine surgery, and who are certified by the American Board of Surgery or its equivalent in Canada, Central America, Mexico and South America. In addition, membership shall be limited to fellows of the American College of Surgeons or its international equivalent.
- 1b) The candidates for active membership would have attended at least one annual meeting of the American Association of Endocrine Surgeons prior to their application.
- 1c) The candidates for active membership should be able to provide evidence of special interest in endocrine surgery.
- 1d) The candidates who are applying for active membership, who have completed their Endocrine Surgical Fellowship should be in practice at least for one year with special emphasis in endocrine operative surgery.

2. There shall be four types of members: Active, Senior, Honorary, and Corresponding.
3. **Active/Standard members** shall consist of original charter members and all members subsequently elected until they become eligible for senior membership. The number of active members shall not be limited.
4. **Senior members** shall consist of active members who have reached the age of 65 years or who have retired from active practice. Senior members shall have all the responsibilities and privileges of active members, excepting those regarding attendance at meetings.
5. **Honorary members** shall consist of individuals who have made outstanding contributions to the discipline of endocrine surgery. They shall have no voting privileges, are not eligible for election as officers, and are not subject to assessment for dues.
6. **Corresponding members** shall consist of individuals who meet all the same qualifications in their respective countries as active members. They shall have no voting privileges, are not eligible for election as officers, shall not have attendance requirements, but may be subject to dues at a reduced amount.

Article IV - Annual Meeting

An annual assembly of the Association shall be held in accordance with the bylaws. Abstracts for consideration for presentation must be authored or sponsored by a member.

Article V - Officers, Council

1. Officers of the Association shall consist of a president, president-elect, a vice president, a secretary-treasurer, and a recorder; all to be elected as provided in the bylaws.
2. There shall be a council of the Association consisting of the officers, the three immediate past presidents and six council members.

Article VI - Alterations, Repeal

The Association may alter or repeal any article of this Constitution by a three-fourths affirmative vote of members present at the annual assembly, provided a copy of the proposed change has been delivered to each voting member 60 days in advance of the assembly meeting.

BYLAWS

Article I - Election of New Members

1. Physicians fulfilling constitutional membership requirements who reside in the United States, Canada, Central America, Mexico or South America may be eligible for active membership.
2. Application forms for active or corresponding membership shall be available only by request of a member and shall be provided by the secretary-treasurer. Completed application forms signed by the proposed member, one sponsor, and two endorses shall be delivered to the secretary-treasurer at least four months before the annual assembly. Completed applications shall be reviewed by council, which has the right to accept or reject any application for membership in the Association. Names of prospective members recommended for election by the council shall be submitted to membership

at the annual assembly. Election shall be made by secret ballot, by a three-fourths affirmative vote of the members present. A prospective member who fails to be elected at one meeting may be considered at the next two annual meetings of the Association. If election fails a third time, the prospective member's application may be resubmitted after a two year interval.

3. Prospective members for honorary membership shall be proposed in writing to the council through the secretary-treasurer. Prospective members approved by the council will be elected by three-quarters affirmative vote of the council and officers present.
4. Active members in good standing who subsequently take up practice in geographic areas outside of the United States, Canada, Central America, Mexico, South America shall be changed to corresponding members of the Association.

Article II - Officers, Councilors

1. The president, president-elect, and vice president of the Association shall be elected for terms of one year each. The secretary-treasurer and recorder shall be elected for three year terms.
2. The president shall preside at council meetings and the annual assembly. The president shall appoint members to all standing and ad hoc committees and shall serve as an ex-officio member of each. Successors to vacated offices of the Association shall be appointed by the president until the position is filled at the next annual meeting. The president shall prepare an address to the annual assembly of the Association.
3. The president-elect, in the absence or incapacity of the president, shall perform the duties of the president's office.

In the absence or incapacity of both the president and the president-elect, the chair shall be assumed by the vice president.

4. The secretary-treasurer shall keep minutes of the meetings of the Association and the council, receive and care for all records belonging to the Association, and conduct the correspondence of the Association. This office will issue to all members a written report of the preceding year's transactions to be read to the council and membership at the annual assembly. The secretary-treasurer will prepare an annual report for audit. The recorder shall receive the manuscripts and edition of the discussions. The recorder shall be custodian for the transactions of the Association.
5. Council members shall be elected for three-year terms, with two councilors being elected annually so as to provide overlapping terms.

Article III - Committees

1. Standing committees of the Association shall consist of the membership committee (composed of the council), publication and program committee, and education and research committee.
2. The nominating committee shall consist of the president and two immediate past presidents. The most senior past president is chairman of the committee.
3. Other committees may be designated by the president with advice of the council.
4. All committees shall be chaired by members appointed by the president with the advice of the council.

Article IV - Meetings

1. An assembly of the Association shall be held at the time and place determined by the council.

During the annual assembly, there shall be an executive session of the membership. The business of the Association shall be conducted at this time. The report of the nominating committee shall be presented to the membership during the executive session. Nominations may be made from the floor. Officers of the Association and council members shall be elected by majority vote of the active and senior membership during the executive session.

3. Any active member who is absent from three consecutive annual assembly meetings without adequate explanation of this absence made in writing to the secretary-treasurer, shall be dropped from membership in the Association by vote of the council. Membership may be reinstated by vote of the council.
4. Any member of the Association may invite one or more guests to attend the annual assembly.

Article V - Fees, Dues

1. Dues and assessments shall be levied by the council and approved by the membership at the annual assembly.
2. Any member whose dues remain unpaid for period of 1 year shall be dropped from membership, provided that notification of such a lapse beginning at least 3 months prior to its effective date. The member may be reinstated following payment of the dues in arrears on approval of the council.
3. Senior members are not required to pay dues.

Article VI - Resignations, Expulsions

1. Resignations of members otherwise in good standing shall be accepted by majority vote of the council.
2. Charges of unprofessional or unethical conduct against any member of the Association must be submitted in writing to council. The council's concurrence or disallowance of the charges shall be presented to the membership at the annual assembly executive session. A three-fourths affirmative vote of the members present shall be required for expulsion.

Article VII - Quorum

1. A minimum of 30 members shall constitute a quorum at the annual assembly to effect changes in the constitution and bylaws of the Association, to make assessments, to authorize appropriations or expenditures of money other than those required in the routine business of the Association, to elect officers, and members, and to expel members.
2. For the transaction of other business, the members present at any annual assembly shall constitute a quorum.

Article VIII - Alterations, Repeal

Bylaws may be altered or repealed at the annual assembly by a two-thirds affirmative vote of the members present.

Article IX - Procedure

Proceedings of the Association shall be conducted under Robert's Rules of Order.

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