



**International Association
of Endocrine Surgeons**

**Vienna Austria
August 14th to August 18th, 2022**

HISTORICAL INTRODUCTION

The International Association of Endocrine Surgeons (IAES) owes its origins more to Peter Heimann, Professor of Surgery, Bergen, Norway, than to any other person. He was a general surgeon with a particular interest in the thyroid gland, and it was his ambition to polarize the activities of those general surgeons interested in the endocrine system into a special group within the Society Internationale de Chirurgie (SIC), of which he was a very active member.

In 1978, Peter Heimann wrote to a number of his friends to say that he was dying of gastric carcinoma, and stated his fervent wish that an endocrine group of surgeons should still be formed, even though it would not have his guidance. Peter died on March 18, 1978 and as a result of the letters he had written, Selwyn Taylor (London), Richard Egdahl (Boston) and Orlo Clark (San Francisco) circulated a group of endocrine surgeons around the world, a task greatly facilitated by Peter Heimann's secretary who kindly handed on all the previous correspondence. Scientific papers were invited and a single day's program set up during the next meeting of the SIC, together with provision for all those interested to meet and discuss plans for the future.

So it was at 9:00am, Thursday, September 4, 1979, that a group met in a room of the SIC Congress in San Francisco and elected a President, Selwyn Taylor; a President-elect, Richard Egdahl; a Secretary-Treasurer, Orlo Clark; and a small international committee; N. Thompson, Ann Arbor, Michigan (coordinator); H.A. Bruining, Rotterdam, The Netherlands; Y. Fujimoto, Tokyo, Japan; P.-O. Granberg, Stockholm, Sweden; T.S. Reeve, Sydney, Australia; H.D. Roehler, Heidelberg, West Germany; W. Rudowski, Warsaw, Poland; and S.A. Wells, Jr., Durham, North Carolina.

The original aims of the IAES were "To provide a forum for the exchange of views of those who are involved in expanding the frontiers of endocrine surgery, whether by clinical experience, laboratory investigation, or in any other way: Not for the general surgeon who occasionally operates on a thyroid or adrenal gland."

The IAES, indeed, fulfills these aims, and is proud of its place in the Society Internationale de Chirurgie.

Selwyn Taylor MD

*Courtesy of HD Roehler
Selwyn Taylor putting the Presidential Medallion on
Richard Egdahl with President-elect Per-Ola Granberg
watching on at the second meeting of the IAES in 1981*



PAST and PRESENT IAES OFFICERS

YEAR	PRESIDENT	PRESIDENT-ELECT	SECRETARY TREASURER	COUNCIL COORDINATOR
1979-1981	Selwyn Taylor	Richard G. Egdahl	Orlo H. Clark	Norman Thompson
1981-1983	Richard G. Egdahl	Per-Ola Granberg	Orlo H. Clark	Norman Thompson
1983-1985	Per-Ola Granberg	Thomas S. Reeve	Orlo H. Clark	Norman Thompson
1985-1987	Thomas S. Reeve	Yoshihide Fujimoto	Jon van Heerden	Richard. Welbourn
1987-1989	Yoshihide Fujimoto	Norman Thompson	Jon van Heerden	Ivan D.A. Johnston
1989-1991	Norman Thompson	Hans D. Roeher	Jon van Heerden	Ivan D.A. Johnston
1991-1993	Hans D. Roeher	Ivan D.A. Johnston	Malcolm H. Wheeler	Jon van Heerden
1993-1995	Ivan D.A. Johnston	Orlo H. Clark	Malcolm H. Wheeler	Jon van Heerden
1995-1997	Orlo H. Clark	Charles A. Proye	Malcolm H. Wheeler	Jon van Heerden
1997-1999	Charles A. Proye	Jon A. van Heerden	Göran Åkerström	Malcolm Wheeler
1999-2001	Jon van Heerden	Shiro Noguchi	Göran Åkerström	Malcolm Wheeler
2001-2003	Shiro Noguchi	Malcolm H. Wheeler	Göran Åkerström	Malcolm Wheeler
2003-2005	Malcolm H. Wheeler	Henning Dralle	Gerard Doherty	Göran Åkerström
2005-2007	Henning Dralle	Göran Åkerström	Gerard Doherty	Göran Åkerström
2007-2009	Göran Åkerström	Leigh Delbridge	Gerard Doherty	Henning Dralle
2009-2011	Leigh Delbridge	Robert Udelsman	Geoffrey Thompson	Gerard Doherty
2011-2013	Robert Udelsman	Chen-hsen Lee	Geoffrey Thompson	Gerard Doherty
2013-2015	Chen-hsen Lee	Jean-Francois Henry	Geoffrey Thompson	Gerard Doherty
2015-2017	Dimitrios Linos	Gerard Doherty	Janice L. Pasioka	GeoffreyThompson
2017-2019	Gerard Doherty	Akira Miyauchi	Janice L. Pasioka	Geoffrey Thompson
2019-2022	Akira Miyauchi	Jan Zedenius	Janice L Pasioka	Geoffrey Thompson

COUNCIL MEMBERS

- 1979-1983 L. Ayala (Venezuela)
1979-1983 H.A. Bruining (Netherlands)
1979-1984 Tom Reeve (Australia)
1979-1983 Hans Roeher (Germany)
1979-1981 W. Rudoski (Poland)
1979-1981 Sam Wells (USA)
1981-1985 C. Dubost (France)
1981-1985 Yoshihide Fujimoto (Japan)
1983-1987 Erol Duren (Turkey)
1983-1985 Jon van Heerden (USA)
1983-1985 Richard Welbourn (London)
1985-1989 Mogens Blichert-Toft (Denmark)
1985-1989 John Boey (Hong Kong)
1985-1989 Jose Patino (Columbia)
1985-1989 Charles Proye (France)
1985-1989 Mathias Rothmund (Germany)
1987-1991 Anthony Edis (Australia)
1987-1991 Henry Johansson (Sweden)
1989-1993 Dimitrios Linos (Greece)
1991-1995 Dennaro Favia (Italy)
1991-1997 Bertil Hamberger (Sweden)
1991-1995 Edwin Kaplan (USA)
1991-1995 Bruno Niederle (Austria)
1991-1995 Shin-Ichiro Takai (Japan)
1993-1997 Colin Russell (UK)
1993-1997 Göran Åkerström (Sweden)
1995-2001 Leigh Delbridge (Australia)
1999-2004 Henning Dralle (Germany)

1999-2004 N. Dudley (UK)
1999-2005 Peter Goretzki (Germany)
1999-2004 Barbara Kinder (USA)
1999-2004 Sten Lennquist (Sweden)
1999-2004 Paolo Miccoli (Italy)
1999-2004 Takao Obara (Japan)
2001-2007 Jacques Marescaux (France)
2004-2009 Quan-Yang Duh (USA)
2004-2009 Jean-Francois Henry (France)
2004-2009 Chen-Hsen Lee (Taiwan)
2004-2009 Janice L. Pasioka (Canada)
2004-2009 Hiroshi Takami (Japan)
2004-2009 Bo Wängberg (Sweden)
2005-2011 C.Y. Lo (Hong Kong)
2007-2013 Robert Parkyn (Australia)
2009-2015 Herbert Chen (USA)
2009-2015 Mete Düran (Turkey)
2009-2015 Barney Harrison (United Kingdom)
2009-2015 Per Hellman (Sweden)
2009-2015 Akira Miyauchi (Japan)
2009-2015 Nancy Perrier (USA)
2011-2017 Gregory Randolph (USA)
2015-2021 Sally Carty (USA)
2015-2021 Tsuneo Imai (Japan)
2015-2021 Jean Louis Kraimps (France)
2015-2021 Stanley B. Sidhu (Australia)
2015-2021 Euy Young Soh (South Korea)
2015-2021 Karl Göran Wallin (Sweden)
2015-2021 Martha A. Zeiger (USA)

2017-2023 Amit Agarwal (India)

2017-2023 Fausto Palazzo (United Kingdom)

2019-2024. Barb Miller (USA)

2019-2024. Marcin Barczyński, (Poland)

2019-2022. Inne Borel-Rinkes (Netherlands)* Moved to INTEREST Chair 2022

2022-2026*

2022-2028

2022-2028

2022-2028

IAES Executive Council and Committees

President - Akira Miyauchi Japan
President Elect - Jan Zedenius Sweden
Secretary Treasurer - Janice L Pasieka Canada
Past President - Jerry Doherty USA
Council Coordinator - Geoff Thompson USA

INTEREST Ex-Officio - Inne Borel-Rinkes Netherlands

Membership Committee:

Jerry Doherty	Martha Zeiger	Euy Young Soh
Geoff Thompson	Marcin Barczyński	Janice Pasieka

Education Committee:

Amit Agarwal	Rob Parkyn	Sally Carty
Jean Louis Kraimps	Geoff Thompson	Janice Pasieka Ex-Officio

Nominating Committee:

Jerry Doherty Chair	Stan Sidhu	Akira Miyauchi
Barb Miller	Jan Zedenius	Geoff Thompson
Innes Borel-Rinkes	Göran Wallin	Janice L Pasieka

Ad Hoc Website Committee:

Fausto Palazzo Chair	Marcin Barczyński	Barb Miller
James C Lee	Janice L Pasieka	

Audit Committee:

Tsuneo Imai	Fausto Palazzo
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The IAES Trainee Awards

Dr. Charles Proye was a dedicated and successful Professor of Surgery in Lille, becoming President of the French Academy of Surgery and awarded the Legion d'Honneur. He founded and chaired the Francophone Association of Endocrine surgery and was one of the founding members of the International Association of Endocrine Surgeons. He served as a councillor 1985-1989, becoming the president in 1997-1999. He specialized in endocrine diseases particularly in the difficult area of managing disease of the endocrine pancreas.



Mr. Selwyn Taylor, went to King's College Hospital on a Burney Yeo Scholarship. After qualifying, he enlisted in the RNVR serving from 1940 to 1945 as Surgeon Lieutenant



Commander in the Atlantic on the destroyers as a surgical specialist, including East Africa, Malaysia and Australia. After the war, he returned to King's College Hospital where he was awarded a George Herbert Hunt scholarship to study at the Sabbatsberg Hospital in Stockholm. He then became a Rockefeller travelling fellow in the USA. Initially a general surgeon, he quickly turned to endocrine and paediatric surgery and from 1947 to 1978 he practiced thyroid and parathyroid surgery exclusively. He was a member of numerous societies including being the president of the Harveian Society, president of the London Thyroid Club, Keat's lecturer to the Society of Apothecaries and was the first president of the IAES in 1979.

Mr. John Farndon was the former president of the British Association of Endocrine Surgeons, President Elect of the Association of Surgeons of Great Britain and Ireland. As professor and head of surgery in Bristol, UK., his main interest was in the endocrine field, specializing in thyroid and parathyroid surgery. He made many important contributions to the field, including improving the way in which phaeochromocytoma patients were prepared for surgery by characterizing the way in which the adrenal tumors released their hormones. As a research fellow under Sam Wells, John spent two years at Duke University, NC where Ivan Johnson and Ross Taylor were his main influences.



Dr. Michael Brauckhoff was a gifted and dedicated clinician, researcher and teacher. He was appointed professor at the University of Bergen and chief physician at the Department of Surgery, Haukeland University Hospital. He was a valued member and contributor to the IAES.

IAES PETER HEIMANN LECTURE

It was the dream of Dr. Peter Heimann to create a society solely of endocrine surgeons. He unfortunately passed away before he could see his vision become a reality. Dr Heimann wanted to create “a forum for the exchange of views of those who are involved in expanding the frontiers of endocrine surgery”. In his honour, the President of the IAES, invites a guest lecturer to expand our knowledge as surgical endocrinologists by giving the Peter Heimann Lecture.

This year’s Peter Heimann Lecture will be given by
Professor Shunichi Yamashita Japan



Previous Peter Heimann Lecturers include:

- 1983 - John Doppman, USA
- 1985 - T. Lowhagen, Sweden
- 1987 - Norman W. Thompson, USA
- 1989 - Richard Welbourn, England
- 1991 - William Beierwaltes, USA
- 1993 - Sam Wells, USA
- 1995 - Sir Dillwyn Williams, UK
- 1997 - J.W. Gray, USA
- 1999 - Jean-François Chatal, France
- 2001 - J. Aidan Carney, USA
- 2004 - Prof. Ch. Reiners, Germany
- 2005 - Jacques Marescaux, France
- 2007 - Karel Pacak, USA
- 2009 - Bruce Robinson, Australia
- 2011 - Creswell Eastman, Australia
- 2013 - John Bilezikian, USA
- 2015 - Virginia LiVolsi, USA
- 2017 - George Chrousos, Greece
- 2019 - Megan Haymart, USA

STATE of the ART LECTURERS

2007 Montreal, Canada

Geoffrey B. Thompson, USA

Electron Kebebew, USA

2015 Bangkok, Thailand

Ian Hay, USA

Akira Miyauchi, Japan

2009 Adelaide, Australia

Quan-Yang Duh, USA

Janice L. Pasieka, Canada

2017 Basel, Switzerland

CY Lo, Hong Kong

Nancy D Perrier, USA

2011 Yokohama, Japan

Clive S. Grant, USA

Michael J. Demeure, USA

2019 Krakow, Poland

Peter Stålberg, Sweden

Carrie Lubitz Cunningham, USA

2013 Helsinki, Finland

Woong Youn Chung, South Korea

William Young Jr., USA

2021 Virtual Meeting

Carmen Solorzano, USA

Stan Sidhu, Australia

IAES TRAVEL AWARDS

Presenting Authors of free papers who are residents in training, fellows, or students will be eligible for a travel scholarships (\$1000 USD each) offered by the International Association of Endocrine Surgeons (IAES), based on the rank of their submitted IAES abstract and financial need.

2004	Amit Agarwal, India	Kevin Lye, USA
	Marcin Barczyński, Poland	Funalal Jane Odubu, Uganda
	Mukhta Baxi, India	Raja Gopalan Ramasubbu, India
	Laurent Brunaud, France	Nikhil Singh, India
	Sergiy Cherenko, Ukraine	Mark Sywak, Australia
	Lawrence Kim, USA	Rasa Zarnegar, USA
	Yevgeniya Kushchayeva, Ukraine	Geeta Lal, USA
2005	Gaurav Agarwal, India	Radu Mihai, UK
	Marcin Barczyński, Poland	A.R. Ramasubbu, India
	Mukta Baxi, India	Kathryn Spanknebel, USA
	Nadine Caron, Canada	Frederick Triponez, USA
	Brian Land, Hong Kong	David Velazques-Fernandez, Mexico
2007	Marcin Barczyński	Patsy Soon, Australia
	Ippolito Giuseppe, France	Peter Stalberg, Sweden
	Elizabeth Fialkowski, USA	Frank Weber, Germany
	Akiko Kawamata, Japan	PV Prandeep, India
	Andreas Kiriakopoulos, Greece	Tae Yon Sung, Korea
	Ivan Markovic, Serbia	Marlon Guerrero, USA
2009	Shalini Arora, USA	Prateek Kumar Mehrotra, India
	Saba Balasubramanian, UK	Barbra Miller, USA
	Marcin Barczyński, Poland	Olov Norlén, Sweden
	Anna Bargren, USA	Pooja Ramakant, India
	Hella Hultin, Sweden	C.K. Ben Selvan, India
	Yasuko Kikuchi, Japan	Amber Traugott, USA
	James Kirby-Bott, France	Denis Wirowski, Germany
	Brian Lang, China	

IAES TRAVEL AWARDS

2011	Marcin Barczyński, Poland Arnault Beliard, France Andrii Dinets, Sweden Lucille Gust, France Susan Inchauste, USA Law Yuk, China Kai Pun Wong, Hong Kong	Mark Lewis, USA Sabaretnam Mayilvaganan, India Haggi Mazeh, USA Lilah Fran Morris, USA Orlen Norlén, Sweden Haengrang Ryu, USA
2013	Ritesh Agrawal, India Marcin Barczyński, Poland Sunil Barua, India James Broome, USA Kevin Chu, Hong Kong Priya Dedhia, USA Ivan Markovic, Serbia	Helen Miller, UK Sapna Nagar, USA Naotyoshi Onoda, Japan Pradeep Puthenveetil, India Denis Wirowski, Germany Kai Pun Wong, Hong Kong
2015	Mohammad Elsayed, USA Jordi Vidal Fortuny, Switzerland Catherine McManus, USA Dhaval Patel, USA	Zhang Qiang, China Krishnan Ravikumar, India Feliz Mazimilian Watzka, Germany Takayuki Yamamoto, Japan
2017	Kate Chomsky-Higgins, USA Aimee diMarco, UK James Gallagher, USA Sujen Jayakody, Australia Amin Madani, Canada	Andres Marin, Switzerland Maureen Moore, USA Qi Yan, USA Sankaran Muthukumar, India Sapana Bothra, India

IAES TRAVEL AWARDS

2019	Fredrik Sellgren, Sweden	Amna Khokar, USA
	Nasim Babazadeh, USA	Lei Min, China
	Mohammadmehdi Adhami, Australia	Mohammed Jeraq, USA
	Janet Li, USA	Steve Craig, Canada
	Jessica Limberg, USA	Dessislava Stefanova, USA
	Margarita Ptasnuka, Latvia	Shimena Li, USA
	James Taylor, Australia	Sanjay Yadav, India
	Amanda Doubleday, USA	Claire Graves, USA
	Brittany Greene, Canada	Sarah Hillary, UK
2022	TBA	

IAES Scientific Program 2022

Sunday, August 14th 2022

08:30 - 12:00 **IAES Executive Council Meeting**
Flemings Selection Hotel Wien-City
Council Members Only

18:00 - 21:00 **IAES Welcoming Reception** 🍷🍷🍷🍷🍷
Flemings Selection Hotel Wien-City

IAES members and guests only
Tickets are required

Abstract Program Selection Committee 📖📝

Chair: Tracy Wang USA

Jonathan Hubbard UK	Nancy Perrier USA	Brian Untch USA
Sareh Parangi USA	Chris McHenry USA	Priya Dedhia USA
Sally Carty USA	Herb Chen USA	Heather Stuart Canada
Edwina Moore Australia	Erivelto Volpi Brazil	Anthony Glover Australia
Haggi Mazez Israel	Dave Hughes USA	Iwao Sugitani Japan
Jerry Doherty USA	Laura Chin-Lenn Australia	David Velazquez-Fernandez Mexico
Menno Vriens Netherlands	Claire Graves USA	Soo-Young Kim Korea
Becky Sippel USA	Kristin Long USA	Raj Patel New Zealand
Simon Grodski Australia	Keat Cheah Singapore	Brian Saunders USA
	Kepal Patel USA	Sonia Sugg USA

Monday, August 15th 2022

08:30-09:30 **Opening Ceremony** **Festsaal**


10:00 - 12:00

ISS/SIC Presidential Address
John Hunter USA

ISS/SIC Martin Allgöwer Lecture
Patricia Numann USA

12:10-12:30 **IAES Welcome Opening Remarks** **Prinz Eugen Saal**

Secretary-Treasurer – Janice Pasieka Canada
President IAES – Akira Miyauchi Japan
Local Arrangement Chair - Bruno Niederle Austria

Podium Presentation Judges  : Tracy Wang USA - **Chair**
Vegard Brun Norway
Erivelto Volpi Brazil
Priya Dedhia, USA
Haggi Mazeh Israel
Dave Hughes USA
Aimee diMarco United Kingdom

*Denotes eligible for Trainee awards

___Denotes presenting author

12:30-13:35 **IAES Free Paper Session #1 (Papers 1-4)** **Prinz Eugen Saal**

Moderators: Sebastian Aspinall United Kingdom
Sophie Dream USA

*** 12:30 1 ENVIRONMENTAL CHEMICALS AND THEIR ASSOCIATION WITH HYPERPARATHYROIDISM**

Jessica McMullin, J. Codner, S. G. Patel J. Sharma, D. P. Jones C. J. Weber, N. D. Saunders
Department of Surgery and Division of Pulmonary, Allergy, Critical Care, and Sleep Medicine, Emory University, Atlanta, United States

✳ 12:45 **2 TRANSORAL THYROIDECTOMY AND PARATHYROIDECTOMY- FIRST RESULTS OF THE EUROPEAN TOETVA STUDY GROUP**

Melisa Arikani, P. Riss on behalf of the European TOETVA Study Group
General Surgery, Medical University of Vienna, Vienna, Austria

13:00 **3 LONG-TERM OUTCOMES AFTER THYROID-CONSERVING, CURATIVE SURGERY FOR PATIENTS WITH HIGH- RISK PAPILLARY THYROID CARCINOMA**

Iwao Sugitani, H. Kazusaka, A. Ebina, W. Shimbashi, K. Toda, K. Takeuchi
Department of Endocrine Surgery, Nippon Medical School, Division of Head and Neck, Cancer Institute Hospital, Pathology Project for Molecular Targets, The Cancer Institute, Japanese Foundation for Cancer Research, Tokyo, Japan

✳ 13:15 **4 CARDIAC CHANGES IN PHEOCHROMOCYTOMA/PARAGANGLIOMA PATIENTS AND THEIR REVERSAL AFTER CURATIVE SURGERY: RESULTS OF PHEOCARD PROSPECTIVE COHORT STUDY**

Vishvak Chanthar K.M.M, S. Ranjan Rout, R. Khanna A. Kapoor, G. Chand, A. Mishra, A. Agarwal, G. Agarwal
Endocrine and Breast Surgery, Cardiology, Sanjay Gandhi Postgraduate Institute of Medical sciences, Lucknow, India

Invited Discussant paper #4
James A Lee USA

13:45 - 15:00 **Interesting Cases** 🔍💡 **Prinz Eugen Saal**
Moderator: Janice L Pasieka Canada

15:00 -15:30 **Coffee Break** ☕🍩🍪

15:30 - 17:05 **IAES Free Paper Session #2 (Papers 5-10)** **Prinz Eugen Saal**
Moderators: Julie Miller Australia
Jerry Doherty USA

✳ 15:30 **5 UNILATERAL ADRENALECTOMY FOR PRIMARY ALDOSTERONISM DUE TO BILATERAL HYPERPLASIA CAN RESULT IN RESOLUTION OF HYPOKALEMIA AND AMELIORATION OF HYPERTENSION**

Thomas Szabo Yamashita, O. Shariq, T. Foster, M. Lyden, B. Dy, W. Young, I. Bancos, T. McKenzie
General Surgery, Medical Endocrinology and Metabolism, Mayo Clinic Rochester, Rochester, USA

*** 15:45 6 HEMITHYROIDECTOMY FOR LOW-RISK 1-4 CM PAPILLARY THYROID CANCER IS NOT ASSOCIATED WITH INCREASED RECURRENCE RATES IN THE DUTCH POPULATION WITH A RESTRICTED DIAGNOSTIC WORK-UP**

Alex Jia Feng Lin, P. M. Rodriguez Schaap , M. J. Metman , E. J. Nieveen van Dijkum , C. Dickhoff , T.

P. Links , S. Kruijff , A. F. Engelsman

Surgery, University Medical Center Groningen, Groningen, Surgery, Amsterdam University Medical Center, Amsterdam, Endocrinology, University Medical Center Groningen, Groningen, Netherlands

16:00 7 IS THERE ANY RELIABLE PREDICTOR OF FUNCTIONAL RECOVERY FOLLOWING POST-THYROIDECTOMY UNILATERAL NERVE PALSY?

M. R. Marchese, Luca Revelli, P. Gallucci, C. Montuori, S. Di Lorenzo, L. D'Alatri, C. De Crea, M. Raffaelli

Division of Otolaryngology, Division of Endocrine and Metabolic Surgery, Fondazione Policlinico Universitario Agostino Gemelli IRCCS, Roma, Italy

***16:15 8 NEAR-INFRARED PARATHYROID AUTO-FLUORESCENCE (NIRAF) USE IN A REFERRAL CENTER FOR THYROID SURGERY. PROSPECTIVE RANDOMIZED STUDY OF ONE YEAR FOLLOW-UP**

Luis Carrillo, S. Bakkar, C. Zerrweck, J. L. Kraimps, G. Donatini

General and Endocrine Surgery, CHU POITIERS, Poitiers, France, Surgery, Hashemite University, Zarqa, Jordan, Metabolic and Endocrine Surgery, ABC Hospital, Mexico City, Mexico

Invited Discussant paper # 8

Sally Carty USA

16:35 9 THE RELATIONSHIP BETWEEN THYROID STIMULATING HORMONE LEVEL AND TUMOR ENLARGEMENT OF LOW-RISK PAPILLARY THYROID MICROCARCINOMA DURING ACTIVE SURVEILLANCE

Yasuhiro Ito, A. Miyauchi , M. Fujishima, T. Noda, T. Sano, T. Sasaki, T. Kishi, T. Nakamura

Department of Surgery, Department of Head and Neck Surgery, Department of Internal Medicine, Kuma Hospital, Kobe, Japan


*** 16:50 10 MAKING THE CUT- PARATHYROIDECTOMY BEFORE OR AFTER KIDNEY TRANSPLANTATION?**

Rongzhi Wang, F. Saad, C. Kew, G. Agarwal, K. Wille, J. Locke, H. Chen, S. Ong

Department of Surgery, School of Medicine, Department of Medicine, University of Alabama at Birmingham, Birmingham, United States

Tuesday, August 16th 2022

07:00-08:15 **“Eye-opening” IAES Endocrine Video Session**  **Prinz Eugen Saal**

 Provided by IAES

Moderators: Barb Miller USA
Olov Norlen Sweden

Variable minimally invasive approaches to paragangliomas
Olov Norlen Sweden

Robotic Transoral Thyroidectomy
Amit Agarwal India

Series of Parathyroid Autofluorescence
Jordi Vidal Switzerland

Angiography Guided Thyroidectomy
Pablo Moreno Llorente Spain

Micro Teaching Videos

Neurologic status after lateral neck dissection
Olov Norlen Sweden

The ‘Lee’ Maneuver
Katie McManus USA

ICG for Identification of Normal Adrenal During Partial Adrenalectomy
Barb Miller USA

RLN anastomosis
Akira Miyauchi Japan

Continuous Intraoperative Neuromonitoring in Large Mediastinal Goitre
Roma Pradhan India

08:30 – 10:00 **IAES Free Paper Session #3 (Papers 11-16)**

Prinz Eugen Saal

Moderators: Marcin Barczynski Poland
Brenessa Linderman USA

* 08:30 **11 ARTIFICIAL INTELLIGENCE FOR PREOPERATIVE DIAGNOSIS OF MALIGNANT THYROID NODULES BASED ON SONOGRAPHIC FEATURES AND CYTOLOGY**

Karishma Jassal, A. Koohestani, N. Ravintharan, A. Kiu, S. Grodski, M. Yeung, J. Serpell J. C. Lee
Monash University Endocrine Surgery Unit, Melbourne, Australia

* 08:45 **12 SINGLE CENTER OUTCOMES FROM PARENCHYMAL-SPARING RESECTIONS WITH MICROWAVE ABLATIONS FOR NEUROENDOCRINE TUMOR LIVER METASTASES**

F. Lee, X. Keutgen, Jelani Williams, R. Nordgren, P. Angelos, M. Millis, B. Polite, C.-Y. Liao General Surgery, Medicine, University of Chicago, Chicago, United States

09:00 **13 RADIOFREQUENCY ABLATION FOR HOT NODULES: THE NEW HOT TOPIC**

Erivelto Volpi, L. D. M. Volpi, J. H. Steck, L. Rangel, R. G. Garcia, A. Rahal Jr
Head and Neck Surgery, Oswaldo Cruz German Hospital, Otolaryngology, Santa Casa de Sao Paulo Hospital, Sao Paulo, Otolaryngology, Campinas State University, Campinas, Otolaryngology, Rio de Janeiro State University, Rio de Janeiro, Radiology, Albert Einstein Israeli Hospital, Sao Paulo, Brazil

* 09:15 **14 OVERALL SURVIVAL IN PATIENTS WITH STAGE IV PAN-NET ELIGIBLE FOR LIVER TRANSPLANTATION**

Josefine Kjaer, S. Smith, P. Stålberg, J. Crona, P. Hellman, S. Welin, O. Norlen
Department of Surgical Sciences, Department of Medical Sciences, Uppsala University, Uppsala, Sweden

Invited Discussant paper #14
Inne Borel-Rinkes Netherlands

* 09:35 **15 VALIDATED MODEL PREDICTING EFFECT OF RADIOACTIVE IODINE ON OVERALL SURVIVAL IN PAPILLARY THYROID CANCER**

Mandakini Venkatramani, K. Kuchta, A. Khokar, T. Moo-Young, R. A. Prinz, D. J. Winchester
Northshore University HealthSystems, Evanston, General Surgery, John H. Stroger Jr. Hospital of Cook County, Chicago, United States

✿ 09:50 **16 IMPACT OF SURGEON VOLUME ON MORBIDITY FOLLOWING PARATHYROIDECTOMY IN THE UNITED KINGDOM: A STUDY OF 16,140 PARATHYROIDECTOMIES FROM THE UNITED KINGDOM REGISTRY OF ENDOCRINE AND THYROID SURGERY (UKRETS)**

Sendhil Rajan, D. Gracie, S. R. Aspinall

General & Endocrine Surgery, Aberdeen Royal Infirmary, Aberdeen, United Kingdom

10:05 - 10:30 **Coffee Break** ☕🍰

10:30-11:10 **IAES Peter Heimann Lecture**

Prinz Eugen Saal

Thyroid Cancer and Nuclear Accidents

Introduction: Akira Miyauchi Japan

Lecturer: Shunichi Yamashita Japan

11:15 - 12:00 **IAES Business Meeting** 📁

Prinz Eugen Saal

Akira Miyauchi
Janice Pasioka

IAES President
IAES Secretary-Treasurer

12:10 – 13:15 **IAES Luncheon Session**

Prinz Eugen Saal



Lunch kindly provided by Kuma Hospital

Endocrine Surgical Tumour Board Session

Moderators: Tracy Wang USA
Simon Harper New Zealand

Board Panelists: Yasuhiro Ito Japan
Amanda Laird USA
Haggi Mazeh Israel
Fausto Palazzo United Kingdom
Peter Goretzki Germany
Tsuneo Imai Japan
Julie Miller Australia
Paul Gauger USA

13:30 - 14:20 **IAES Free Paper Session #4 (17-19)**
Moderators: Herb Chen USA
Inga-Lena Nilsson Sweden

Prinz Eugen Saal

✿ 13:30 **17 IMPACT OF FLUORO-CHOLINE PET/CT IN REDUCTION OF FAILED PARATHYROIDECTOMY**

Rijuta Aphale, N. Damle, S. Chumber, M. Khan, R. Khadgawat, Y. Dharmashaktu S. Agarwal, C. Bal
Department Of Surgical Disciplines, Department Of Nuclear Medicine, Department Of Biostatistics,
Department Of Endocrinology, Department Of Pathology, All India Institute Of Medical Sciences, New
Delhi, India

13:45 **18 LABEL-FREE ENHANCEMENT OF ADRENAL GLAND VISUALIZATION USING NEAR INFRARED AUTOFLUORESCENCE FOR SURGICAL GUIDANCE**

G. Thomas, Colleen M. Kiernan, P. A. Willmon, N. Baregamian, A. N. Luckenbaugh, D. A. Barocas, A. Mahadevan- Jansen, C. C. Solorzano
Biomedical Engineering, Vanderbilt University, Division of Surgical Oncology and Endocrine Surgery,
Department of Surgery, Division of Urologic Oncology, Department of Surgery, Vanderbilt University
Medical Center, Nashville, United States

Invited Discussant paper #18

Saba Balasubramanian United Kingdom

✿ 14:05 **19 PARATHYROIDECTOMY FOR NORMOCALCEMIC PRIMARY HYPERPARATHYROIDISM IMPROVES BONE MINERAL DENSITY REGARDLESS OF POST-OPERATIVE PARATHYROID HORMONE LEVELS**

Michael S. Lui, U. Clemente-Gutierrez, D. M. Vodopivec, S. L. Chang, A. S. Shirali, T. A. Guise, P. H. Graham, N. D. Perrier
Surgical Oncology, Endocrine Neoplasia and Hormonal Disorders, The University of Texas MD Anderson
Cancer Center, McGovern Medical School at the University of Texas Health Science Center, Houston,
United States

14:25 – 15:00 **IAES Presidential Address**

Prinz Eugen Saal

Chronology of Thyroid Cancer

Introduction: Iwao Sugitani Japan

Lecturer: Akira Miyauchi Japan

15:00-15:30 **Coffee Break** ☕ 🍪

15:15 - 16:30 **IAES Poster Walk**



Judges:

Tracy Wang USA Chair
Schelto Kruijff Netherlands
Cia Ihre-Lundgren Sweden
Carrie Cunningham USA
Amit Agarwal India
Goran Wallin Sweden
Allan Siperstein USA
James C Lee Australia
Nancy Perrier USA
Euy Soh Korea

18:30 - 23:30 **IAES Gala Banquet**



City Hall

IAES Members will be the invited guests of the Mayor of Vienna

Tickets are required

Dinner 18:30 - 23:30

Presentation of the;

Charles Proye Award for the best clinical podium paper from a trainee

Selwyn Taylor Award for the best scientific podium paper from a trainee

John Fardon Award for the best clinical poster from a trainee

Michael Brauckhoff Award for best scientific poster from a trainee

Wednesday, August 17th 2022

08:30 – 09:50 **IAES Free Paper Session #5 (20-24)**

Prinz Eugen Saal

Moderators: Quan Duh USA
Gianluca Donatini France

08:30 **20 A TIME TREND ANALYSIS OF 5,000 ROBOTIC THYROIDECTOMIES VIA BILATERAL AXILLO-BREAST APPROACH**

Junghak Kwak, J.-H. Ahn, H. W. Yu, S.-J. Kim, Y. J. Chai, J. Y. Choi, K. E. Lee
Department of Surgery, Seoul National University Hospital, Department of Surgery, Seoul National University College of Medicine, Seoul, Department of Surgery, Seoul National University Bundang Hospital, Seongnam, Cancer Research Institute, Seoul National University College of Medicine, Department of Surgery, Seoul National University Boramae Medical Center, Medical Big Data Research Center, Institute of Medical Biological Engineering, Seoul, Korea, Republic Of

08:45 **21 THE PROGNOSTIC IMPACT OF EXTENT OF VASCULAR INVASION IN FOLLICULAR THYROID CARCINOMA**

D. Leong, A. Gill, J. Turchini, Anthony Glover, R. Clifton-Bligh, M. Sywak, S. Sidhu
Endocrine and Surgical Oncology, Anatomical Pathology, Royal North Shore Hospital, Anatomical Pathology, Douglass Hanly Moir Pathology, Endocrinology, Royal North Shore Hospital, New South Wales, Australia

09:00 **22 PATIENT ANXIETY DURING ACTIVE SURVEILLANCE FOR LOW-RISK PAPILLARY THYROID MICROCARCINOMA IS RELIEVED AFTER 5 YEARS: A PATIENT-REPORTED OUTCOME STUDY WITH LONG TERM FOLLOW-UP**

Hiroko Kazusaka, I. Sugitani, K. Toda, M. Sen, M. Saito, R. Nagaoka, Y. Yoshida
Department of Endocrine Surgery, Nippon Medical School Hospital, Division of Head and Neck, Cancer Institute Hospital, Department of Endocrine Surgery, Tokyo Women's Medical University, Tokyo, Japan

Invited Discussant paper #22
Barb Miller USA

09:20 **23 FERROPTOSIS INDUCERS IN THYROID CANCER**

Naira Baregamian, K. R. Sekhar, D. N. Hanna, S. J. Cyr
Surgery, Vanderbilt University Medical Center, Nashville, United States

09:35 **24 ICG ANGIOGRAPHY-GUIDED THYROIDECTOMY IMPROVES IMMEDIATE AND LONG-TERM PARATHYROID GLAND FUNCTION**

Pablo Moreno Llorente, A. García Barrasa, M. Pascua Solé, J. L. Muñoz de Nova
Endocrine Surgery Unit, Hospital Universitari de Bellvitge, Barcelona, General Surgery, Hospital Universitario de la Princesa, Madrid, Spain

09:50– 10:30 **Coffee Break** ☕🍪

10:30 – 12:10 **IAES Panel Session**

Prinz Eugen Saal

Scientific [mis]Conduct and the Care of Surgical Patients

Moderators : Peter Angelos USA
Geoff Thompson United Arab Emirates

Introduction
Peter Angelos USA

Fabrication of Data - What can we learn from the Karolinska Scandal?
Jan Zedenius Sweden

Publish or Perish - Quality over Quantity?
Carmen Solorzano USA

Is IRB approval necessary for innovative surgical techniques? How much data is needed? How much disclosure do patients need about the novelty of a technique?
Jonathan Serpell Australia

How does scientific integrity impacts our relationships with our patients and with industry?
Lin Yip USA

Who is responsible for policing scientific integrity? The journals, the Institutions, the Professional bodies, or it it up to each of us...?
Julie Ann Sosa USA

12:15 - 13:30 **ISS/SIC General Assembly**

Festsaal

13:30 -15:00 **Highlighting Basic Science in Endocrine Surgery**  **Prinz Eugen Saal**

Moderators: Martha Zeiger USA
Stan Sidhu Australia

Application of genomics to advanced thyroid cancer management
Anthony Glover Australia

Characterization and Impact of TGF- β Treatment on Thyroid Stem Cells
Nani Harlina Latar Malaysia

Organoid models of Adrenocortical Carcinoma
Priya Dedhia, USA

Targeted Therapy for Adrenocortical Cancer
Naris Nilubol USA

15:00 – 15:30 **Coffee Break** ☕🍰

15:30 - 17:00

Prinz Eugen Saal

***Some New, Exciting and Ready for 'Realtime' Advances in
Endocrine Surgery***
Case Based Round Table Discussions

15:30 - 16:15

Thyroid Nodule Ablative Techniques

Moderators: Mark Sywak Australia

Panelists: Jenn Kuo USA
Erivelto Volpi Brazil
Rajeev Parameswaran Singapore

16:15 - 17:00

**Fluorescence-based Parathyroid Detection
and Perfusion Assessment**




Moderators: Fredrick Triponez Switzerland

Panelists: Colleen Kiernan USA
Aimee diMarco United Kingdom
Jesse Pasternak Canada

17:00 - 17:15 **Closing Remarks**

Jan Zedenius Sweden
In-Coming President of IAES

Thursday, August 18th 2022

 IAES free-time to explore Vienna  



The Podium Abstracts



**International Association
of Endocrine Surgeons**



* eligible for the

Selwyn Taylor

And

Charles Proye

Awards



* 12:30 1 **ENVIRONMENTAL CHEMICALS AND THEIR ASSOCIATION WITH HYPERPARATHYROIDISM**

Jessica McMullin, J. Codner, S. G. Patel J. Sharma, D. P. Jones C. J. Weber, N. D. Saunders
Department of Surgery and Division of Pulmonary, Allergy, Critical Care, and Sleep Medicine, Emory University, Atlanta, United States

Introduction: The incidence of primary hyperparathyroidism has significantly increased in the United States in the past few decades. Previous work from our institution detected environmental chemicals including polychlorinated biphenyls and pesticides within hyperplastic parathyroid tumors. The National Health and Nutrition Examination Survey (NHANES) is a program designed to assess the health and nutritional status of people in the United States and is part of the Centers for Disease Control and Prevention. The NHANES dataset includes measurements of environmental chemicals within laboratory serum specimens. Our aim was to determine if there are any environmental chemicals associated with elevated parathyroid hormone (PTH) levels in NHANES.

Materials & Methods: NHANES was queried from 2003-2006, which are the only years that include laboratory data on PTH. Subjects with elevated PTH and normal Vitamin D levels were identified. Student's T-Tests were used to analyze levels of environmental chemicals with elevated PTH in a univariate analysis. Categories of environmental chemicals included pesticides and insecticides, polychlorinated biphenyls (PCB), flame retardants, dioxins, furans, and environmental phenols. All environmental chemicals with $p < 0.05$ were then included in separate multivariate models adjusting for serum vitamin D and creatinine.

Results: There were 14,681 subjects analyzed, and of these 9.4% (1,377) had elevated PTH (>65 pg/mL) and normal Vitamin D (>30 ng/mL). Calcium was elevated >10.2 mg/dL in 2.8% (359) of subjects. Eighteen different PCBs were found to be associated with elevated PTH (PCB 74, 138, 146, 153, 158 170, 172, 177, 178, 180, 183, 187, 194, 195, 196, 203, 206, 209; all $p < 0.05$). Additionally, the pesticides dimethylphosphate, transnonachlor, hexachlorobenzene, oxychlordan, heptachlor, and dichlorodiphenyldichloroethylene (DDE) were also associated with elevated PTH ($p < 0.05$).

Conclusion: In NHANES, twenty-four environmental chemicals were found to be associated with elevated PTH levels. These chemicals may lead us towards a causal link between environmental factors and the development of hyperparathyroidism and should be the focus of future studies looking at chemical levels within specimens.

* 12:45 2 TRANSORAL THYROIDECTOMY AND PARATHYROIDECTOMY- FIRST RESULTS OF THE EUROPEAN TOETVA STUDY GROUP

Melisa Arikian, P. Riss on behalf of the European TOETVA Study Group
General Surgery, Medical University of Vienna, Vienna, Austria

Introduction: The aim of this study was to present the first results of an European transoral thyroid surgery study group including centers in Austria, Germany, Italy and Turkey.

Materials & Methods: 382 patients (337 female, 89.2%; 41 male, 10.8%) who underwent endoscopic thyroid or parathyroid surgery via vestibular approach from February 2016 to November 2021 in 9 centers were included. Data was analyzed regarding complications, surgery time, specimen retrieval and hospital stay.

Results: Overall, 371 (97.1%) transoral endoscopic thyroidectomy vestibular approach (TOETVA) and 14 (3.7%) transoral endoscopic parathyroidectomy vestibular approach (TOEPVA) with an average surgery time of 152.7 (\pm 63.3) and 488 nerves at risk were performed. In 58 (18.5%) patients the specimen was retrieved via retroauricular and in 7 (1,8%) via transaxillary approach. 195 (66.6%) patients had benign histology including Grave's disease and 85 (29 %) showed malignancy of the thyroid gland. In 13 (3.4%) adenoma of the parathyroid gland was present. In 11 (2.9%) conversion to open surgery was necessary and in one (0.3%) revision due to bleeding had to be performed. Transient recurrent laryngeal nerve (RLN) paralysis was present in 19 (5 %) and permanent RLN paralysis in 2 (0.5%) patients. 9 (8.9%) patients were affected of hypoparathyroidism after thyroidectomy during hospital stay. At discharge date 66 (17.4%) individuals presented skin discoloration, 48 (12.7%) presented sensibility disorder (chin, lips) and 22 (5.8%) had minor motor function disorder associated with the mental nerve. One patient (0.3%) presented postoperative infection.

Conclusion: Our European results show that transoral thyroid and parathyroid surgery, performed by experienced endocrine surgeons, is a safe scarless procedure and a good alternative to conventional minimally invasive thyroid surgery.

13:00 **3 LONG-TERM OUTCOMES AFTER THYROID-CONSERVING, CURATIVE SURGERY FOR PATIENTS WITH HIGH- RISK PAPILLARY THYROID CARCINOMA**

Iwao Sugitani¹, H. Kazusaka¹, A. Ebina¹, W. Shimbashi², K. Toda², K. Takeuchi³

Department of Endocrine Surgery, Nippon Medical School, Division of Head and Neck, Cancer Institute Hospital, Pathology Project for Molecular Targets, The Cancer Institute, Japanese Foundation for Cancer Research, Tokyo, Japan

Introduction: Guidelines universally recommend total thyroidectomy (TT) for patients with high-risk papillary thyroid carcinoma (PTC). However, in Japan, thyroid-conserving surgery (lobectomy or subtotal thyroidectomy) had been widely adopted for such patients until recently, unless distant metastases (M) were absent. We investigated long-term outcomes for this strategy.

Materials & Methods: A prospectively recorded database was retrospectively analyzed for 1463 patients who had undergone curative surgery for PTC >1 cm in diameter between 1993 and 2013. High-risk PTC was defined for tumors showing: tumor size (T) >4 cm; gross extrathyroidal extension (ETE); large nodal metastasis ≥ 3 cm (LN); or M. Among 505 high-risk patients, 415 did not have M.

Results: Median age was 59 years and 270 patients were female. Median duration of follow-up was 10.3 years. Thyroid-conserving surgery was conducted for 254 patients (LT group) and TT for 161 patients (TT group). In the whole cohort, Cox proportional hazards modeling identified age ≥ 55 years (hazard ratio [HR] 10.3, 95% confidence interval [CI] 4.0- 26.6), LN (HR 3.1, 95%CI 1.8-5.5) and T >4 cm (HR 2.3, 95%CI 1.3-4.0) as significantly associated with cause-specific survival (CSS) and the same three factors as significantly associated with M recurrence-free survival (M-RFS). The extent of thyroidectomy was not associated with CSS and M-RFS. Patients with *TERT* promoter mutations displayed significantly worse outcomes than those without those mutations (10-year CSS: 83.2% vs. 100%). The rate of LN was lower for the LT group (25.6%) than for the TT group (46.6%). After propensity score matching, no significant differences were seen between groups for CSS (10-year CSS: 90.9% vs. 88.1%) or M-RFS (10-year M-RFS: 78.1% vs. 71.7%). Compared to the LT group, the TT group showed a significantly higher risk (risk ratio [RR]: 1.3) of postoperative transient recurrent laryngeal nerve palsy. TT for high-risk PTC also showed a significantly higher risk (RR: 10.5) of postoperative permanent hypoparathyroidism than TT for low-risk PTC (T1N0M0). Using the dynamic risk stratification (DRS) system for the LT group at 2 years after initial surgery, structural recurrence occurred even in 21.4% of patients with excellent response.

Conclusion: For patients with high-risk PTC, although TT enables sophisticated management including DRS, thyroid-conserving surgery showed almost identical oncological outcomes with lower complication rates.

✱ 13:15 4 **CARDIAC CHANGES IN PHEOCHROMOCYTOMA/PARAGANGLIOMA PATIENTS AND THEIR REVERSAL AFTER CURATIVE SURGERY: RESULTS OF PHEOCARD PROSPECTIVE COHORT STUDY**

V. chanthar K.M.M.^{1,*}, S. ranjan rout², R. khanna², A. Kapoor², G. chand¹, A. mishra¹, A. agarwal¹, G. agarwal¹ ¹Endocrine and Breast Surgery, ²Cardiology, Sanjay Gandhi Postgraduate Institute of Medical sciences, Lucknow, India

Introduction: Pheochromocytoma and Paraganglioma (PPGL) are catecholamine producing tumors of chromaffin cell origin, known to cause varied cardiovascular manifestations from hypertension to myocardial infarction. This study sought to objectively evaluate the cardiac changes in PPGL patients and their reversal following curative surgery

Materials & Methods: The study was approved by IEC and registered in ClinicalTrials.gov (NCT05082311) and involved thirty five consecutive PPGL patients managed as per standard protocol involving alpha blockade followed by curative surgery. They underwent detailed cardiac evaluation using 2D-echocardiography and speckle tracking echocardiography at the time of diagnosis, 7-10 days after alpha blockade, and at 7 days, 3 months, 6 months after surgical removal. Age and gender matched essential hypertensives and healthy individuals (10 in each group) served as two control groups.

Results: Patients with PPGLs had significant higher mean blood pressure, left ventricle end diastolic dimension and volume (LVEDD, LVEDV), left ventricle end systolic volume (LVESV), septal wall thickness, LV hypertrophy, lower mean LV ejection fraction (LVEF), early diastolic mitral annular velocity (E/A), decreased amplitude of LV longitudinal strain, and increased circumferential strain ($p < 0.001$) when compared with the control groups at baseline. Presence of hypertrophy was independently associated with presence of hypertension. After alpha blockade there was marked reduction in the mean LVEDD, LVEDV, LVESV, and normalization of E/A ratio ($p < 0.001$) in the PPGL patients. Following curative surgery there were early improvement in all echocardiographic parameters and it continued to improve even at 6 months after surgery (Table). There was marked improvement in the global longitudinal strain as seen on serial speckle tracking echocardiography with recovery of most of the segments of LV (Fig) depicting the reversal of sub clinical endocardial dysfunction ($p < 0.001$)

Conclusion: PPGL patients have LV hypertrophy, systolic LV dysfunction, and subclinical diastolic dysfunction which are reversed after curative surgery

IAES PODIUM ABSTRACTS SESSION #2

* 15:30 5 UNILATERAL ADRENALECTOMY FOR PRIMARY ALDOSTERONISM DUE TO BILATERAL HYPERPLASIA CAN RESULT IN RESOLUTION OF HYPOKALEMIA AND AMELIORATION OF HYPERTENSION

Thomas Szabo Yamashita, O. Shariq, T. Foster, M. Lyden, B. Dy, W. Young, I. Bancos, T. McKenzie
General Surgery, Medical Endocrinology and Metabolism, Mayo Clinic Rochester, Rochester, USA

Introduction: Bilateral idiopathic hyperaldosteronism (IHA) is the causative etiology in 60% of patients with primary aldosteronism (PA). Medical management is considered standard of care for IHA. The role of unilateral adrenalectomy with the intent of debulking total aldosterone production as a palliative measure remains controversial.

Materials & Methods: Single-center retrospective review (2010-2020) of all adult patients who underwent unilateral adrenalectomy with a diagnosis of PA due to IHA defined as lateralization index on successful adrenal venous sampling (AVS) <4. Demographic, pre-operative, intra-operative and post-operative variables were assessed until last follow-up. Hypertensive regimens were converted to the WHO Defined Daily Dose (DDD).

Results: Twenty-four patients were identified, 14 male (58.3%), mean age 52 ±10 years. Twenty-two patients (92%) had pre-operative hypokalemia, 90% on potassium supplements. Median number of antihypertensives taken was 3 (Q1-2, Q3- 4) and DDD median 4mg/dL (Q1-3mg/dl, Q3-5.3mg/dl). 37% of patients on a mineralocorticoid receptor blocker (MRB) preoperatively. All patients underwent successful AVS, with median lateralization index of 3.52 (range 1.19-3.88). Median time from diagnosis until surgical treatment was 23.5months (Q-14.5, Q3-107). All operations were performed in minimally invasive fashion, with all patients being discharged on the first postoperative day. There were no conversions to open procedure, instances of hyperkalemia, ICU admissions, or post-operative complications. Median follow-up was 10.5months (range 1-145 months). Seventy-seven percent of patients demonstrated resolution of hypokalemia at last follow-up. Post-operatively median number of antihypertensives taken per patient was 1.5 (Q1-1, Q3-3) and DDD median was 2mg/dL (Q1-0.5mg/dl, Q3-2.75mg/dL) at last follow-up, vs pre-operative DDD of 4mg/dL (Q1-3mg/dl, Q3-5.3mg/dl), $p=0.003$. Only 3 patients required continuation of MRB post-operatively. Blood pressure control at last follow-up was improved in 75% of patients, with two patients being off any antihypertensive regimen.

Conclusion: Unilateral adrenalectomy in the setting of IHA can improve blood pressure control and stabilize potassium levels in selected patients. Further prospective studies in larger cohorts will be necessary to further define the role of unilateral adrenalectomy in the setting of PA due to IHA.

*15:45 6 HEMITHYROIDECTOMY FOR LOW-RISK 1-4 CM PAPILLARY THYROID CANCER IS NOT ASSOCIATED WITH INCREASED RECURRENCE RATES IN THE DUTCH POPULATION WITH A RESTRICTED DIAGNOSTIC WORK-UP

Alex Jia Feng Lin, P. M. Rodriguez Schaap, M. J. Metman, E. J. Nieveen van Dijkum, C. Dickhoff, T.

P. Links, S. Kruijff, A. F. Engelsman

Surgery, University Medical Center Groningen, Groningen, Surgery, Amsterdam University Medical Center, Amsterdam, Endocrinology, University Medical Center Groningen, Groningen, Netherlands

Introduction: The worldwide incidence of papillary thyroid carcinoma is rising without increasing mortality. Increased use of imaging modalities leads to increased papillary thyroid carcinoma (PTC) diagnoses without clinical significance. Therefore, the 2015 American Thyroid Association (ATA) guidelines recommend to de-escalated treatment such as hemithyroidectomy (HTx) instead of total thyroidectomy (TTx) for 1-4 cm PTC. Dutch guidelines endorse restricted work-up for thyroid incidentalomas recommending only fine needle aspiration in case of a 'palpable thyroid nodule'. A restrictive diagnostic work-up algorithm may result in the identification of less indolent PTCs and may lead to a patient population with relatively more aggressive PTCs. Therefore, this study aims to retrospectively analyze overall survival and recurrence of low-risk 1-4 cm PTC in the Netherlands.

Materials & Methods: From the national cancer registry, all patients diagnosed with low-risk 1-4 cm PTC between 2005 and 2015 were included for analysis. Low-risk PTC was defined according to the American Thyroid Association guideline. Age at diagnosis, sex, initial and additional surgical treatment, vital status, pathology and radioactive iodine (RAI) treatment details were collected. Disease free survival (DFS) and overall survival were compared between patients who underwent total thyroidectomy with or without RAI and hemithyroidectomy without RAI.

Results: In total 901 patients were included, of which 711 (78.9%) were females, with a median follow-up of 7.73 [IQR; 5.68-10.62] years. Total thyroidectomy (TTx) was performed in 893 (94.8%) patients and hemithyroidectomy (HTx) in 49 (5.2%) patients. Recurrence occurred in 23 (2.6%) patients. Moreover, the 10-year overall survival was 82.8% and 91.4% for HTx and TTx, respectively ($p=0.038$). Multivariable analysis showed no significant correlation between the extent of surgery (HTx versus TTx) and DFS ($HR=0$, $p=0.978$). Additionally, the extent of surgery did not impact overall survival on multivariable analysis ($HR=1.245$, 95% CI [0.563–2.760]; $p=0.590$).

Conclusion: Low-risk PTC patients with 1-4 cm tumor who underwent hemithyroidectomy showed similar recurrence rates as those who underwent total thyroidectomy with or without adjuvant radioactive iodine therapy. This similar recurrence rate suggests that hemithyroidectomy can be sufficient in treating low-risk 1-4 cm PTC, possibly reducing morbidity of low-risk 1-4 cm PTC patients in the Netherlands.

16:00 **7 IS THERE ANY RELIABLE PREDICTOR OF FUNCTIONAL RECOVERY FOLLOWING POST-THYROIDECTOMY UNILATERAL NERVE PALSY?**

M. R. Marchese, Luca Revelli, P. Gallucci, C. Montuori, S. Di Lorenzo, L. D'Alatri, C. De Crea, M. Raffaelli

Division of Otolaryngology, Division of Endocrine and Metabolic Surgery, Fondazione Policlinico Universitario Agostino Gemelli IRCCS, Roma, Italy

Introduction: It is usually difficult to predict outcome of post-thyroidectomy unilateral vocal fold palsy (UVFP). We aimed to prospectively identify reliable predictor of outcome of UVCP basing on Intra Operative Neuromonitoring (IONM) and Flexible Fiberoptic Laryngostroboscopy (FFL) findings.

Materials & Methods: Among 1172 thyroidectomies with routine use of IONM performed from April to December 2021, all the patients who showed UVFP at post-operative laryngoscopy were included. All of them underwent FFL 15 days postoperatively (PO) (T0) and were addressed to speech therapy. Follow up FFL was performed 45 days (T1) and 120 days (T2) PO. Arytenoid motility was checked at every time point. IONM and FFL findings were correlated to the functional outcome at every time point. Patients were grouped in two groups: those who recovered vocal fold motility (VFM) at T2 (recovery group - RG) and those who did not (no recovery group - NRG).

Results: Fifty-nine UVFP (5.0% of all the operated patients) were identified as complication of thyroid lobectomy in 7 cases (11.9%), total thyroidectomy (TT) in 31 (52.5%) and TT plus central neck dissection in 21 (35.6%). Eight patients (13.5%) were lost at T2 follow up and were excluded. Overall, 9 patients were included in NRG (0.8% of all the operated patients, 17.6% of UVCP). Final histology showed malignant disease in 26 patients (51%) and benign disease in 25 (49%). At IONM, 31 patients had loss of signal (LOS) and 20 significant reduction of signal (>50%). In the RG, 26 out of 42 patients had LOS, while in the NRG 5 out of 9. At T0 28 out of 51 included patients (54.9%) showed some arytenoid motility (AM) and 23 out of 51 (45.1%) arytenoid fixation (AF). At T1, 19 patients with AM (63,4%) and 8 with AF (27,6%) recovered VFM. 8 out of 29 patients with AF at T0 showed AM at T1. Significantly more patients in NRG had AF (8 out of 9) with respect to RG (15 out of 42) ($p<0.01$). No significant difference was found between RG and NRG concerning age, sex, final histology and IONM findings (type of LOS, percent drop of signal). AM at T0 was the only predictive factor for recovery of VFM ($p<0.01$).

Conclusion: Most of the patients with UVFP recover within 4 months. AM as evaluated by FFL is associated with early recovery of VFM. FFL should be included in the diagnostic protocols of patients with UVCP to reliably predict clinical outcome.

✱16:15 **8 NEAR-IRRED PARATHYROID AUTO-FLUORESCENCE (NIRAF) USE IN A REFERRAL CENTER FOR THYROID SURGERY. PROSPECTIVE RANDOMIZED STUDY OF ONE YEAR FOLLOW-UP**

Luis Carrillo, S. Bakkar, C. Zerrweck, J. L. Kraimps, G. Donatini
General and Endocrine Surgery, CHU POITIERS, Poitiers, France, Surgery, Hashemite University, Zarqa, Jordan, Metabolic and Endocrine Surgery, ABC Hospital, Mexico City, Mexico

Introduction: Transient post-operative hypoparathyroidism may affect up to 53% of patients undergoing total thyroidectomy, resulting in prolonged hospital stay or hospital readmission and strongly affects patient's quality of life when permanent (up to 12% of patients)(1-3). Parathyroids' lesion may result from devascularization or inadvertent resection, the latter reported in up to 20% of patients. Since its introduction in current surgical practice NIRAF demonstrated to reduce post-operative hypoparathyroidism rate(4).

Materials & Methods: All patients undergoing not less than total thyroidectomy by two high-volume endocrine surgeons (>200 thyroidectomy per year) between January 2020 and June 2021 were included in the study. They were randomized in two different cohorts the day of the surgery: NIRAF Group(NG) and Control Group(CG). In NG NIRAF started by the beginning of thyroid bed dissection, while in CG visual inspection was used. Indocyanine Green (ICG) was used at the end of surgery in NG to assess parathyroid vascularisation. A complete follow-up for post-operative parathyroid function of at least six months was available for all patients included. Patients who underwent less than total thyroidectomy or who had uncomplete follow-up were excluded.

Results: In the study period 637 patients underwent thyroid surgery. Two-hundred-forty patients were included. Eight patients in NG and 1 in CG were excluded due to uncomplete follow-up or technical intra-operative problem. Finally there were 112 patients in NG and 119 in CG. No differences were present in patients' demographics between groups. Number of detected parathyroid glands was 415/448 in NG and 385/478 in CG($p<0.00001$). Accidental parathyroidectomy was reported in 7/448 patients in NG and in 31/476 in CG($p=0.0001$). Mean calcium levels were comparable between groups, while mean values of PTH(ng/ml) at post-operative day-1 were higher in NG compared to CG (28,2 versus 25,4)($p=0.0008$). Post-operative transient hypoparathyroidism occurred in 15/112 patients (13,3%) in NG and in 40/119 patients (33%) in CG($p=0.0003$), remaining definitive in 1/112 patients (0.9%) in NG and in 8/119 patients (6.7%) in CG($p=0.02$). No accidental parathyroidectomy was reported in 31 patients in NG who had concomitant central neck dissection.

Conclusion: NIRAF use is effective to decrease parathyroid's morbidity by 2.5-fold for transient hypoparathyroidism and by 7-fold for permanent hypoparathyroidism.

16:35 9 THE RELATIONSHIP BETWEEN THYROID STIMULATING HORMONE LEVEL AND TUMOR ENLARGEMENT OF LOW-RISK PAPILLARY THYROID MICROCARCINOMA DURING ACTIVE SURVEILLANCE

Yasuhiro Ito, A. Miyauchi, M. Fujishima, T. Noda, T. Sano, T. Sasaki, T. Kishi, T. Nakamura
Department of Surgery, Department of Head and Neck Surgery, Department of Internal Medicine, Kuma Hospital, Kobe, Japan

Introduction: Active surveillance (AS) for low-risk papillary thyroid microcarcinoma (PTMC) was initiated at Kuma Hospital in 1993 and is gradually spreading worldwide. In this study, we focused on thyroid stimulating hormone (TSH) levels of patients who undergo AS.

Materials & Methods: Between 1993 and 2019, 3312 patients underwent AS at Kuma Hospital. Of these, 2705 patients who underwent AS after adopting an electronic medical record in 2005 were enrolled. All patients were diagnosed with PTMC by cytopathology. Patients with Graves' disease were excluded. Some patients were prescribed levothyroxine. The AS period ranged from 1.0 to 15.7 years (median 5.5 years). We judged tumor enlargement when the size increased by ≥ 3 mm.

Results: Ninety-two patients (3.4%) showed tumor enlargement during AS; 5-, 10-, and 15-year enlargement rates were 3.0, 5.5, and 6.2%, respectively. We investigated whether and how various factors such as gender, age, family history of papillary carcinoma, multiplicity, levothyroxine administration, tumor size, and detailed TSH score affected tumor enlargement. We performed multivariate analysis for factors with $p < 0.20$ on univariate analysis. Young age (< 40 years) ($p < 0.0001$), large size (≥ 9 mm) ($p = 0.0171$), and high detailed TSH score (≥ 3 , higher than median value of normal range) ($p = 0.0384$) were independent factors relating to tumor enlargement. In the subset of patients < 40 years, low detailed TSH score (< 3) was the independent factor against tumor enlargement ($p = 0.0345$). In the subset of patients ≥ 40 years, none of the factors were significantly related to tumor enlargement on multivariate analysis. Only 22 patients (0.8%) showed novel appearance of lymph node metastasis during AS; 5-, 10-, 15-year node metastasis appearance rates were very low, at 0.9, 1.1, and 1.1%, respectively. To date, none of the patients showed distant metastasis or died of thyroid carcinoma during AS. Two hundred and eleven patients (7.8%) underwent conversion surgery after AS > 1.0 years for various reasons. After surgery, although only one patient showed lymph node recurrence, no patients showed distant recurrence (postoperative follow-up period, 0.1-13.8 years; median 4.6 years).

Conclusion: AS for PTMC is a safe management and beneficial for patients, if appropriately implemented. PTMC in young patients more likely to grow. For them, mild TSH suppression to low normal range could prevent carcinoma progression, although prospective studies are needed to draw more reliable conclusions.

* 16:50 10 MAKING THE CUT- PARATHYROIDECTOMY BEFORE OR AFTER KIDNEY TRANSPLANTATION?

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Introduction: Hyperparathyroidism is common in patients with end stage kidney disease and may persist even after kidney transplantation(KT). Parathyroidectomy(PTx) is curative but whether PTx should be performed before or after KT remains controversial. There is concern that PTx can adversely affect the renal allograft function if performed post-KT and result in complications such as permanent hypocalcemia. Our study was conducted to evaluate possible differences in outcomes and postoperative complications of PTx before and after KT at our institution.

Materials & Methods: We performed a retrospective review of 98 KT recipients at our center between 1/2012-2/2019 who had received PTx either pre-KT or post-KT. The data of patient demographics, surgical outcome and postoperative complications of KT and PTx were collected. The Independent t-test, Mann-Whitney U test, Chi-square test and Linear regression were used to compare the two groups using SPSS.

Results: Ninety eight patients were included in this study, with 23(23.5%) patients undergoing PTx before KT and 75(76.5%) after KT. The length of follow-up after KT was 67.7 ± 25.5 months. In post KT patients, 30-day renal function was unchanged after PTx. Only 1 case of acute rejection occurred within 30 days of PTx. Calcium oxalate and phosphate crystals were less common on post-KT allograft biopsy in pre-KT PTx patients (10.0% vs. 34.8%, $p=0.038$). Patients in the pre-KT PTx group had higher median(IQR) parathyroid hormone(PTH) levels($1387.8(881.3-1582.7)$ pg/mL vs. $258.5(178.0-409.9)$ pg/mL, $p<0.001$) and lower mean adjusted calcium(9.4 ± 1.3 mg/dL vs. 10.6 ± 0.8 mg/dL, $p<0.001$) at time of PTx. Patients in the pre-KT group required more calcium supplementation after PTx than post-KT group($p<0.001$)(Table 1). A higher PTH level before PTx was associated with higher postoperative calcium supplement requirement. At one year post-PTx, high daily calcium intake was observed in 11(11.2%) patients requiring >1000 mg/day and 5(5.1%) patients requiring >2000 mg/day. The patient demographics were similar in the two groups and there were no differences in surgical cure or postoperative complications.

Conclusion: Parathyroidectomy before or after kidney transplantation does not adversely affect allograft function. The incidence of permanent hypocalcemia was low. Parathyroidectomy is safe and effective either before or after kidney transplantation.

✿ 08:30 **11 ARTIFICIAL INTELLIGENCE FOR PREOPERATIVE DIAGNOSIS OF MALIGNANT THYROID NODULES BASED ON SONOGRAPHIC FEATURES AND CYTOLOGY**

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Introduction: Despite widespread use of ultrasonography (USG) and fine needle aspiration cytology (FNAC) to assess thyroid nodules, the interpretation of results is nuanced and requires specialist endocrine surgery input. Using readily available pre-operative data, the aims of this study were to develop an artificial intelligence (AI) model to classify nodules into likely benign or malignant; and to determine the diagnostic performance of the model.

Materials & Methods: Patients undergoing surgery for thyroid nodules between 2010 – 2020 were recruited from the Monash University Endocrine Surgery Unit database. Age, sex, serum TSH, USG features, FNAC results and final surgical histopathology were used. Training group USG images were reviewed and annotated by a radiologist experienced in thyroid USG and supplemented with features extracted from existing reports. Testing group USG features were extracted solely from existing reports to reflect primary care practice. We developed an AI model based on classification algorithms (K Nearest Neighbour, Support Vector Machine, Decision Tree, Naïve Bayes) and evaluated its diagnostic performance of thyroid malignancy.

Results: In the training group (n=847) 75% were female and 27% of cases were malignant. The testing group (n=198) consisted of 77% females and 17% malignant cases. Mean age was 52 years. Area under the ROC curves for internal validation of the four classifier AI algorithms are demonstrated in Figure 1. In the testing group following external validation, Support Vector Machine classifier was found to perform best in predicting final histopathology with an accuracy of 91%, sensitivity 91%, specificity 86%, F-score 94% and AUROC 0.86.

Conclusion: There is potential for an AI model incorporating radiology, cytology and demographics in a computer-aided decision support tool, to be used by primary care physicians, to help select patients for specialist management. Work on incorporating USG images into the AI model is currently underway.

✳ 08:45 **12 SINGLE CENTER OUTCOMES FROM PARENCHYMAL-SPARING RESECTIONS WITH MICROWAVE ABLATIONS FOR NEUROENDOCRINE TUMOR LIVER METASTASES**

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Introduction: Surgical debulking of neuroendocrine tumors (NETs) is used as a therapeutic approach for metastatic NETs in selected centers. Reported outcomes after parenchymal-sparing liver resections (PSR) in NET patients with high numbers of liver metastases are sparse.

Materials & Methods: Patients with NET liver metastases that underwent surgical debulking were included from 2019 to 2021. All patients underwent preoperative and serial postoperative imaging every 3 months with MRI Abdomen plus hepatobiliary contrast. Trends in perioperative liver function and serum tumor markers were examined, as well as morbidity, mortality. Post-operative outcomes such as progression free survival (PFS) and adjuvant therapeutic interventions for disease progression were quantified.

Results: 940 liver lesions were debulked from 48 patients with a combination of PSR (47%) and ultrasound navigation- guided microwave ablations (MWA) (53%). The median number of lesions targeted was 17.5. Post-operative transaminitis and thrombocytopenia correlated with number of lesions debulked (median POD1 AST/ALT 450/600 IU/L for 1-15 vs. 1500/ 1100 IU/L for >15 lesions, $p=0.02/0.05$ and median POD2 platelets $150 \times 10^9/L$ for 1-15 vs. $105 \times 10^9/L$ for >15 lesions, $p = 0.05$). Synthetic liver function measured by postoperative INR (median peak 1.37) and total bilirubin (median peak 1.25 mg/dL) did not differ according to number of lesions debulked. 15% of patients sustained a Clavien- Dindo grade 3/4 complication and was not associated with the number of lesions targeted. 30-day mortality was 0%. Bile leak occurred in 4 patients with a leak-to-resected lesion ratio of 0.9%. All patients with preoperative symptoms had improvement after surgery despite only 80% having a biochemical response postoperatively. Hazard regression analysis showed that PNET (compared to SBNET, $p=0.003$) and grade 2 (compared to grade 1, $p=0.01$) tumors, but not number of resected liver lesions, correlated with a higher risk of disease progression. 16% of patients necessitated non-surgical liver directed therapy after surgery. While extrahepatic disease (20%) did not impact PFS ($p=0.09$), the presence of bone mets was subsequently noted to have more disease progression than intraperitoneal metastases.

Conclusion: PSR with MWA for NET liver metastases is safe and does not affect synthetic liver function. Transaminitis and thrombocytopenia are proportionate to the amount of liver lesions debulked. All symptomatic patients had improvement of symptoms after PSR with MWA.

09:00 **13 RADIOFREQUENCY ABLATION FOR HOT NODULES:
THE NEW HOT TOPIC**

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Introduction: Thyroid nodules are found in 3-7% of individuals on physical examination and in 20-76% on ultrasound. About 8-10% of benign nodules may exhibit autonomous behavior, causing symptoms of hyperthyroidism. Iodine therapy and thyroidectomy are effective treatment options for definitive treatment, however, both can induce hypothyroidism, which is also an unwanted condition. Radiofrequency Ablation (RFA) is a safe and effective alternative for the treatment of hyperfunctioning nodules. This work aims to demonstrate our results in treating toxic nodules by RFA in volumetric reduction and normalization of TSH levels.

Materials & Methods: We enrolled Twenty-six patients in this study, with a mean age of 45.4 ± 15.0 years, twenty-five patients were women, and one was a man. All underwent a single RFA session without any reported. Of the 26 nodules submitted to ablative therapy, 15 were smaller than 12.0 cc, and 9 of them larger than 12.0 cc. We followed this group of patients for up six months after the RFA treatment

Results: Of the 26 nodules submitted to ablative therapy, 15 were smaller than 12.0 cc, and 9 of them larger than 12.0 cc. After RFA, there was a reduction in the volume of all nodules, with the volumetric reduction being more significant in nodules larger than 12.0 cc. The normalization of TSH laboratory levels occurs within 60 days. All patients progressed to euthyroidism in up to 90 days of follow-up, with no recurrence of hyperthyroidism in all cases.

Conclusion: A single RFA session effectively treated autonomous nodules, restored euthyroidism in all patients, and significantly shrunk the volume of the nodules. Its use could be a safe option in treating these patients and should be considered in the range of therapeutic options.

✿ 09:15 **14 OVERALL SURVIVAL IN PATIENTS WITH STAGE IV PAN-NET ELIGIBLE FOR LIVER TRANSPLANTATION**

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Introduction: The use of liver transplantation (LT) in patients with stage IV neuroendocrine pancreatic tumors (pan-NET) is under debate. Previous studies report a five-year survival of 27-44% after LT in pan-NET and up to 92.7% in patients with mixed NETs. This study aimed to determine survival rates of patients with stage IV pan-NET meeting criteria for LT while only subjected to multimodal treatment.

Materials & Methods: Medical records of patients with pan-NET diagnosed from 2000-2021 at a tertiary referral center were evaluated for eligibility. Patients without liver metastases, patients who did not undergo primary tumor surgery, age >75 years and patients with grade 3 tumors were excluded. The patients were divided into groups; all included patients, patients that met the Milan criteria, the criteria for LT according to the guidelines of United Network for Organ Sharing (UNOS) or the criteria for LT according to the guidelines of European Neuroendocrine Tumor Society (ENETS). Kaplan- Meier survival analysis was used to calculate overall survival.

Results: Out of 519 patients with pan-NET, 41 patients were included. Mean follow-up time was 5.4 years. Overall survival was 9.3 years (95% CI 6.8 to 11.7) and five-year survival was 64.7% (95% CI 48.2-81.2). Patients meeting the Milan, ENETS and UNOS criteria for LT had a five-year survival of 64.9% (95% CI 32.2-97.6), 85.7% (95% CI 59.8-100.0) and 55.4% (95% CI 26.0-84.8), respectively.

Conclusion: In patients with stage IV pan-NET, grade 1 and 2, with no extra abdominal disease, 5-year survival was 64.7% (95% CI 48.2-81.2). As these survival rates exceed previously published series of LT for pan-NET, the evidence base for this treatment is virtually non-existent.

✿ 09:35 **15 VALIDATED MODEL PREDICTING EFFECT OF RADIOACTIVE IODINE ON OVERALL SURVIVAL IN PAPILLARY THYROID CANCER**

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Introduction: OS in PTC is influenced by clinical and treatment variables. There is no validated tool to determine impact of radioactive iodine (RAI) on OS. This study aims to create a prognostic tool using a large national database to help personalize treatment for PTC patients.

Materials & Methods: Surgical patients with PTC were identified in the National Cancer Database from 2004-2017. Those with metastases or incomplete data were excluded. Patients were randomly divided into training and validation sets (70% training set; 30% validation set). Multivariate analysis of the training set identified variables for the calculator. A model using Cox regression and bootstrapped coefficients was created to predict OS at 5 and 10 years. The model's performance was assessed with calibration plots. Predicted and observed OS were compared.

Results: 194,411 patients were analyzed. 136,088 patients were in the training set and 58,323 in the validation set. There were no significant differences between training and validation sets ($p > 0.05$). Average patient age was 48 years. Majority were female (77%), Caucasian (76%), had Charlson Comorbidity Index of 0 (85%) and total thyroidectomy (87%). 88% had negative margins, 47% had N0 disease and 54% received RAI. Multivariate analysis of the training set for OS showed age, sex, race, CCI, type of surgery, surgical margins, tumor size, nodal status, and use of RAI were significant ($p < 0.05$). A Cox regression prediction model was created with these variables (Table 1). The model's predicted and observed OS were compared in the training and validation sets (Figure 1). Area under the curve for the model was 0.76 for the training set and 0.75 for the validation set.

Conclusion: This model accurately predicts PTC mortality and the effect of RAI on OS. It can be used to individualize prognosis and therapy for PTC patients.

* 09:50 **16 IMPACT OF SURGEON VOLUME ON MORBIDITY FOLLOWING PARATHYROIDECTOMY IN THE UNITED KINGDOM: A STUDY OF 16,140 PARATHYROIDECTOMIES FROM THE UNITED KINGDOM REGISTRY OF ENDOCRINE AND THYROID SURGERY (UKRETS)**

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Introduction: Outcomes in endocrine surgery have been shown to improve with increasing surgeon volume. We aimed to study the effect of surgeon volume on morbidity following parathyroidectomy (Px) in the UK.

Materials & Methods: UKRETS (United Kingdom Registry of Endocrine and Thyroid Surgery) data from 06/01/04 to 31/12/2019 was analysed. Px for primary hyperparathyroidism with complete data were included. Exclusion criteria were patient age <18 or >80 years; surgeons contributing <10 cases; and length of stay >28 days. Primary outcome was persistent disease; secondary outcomes were post-operative hypocalcaemia, length of stay, and haemorrhage.

Results: Of the 35814 patients who underwent Px in the study period, 16140 were included for analysis after applying the exclusion criteria. These patients were operated by a total of 153 surgeons, who undertook a mean of 22.5 (range 2-115) Px/year. Overall incidence of persistent disease was 4.8% (776/16,140). Rates of persistent hypercalcaemia in patients undergoing surgery with negative and positive localisation are shown in *Table 1*. Surgeon volume significantly reduced persistent disease on multivariable analysis (OR 0.878, 95%CI 0.842-0.914, $p < 0.001$), along with age, gender, and positive localisation. BNE and reoperation significantly increased persistent disease. Hypocalcaemia occurred in 3.2% (509/16,140) and fell with increasing surgeon volume (OR 0.951, 95%CI 0.910-0.993, $p < 0.001$). Haemorrhage and length of stay were not significantly associated with surgeon volume.

Conclusion: The incidence of persistent disease and hypocalcaemia decreased with increasing surgeon volume. The relative reduction in persistent disease with surgeon volume was similar in image negative and positive groups, but the absolute reduction was higher in image negative Px. Restricting image negative Px to high volume surgeons should be considered.

✿ 13:30 **17 IMPACT OF FLUORO-CHOLINE PET/CT IN REDUCTION OF FAILED PARATHYROIDECTOMY**

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Introduction: Accurate localization of the pathological parathyroid gland is a prerequisite for minimally invasive surgical management of hyperparathyroidism (HPT). Poor imaging or discordance in odd situations like ectopic adenomas, parathyroid hyperplasia, syndromic HPT and secondary and tertiary HPT results in localization dilemma thus causing failed parathyroidectomy. We studied the impact of Fluoro-Choline (FCH) PET/CT imaging in reduction of possible failed parathyroidectomies.

Materials & Methods: We did a retrospective observational study of 117 patients (2018-2021) of HPT among which 96 patients underwent focused parathyroidectomy (FP). Neck exploration (NE) was performed in 21 patients for multiglandular disease, secondary HPT and syndromic patients. All patients had undergone ultrasound imaging and 99mTc-sestaMIBI scan with early SPECT/CT (MIBI). When this preliminary imaging was doubtful or negative or multiple lesions were expected, FCH PET/CT was performed. We compared the localization accuracy of MIBI scan and FCH PET/CT with surgical outcomes as reference standard.

Results: MIBI scan showed overall lesion detection rate (LDR) of 74.2 % (95% CI 73.3-75.07%) in localization of pathological parathyroid gland in 117 patients. FCH PET/CT was done in 26/96 patients who underwent FP and showed 94% (95% CI 94.2-95.2%) LDR in accurately localizing an adenoma while LDR of MIBI was 24% (95% CI 23.38-24.62%) in these 26 patients. In 10/21 patients who underwent NE, FCH had 100% LDR in localizing multiglandular disease whereas, it was only 50% for MIBI. In patients who underwent NE without FCH scan, MIBI showed 63% LDR. Out of 96 patients of FP, 87 patients showed features of parathyroid adenoma. Single hyperplastic gland was seen in 7 patients, lipoadenoma was seen in 1 patient and 1 patient had features suggestive of parathyroiditis on histopathology. Out of 21 patients of neck exploration, two patients had co-existing hyperplasia and adenoma while rest all showed features of parathyroid hyperplasia.

Conclusion: In patients who underwent successful FP, FCH was able to prevent neck exploration or possible failures in 23.8% cases. FCH PET was also able to provide accurate aid in localization in 46.7% of NE. Thus, FCH was found to be a reliable investigation in localization of MIBI-indeterminate/negative lesions and in situations where NE is warranted and may also be further studied for use as a first line investigation.

13:45 18 LABEL-FREE ENHANCEMENT OF ADRENAL GLAND VISUALIZATION USING NEAR INFRARED AUTOFLUORESCENCE FOR SURGICAL GUIDANCE

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Introduction: Benign or malignant tumors of the adrenal glands (AGs) are typically managed by adrenalectomy. During adrenalectomy, it is essential to distinguish the AG(s) from retroperitoneal fat and surrounding structures. Traditionally surgeons have relied on their own subjective visual skills to locate AGs; however, ultrasound and exogenous labels have been explored to aid intraoperative AG visualization, all of which have their own limitations. We investigated a novel label- free approach using near infrared autofluorescence (NIRAF) detection that could be potentially implemented for enhanced intraoperative AG visualization.

Materials & Methods: Patients undergoing adrenalectomy or nephrectomy were enrolled for this Institutional Review Board-approved study. NIRAF emitted above 800 nm was quantified in-vivo from AGs and surrounding tissues during open adrenalectomy or nephrectomy. Meanwhile for robotic adrenalectomy, NIRAF was measured from excised AGs and other tissue structures ex-vivo. For this study, NIRAF images of tissues were captured using a near infrared (NIR) camera setup, while NIRAF intensities were concurrently recorded using an NIR spectroscopy device. Normalized NIRAF intensities (expressed as mean \pm standard error) were analyzed and compared. A p-value \leq 0.05 was considered statistically significant upon using student's t-test.

Results: Fifty patients were enrolled including 23 adrenal cortical tumors, 8 adrenal medullary tumors, 4 adrenal cysts and others—2 adrenal hyperplasia, 1 hemangioma, 1 myelolipoma, 1 malignant lymphoma, 3 secondary metastatic tumors, 3 necrotic tumors and 4 healthy AGs. Normalized NIRAF intensity measured above 800 nm was significantly elevated for AGs (57.2 ± 5.3) versus retroperitoneal fat (1.7 ± 0.2 , $p < 0.001$) and other structures (0.8 ± 0.20 , $p < 0.001$). NIRAF images of AGs indicated elevated NIRAF intensity in adrenal cortex compared to the medulla and other periadrenal structure. NIRAF intensity in AGs was notably decreased in malignant lesions, when compared to benign tumors and healthy adrenals.

Conclusion: Our preliminary findings indicate that NIRAF detection could be a promising technology to enhance AG visualization intraoperatively during adrenalectomy and potentially aid in preserving healthy AG remnant and aid in cortical-sparing adrenalectomies.

* 14:05 **19 PARATHYROIDECTOMY FOR NORMOCALCEMIC PRIMARY HYPERPARATHYROIDISM IMPROVES BONE MINERAL DENSITY REGARDLESS OF POST-OPERATIVE PARATHYROID HORMONE LEVELS**

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Introduction: Biochemical cure in normocalcemic primary hyperparathyroidism (nPHPT) is defined as parathyroid hormone (PTH) level normalization 6 months after parathyroidectomy (PTX). However, recent studies show that a significant number of nPHPT patients have persistent PTH elevation, and thus are “not cured.” We sought to correlate the natural trend of PTH with skeletal changes after PTX in patients with nPHPT.

Materials & Methods: This is a retrospective study of adult patients who underwent PTX in a tertiary referral center for sporadic PHPT between 2010 and 2020. Pre- and post-operative (6-months, 18-months, and last follow-up) laboratory and bone mineral densities (BMD) were collected. The percentage change in BMD from baseline to 18-months after PTX was calculated in the lumbar spine (LS), total hip (TH) and femoral neck (FN) if both were done at our institution. Patients were grouped as hypercalcemic PHPT (hPHPT) or nPHPT defined by the American Association of Endocrine Surgeons. Biochemical cure for hPHPT and nPHPT was normalization of serum calcium and PTH levels 6 months after surgery respectively.

Results: Of 661 patients meeting inclusion criteria, 68 (10.3%) had nPHPT. They had lower preoperative PTH (92.3 mg/dL vs 112 mg/dL, $p < 0.001$) and β -CrossLaps levels (480 pg/mL vs 594 pg/mL, $p = 0.005$) than hPHPT patients. nPHPT patients had fewer successful minimally invasive PTX (56% vs 73%, $p = 0.004$), and underwent more upfront standard cervical explorations (22% vs 13%, $p = 0.042$). Multigland disease was more likely in nPHPT patients (31% vs 18%, $p = 0.014$). Fewer nPHPT patients achieved biochemical cure (76% vs 95%, $p < 0.001$). Of 28 nPHPT patients with complete BMD and 18-month biochemical values, 7 (25%) had persistent PTH elevation at all time points (median 31- months). These 28 nPHPT patients had BMD improvement in the LS (1.84%, $p = 0.002$) and TH (1.64%, $p = 0.014$). When stratified by post-operative PTH levels, nPHPT patients with persistent PTH elevation had more BMD improvement at the TH than those with normalized PTH (3.73% vs -0.83%, $p = 0.017$). The LS (3.46% vs 1.53%, $p = \text{NS}$) and FN (3.66% vs 1.59%, $p = \text{NS}$) showed no difference in improvement.

Conclusion: Parathyroidectomy improves BMD in nPHPT patients with bone disease. Although one in four nPHPT patients had elevated PTH levels post-operatively which persisted throughout a >2-year follow-up time, significant BMD improvement was still seen. These findings are crucial to discuss with patients considering surgery and setting realistic post-operative expectations.

08:30 **20 A TIME TREND ANALYSIS OF 5,000 ROBOTIC THYROIDECTOMIES VIA BILATERAL AXILLO-BREAST APPROACH**

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Introduction: Since the introduction of the bilateral axillo-breast approach robotic thyroidectomy (BABA RT) in 2008, it has become one of the most popular robotic thyroid surgical approaches and was performed over 5,000 successful cases at Seoul National University (SNU)-affiliated hospitals by 2021. Although, several studies have demonstrated the clinical outcomes of BABA RT cases, no studies have reported the time trend analysis of BABA RT cases based on large databases. This study aimed to investigate the time trends of surgical outcomes in patients who underwent BABA RT over the last 14 years.

Materials & Methods: From February, 2008 to September, 2021, we conducted a retrospective medical chart review of 5,011 consecutive patients who underwent BABA RT at three SNU-affiliated hospitals. To evaluate trends in surgical treatment strategies and outcomes after BABA RT, the patients were divided into three groups based on the main model of the da Vinci robotic surgical system used.

Results: Of the 5,011 patients, 4,706 were diagnosed with thyroid cancer, and the remaining 305 with benign thyroid disease. The most common histological subtype was papillary thyroid carcinoma (n = 4,584; 97.4%). With respect to the surgical extent for thyroid cancer, total thyroidectomy gradually decreased from 92.2 to 17.5%, and thyroid lobectomy increased from 1.0 to 75.6%. The mean tumor size significantly increased from 0.8 cm to 1.2 cm ($p < 0.05$). The mean number of metastatic lymph nodes (LNs) in central neck dissection (CND) and lateral neck dissection (LND) (from 0.9 to 1.6; CND, from 0.6 to 3.9; LND, $p < 0.05$) and harvested LNs in CND and LND significantly increased throughout the study period (from 4.7 to 6.2; CND, 5.3 to 17.9; LND, $p < 0.05$). Permanent hypoparathyroidism decreased from 3.4 to 2.9%. The rate of transient and permanent vocal cord palsy decreased from 15.2 to 2.7% and from 0.7 to 0.2%, respectively.

Conclusion: With advancements in robotic surgical systems and improvements in BABA RT technique, surgical indications have expanded to include more advanced thyroid diseases, and surgical outcomes have improved over the last 14 years.

08:45 21 THE PROGNOSTIC IMPACT OF EXTENT OF VASCULAR INVASION IN FOLLICULAR THYROID CARCINOMA

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Introduction: Encapsulated angioinvasive follicular thyroid carcinoma (EAFTC) is associated with an increased risk of distant metastasis and reduced survival compared to minimally invasive follicular thyroid carcinoma (MIFTC). There is controversy regarding the extent of surgery and adjuvant radioactive iodine therapy for angioinvasive follicular thyroid carcinoma when stratified by number of foci of angioinvasion.

Materials & Methods: All follicular thyroid carcinoma cases from 1990-2018 were identified from a thyroid cancer database. Primary outcomes were distant metastasis free survival (DMFS) and disease specific survival (DSS) with factors of interest being age, gender, tumour size, treatment, foci of angioinvasion and histological subtype. Data linkage with the NSW Registry of Births Deaths & Marriages was used to determine survival times. Outcomes were analysed using Kaplan Meier estimates and Cox proportional hazard regression to produce hazard ratios (HR).

Results: A total of 292 cases were identified; 139 MIFTC, 141 EAFTC and 12 widely invasive follicular thyroid carcinoma (WIFTC). The majority of EAFTC patients were treated by total thyroidectomy (>97%) and RAI therapy (>91%). Over a median follow up period of 6.25 years, DMFS was significantly reduced ($p < 0.001$) with 3.6% (MIFTC), 14.2% (EAFTC) and 50% of WIFTC developing metastasis. The risk of metastasis in EAFTC with ≥ 4 foci of angioinvasion was 31.7% (HR=5.89, $p=0.004$), 6.3% for EAFTC (HR=1.74 $p=0.47$) with < 4 foci of angioinvasion and 50% for WIFTC (HR=12.05 $p < 0.001$), compared to 3.6% for MIFTC. A significant proportion (50%) of EAFTC presented with metastasis. Age ≥ 50 years (HR=4.24, $p=0.005$) and tumour size by 1cm (HR=1.27 $p=0.014$) were significantly associated with increased risk of distant metastasis. DSS was reduced significantly ($p < 0.001$), with 2.9% (MIFTC), 7.8% EAFTC and 33.3% of WIFTC patients dying of disease. For EAFTC patients DSS was 96.8% for < 4 foci and 82.6% for ≥ 4 foci of angioinvasion ($p=0.003$).

Conclusion: Encapsulated angioinvasive follicular thyroid carcinomas are at increased risk of distant metastasis with survival related to the extent of angioinvasion. Tumours with < 4 foci of angioinvasion should be considered for a total thyroidectomy and adjuvant RAI therapy particularly in older patients.

09:00 **22 PATIENT ANXIETY DURING ACTIVE SURVEILLANCE FOR LOW-RISK PAPILLARY THYROID MICROCARCINOMA IS RELIEVED AFTER 5 YEARS: A PATIENT-REPORTED OUTCOME STUDY WITH LONG TERM FOLLOW-UP**

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Introduction: Active surveillance (AS) has been adopted as reasonable management to prevent overtreatment of low-risk papillary thyroid microcarcinoma (PTMC). Several patient-reported outcome (PRO) studies have suggested that patients under AS experience higher anxiety than those receiving immediate surgery. We have performed AS for patients with low-risk PTMC since 1993. This cross-sectional study compared PROs between patients who underwent AS and immediate surgery, and investigated factors affecting quality of life (QoL) in patients during AS.

Materials & Methods: Among 282 patients with low-risk PTMC, 249 were under AS (AS group) and 33 underwent immediate surgery (Surgery group). The Surgery group included both conventional surgery (n = 24) and video-assisted neck surgery (n = 9). Three questionnaires were used to evaluate QoL, including the State-Trait Anxiety Inventory (STAI), the SF-36 version 2 (SF-36v2) and a visual analog scale (VAS) assessing thyroid cancer-related symptoms, anxiety and satisfaction with management. Multiple linear regression analyses were used to determine relationships between state anxiety and other variables in the AS group.

Results: Mean age was 49.9 ± 10.7 years and 246 patients (87.2%) were women. Median duration of follow-up was 7.9 years (range, 0.5–27.0 years) in the AS group and 4.0 years (range, 0.8–25.3 years; $p < 0.001$) in the Surgery group. Compared with the Surgery group, the AS group showed significantly less STAI scores in both state and trait anxiety ($p = 0.04$, $p = 0.03$), and better Mental Component Summary (MCS) score in SF-36v2 ($p = 0.002$). In all scales of the SF-36v2 except Social Functioning (SF), the AS group showed higher scores than norm-based scores for the general Japanese population. With the VAS, the Surgery group reported worse symptoms related to neck surgery than the AS group. In multiple linear regression analysis of the AS group, trait anxiety ($\beta = 0.64$) and follow-up duration ($\beta = -0.12$) were the most significant predictors of state anxiety. Compared with the group with < 5 years since starting AS, the group with ≥ 5 years since starting AS showed significantly lower state anxiety score ($p = 0.002$).

Conclusion: Low-risk PTMC patients under AS showed less anxiety and better psychological health than the Surgery group. A certain period such as 5 years seems to alleviate the anxiety of patients under AS.

09:20 **23 FERROPTOSIS INDUCERS IN THYROID CANCER**

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Introduction: Papillary thyroid carcinoma (PTC) progression imparts reduced patient survival. Evasive tumor progression can be influenced by antioxidant Glutathione (GSH) metabolism. Glutathione peroxidase 4 (GPX4) regulates GSH oxidation to prevent lipid peroxidation of cell membranes during increased oxidative stress in cancers and regulates ferroptosis cell death pathway in tumor cells. We have shown that PTC tissues are GSH-enriched. This study aims to determine whether ferroptosis is a critical pathway to abrogate GSH-mediated cytoprotective and chemo-resistant behaviors in thyroid cancer cells and 3D spheroid model.

Materials & Methods: We examined differential effects of various classes of GPX4 inhibitors on thyroid cancer cells (K1, MDA-T32, MDA-T68) with diverse mutational signatures and 3D spheroid model. The effects of GPX4 inhibitors on ferroptosis activation, tumor cell survival, oxidative stress, and activation of signaling pathways were assessed by Western blot, GSH/GSSG levels, ROS induction, RT-qPCR, migration, immunofluorescence, and viability assays.

Results: GPX4 inhibition induced ferroptosis, ROS, arrested tumor cell migration, increased DNA damage, DNA damage repair response, and mTOR pathway suppression. Mechanism of GPX4 inhibitor-induced cell death was mTOR pathway suppression-dependent with subsequent activation of autophagy and enhanced DNA damage. Differential responses to DNA damage response were observed in 3D spheroids.

Conclusion: Effective GPX4 inhibition with various inhibitors induced a robust but differential activation of ferroptosis in thyroid tumor cells *in vitro* and in the 3D spheroid model. Our study is the first of its kind to determine the differential effects of GPX4 inhibitors on thyroid cancer cells with various mutational backgrounds. We have identified a novel mechanism of action of GPX4 inhibition in preclinical models of thyroid cancer that can be further exploited for therapeutic benefit in advanced therapy-resistant thyroid cancers.

09:35 24 ICG ANGIOGRAPHY-GUIDED THYROIDECTOMY IMPROVES IMMEDIATE AND LONG-TERM PARATHYROID GLAND FUNCTION

Pablo Moreno Llorente, A. García Barrasa, M. Pascua Solé, J. L. Muñoz de Nova
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Introduction: Hypoparathyroidism is the most frequent complication after total thyroidectomy. When it evolves into a permanent condition, it has been associated with a worsening in patients' quality of life, as well as a predisposition to develop multiple disorders and even to a shorter lifespan. Our objective is to assess the usefulness of an indocyanine green (ICG) angiography-guided thyroidectomy to reduce the rate of permanent hypoparathyroidism.

Materials & Methods: We performed a prospective study with two consecutive cohorts (control group: CG; angiography group: AG) of patients who underwent a total thyroidectomy. ICG angiography to assess the vascularization degree of the parathyroid glands at the end of the surgery was performed in all patients (CG and AG). Additionally, in the AG we also performed an ICG angiography immediately after the visualization of parathyroid glands to identify their feeding vessels. Both groups were compared to establish the differences in the rate of postoperative hypocalcemia (need of calcium treatment due to the presence of symptoms or corrected calcium levels at 24h after surgery <1.8 mmol/L) and permanent hypoparathyroidism (need of calcium and/or vitamin D supplementation 12 months after thyroid surgery to maintain calcium levels within the normal range and free of hypocalcemic symptoms). Statistical analysis was performed using the Chi-square test with Yates correction or Fisher's exact test, as appropriate. P-values <0.05 were considered statistically significant. We also calculated the Odds Ratios (OR) with 95% confidence intervals (95%CI).

Results: We included 120 consecutive patients (84 CG; 36 AG). Thyroid cancer was the most common preoperative diagnosis (63.1% CG – 69.4% AG; $p=0.646$) and central lymph node dissection was commonly performed in both groups (54.8% CG – 64.3% AG; $p=0.468$). The AG developed a lower rate of postoperative (26.2% - 5.6%; $p=0.011$) and permanent hypoparathyroidism (11.9% - 0%; $p=0.032$). The OR for permanent hypoparathyroidism was 0.673 (95%CI 0.591-0.766). We also observed a significant higher rate of well vascularized parathyroid glands at the end of the surgery (score 2) in the AG (39.2% - 52.9%; $p=0.018$).

Conclusion: ICG angiography-guided thyroidectomy is a useful tool to identify parathyroid vascularization, which allows us a better parathyroid preservation and consequently, significant decrease in permanent hypoparathyroidism rates.

The IAES Posters



**International Association
of Endocrine Surgeons**



* eligible for the

John Farndon

And

Michael Brauckhoff

Awards



Adrenal Posters

* ISW2022-1339

DEDICATED MULTIDISCIPLINARY SERVICE IMPROVES SURGICAL SELECTION AND POSTOPERATIVE OUTCOMES FOR PATIENTS WITH PRIMARY ALDOSTERONISM

J. C. Lee, J. Zhang , J. Yang , P. J. Fuller R. Libianto , J. Shen , S. Grodski
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* ISW2022-1613

ADRENALECTOMY FOR PHEOCHROMOCYTOMA WITHOUT PREOPERATIVE ALPHA-ADRENERGIC BLOCKADE DOES NOT RESULT IN INCREASED HEMODYNAMIC INSTABILITY

Holscher, T. J. van den Berg, K. M. A. Dreijerink, A. F. Engelsman, E. J. M. Nieveen van Dijkum
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*ISW2022-1700

CLINICAL CHARACTERISTICS AND OUTCOMES OF ADRENAL HEMORRHAGE

T. N. Wang, E. Bashian, J. E. Phay, B. S. Miller, C. E. Hackett, P. H. Dedhia
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Neuroendocrine Posters

* ISW2022-1254

SURGICAL MANAGEMENT OF METASTATIC INSULINOMA: IS THERE A ROLE FOR CYTOREDUCTION?

A. Sada, A. Vella, E. B. Habermann 3, C. A. Thiels, T. R. Foster, T. R. Halfdanarson, D. M. Nagorney, T. J. McKenzie

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ISW2022-1653

EXTERNAL VALIDATION OF A PROGNOSTIC MODEL FOR THE PREDICTION OF 3-YEAR MORTALITY AND TUMOR RECURRENCE IN PATIENTS UNDERGOING SURGERY FOR PANCREATIC NEUROENDOCRINE NEOPLASMS

J. E. Waha, M. Enzensberger, M. Thalhammer, P. Kornprat, H.-J. Mischinger, P. Schemmer, H. Schrem

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ISW2022-1746

TFF3, MINDIN AND DCR3 EXPRESSION IN SMALL INTESTINAL NEUROENDOCRINE PRIMARY TUMOURS HAS A NEGATIVE IMPACT ON SURVIVAL

C. Nylén, J. Möller, S. Backman, P. Stålberg, K. Edfeldt, C. Ihre-Lundgren, C. Juhlin, P. Hellman

Department of Molecular Medicine and Surgery, Karolinska Institute, Stockholm, Sweden, Karolinska Institutet, Acute and Trauma Surgery, Karolinska University Hospital, Stockholm, Department of Surgical Sciences, Uppsala University, Sweden, Uppsala University, Uppsala, Department of Oncology-Pathology, Karolinska Institute, Stockholm, Sweden, Karolinska Institutet, Stockholm, Sweden

Parathyroid Posters

ISW2022-1055

PERSISTENT HYPERPARATHYROIDISM AFTER PREEMPTIVE KIDNEY TRANSPLANTATION

M. Okada, T. Hiramitsu, T. Ichimori, S. Narumi, Y. Watarai, K. Futamura, N. Goto, T. Sato
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Daini Hospital, Nagoya, Japan

* ISW2022-1369

ASSOCIATION OF HYPERCALCEMIA AND BENIGN FIBRO-OSSEOUS JAW TUMORS: A 25-YEAR RETROSPECTIVE STUDY AT MAYO CLINIC

K. McMillan, D. McMillan, O. Shariq, C. Lohse, B. Dy, M. Lyden, K. Arce
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* ISW2022-1372

INCIDENCE OF HYPOPARATHYROIDISM POST TOTAL THYROIDECTOMY WITH SELECTIVE PARATHYROID AUTO-TRANSPLANTATION

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* ISW2022-1397

REDUCING DISPARITIES IN THE TREATMENT OF HYPERPARATHYROIDISM

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* ISW2022-1423

ROLE OF INFLAMMATION IN PRIMARY HYPERPARATHYROIDISM

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Gillis

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* ISW2022-1443

**PARATHYROIDECTOMY FOR SECONDARY AND TERTIARY
HYPERPARATHYROIDISM: DOES RACE IMPACT SURGICAL OUTCOMES?**

R. L. Green, A. M. Fagenson, S. S. Karhadkar, L. E. Kuo
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ISW2022-1474

**OPERATIVE SUCCESS IS ACHIEVED REGARDLESS OF IOPTH CRITERION USED
DURING FOCUSED PARATHYROIDECTOMY FOR SPORADIC PRIMARY
HYPERPARATHYROIDISM**

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Miami Miller School of Medicine, Miami, United States

* ISW2022-1514

**UTILITY OF THE SLOPE OF CHANGE IN IOPTH DURING PARATHYROIDECTOMY
IN PREDICTING SINGLE GLAND DISEASE FOR PRIMARY
HYPERPARATHYROIDISM**

D. Bermudez Garolera, M. Lui, C. Seib, M. Sum, J. Prescott, J. Allendorf, K. Patel, I. Suh
New York University Grossman School of Medicine, New York, Stanford University, Stanford,
United States

* ISW2022-1531

**SELECTIVE UTILIZATION OF INTRAOPERATIVE PARATHYROID HORMONE
MEASUREMENT DURING MINIMALLY INVASIVE PARATHYROIDECTOMY IN
PATIENTS WITH PREOPERATIVE CONCORDANT FINDINGS**

A. S. Shirali, M. S. Lui, B. L. Huang, U. Clemente-Gutierrez, S. B. Fisher, P. H. Graham, E. G.
Grubbs, N. D. Perrier
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ISW2022-1542

**INTRAOPERATIVE INTACT PTH MONITORING IS ESSENTIAL DURING
PARATHYROIDECTOMY FOR RENAL HYPERPARATHYROIDISM**

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* ISW2022-1567

FEASIBILITY OF AUTOFLUORESCENCE USING OVERLAY-IMAGING FOR THE DETECTION OF PARATHYROID GLANDS: STANDARDS AND CLINICAL APPLICABILITY.

M. Arikan, J. Hegazy, S. Mertlitsch, L. Hargitai, C. Scheuba, P. Riss
General Surgery, Medical University of Vienna, Vienna, Austria

ISW2022-1622

PRIMARY HYPERPARATHYROIDISM AND TREATMENT FOR PAIN BEFORE AND AFTER PARATHYROIDECTOMY - A POPULATION STUDY

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ISW2022-1658

IMPACT OF COVID-19 DELAYS ON PARATHYROIDECTOMIES IN PATIENTS WITH PRIMARY HYPERPARATHYROIDISM

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ISW2022-1859

THYROIDECTOMY DURING EXHAUSTIVE PARATHYROID EXPLORATION: IS IT FRUITFUL?

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Thyroid Posters

* ISW2022-1068

ACCURACY OF SURGEON-PERFORMED TRANSCUTANEOUS LARYNGEAL ULTRASONOGRAPHY IN DETECTING VOCAL CORDS MOVEMENT FOLLOWING THYROID AND PARATHYROID SURGERY

M. S. Bin Abdullah, S. N. Abdullah Suhaimi, R. Muhammad, M. Mat Baki, N. H. Md Latar
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ISW2022-1121

A PROSPECTIVE STUDY OF ELECTROMYOGRAPHIC AMPLITUDE CHANGES DURING INTRAOPERATIVE NEURAL MONITORING FOR OPEN THYROIDECTOMY

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* ISW2022-1156

OUTCOMES OF PAPILLARY THYROID MICROCARCINOMA PRESENTING WITH CLINICALLY DETECTED LATERAL LYMPHADENOPATHY

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ISW2022-1201

TUMOURAL IODINE CONCENTRATIONS PREDICTS AVIDITY IN SUBSEQUENT METASTASES IN PAPILLARY AND POORLY DIFFERENTIATED THYROID CANCER

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* ISW2022-1318

COMPARISON BETWEEN OPEN VERSUS ROBOTIC MODIFIED RADICAL NECK DISSECTION IN PATIENTS WITH WELL-DIFFERENTIATED THYROID CANCER

J. K. Lee, J.-H. Choi, W. Kim, H. W. Yu, S.-J. Kim, Y. J. Chai, J. Y. Choi, K. E. Lee
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ISW2022-1366

CHILDHOOD PAPILLARY THYROID CARCINOMA: LONG-TERM POSTOPERATIVE OUTCOME AND PREDICTION OF RECURRENT DISEASE IN 189 PATIENTS CONSECUTIVELY TREATED AT THE MAYO CLINIC DURING 1936 THROUGH 2020.

D. Hay, S. Kaggal, R. A. Lee, M. Rivera, S. Pittcock, G. B. Thompson
Endocrinology, Mayo Clinic College of Medicine, Rochester, Minnesota, Rochester, United States

ISW2022-1373

COMPLICATIONS AND PROGNOSIS OF CONVERSION SURGERY AFTER ACTIVE SURVEILLANCE AND IMMEDIATE SURGERY IN PATIENTS WITH LOW-RISK PAPILLARY THYROID CARCINOMA

M. Fujishima, A. Miyauchi, Y. Ito, T. Noda, T. Sano, T. Sasaki, T. Kishi, T. Nakamura
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ISW2022-1374

COMPARISON OF OUTCOMES BETWEEN PATIENTS WHO UNDERWENT ACTIVE SURVEILLANCE AND IMMEDIATE SURGERY FOR LOW-RISK PAPILLARY THYROID MICROCARCINOMA

T. Sasaki, A. Miyauchi, M. Fujishima, Y. Ito, T. Noda, T. Sano, T. Kishi, T. Nakamura
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ISW2022-1429

CLINICOPATHOLOGIC AND GENETIC CHARACTERISTICS OF PATIENTS OF DIFFERENT AGES WITH DIFFUSE SCLEROSING VARIANT PAPILLARY THYROID CARCINOMA

S. Y. Kim, H. J. Yoon, S.-M. Kim, H. Chang, Y. S. Lee, H.-S. Chang, C. S. Park
Ajou University, Suwon, Yonsei University, Seoul, CHA university, Goyang-Si, Korea, Republic Of

ISW2022-1442

**USING THE POWER OF 'OMICS' TO CHARACTERISE PAPILLARY THYROID
CANCER MESENCHYMAL STEM CELLS, DO THEY HAVE A ROLE TO PLAY IN
THYROID CANCER PROGRESSION?**

D. Jandu, C. Brooks, A. Theodorou, A. Meeson, S. Aspinall
Newcastle University, Newcastle upon Tyne, General Surgery, NHS Grampian, Aberdeen,
United Kingdom

ISW2022-1446

LONG TERM OUTCOME AFTER TOXIC NODULAR GOITRE

G. Sjölin, T. Watt, K. Byström, J. Calissendorff, P. Karkov Cramon, H. Filipsson Nyström, B.
Hallengren, G. Wallin and Mats Holmberg, Selwan Khamisi, Mikael Lantz, Tereza Planck, Ove
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* ISW2022-1467

**INTRAOPERATIVE MET-RECEPTOR TARGETED FLUORESCENT IMAGING AND
SPECTROSCOPY FOR LYMPH NODE DETECTION IN PAPILLARY THYROID
CANCER: NOVEL DIAGNOSTIC TOOLS FOR MORE SELECTIVE CENTRAL LYMPH
NODE COMPARTMENT DISSECTION.**

P. K. Jonker, M. J. Metman, L. H. Sondorp, M. S. Sywak, A. J. Gill, T. M. van Ginhoven, R. S.
Fehrmann, S. Kruijff and On behalf of the Thyroid TARGET study collaborative Pascal K.C.
Jonker, MD; Madelon J.H. Metman, MD; Luc H.J. Sondorp, MSc; Mark S. Sywak, FRACS;
Anthony J. Gill, MD; Liesbeth Jansen, PhD; Thera P. Links, PhD; Paul J. van Diest, PhD, Tessa
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Shore Hospital, St Leonards, Australia, Surgery, Department of Biomedical Sciences of Cell &
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Groningen, Groningen, Netherlands, NSW Health Pathology, Department of Anatomical
Pathology, Royal North Shore Hospital, St Leonards, Australia, Department of Surgery, Erasmus
MC Cancer Institute, Rotterdam, Department of Medical Oncology, University Medical Center
Groningen, University of Groningen, Groningen, Netherlands

ISW2022-1482

CLINICAL VALIDATION OF NERVETREND VS. CONVENTIONAL I-IONM MODE OF NIM VITAL IN PREVENTION OF RECURRENT LARYNGEAL NERVE EVENTS DURING BILATERAL THYROID SURGERY: AN INTERIM SAFETY ANALYSIS OF AN ONGOING PROSPECTIVE RANDOMIZED CONTROLLED TRIAL.

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ISW2022-1539

THE ASSOCIATION OF SURGEONS' TREATMENT RECOMMENDATIONS FOR LOW-RISK THYROID CANCER AND MEDICAL UTILIZATION PREFERENCES

Chiu, M. Saucke, K. Bushaw, K. Long, S. Pitt

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ISW2022-1546

IS TOTAL TUMOR DIAMETER A MARKER FOR RECURRENCE IN MULTIFOCAL PAPILLARY THYROID CARCINOMA?

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* ISW2022-1550

INTRA-THORACIC THYROID RESTS: AN UPDATED CLASSIFICATION AND CASE SERIES

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ISW2022-1565

ASYMPTOMATIC PAPILLARY THYROID CARCINOMA: THE IMPORTANCE OF PHYSICAL EXAMINATION IN POTENTIALLY 'OVERDIAGNOSED' PATIENT POPULATION

T. Okamoto, M. Fujimoto, Y. Yoshida, K. Horiuchi, Y. Omi, J. Yanagida, T. Nakai, Y. Yamanashi
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ISW2022-1582

NOVEL TECHNIQUE OF 3-DIMENSIONAL ULTRASOUND WITH GYROSCOPIC GUIDANCE FOR THYROID IMAGING

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* ISW2022-1609

DIAGNOSTIC VALUE OF FINE-NEEDLE ASPIRATION CYTOLOGY IN THYROID CANCER: A SWEDISH REGISTRY STUDY OF 2349 THYROID CANCER CASES WITH HISTOLOGICAL CORRELATION.

P. Lind, E. Nordenström, L. Johansson, G. Walli, K. Daskalakis

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ISW2022-1610

THE ROLE OF TARGETED EXOME SEQUENCING IN THYROID CANCER

P. Karunakaran, V. Krishnasamy, D. Jayakumar, S. Jayaraman

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ISW2022-1716

COMPLICATIONS AFTER THYROID SURGERY FOR HASHIMOTO'S GOITER COMPARED TO OTHER BENIGN PATHOLOGIES

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* ISW2022-1756

CALCIFICATIONS FORMATION ON ULTRASONOGRAPHY AFTER FINE NEEDLE ASPIRATION IN BENIGN THYROID NODULES

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ISW2022-1888

GENDER AND AGE COULD SIGNIFICANTLY AFFECT ANTI-THYROID ANTIBODY CUT-OFF LEVELS AND THEIR DIAGNOSTIC ACCURACY FOR RECURRENCE IN PATIENTS WITH PAPILLARY THYROID CARCINOMA.

R. H. Pérez-Soto, M. López, J. D. Hernández-Acevedo, M. Sierra-Salazar, M. F. Herrera, D. Velázquez-Fernández
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ISW2022-1901

TOMOGRAPHIC ULTRASOUND IN THE EVALUATION OF THYROID NODULES

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Associate Member

Senior Member

Honorary Member

Membership by Country

ARGENTINA (1)

Gramática, Luis

AUSTRALIA (77)

Abraham, Earl
Armstrong, Jonathan
Bennett, Ian Craig
Bochner, Melissa A.
Cheng, Michael
Chionh, Joanne
Craig, Steven
Edirimanne, Senarath B.
Farrell, Stephen
Ghusn, Danielle
Gluch, Laurence
Grodski, Simon
Gupta, Anurag
Hartley, Lionel
Jayaweera, Suren
Jones, Corinne
Lai, Christine Su-Li
Law, Michael
Leong, David
Lim, Ernest
Littlejohn, David
Miller, Julie
Moore, Edwina
Nguyen, Hieu Huu
O'Neill, Christine
Parkyn, Robert F.
Reeve, Thomas
Ryan, Simon
Serpell, Jonathan W.
Skandarajah, Anita
Sywak, Mark Simon
Tam, Diana
Thompson, Andrew
Tien, Alan
Turkiewicz, Domenika Barbara
Vujovic, Petar
Wetzig, Neil Robert
Wong, Clement
Yeung, Meei

AUSTRIA (2)

Bodner, Ernst
Niederle, Bruno

BELGIUM (5)

Hamoir, Etienne E. F.
Kinnaert, Paul C.A.
Squifflet, Jean-Paul

AUSTRALIA

Bendinelli, Cino
Bingham, Janne
Campbell, Peter R.
Chin-Lenn, Laura
Clement, Zackariah
Delbridge, Leigh W.
Edis, Anthony John
Fleming, William R.
Glover, Anthony
Gough, Jenny
Gundara, Justin
Hamza Aziz, Saud
Isaacs, Kim
Johnson, William
Kollias, James
Lam, Tracey
Lee, James C.
Lim, Caitlin
Lisewski, Dean
Meade, Sally
Moar, Xavier
Nano, Maria Teresa
Niles, Navin
Oliver, David J.
Pyke, Christopher M.
Rice, Samuel Joel
Schulte, Klaus-Martin
Sidhu, Stanley B.
Stringer, Kate Melissa
Tan, Jason (Sze Chih)
Taylor, James
Thompson, Ivan John
Tsan, Cyril
Ung, Owen Allan
Walters, David
Whitfield, Robert
Wong, Sze Ling
Yong, En Loon Charles

BELGIUM

Van Slycke, Sam
Vander Poorten, Vincent

CANADA (10)

Gagner, Michel
Harvey, Adrian
Malaise, Jacques F.I.R.
McMullen, Todd
Mitmaker, Elliot
Pasieka, Janice L.
Pasternak, Jesse
Rosen, Irving Bernard
Stuart, Heather
Yeo, Caitlin

CHINA (11)

Chen, Guang
Cheng, Ruochuan
Dai, Wenjie
Fan, Youben
Fu, Yaowen
Liu, Jia
Meng, Xianying
Qiang, Zhang
Wang, Chunxi
Wang, Guangyi
Zhu, Jing-Qiang

DENMARK (1)

Blichert-Toft, Mogens

FINLAND (1)

Heiskanen, Ilkka

FRANCE (7)

Carnaille, Bruno
Denizot, Anne
Donatini, Gianluca
Hartl, Dana M.
Henry, Jean-Francois
Kraimps, Jean Louis
Marescaux, Jacques

GREECE (13)

Athanasidou, Maria
Christoforides, Christos
Kafetzis, Ilias-Dimitrios
Kouskos, Efstratios P.
Papavramidis, Theodosios
Vamvakidis, Kyriakos
Zorbas, Ilias

BRAZIL (1)

Volpi, Eriuelto

CHILE (2)

Cabané, Patricio
Rappoport, Daniel

COLOMBIA (3)

Dueñas Muñoz, Juan Pablo
Patiño, José Felix
Sanabria, Alvaro

CYPRUS (1)

Loizou, Marios

GERMANY (12)

Alesina, Pier F.
Dralle, Henning
Engel, Ursula
Goretzki, Peter E.
Musholt, Petra
Musholt, Thomas Johannes
Nies, Christoph R.V.
Röher, Hans-Dietrich
Simon, Dietmar
Steinmüller, Thomas M.
Trupka, Arnold W.
Walz, Martin K.

GREECE

Daskalakis, Kosmas
Linos, Dimitrios A.
Kiriakopoulos, Andreas
Koutelidakis, Ioannis
Roukounakis, Nikolaos
Vasileiadis, Ioannis

GUATEMALA (1)

Penalanzo, Marco Antonio

HONG KONG (6)

Boey, John Hoong
Cheung, Polly Suk-Yee
Kwan, Tim-Lok
Lang, Brian
Liu, Shirley
Lo, Chung Yau "CY"

HUNGARY (1)

Horányi, János

IRELAND (1)

Butt, Javaid

ISRAEL (2)

Mazeh, Haggi
Schachter, Pinhas P

ITALY (3)

Alesina, Pier
Iacobone, Maurizio
Pasquali, Claudio

JAPAN (39)

Aso, Yoshio
Fukunari, Nobuhiro
Hara, Hisato
Hibi, Yatsuka
Imamura, Masayuki
Ito, Yasuhiro
Iwasaki, Hiroyuki
Kazusaka, Hiroko
Kurihara, Hideo
Matoba, Naoya
Miyauchi, Akira
Obara, Takao
Okamoto, Takahiro
Nishida, Toshirou
Shimizui, Kazuo
Sugitani, Iwao
Takami, Hiroshi
Tomoda, Chisato
Urano, Takashi
Yokoe, Takao

INDIA (20)

Aphale, Rijuta
Abraham, Deepak T.
Agarwal, Amit
Agarwal, Gaurav
Baxi, Mukta
DasGupta, Anjonn
Dorairajan, Natarajan
Kapur, Man Mohan
Mayilvaganan, Sabaretnam
Mishra, Anjali
Mishra, Saroj Kanta
Nair, Aravindan
Paul, M.J.
Pradhan, Roma
Rajan, Sendhil
Ramakant, Pooja
Rao, P.S. Venkatesh
Singh, Kul
Verma, Satyajeet
Yadav, Sanjay Kumar

JAPAN

Enomoto, Keisuke
Fukuuchi, Atsushi
Hayashi, Toshitetsu
Imai, Tsuneo
Ito, Koichi
Kasuga, Yoshio
Kim, Seung Jin
Kikuchi, Shoichi
Maeda, Shigeto
Miura, Daishu
Mori, Yoko
Okada, Manabu
Onoda, Naoyoshi
Sasaki, Jun
Sugino, Kiminori
Suzuki, Shinichi
Tominaga, Yoshihiro
Uchino, Shinya
Yamashita, Hiroyuki

KENYA (1)

Adwok, John Adieng

KOREA (11)

Chang, Hojin
Kim, Bup-Woo
Kim, Seokmo
Lee, Kyu Eun
Soh, Euy Young
Yang, Jung-Hyun

KOREA

Chung, Woong Youn
Kim, Hoon Yub
Kim, Soo Young
Lee, Yong Sang
Sung, Tae-Yon

MALAYSIA (5)

Abdullah, Hisham
Emran, Nor Aina
Latar, Nani
Sairi Ab Hadi, Imi
Yong, En Loon Charles

LITHUANIA (1)

Beisa, Virgilijus

MEXICO (3)

Herrera, Miguel F.
Perez-Soto, Rafael
Velázquez-Fernández, David

NETHERLANDS (19)

Aggenbach, Laura
Borel-Rinkes, I. H.M. (Inne)
Bruining, Hajo
Hamming, Jaap Frans
Koetje, Jan
Lin, Jin Feng Alex
Noltes, Milou
Sondorp, Luc
Van de Velde, Cor. J.H.
Vriens, Menno R

NETHERLANDS

Bosscher, M. Frederiek
Bruinsma, Wendy
Engelsman, Anton
Jonker, Pascal
Kruijff, Schelto
Metman, Madelon
Sier, Maartje Femke
van der Plas, Willemijn
van Dijk, Deborah

NEW ZEALAND (7)

Biggar, Magdalena
Dijkstra, Birgit
El-Haddawi, Falah
Harper, Simon
Mercer, Philippa
Patel, Rajeshbhai
Popadich, Aleksandra

NORWAY (2)

Vegard Brun
Søreide, Jon Arne

POLAND (3)

Barczyński, Marcin
Przybyszowski, Andrzej
Tolloczko, Tadeusz

PHILIPPINES (1)

Chua, Henry

PORTUGAL (3)

Craveiro Rocha, José Emidio
Rocha, Vitor M.G.
Taveira Gomes, Antonio

SAUDI ARABIA (1)

Al-Sobhi, Saif Al-Deen S.

SINGAPORE (3)

Cheah, W. Keat
Hu, Jesse
Parameswaran, Rajeev

SOUTH AFRICA (2)

Conradie, Wilhelmina
Dent, David Marshall

SWEDEN (22)

Akerström, Göran
Bergenfelz, Anders O.
Farnebo, Lars-Ove
Hamberger, Bertil
Hennings, Joakim
Jansson, Svante
Muth, Andreas
Norlén, Olov
Skogseid, Britt Monica
Thorsteinsson, David
Wängberg, Bo I.

SWITZERLAND (8)

Gemsenjäger, Ernst
Kuczma, Paulina
Kull, Christof
Rüedi, Thomas P.
Sadowski Veuthey, Samira Mercedes
Sadowski-Meyer, Charlotte
Triponez, Frederic
Vidal Fortuny, Jordi

TANZANIA (2)

Buname, Gustave
Mbunda, Fidelis

THAILAND (2)

Anuwong, Angkoon
Chantawibul, Suchart

UKRAINE (1)

Hulchiy, Mykola

SERBIA (1)

Paunovic, Ivan

SPAIN (2)

Duran, Manuel
Moreno Llorente, Pablo

SWEDEN

Bäckdahl, Per Martin
Daskalakis, Kosmas
Gimm, Oliver
Hellman, Per
Ihre-Lundgren, Catharina
Lennquist, Sten E.V.
Nilsson, Inga-Lena
Sandelin, Kerstin
Stalberg, Peter
Wallin, Karl Göran
Zedenius, Jan Victor

TAIWAN (6)

Chen, Hwa-Tsung
Cheng, Shih-Ping
Huang, Shih-Horng
Huang, Shih-Ming
Lee, ChenHsen
Shih, Ming-Lang

TURKEY (7)

Cantürk, Nuh
Duren, Mete
Düren, Erol
Isgör, Adnan
Kocdor, Mehmet Ali
Ozcinar, Beyza
Tezelman, Tefvik S.

UNITED ARAB EMIRATES (1)

Alain Sabri

UNITED KINGDOM (13)

Aspinall, Sebastian R.
Chadwick, David Ralph
Di Marco, Aimee
Holl-Allen, Robert T.J.
Kirkby-Bott, James
Palazzo, Fausto
Wheeler, Malcolm H.

USA (112)

Albertson, David A.
Angelos, Peter
Broome, James Th.
Callender, Glenda
Carling, Tobias J.E.
Carty, Sally E.
Clark, Orlo H.
Demeure, Michael J.
Dedhia, Priya
Esselstyn Jr., Caldwell B.
Fahey III, Thomas
George, Jonathan
Goldfarb, Melanie
Grant, Clive S.
Grogan, Raymon
Harari, Avital
Hay, Ian
Inabnet III, William B.
Jackson, Gilchrist
Kim, Lawrence Thomas
Kuo, Lindsay
Lairmore, Terry
Lee, Jeffrey E.
Lew, John I.
Lindeman, Brenessa
Long, Kristin
Lyden, Melanie L.
McHenry, Christopher R.
McKenzie, Travis J.
McManus, Catherine (Katie)
Miller, Barbra
Miskulin, Judiann
Monchik, Jack M.
Numann, Patricia
Parangi, Sareh
Patel, Kepal
Phan, Giao
Randolph, Gregory
Rodgers, Steven
Saunders, Brian David
Sebelik, Merry
Shifrin, Alexander

UNITED KINGDOM

Balasubramanian, Sabapathy P.
Christakis, Ioannis
Gunn, Andrew
Hubbard, Johnathan G.
Matheson, Norman A.
Scott-Coombes, David M.

USA

Aliapoulos, Menelaos A.
Bouvet, Michael
Budd, Daniel C.
Caragacianu, Diana L.
Carneiro-Pla, Denise
Chen, Herbert
Cohen, Mark
Doherty, Gerard M.
Dream, Sophie
Duh, Quan-Yang
Evans, Douglas B.
Gauger, Paul Glenn
Goldstein, Richard E.
Graves, Claire
Hamburger, Stuart W.
Harness, Jay K.
Hughes, David T.
Irvin III, George L.
Kaplan, Edwin L.
Kuo, Jennifer H.
Kiernan, Colleen
Laird, Amanda
Lee, James A.
Libutti, Steven
Lobo, Errol
Cunningham, Carrie
Mathur, Aarti
McIntyre, Jr., Robert C.
McLeod, Michael K.
Mendez, William
Mitchell, Bradford
Moore, Edwina
Neumayer, Leigh
Pandian, T.K.
Park, Paul
Perrier, Nancy
Prinz, Richard A.
Reiling, Richard B.
Roman, Sanziana
Saxe, Andrew W.
Sequeira, Melwyn
Silen, William

Siperstein, Allan E.
Smith, Philip
Solorzano, Carmen C.
Sosa, Julie Ann
Starling, James
Sturgeon, Cord
Szabo Yamashita, Thomas
Terris, David James
Udelsman, Robert
van Heerden, Jon A.
Wang, Tracy
Wells Jr., Samuel A.
Williams, Jelani
Wong, Rongzhi (Ron)
Yip, Linwah
Zeiger, Martha A.

Sippel, Rebecca
Snyder, Samuel Kevin
Sorensen, Meredith
Spanknebel, Kathryn Ann
Starnes, Hal Fletcher
Sugg, Sonia
Tacl, Elizabeth 'Beth'
Thompson, Geoffrey Bruce
Untch, Brian
Wang, Robert C.
Weigel, Ronald J.
Wenger, Ronald
Wilson, Stuart Dickinson
Yeh, Michael
Yutan, Elaine

YEMEN (1)

Obadiel, Yasser

Full Active Member

Associate Member

Senior Member

Honorary Member