I International Workshop on chest Wall Deformities

19th - 20th October 2017. Barcelona. Spain

Department of Pediatric Surgery.
Hospital Universitari Vall d´Hebron. Barcelona

LIVE SURGERIES performed by our International guests
General Information

Venue

Salón de actos (“Meeting room”) Pabellón docente. Hospital Universitari All d’Hebron. Passeig de la vall d’hebron 119-129. Tramway stations: “Vall d’Hebron” (L5/L3) or “Montbau” (L3)

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Welcome

Dear colleges,

It’s our great pleasure to invite you to participate in the I International Workshop on Chest Wall Deformities in Barcelona (19-20th October 2017). The workshop is organized by the Department of Pediatric Surgery of the University Hospital Vall d’Hebron in Barcelona (Spain) counting with the collaboration of Dr. Laureano Molins, Head of the Thoracic Surgery Department of Hospital Clinic from Barcelona.

Minimal invasive technique for the treatment of Pectus excavatum (PE) was described by Dr. Donald Nuss in 1997. This technique introduced a paradigm shift by demonstrating that the thoracic wall is an elastic and malleable structure in children and teenager. Inspired by the same concept, other minimal invasive procedures for the treatment of Pectus carinatum (PC) have been described.

Several authors have also suggested a variety of non-operative approaches based on this same concept. Since the anterior chest wall is still compliant during puberty it permits remodeling by applying external compression for PC or external suction for PE.

On this occasion, we have the pleasure to welcome International experts as our guests of honor. They have revolutionized the treatment of chest wall deformities by minimal invasive techniques and have the largest experience around the world. An intensive two-day course with active participation from Donald NUSS from USA, mentor of NUSS Procedure, Hyung Joo PARK from Seoul Korea, Marcelo MARTINEZ FERRO from Argentina, Robert KELLY from USA, Mustafa YUKSEL from Turkey, Hans PILEGAARD from Denmark, José RIBAS Milanez de Campos from Brazil, Dawn JAROSZEWSKI from USA, Patricio VARELA from Chile, Frank Martin HAECKER from Switzerland, Carlos BARDAJI from Spain, Jean Marie WIHLM and Jean-Pierre CHAVOIN from France, Antonio MESSINEO and Michele TORRE from Italy. Our guests will perform “Live Surgeries”. The first day will be dedicated to the treatment of PE and the second day will be dedicated to the treatment of PC and atypical forms including both days” live surgeries”.

We look forward to your participation and to your contribution to this meeting.

Welcome to Barcelona,

Sincerely

The organizing Committee
# Program chairs

**Direction:**
Manuel López Paredes & Ana Lain Fernández  
Department of Pediatric Surgery  
Hospital Universitari Vall d’Hebron. Barcelona, Spain

**Co-direction:**
Laureano Molins  
Head of Thoracic Surgery Department  
Hospital Clinic de Barcelona. Spain

**Local Organization:**
Residents: Paula Jimenez, Mireia Fernández, Montserrat Aguilera, Carlos Leganés, Javier Güizzo, Marta Pilar Martin, Patricia Barila, Marta Martos.

**International Organization:**
Jaqueline Narvaez (Los Angeles, USA)

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## International Guest Faculty

**Donald Nuss, M.B.,Ch.B., FRCS(C), FACS, FAAP**, received his medical degree from the University of Cape Town, South Africa in 1963. Dr. Nuss completed his General Surgery Residency at the Mayo Graduate School of Medicine and Mayo Clinic in 1971 and his Fellowship in Pediatric Surgery at Red Cross War Memorial Children’s Hospital in Cape Town in 1973. Dr. Nuss served as the Director of CHKD’s Division of Pediatric Surgery and Professor of Surgery and Pediatrics at Eastern Virginia Medical School in Norfolk, Virginia and currently serves as a member of the Board of Directors of Children’s Hospital of The King’s Daughters Health System, Inc. Dr. Nuss served on the Medical Executive Committee of Children’s Hospital of The King’s Daughters for 25 years and as Surgeon-in-Chief and Vice President for Surgical Affairs for 20 years. Dr. Nuss is the developer of the Minimally Invasive Procedure for Pectus Excavatum and conducts an intensive international workshop and training course each year at the Children’s Hospital of The King’s Daughter’s in Norfolk, Virginia. Dr. Nuss is emeritus Professor of Surgery at EVMS and prior to his retirement in 2010 was Surgeon-in-Chief and Vice President for Surgical Affairs at CHKD for 19 years.

**Hyung Joo Park, MD, PhD, FCCP**, Professor. Department of Thoracic and Cardiovascular Surgery Seoul St. Mary’s Hospital. College of Medicine, The Catholic University of Korea. Seoul, Korea.  
President (2016~) of Chest Wall International Group (CWIG).  

**José Ribas Milanez de Campos**: Professor of Thoracic Surgery, Department of Thoracic Surgery, Hospital das Clinicas, In Cor, University of Sao Paulo, Brazil and Thoracic Department of Hospital Albert Einstein in Sao Paulo, Brazil.
Marcelo Martinez-Ferro, MD, Professor, graduated from the Buenos Aires University School of Medicine in 1983, completing his residency in pediatric surgery at the Ricardo Gutierrez Children’s Hospital. At Garrahan National Children’s Hospital, where he stayed for 15 years. In 1992, the completion of a fellowship at the Fetal Treatment Center confirmed his passion and interest in fetal treatment and video surgery. He became a pioneer in pediatric minimal access surgery (laparoscopy, thoracoscopy) developing techniques, tools and multidisciplinary teams. In the early 90’s, Dr. Ferro and his team performed the first pediatric minimal access surgery procedure in Argentina. Many of the novel minimal access surgical techniques and procedures used today resulted from Dr. Ferro’s innovative approaches (esophageal atresia, hepatobiliary disorders, neonatal thoracoscopy and laparoscopic procedures) and chest wall deformities. One of his most significant contributions was the invention, together with Dr. Fraile, of the FMF Dynamic Compressor System, an adaptable brace used to correct chest wall deformities. Author of the Latin American best seller “Neonatologia Quirurgica” (Surgical Neonatology) text-book, more than 23 other book chapters and close to 150 publications, he remains a highly-requested lecturer and guest speaker for numerous surgical and medical societies and is a former IPEG (International Pediatric Endosurgery Group) President. Current professor of surgery and pediatrics, Chief Division of Pediatric Surgery, at Fundación Hospitalaria Children’s Hospital in Buenos Aires.

Robert E. Kelly, Jr., M.D., FACS, FAAP, is a Board Certified Pediatric and General Surgeon. He received his medical degree from Johns Hopkins University in 1985. He completed his General Surgery Residency at Vanderbilt University School of Medicine and his Pediatric Surgery Fellowship at Children’s Hospital of Buffalo. Dr. Kelly also completed an ECMO and Surgical Research Fellowship at UCLA School of Medicine. Dr. Kelly joined Children’s Surgical Specialty Group- Pediatric Surgery in 1994. Dr. Kelly has introduced new surgical techniques with Dr. Nuss. Since his arrival at CHKD, Dr. Kelly has pioneered many well-regarded research collaborations, including work with Old Dominion University's engineering department to develop a simulator for teaching the Nuss procedure. He has also collaborated with ODU’s department of psychology formally led by CHKD’s Dr. Michele Lombardo, which has grown out of the multi center study assessing body image on pectus carinatum patients. In 2014, Dr. Kelly received the title of Adjunct Professor of Modeling and Simulation Engineering with Old Dominion University/Batten College of Engineering and Technology Modeling, Simulation and Visualization Engineering. Dr. Kelly is the Chairman of the Department of Surgery at Children's Hospital of The King's Daughters since 1998. He is the Vice President for Surgical Affairs/Surgeon in Chief for Children’s Hospital of The King's Daughters. He holds the academic appointment of Professor of Clinical Surgery and Pediatrics in the Department of Surgery at Eastern Virginia Medical School.Dr. Kelly has been the Program Director for an intensive international pectus workshop and training course each year at Children’s Hospital of The King’s Daughters since 2008.

Hans K. Pilegaard, MD, Professor, graduated from the Medical School Odense University in 1977. He completed his general surgical training in 1989 and the thoracic surgical specialization in 1992. He was appointed as a Consultant in thoracic and cardiovascular surgery in Aarhus University Hospital in 1993. He retired from this position 2016, but he is still associated to the department as a consultant and takes part in difficult cases. Today he is doing pectus surgery in a private hospital, Aleris-Hamlet, Aarhus as an Ass. Professor. He has performed over 1000 heart operations, more than 5000 general thoracic operations, more than 2000 corrections of PE and 250 corrections of PC. He has been the lead for research in Thoracic surgery from 2007-12 and has authored chapters in 15 books and contributed to more than 100 papers. He has presented more than 100 Oral presentations and 25 Posters. Was Chairman of the Danish Society of Thoracic Surgery 1995-97 and of the Danish Surgical Lung Cancer Group 2002-2016. He is a member of the Chest Wall International Group (CWIG), and has been president for CWIG 2013-15. Faculty member of the EACTS academy, European Association for Cardio-Thoracic Surgery EACTS, The European Society of Thoracic Surgery ESTS, CWIG and the Danish Society of Thoracic Surgery.

Mustafa Yüksel, MD, Professor graduated in Ankara University Medical School in 1977. He completed his specialization in cardiovascular surgery in Ankara Ataturk Pulmonary Diseases and Thoracic Surgery Department in 1983. He was the vice Head of Heybeliada Pulmonary Diseases and Thoracic Surgery Department until 1990, in 1991 he was assigned Assistant Professor in Marmara University. He practiced under Dr. Peter Goldstraw in London in Royal Brampton Hospital between 1991 and 1992. In 1994 he became an associate professor and a professor in 1999. Prof. Dr. Mustafa Yüksel is currently a lecturer and head of Marmara University Thoracic Surgery department. He has written numerous articles and edited medical books (including thoracic surgery, pediatric Thoracic Surgery, thoracic trauma, esophagus diseases and treatment).
Frank-Martin Haecker, MD, FEAPU, is currently Professor of Pediatric Surgery and Co-Head of the Department of Pediatric Surgery at the University Children’s Hospital Basel (UKBB), Switzerland. He received his medical degree in 1990. He served as a junior staff member at the Department of Pediatric Surgery at the University Hospital of Tübingen and at the Department of General Surgery at the Hospital of Baden-Baden (Germany). Then he became Attending Surgeon at the Department of Pediatric Surgery at the UKBB in Basel (Switzerland) (2000-2007). In 2008 he became Assistant Professor of Pediatric Surgery at the University of Basel. Since 2014 he is Professor of Pediatric Surgery. He is now a senior staff member in the Department of Pediatric Surgery at the UKBB. He is particularly interested in conservative and surgical treatment of chest wall deformities as well as in pediatric urology. He serves as the head of both the Pectus Program and the Department of Pediatric Urology at the UKBB. Since 2014, he became senior consultant at the Department of Pediatric Surgery at the University Hospital of Freiburg (Germany). Professor Haecker is a member of several national and international professional societies. He is member of the executive committee off he CWIG (Chest Wall International Group).

Dawn E. Jaroszewski, M.D., is a Professor in the Department of Cardiothoracic Surgery at Mayo Clinic in Arizona. She serves as director of the Mayo Clinic Chest Wall and Thoracic Surgery Program, which has become one of the largest volume adult pectus treatment sites in North America. Dr. Jaroszewski earned her B.A. and MBA from the University of Texas and her medical degree from the University of Texas Health Science Center at San Antonio. She trained at Mayo Clinic in general surgery and at Baylor College of Medicine/MD Anderson in cardiothoracic surgery. She further completed an advanced chest fellowship at the University of California-Los Angeles. Double-boarded in both cardiothoracic and general surgery, Dr. Jaroszewski is a fellow of the American College of Surgeons, where she serves as coordinator and presiding officer of the Committee on Video-based Education. She is also an active member in the Society of Thoracic Surgeons, European Association for Cardio-Thoracic Surgery and Chest Wall International Group. She is an investigator for the National Institutes of Health and National Cancer Institute and an Esophageal and Gastric Cancer guideline panel member for the National Comprehensive Cancer Network. Dr. Jaroszewski specialized in pectus and chest wall deformities and has performed over 1,000 cases. She has been involved in over 100 research projects and publications of peer-reviewed journal articles and book chapters and presents internationally on her expertise.

Patricio Varela MD. Professor of pediatric surgery Santiago, Chile. He received his medical degree from the University of Chile 1990, and completed his surgical residency at Mackenna Children’s hospital. His pediatric surgery fellowship was completed in minimally invasive surgery, at Le Bonheur Children medical center, Memphis Tennessee, between 1997-1998. Dr. Varela has received international attention for his expertise in Chest wall malformations and tracheal surgery in Children. Was one of the pioneer introducing the Nuss procedure in central and South America since 1999. Past president of the Chilean Pediatric Surgical society and past president of the South American pediatric surgical association. Currently Director of Endosurgery Post Graduate Training (Department of Pediatric Surgery, University of Chile) and Director of the Chest wall malformation and tracheal surgery unit at The Mackenna Children’s hospital and Clinica Las Condes medical center.

Professor Jean Marie Wihlm, MD, Professor, graduated as Medical Doctor at the Faculty of Medicine of Strasbourg, University “Louis Pasteur” (1975). Surgery residency at Strasbourg University Hospital (1976-1982), qualified in General surgery and Thoracic surgery(1985), appointed Professor of Thoracic and Cardiovascular Surgery (1989), Head of the Thoracic Surgery Department, Hopitaux Universitaire de Strasbourg, France (1996-2013) and Consultant at University Hospital Cochin, Paris, France (2014). His main interest for 25 years is chest wall reconstruction for deformities, tumors, trauma and sternal problems. Since 2006 he developed novel titanium osteosynthesis systems: STRATOS and STRACOS. He is founding member of the Chest Wall International Group (CWIG), and member of: Société Française de Chirurgie Thoracique et Cardio-vasculaire (1980), EACTS (1986), NASPE (1992), STS (2005), SCTS (2010).

Carlos Bardaji Pascual, MD PhD. Professor. European board of Pediatric Surgery. Associate Professor of Pediatric Surgery, Autonomous University of Barcelona (Spain). Head of Pediatric Surgery Department Complejo hospitalario Navarra, Pamplona, Spain.
Andre Hebra, Professor, Chief Medical Officer and Physician in Chief in Nemours Children's Hospital. He is leading the organization as one of the premier pediatric healthcare providers in Central Florida. He was the former Chief of Pediatric Surgery & Chief of Surgery of MUSC Children's Hospital. He received the H. Biemann Othersen Endowed Chair in Surgery in 2008. He has had more than 100 publications of peer-reviewed scientific articles and book chapters. He has been a pioneer in the development and improvement of minimal-access surgical techniques, particularly for the treatment of congenital chest anomalies such as pectus excavatum and carinatum.

Antonio Messineo, Professor, is since 2002 Head of the Department of Pediatric Surgery, Children's Hospital of Florence and Associate Professor of Pediatric Surgery, University of Florence (Italy). He has published more than 200 papers and several chapters in books. He is member of several societies: European Association of Pediatric Surgery, British Association of Pediatric Surgery, Italian Association of Pediatric Surgery, International Pediatric Endoscopy Group (IPEG), Chest Wall International Group (CWIG).

Jean-Pierre Chavoin, MD, Professor is University teacher, he was head of Burns and Plastic Surgery Department of Toulouse University Hospital during 14 years, where he continues to practice. He was also President and General Secretary of French Plastic Surgery Society (SOFCPRES) during 15 years. He is the author of 3 reference books published by Elsevier-Masson Ed. Paris : « Chirurgie Plastique et esthétique – Techniques d'Intervention » (2009), « Chirurgie Plastique et reconstructrice des parois et des confins » Rapport National 2009 (SOFCPRES), « Chirurgie Plastique du sein » (2012) and has published over 200 articles in national and international journals. Jean-Pierre Chavoin is now totally involved in Pectus Excavatum and Poland Syndrome research and treatment, with CAD custom-made implants. He's in charge of training and monitoring AnatomikModeling referral centres.

Gemma Giralt Garcia, MD is currently a pediatric cardiologist of the Department of Pediatric Cardiology at Hospital Vall d’Hebrón (Barcelona). She graduated as medical doctor at the Faculty of Medicine of Universitat Autònoma de Barcelona in 2000. In 2005 she finished the Pediatric residency and then she started the subspecialty of pediatric cardiology. Since 2006 she works as a Pediatric Cardiologist at Hospital Vall d’Hebrón, and she is now the responsible for the Image section of the Pediatric Cardiology Department. She is a member of the Image Group of “Sociedad Española de Cardiología Pediátrica (SECPP)".

Michele Torre, MD. Consultant of Pediatric Surgeon and Airway Team in the Department of Pediatric Surgery, Instituto Giannina Gaslini, Genova, Italy Dr. Torre has experience in all fields of Pediatric and Neonatal Surgery and Urology with specific interest in thoracic malformations, tracheal surgery, airway malformations, lung malformations and thoracoscopy. Director of the Airway Team of Gaslini Institute of Genova.

Gilbert Massard, Professor, M.D. Consultant and specialist in Thoracic Surgery in Centre Hospitalier, Department of Thoracic Surgery, Strasbourg, France. Member of the American Association for Thoracic Surgery, the Cardiothoracic Surgery Network and the European Society of Thoracic Surgeons. He is focused in Oncology, Infectious and inflammatory disorders, Lung Transplantation, VATS lobectomy, Pectus Excavatum and Chest wall surgery.

Gastón Bellía Munzón, MD received his medical degree in 1997 (Universidad del Salvador). He completed his residency in Paediatric surgery in "Hospital de Niños Pedro de Elizalde” (Buenos Aires, Argentina) in 2008. Actually he works as paediatric surgeon in "Hospital Pedro de Elizalde” in the section of thoracic surgery and in the Airway Unit. At the same time he also works in “Fundación Hospitalaria” with Dr. Marcelo Martinez-Ferro, being the Director of the Clinic “Mi Pectus”, centre specialized in the diagnosis and treatment of complex chest wall deformities. Pioneer in his country in the implementation of laringotracheal resections for the treatment of airway stenosis. He has published several papers in national and international journals and regularly participates in national and international scientific activities.
Thursday 19th

PECTUS EXCAVATUM

- 8.00-8.15 Registration
- 8.15-8.30 Welcome
  Vicenç Martínez Ibáñez (General Medical Manager of Hospital Universitari Vall d’Hebron)
  Manuel López (Head of the Pediatric Surgery Department, Hospital Universitari Vall d’Hebron)
  Ana Lain (Consultant in Pediatric Surgery, Hospital Universitari Vall d’Hebron)
  Laureano Molins (Head of Thoracic Surgery Department, Hospital Clinic Barcelona)

- 8.30-8.45 Introduction talk: “Pectus excavatum from a pediatric perspective”
  (Donald Nuss)

LIVE SURGERIES

  Moderators:
  Auditorium: José Ribas Milanez de Campos
          Laura Garcia Martinez
  Operating Room: Marcelo Martinez-Ferro
          Carles Gine Prades

- 8.45 Case 1 & 2 presentation (Marta Pilar Martín)
- 9.00-12.00 CASE 1 & 2: Pectus excavatum correction
  o  Case 1: Hyung Joo Park (Asymmetric PE)
  o  Case 2: Marcelo Martinez-Ferro & Gaston Bellia (Symmetric PE)

  11.00-12.15 Coffee break & exhibition

- 12.15 Case 3 & 4 presentation (Patricia Barila)
- 12.30-14.30 CASE 3 & 4: Pectus excavatum correction
  o  Case 3: Hans Pilegaard (Asymmetric PE)
  o  Case 4: Robert Kelly (Symmetric PE)

  13.30-15.00 Lunch
CASE 1
14 years. Asymmetric PE (2A1). Hyung Joo Park
CASE 2
14 years. Symmetric PE (1A). Marcelo Martinez-Ferro & Gaston Bellia
CASE 3
12 years. Asymmetric PE (2A2). Hans Pilegaard
CASE 4

14 years. Mild asymmetric PE (2A1). Robert Kelly
Round tables: Pectus excavatum

15.00-15.45 Diagnostic workup
Donald Nuss & Frank-Martin Haecker

- CT or RMI? (Marcelo Martinez Ferro)
- A novel objective approach to the external measurement of PE severity by means of an optical device (Antonio Messineo)
- Which index should we use? (Hyung Joo Park)

15.45-17.15 Treatment
Jose Ribas Milanez de Campos & Laura García

- Non-operative treatment of pectus excavatum (Frank-Martin Haecker)
- Nuss procedure: tips and tricks (Donald Nuss)
- 3D imaging & surgical planning (Marcelo Martinez Ferro)
- Cross bar technique (Hyung Joo Park)
- Repair in Adults (Dawn Jaroszewski)
- Chest wall reconstruction by 3D custom made implants with computer aided design: A 706 cases experience for Pectus excavatum (568) and Poland’s syndrome (138) (Jean-Pierre Chavoin)

17.15-17.45 Coffee break & exhibition

17.45-18.30 Sternal elevation
Antonio Messineo & Manuel López

- Vacuum bell (Frank-Martin Haecker)
- Crane technique (Hyung Joo Park)
- Double screws (Carlos Bardaji)
- Rule-track (Robert Kelly)

18.30-19.30 Bar removal: How I do it?
Hyung Joo Park & Marcelo Martinez-Ferro

- How I do it? Donald Nuss
- How I do it? Patricio Varela
- How I do it? Mustafa Yuksel
- Dealing with complications during bar removal (Hans Pilegaard)
Friday 20th

PECTUS CARINATUM & OTHER CHEST WALL DEFORMITIES

- 8.15-8.30 “High-end Pectus Surgery toward the Total Chest Wall Remodeling." (Hyung Joo Park)

- 8.30-8.45 "New developments in chest deformation surgical approaches: thermoreactive alloys and clinical applications, the "Rudakov technique" (Gilbert Massard)

LIVE SURGERIES

Moderators:

Auditorium: Patricio Varela
Carles Gine Prades
Operating Room: Marcelo Martínez-Ferro
Ana Lain Fernández

- 8.45 Case 5 & 6 presentation (Paula Jimenez)

- 9.00-12.00 CASE 5 & 6: Pectus carinatum correction
  o Case 5: Mustafa Yuksel: Abramson Technique
  o Case 6: Jose Ribas Milanez de Campos: Open approach

11.00-12.15 Coffee break & exhibition

- 12.15 Case 7 presentation (Javier Güizzo)

- 12.30-14.30 CASE 7: Hybrid case correction
  o Case 7: Hyung Joo Park

13.30-15.00 Lunch
Case 5
18 years. PC. Abramson technique. Mustafa Yuksel
Case 6

15 years. PC. Open approach. José Ribas Milanez de Campos
Case 7
17 years. Hybrid malformation (2C). Sandwich technique.
Hyung Joo Park
Round tables: other types of chest wall deformities

15.00-15.45 Physiologic changes in pectus excavatum correction
(Donald Nuss & Ana Laín)

- Intraoperative TEE in pediatric patients (Gemma Giralt)
- Cardiac changes during pectus excavatum correction (Dawn Jaroszewski)
- Physiological changes after correction of pectus excavatum (Hans Pilegaard)

15.45-16.45 Pectus carinatum & hibrid malformations
Robert Kelly & Patricio Varela

- Non operative management (Frank-Martin Haecker)
- Tips and tricks: Abramson technique (Mustafa Yuksel)
- Sandwich technique (Hyung Joo Park)
- Open approach (Jose Ribas Milanez de Campos)

16.45-17.15 Coffee break & exhibition

17.15-18.15 Techniques in other types of chest wall deformities
Hans Pilegaard & Mustafa Yuksel

- Curranino-Silverman Syndrome (Patricio Varela)
- Chest wall deformities correction combined with cardiac surgery (Jean-Marie Wihlm)
- Sternal cleft (Jose Ribas Milanez de Campos)
- Global thoracic management in Poland Syndrome (Dr. Michele Torre)

18.15-19.00 Complications
Dawn Jaroszewski & Carlos Bardaji

- Avoiding infection & metal allergy in chest wall reconstruction? (Robert Kelly)
- Via streaming: Intraoperative complications (Andre Hebra)
- Re-do procedures in pectus excavatum and carinatum (Robert Kelly)

19.00-19.10 Closing remarks
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