

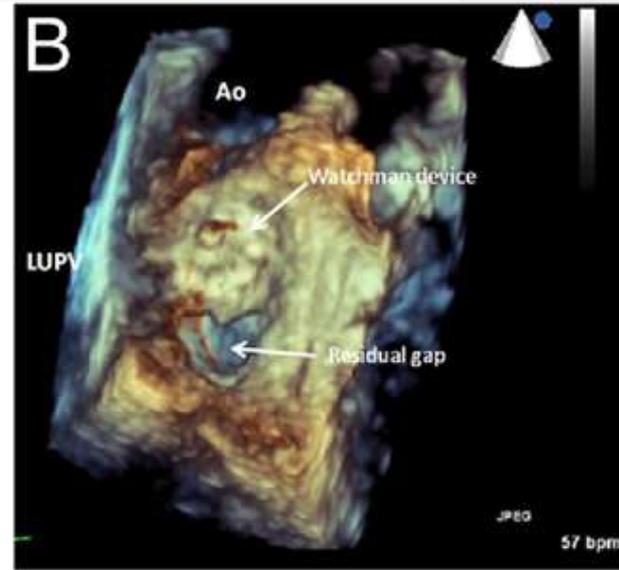
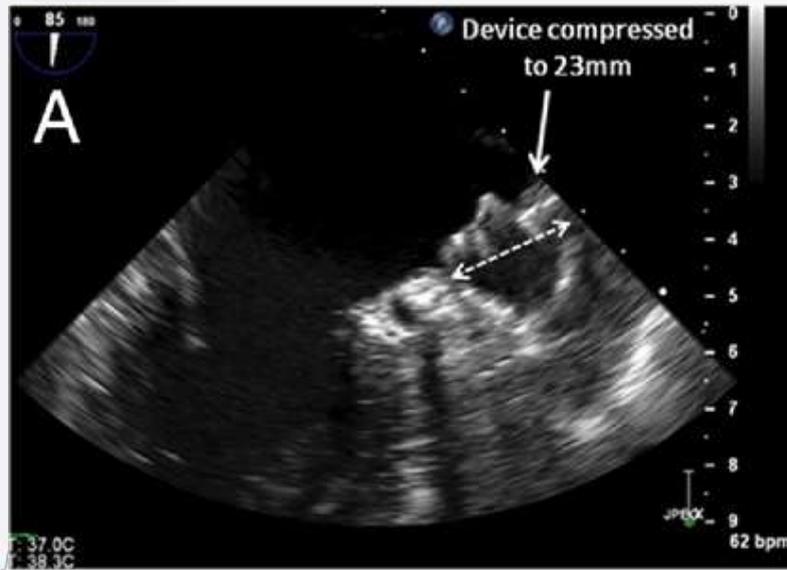
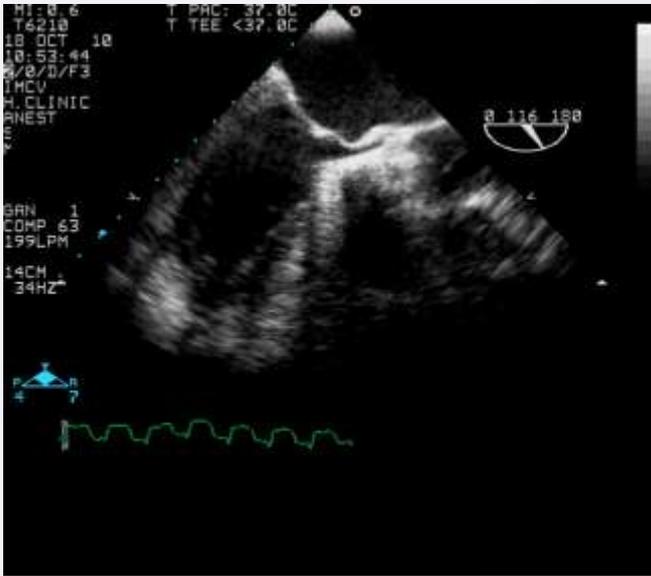
Imagen Cardíaca



Marta Sitges

**Servicio de Cardiología, Instituto del Tórax,
Hospital Clínic, Univ. de Barcelona**

Apoyo al intervencionismo percutáneo



CARDIO  ACTUALIDAD 2011

Imagen cardiaca

Apoyo al intervencionismo percutáneo



European Heart Journal (2011) 32, 2189–2214
doi:10.1093/eurheartj/ehr259

RECOMMENDATIONS

EAE/ASE recommendations for the use of echocardiography in new transcatheter interventions for valvular heart disease

Jose L. Zamorano^{1*†}, Luigi P. Badano², Charles Bruce³, Kwan-Leung Chan⁴, Alexandra Gonçalves⁵, Rebecca T. Hahn⁶, Martin G. Keane⁷, Giovanni La Canna⁸, Mark J. Monaghan⁹, Petros Nihoyannopoulos¹⁰, Frank E. Silvestry⁷, Jean-Louis Vanoverschelde¹¹, and Linda D. Gillam^{12‡}

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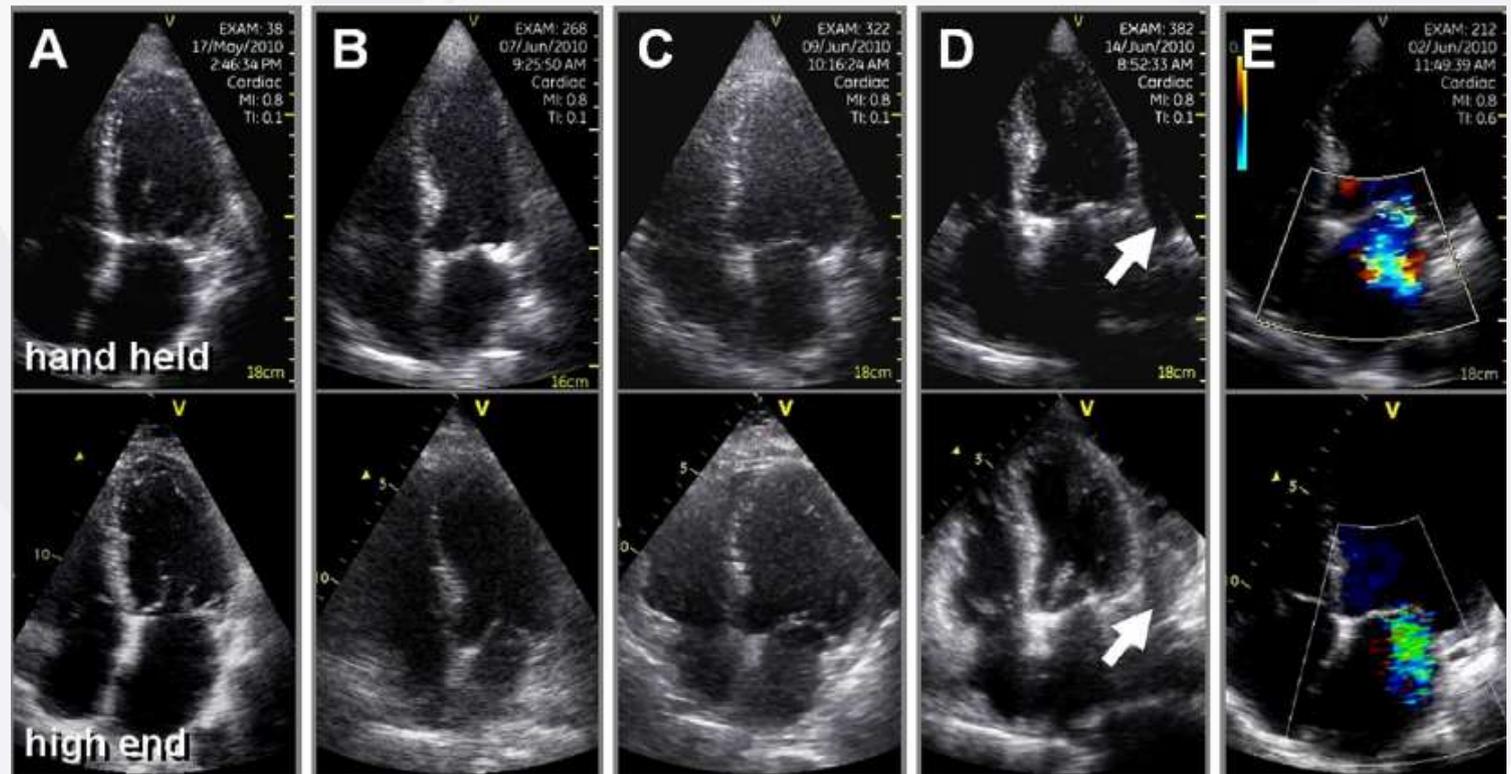
Imagen cardiaca

Ecocardiografia de bolsillo

Diagnostic Accuracy of a Hand-Held Ultrasound Scanner in Routine Patients Referred for Echocardiography

Christian Prinz, MD, and Jens-Uwe Voigt, MD, *Leuven, Belgium; and Bad Oeynhausen, Germany*

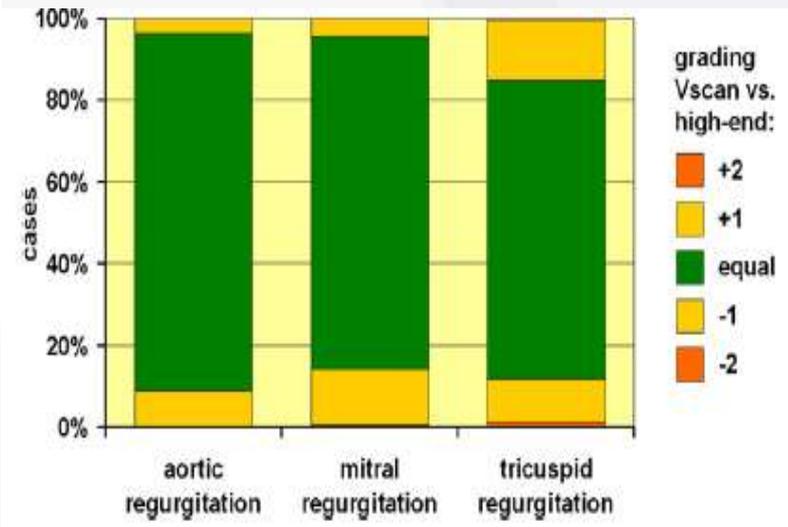
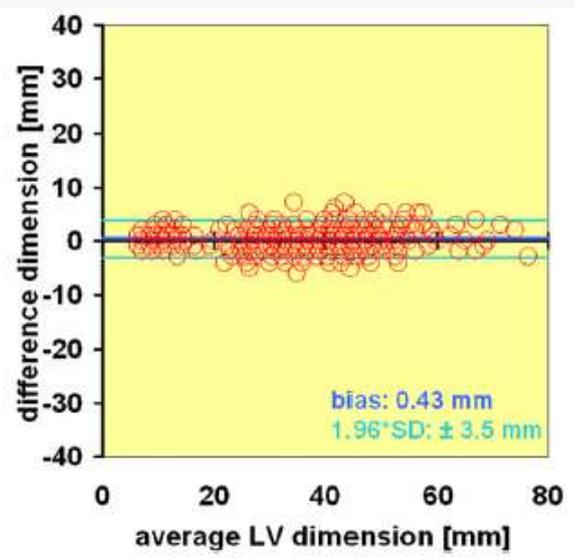
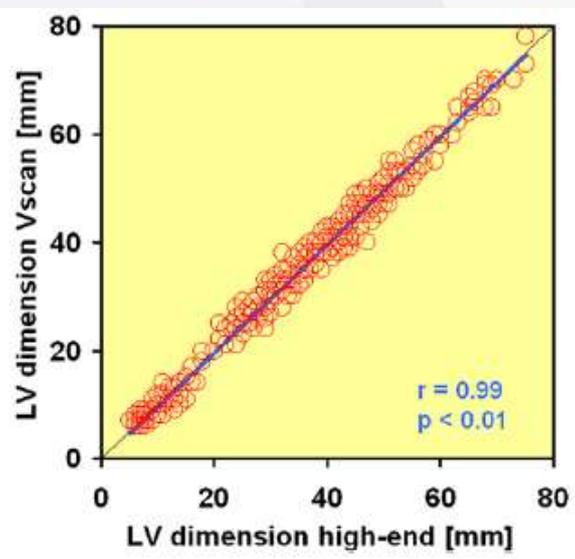
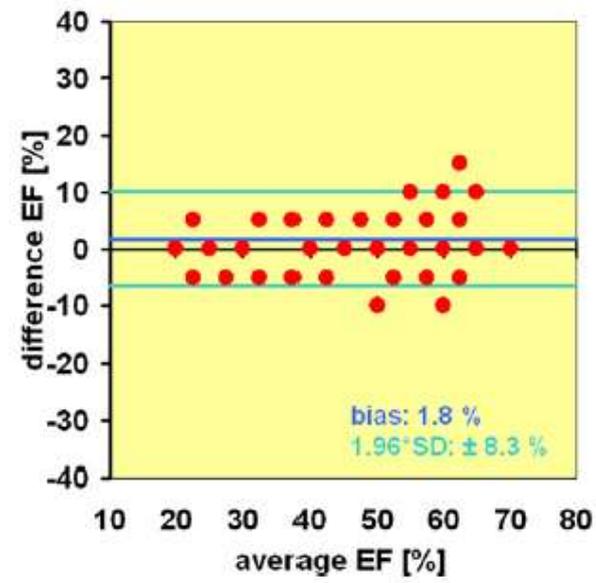
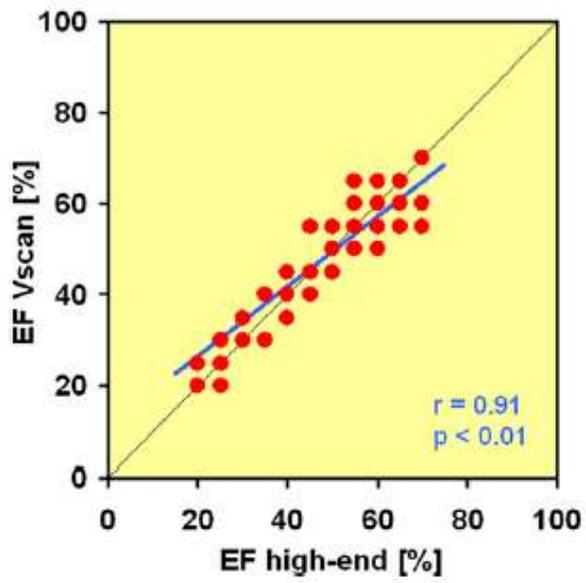
349 pacientes



CARDIO  ACTUALIDAD 2011

Imagen cardiaca

Ecocardiografia de bolsillo



The use of pocket-size imaging devices: a position statement of the European Association of Echocardiography

Rosa Sicari*, Maurizio Galderisi, Jens-Uwe Voigt, Gilbert Habib, Jose L. Zamorano, Patrizio Lancellotti, and Luigi P. Badano

- **Uso limitado. No examen diagnóstico completo**
- **Incorporado como parte de la exploración física**
- **Experiencia y formación adecuada requerida**
- **Informar al paciente que NO substituye a un ecoc. completo**



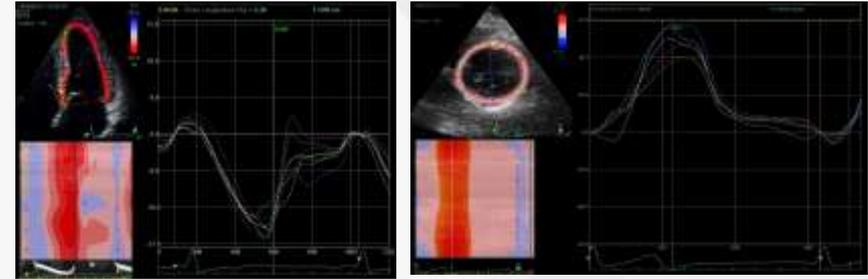
Table 2 Summary of indications for pocket-size devices

1. Complement to a physical examination in the coronary and intensive care unit
2. Tool for a fast initial screening in an emergency setting
3. Cardiologic counselling in- or outside health-care facilities and hospitals
4. First cardiac evaluation in ambulances
5. Screening programmes in schools, industry, and community activities
6. Triaging candidates for a complete echocardiographic examination
7. Teaching tool
8. Semi-quantification of extravascular lung water

Deformación miocárdica: disfunción incipiente

The Utility of Cardiac Biomarkers, Tissue Velocity and Strain Imaging, and Cardiac Magnetic Resonance Imaging in Predicting Early Left Ventricular Dysfunction in Patients With Human Epidermal Growth Factor Receptor II-Positive Breast Cancer Treated With Adjuvant Trastuzumab Therapy

Nazanin Fallah-Rad, MD,* Jonathan R. Walker, MSc,* Anthony Wassef, MD,†
Matthew Lytwyn, BSc,* Sheena Bohonis, BSc,* Tielan Fang, MSc,* Ganhong Tian, MD, PhD,‡
Iain D. C. Kirkpatrick, MD,§ Pawan K. Singal, PhD,* Marianne Krahn, MD,|| Debjani Grenier, MD,||
Davinder S. Jassal, MD*‡§¶
Winnipeg, Manitoba, Canada



Obj. 1º: ↓ 10 puntos FE

Table 4 ROC Curve Analysis for TVI and Strain Imaging

Echocardiographic Variables	Cutoff Value	Sensitivity (95% CI)	Specificity	PPV	NPV
S' (cm/s)	0.60	0.93 (0.59–0.99)	0.99	0.96	0.98
Longitudinal strain	2.00	0.79 (0.51–0.96)	0.82	0.60	0.92
Radial strain	0.80	0.86 (0.57–0.98)	0.81	0.60	0.95

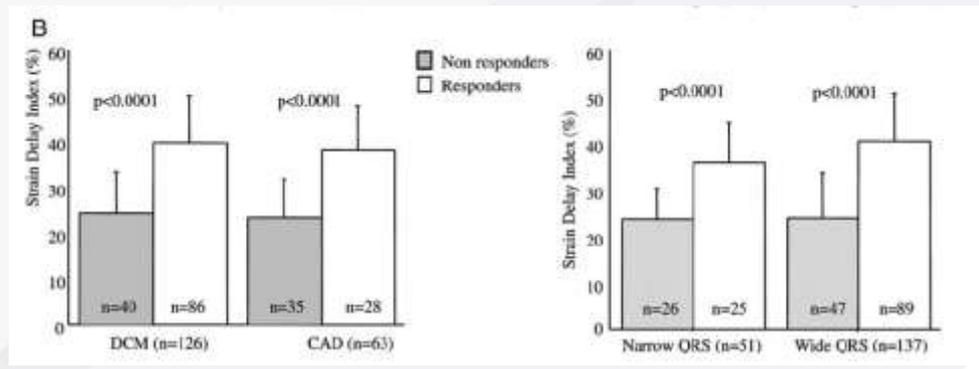
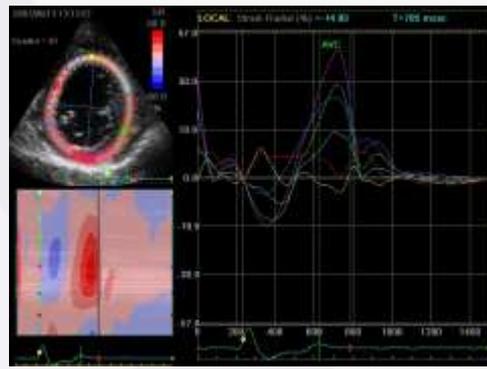
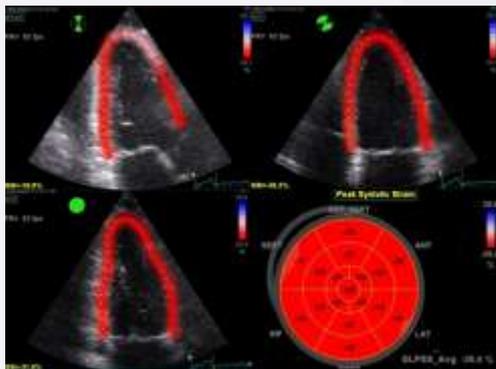
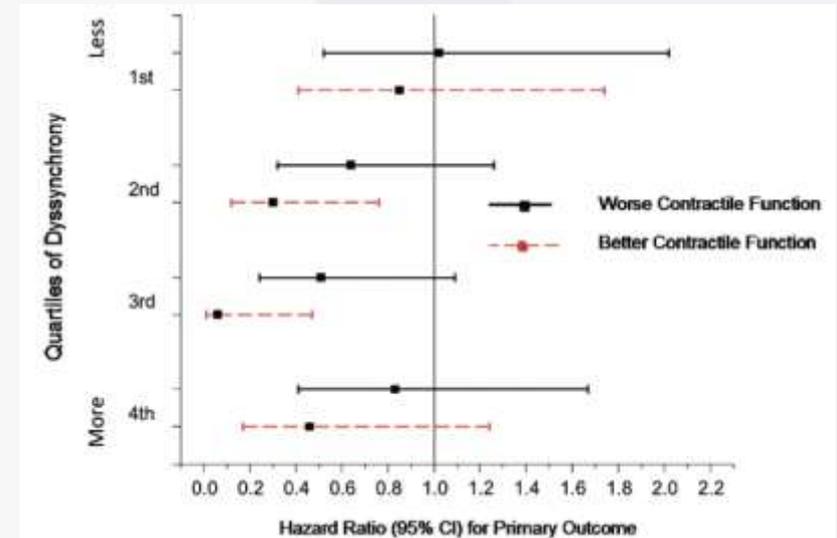
Deformación miocárdica: TRC

Dyssynchrony, Contractile Function, and Response to Cardiac Resynchronization Therapy

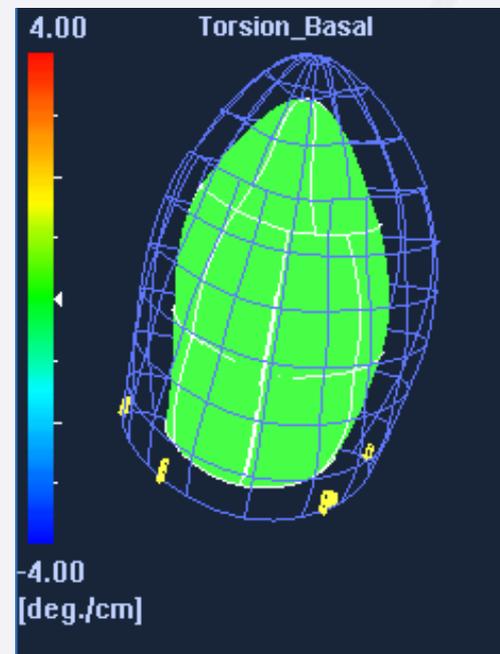
Dorit Knappe, MD*; Anne-Catherine Poulleur, MD*; Amil M. Shah, MD; Susan Cheng, MD; Hajime Uno, PhD; W. Jackson Hall, PhD; Mikhail Bourgoun, MD; Elyse Foster, MD; Wojciech Zareba, MD, PhD; Ilan Goldenberg, MD; Scott McNitt, MS; Marc A. Pfeffer, MD, PhD; Arthur J. Moss, MD; Scott D. Solomon, MD; for the Multicenter Automatic Defibrillator Implantation Trial-Cardiac Resynchronization Therapy Investigators

Multicentre study using strain delay index for predicting response to cardiac resynchronization therapy (MUSIC study)

Pascal Lim^{1*}, Erwan Donal², Stéphane Lafitte³, Genevieve Derumeaux⁴, Gilbert Habib⁵, Patricia Réant³, Sophie Thivolet⁴, Nicolas Lellouche¹, Richard A. Grimm⁶, and Pascal Gueret¹



Deformación miocárdica: Mecánica cardiaca



Current and Evolving Echocardiographic Techniques for the Quantitative Evaluation of Cardiac Mechanics: ASE/EAE Consensus Statement on Methodology and Indications

Endorsed by the Japanese Society of Echocardiography

Victor Mor-Avi, PhD, FASE,* Roberto M. Lang, MD, FASE,† Luigi P. Badano, MD, FESC, Marek Belohlavek, MD, PhD, FESC, Nuno Miguel Cardim, MD, PhD, FESC, Geneviève Derumeaux, MD, PhD, FESC, Maurizio Galderisi, MD, FESC, Thomas Marwick, MBBS, PhD, Sherif F. Nagueh, MD, FASE, Partho P Sengupta, MBBS, FASE, Rosa Sicari, MD, PhD, FESC, Otto A. Smiseth, MD, PhD, FESC, Beverly Smulevitz, BS, RDCS, Masaaki Takeuchi, MD, PhD, FASE, James D. Thomas, MD, FASE, Mani Vannan, MBBS, Jens-Uwe Voigt, MD, FESC, and José Luis Zamorano, MD, FESC†, *Chicago, Illinois; Padua, Naples, and Pisa, Italy; Scottsdale, Arizona; Lisbon, Portugal; Lyon, France; Cleveland and Columbus, Ohio; Houston, Texas; Irvine, California; Oslo, Norway; Kitakyushu, Japan; Leuven, Belgium; Madrid, Spain*

RM cardiaca y Fibrosis miocárdica: Pronóstico

Journal of the American College of Cardiology
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Vol. 57, No. 7, 2011
ISSN 0735-1097/\$16.00
doi:10.1016/j.jacc.2010.06.062

Myocardial Fibrosis Predicts Appropriate Device Therapy in Patients With Implantable Cardioverter-Defibrillators for Primary Prevention of Sudden Cardiac Death

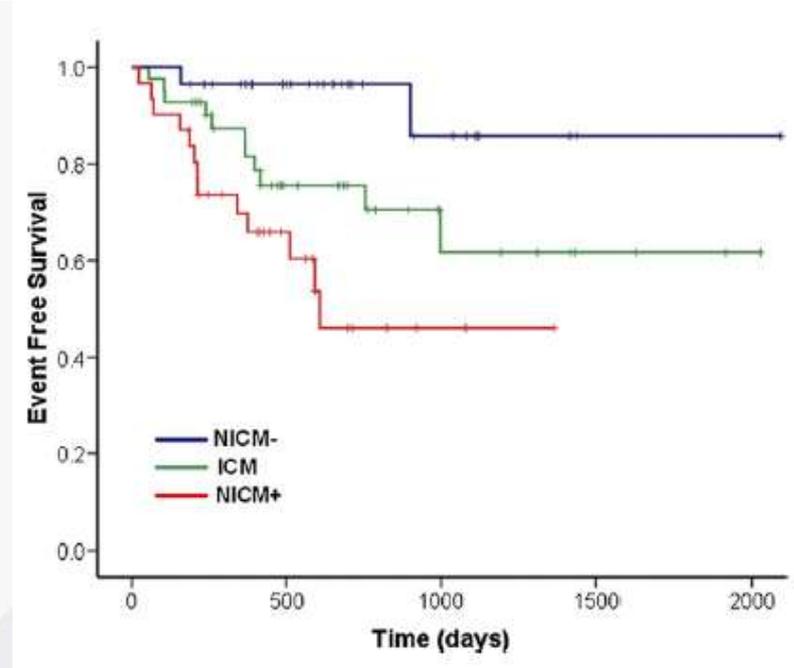
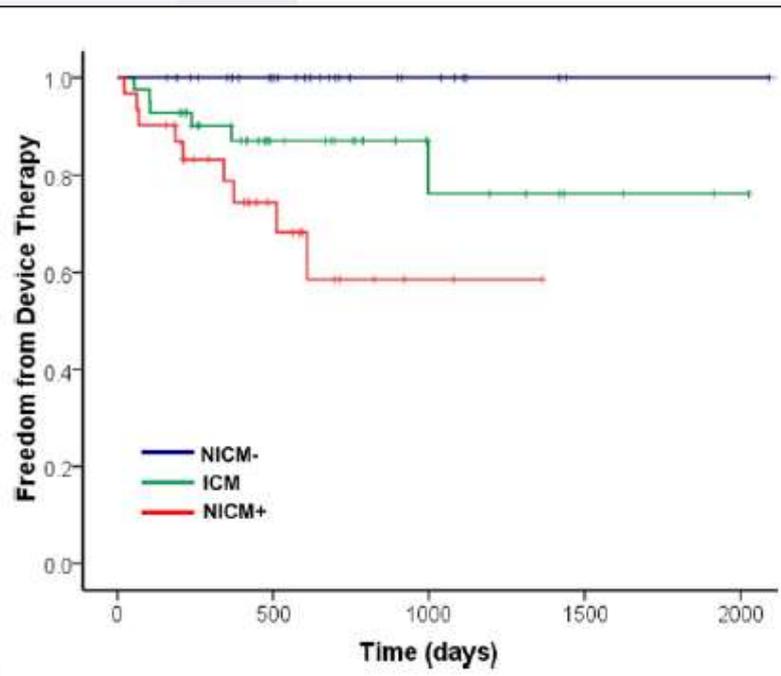
Leah Iles, MBChB, Heinz Pfluger, MD, Lisa Lefkovits, MBBS, Michelle J. Butler, MBBS,
Peter M. Kistler, PhD, David M. Kaye, PhD, Andrew J. Taylor, PhD
Melbourne, Australia

103 pacientes

RT+ :

100% isquémicos (n= 42)

51% de no isquémicos (n = 61)



CARDIO
ACTUALIDAD 2011

Imagen cardiaca

RM cardiaca y Fibrosis miocárdica: Tratamiento

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Vol. 57, No. 2, 2011
ISSN 0735-1097/36.00
doi:10.1016/j.jacc.2010.07.043

Cardiac Imaging

Noninvasive Identification of Ventricular Tachycardia-Related Conducting Channels Using Contrast-Enhanced Magnetic Resonance Imaging in Patients With Chronic Myocardial Infarction

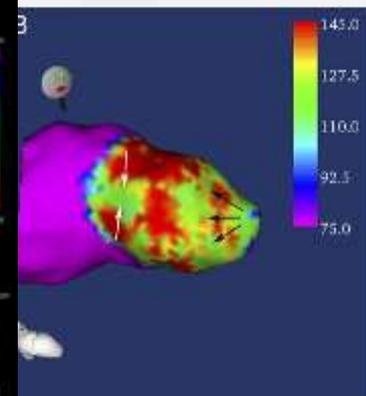
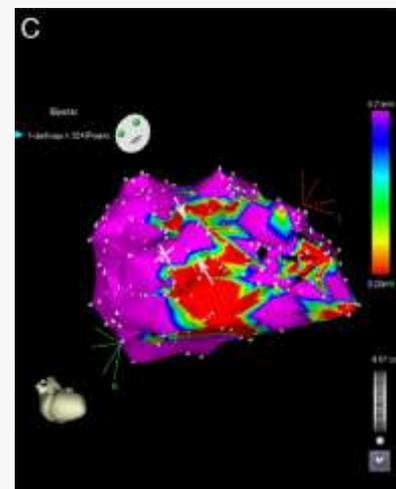
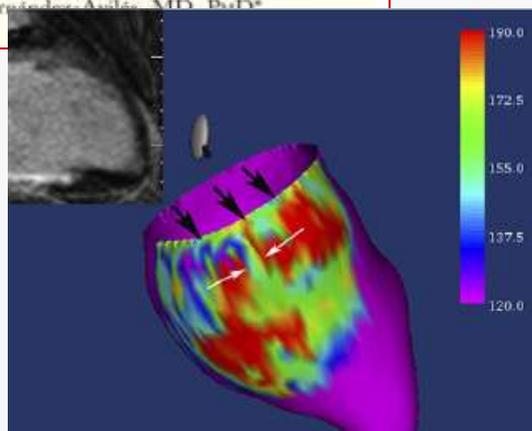
Comparison of Signal Intensity Scar Mapping and Endocardial Voltage Mapping

Esther Perez-David, MD,* Ángel Arenal, MD,* José L. Rubio-Guervano, PhD,†
Roberto del Castillo, MD,* Leonardo Atea, MD,* Elena Arbelo, MD, PhD,‡
Eduardo Caballero, MD, PhD,‡ Verónica Celorrio, MD,* Tomas Datino, MD, PhD,*
Esteban Gonzalez-Torrecilla, MD, PhD,* Felipe Atienza, MD,* María J. Ledesma-Carbayo, PhD,†
Javier Bermejo, MD,* Alfonso Medina, MD, PhD,‡ Francisco Fernandez-Avilés, MD, PhD*
Madrid and Las Palmas de Gran Canaria, Spain

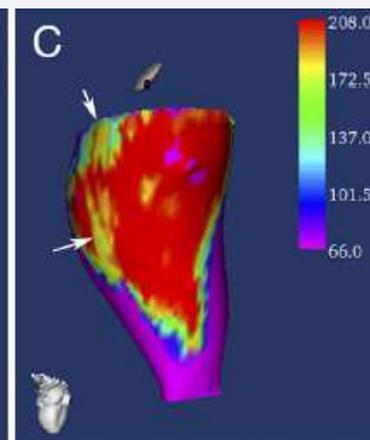
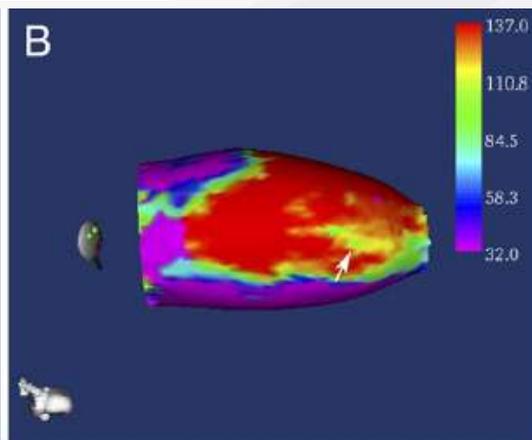
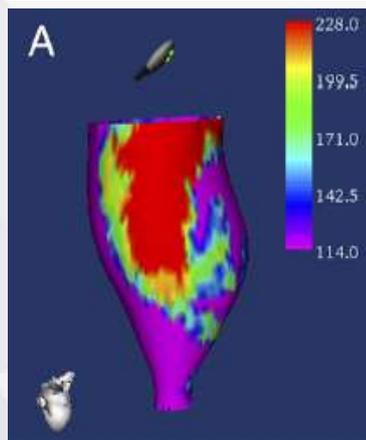
RM 1.5T, RT

HETEROGENEIDAD CICATRIZ

TVMS



Control



CARDIO  ACTUALIDAD 2011

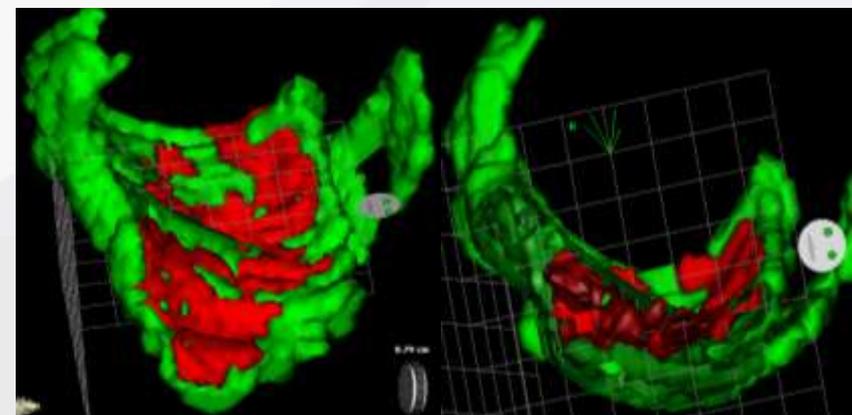
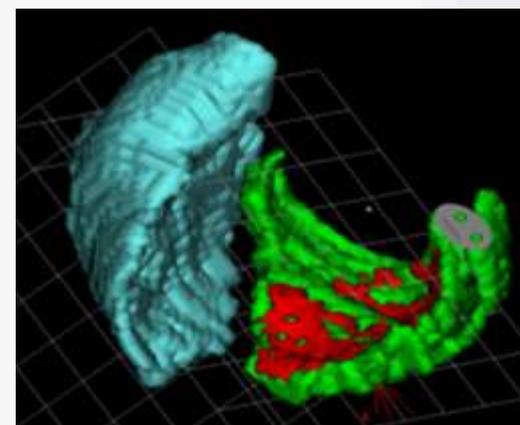
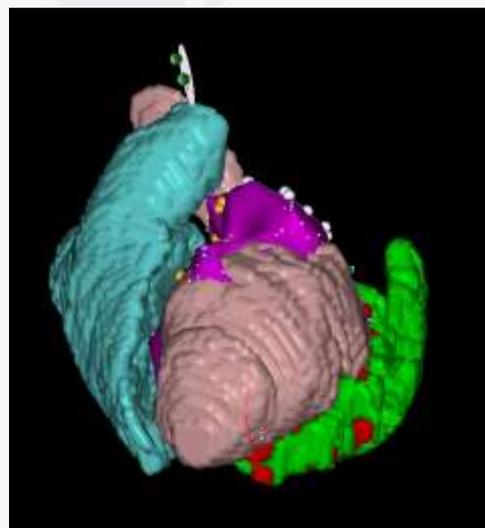
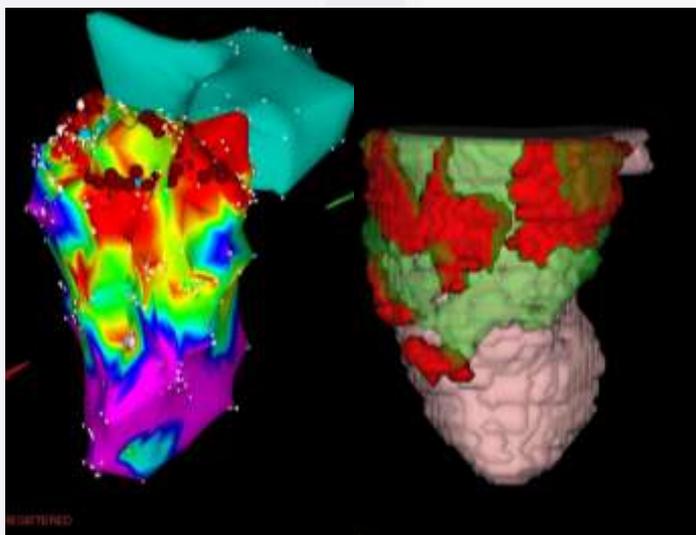
RM cardiaca y Fibrosis miocárdica: Tratamiento

Integration of 3D Electroanatomic Maps and Magnetic Resonance Scar Characterization into the Navigation System to Guide Ventricular Tachycardia Ablation

David Andreu, Antonio Berruezo, José T. Ortiz-Pérez, Etelvino Silva, Lluís Mont, Roger Borràs, Teresa María de Caralt, Rosario Jesús Perea, Juan Fernández-Armenta, Hrvojka Zeljko and Josep Brugada

Circ Arrhythm Electrophysiol published online August 31, 2011;

RM 3 T, RT



- Visualización substrato de TV
- Identificación sujetos con riesgo de TV
- Integración y registrado con sistema de mapeo EA: guía ablación TV

Cuantificación y estimación no invasiva

Non-invasive estimation of pulmonary vascular resistance with cardiac magnetic resonance

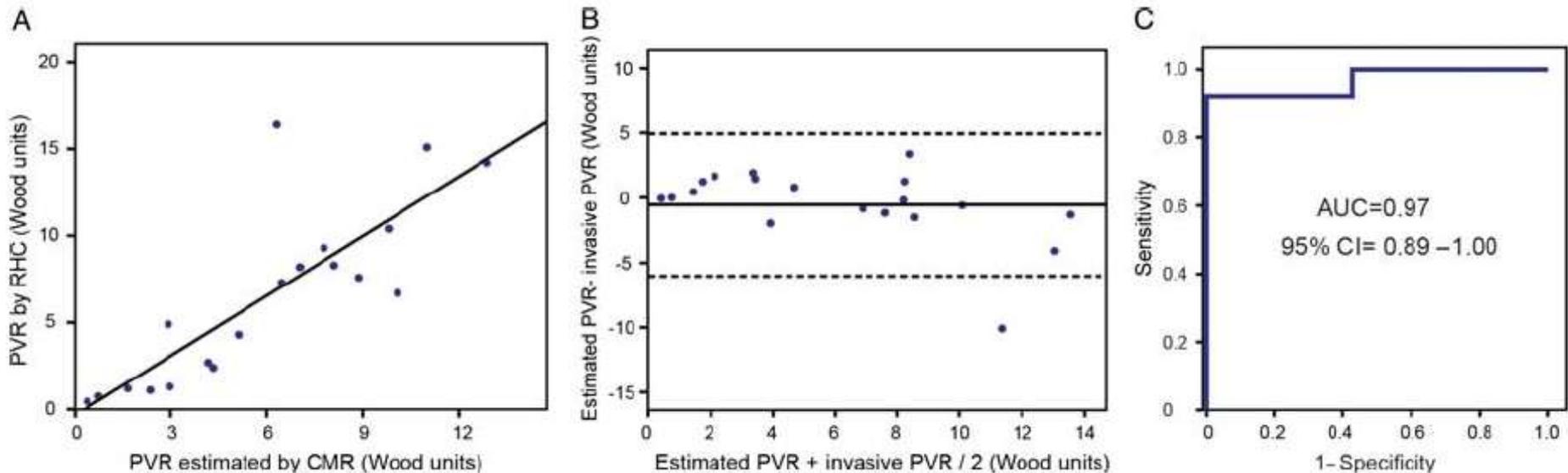
Ana García-Alvarez^{1,2,3}, Leticia Fernández-Friera¹, Jesús G. Mirelis^{1,2},
Simonette Sawit¹, Ajith Nair¹, Jill Kallman¹, Valentin Fuster^{1,2}, and Javier Sanz^{1*}

¹The Zena and Michael A. Wiener Cardiovascular Institute and Marie-Josee and Henry R. Kravis Center for Cardiovascular Health, Mount Sinai School of Medicine, New York, USA;

²Centro Nacional de Investigaciones Cardiovasculares (CNIC), Madrid, Spain; and ³Thorax Institute, Cardiology Department, Hospital Clinic, Barcelona, Spain

100 pacientes

RM y cateterismo



Potencial herramienta para seguimiento enfermedad y/o tratamiento

CARDIO  ACTUALIDAD 2011

Imagen cardiaca

MSCT 2011: Valor pronóstico

Meta-Analysis and Systematic Review of the Long-Term Predictive Value of Assessment of Coronary Atherosclerosis by Contrast-Enhanced Coronary Computed Tomography Angiography

Fabian Bamberg, MD, MPH,*† Wieland H. Sommer, MD,† Verena Hoffmann, PhD,‡
Stephan Achenbach, MD,§ Konstantin Nikolaou, MD,† David Conen, MD, MPH,||
Maximilian F. Reiser, MD,† Udo Hoffmann, MD, MPH,* Christoph R. Becker, MD†
Munich and Erlangen, Germany; Boston, Massachusetts; and Basel, Switzerland

> 7000 pacientes

20 meses FU

Mortalidad total y CV

Prognostic Value of Cardiac Computed Tomography Angiography

A Systematic Review and Meta-Analysis

Edward A. Hulten, MD, MPH,* Salvatore Carbonaro, MD,* Sara P. Petrillo, MD,‡
Joshua D. Mitchell, MD,† Todd C. Villines, MD*
Washington, DC; and Rockville, Maryland

> 9000 pacientes

20 meses FU

MACE

MSCT 2011: Valor pronóstico

Age- and Sex-Related Differences in All-Cause Mortality Risk Based on Coronary Computed Tomography Angiography Findings

Results From the International Multicenter CONFIRM (Coronary CT Angiography Evaluation for Clinical Outcomes: An International Multicenter Registry) of 23,854 Patients Without Known Coronary Artery Disease

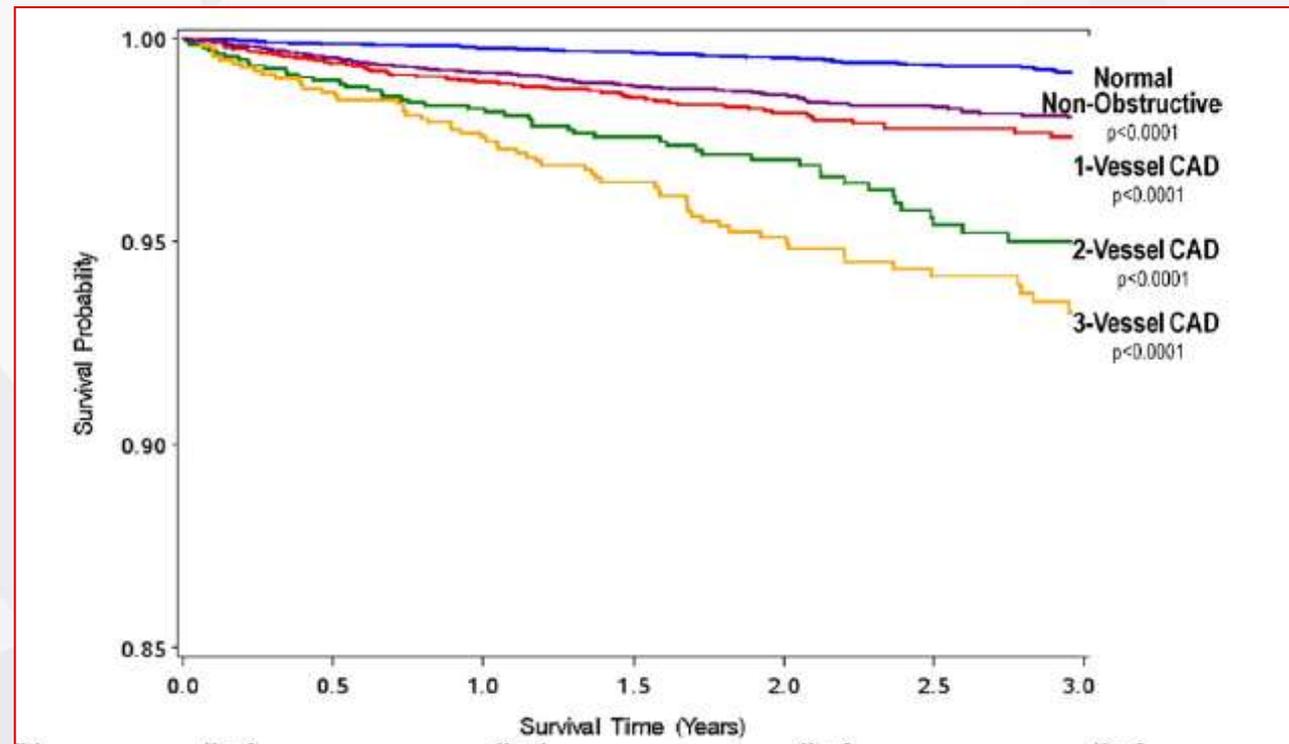
24.000 pacientes

34% asintomáticos!

solo 9% alto riesgo pre-test EAC

Seguimiento > 2 años, Mortalidad total

64-MSCT



CARDIO  ACTUALIDAD 2011

Imagen cardiaca

MSCT 2011: Valor pronóstico adicional

Incremental Prognostic Value of Cardiac Computed Tomography in Coronary Artery Disease Using CONFIRM COroNary Computed Tomography Angiography Evaluation for Clinical Outcomes: An InteRNational Multicenter Registry

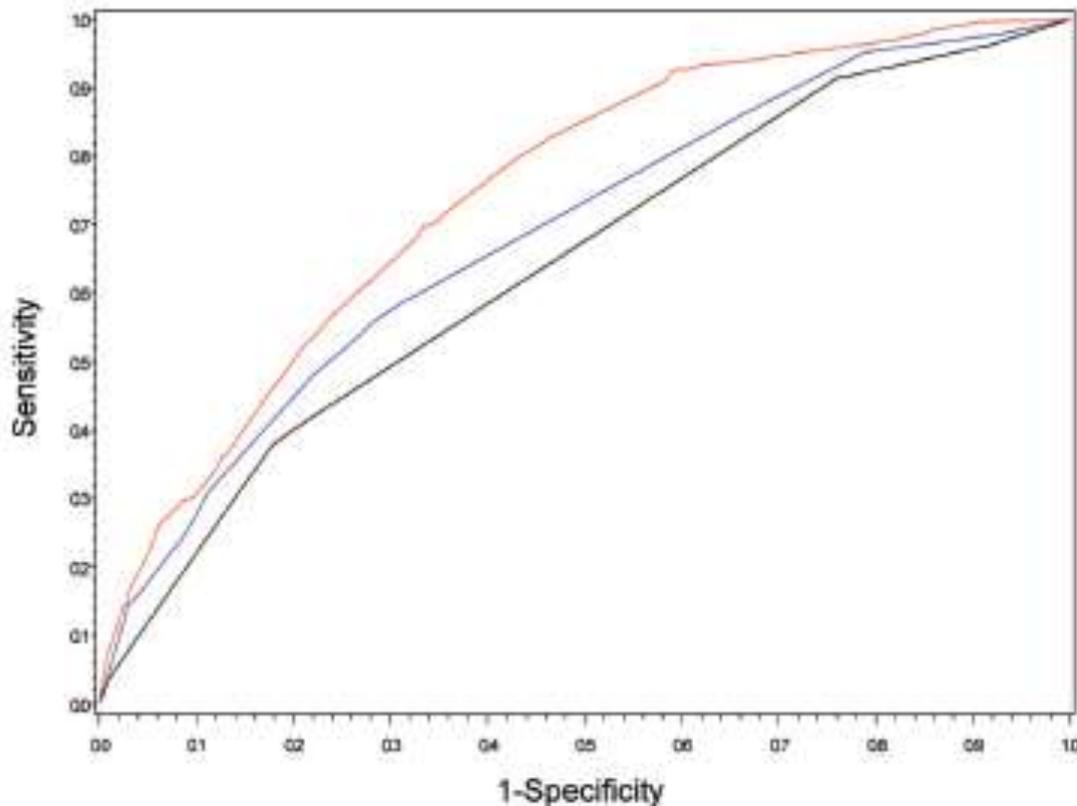
Benjamin J.W. Chow, MD; Gary Small, MBBS; Yeung Yam, BSc; Li Chen, MSc;
Stephan Achenbach, MD; Mouaz Al-Mallah, MD, MSc; Daniel S. Berman, MD;
Matthew J. Budoff, MD; Filippo Cademartiri, MD, PhD; Tracy Q. Callister, MD;
Hyuk-Jae Chang, MD, PhD; Victor Cheng, MD; Kavitha M. Chinnaiyan, MD; Augustin Delago, MD;
Allison Dunning, MSc; Martin Hadamitzky, MD; Jörg Hausleiter, MD; Philipp Kaufmann, MD;
Fay Lin, MD; Erica Maffei, MD; Gilbert L. Raff, MD; Leslee J. Shaw, PhD; Todd C. Villines, MD;
James K. Min, MD; on behalf for the CONFIRM Investigators

14.000 pacientes

Valor adicional sobre FE y factores riesgo

Mortalidad total

FU 22 meses



Severidad EAC
AUC 0.75

FE VI
AUC 0.68

Factores riesgo
AUC 0.64

Imagen cardiaca

MSCT 2011: Valor pronóstico adicional

Mortality Risk in Symptomatic Patients With Nonobstructive Coronary Artery Disease

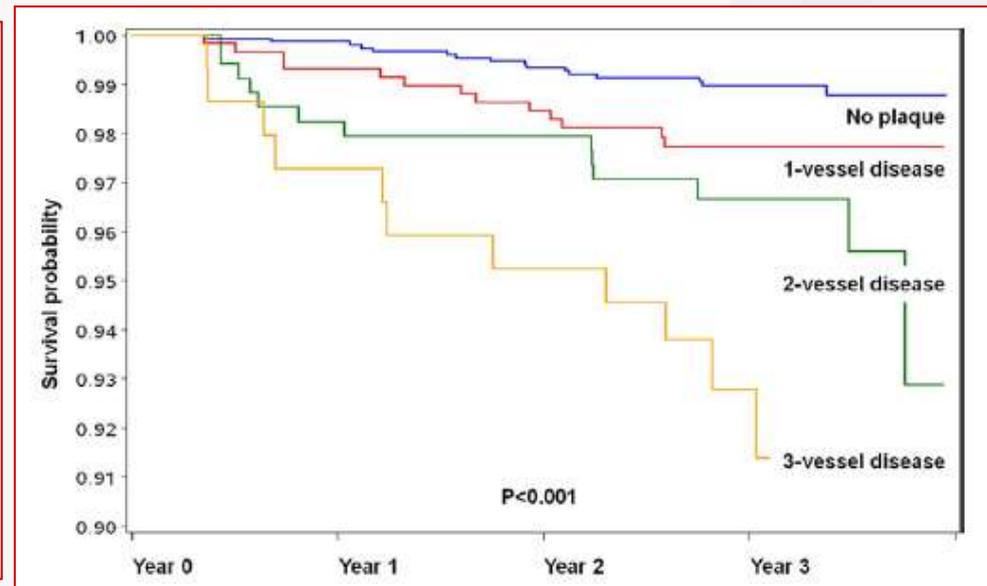
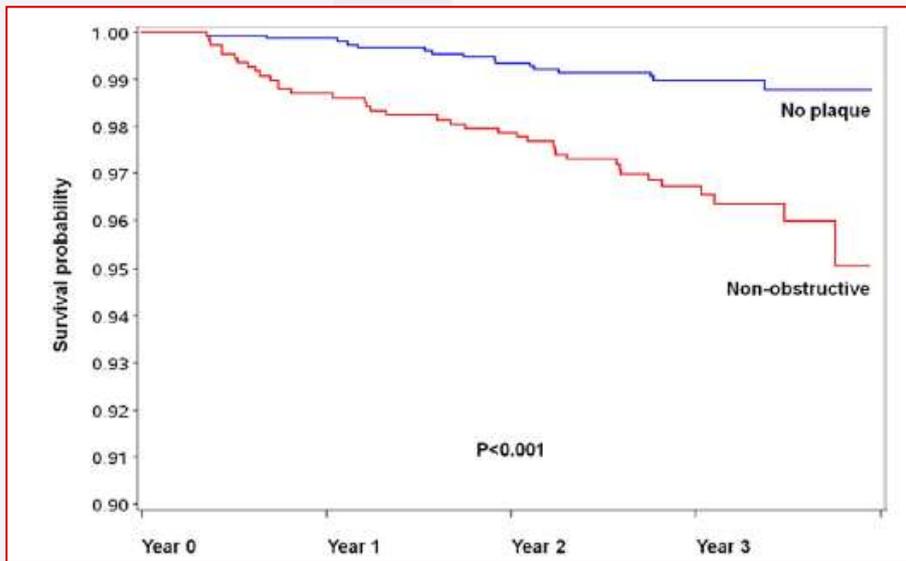
A Prospective 2-Center Study of 2,583 Patients Undergoing
64-Detector Row Coronary Computed Tomographic Angiography

Fay Y. Lin, MD,* Leslee J. Shaw, PhD,† Allison M. Dunning, MSc,* Troy M. LaBounty, MD,‡
Jin-Ho Choi, MD, PhD,* Jonathan W. Weinsaft, MD,* Sunaina Koduru, MD,* Millie J. Gomez, MD,*
Augustin J. Delago, MD,§ Tracy Q. Callister, MD,|| Daniel S. Berman, MD,‡ James K. Min, MD‡
New York and Albany, New York; Atlanta, Georgia; Los Angeles, California; and Hendersonville, Tennessee

Pacientes con dolor torácico

EAC no obstructiva (< 50%)

Seguimiento 3 años: mortalidad total



MSCT 2011: Baja radiación

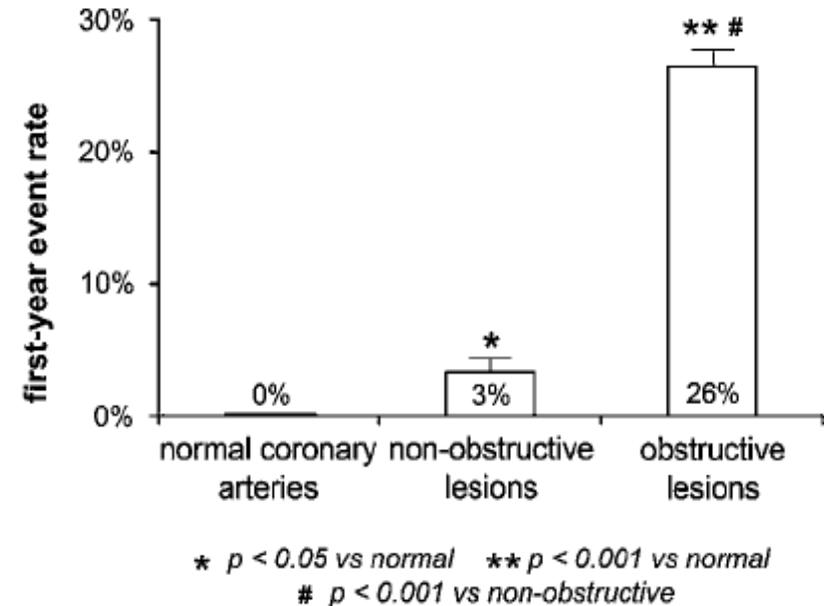
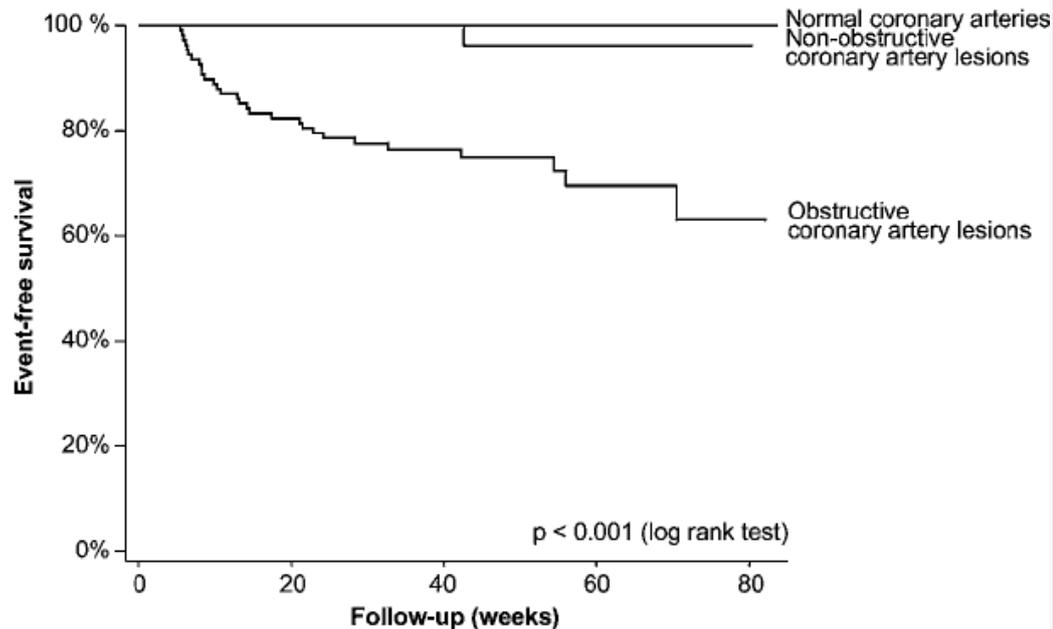
Prognostic performance of low-dose coronary CT angiography with prospective ECG triggering

Ronny R Buechel,¹ Aju P Pazhenkottil,¹ Bernhard A Herzog,¹ Michael Brueckner,¹ Rene Nkoulou,¹ Jelena R Ghadri,¹ Silke M Küest,¹ Christophe A Wyss,¹ Lars Husmann,¹ Philipp A Kaufmann^{1,2}

400 pacientes

FU 10 meses

1.8 ± 0.6 mSv



Avances tecnológicos: RM & MCP/DAI

Magnetic resonance imaging in patients with a pacemaker system designed for the magnetic resonance environment

Bruce L. Wilkoff, MD, FHRS, CCDS,* David Bello, MD,[†] Milos Taborsky, MD, PhD, FESC,[‡] Josef Vymazal, MD, PhD,[‡] Emanuel Kanal, MD, FACR, FISMRM,[§] Hubertus Heuer, MD,^{||} Katrin Hecking, MD,^{||} W. Ben Johnson, MD, CCDS,[¶] William Young, MD,[¶] Brian Ramza, MD, PhD,^{**} Naveed Akhtar, MD,^{**} Bernhard Kuepper, MD,^{††} Peter Hunold, MD,^{††} Roger Luechinger, PhD,^{‡‡} Helmut Puererfellner, MD,^{§§} Firat Duru, MD,^{|||} M.J.W. Gotte, MD,^{***} Richard Sutton, MD, PhD,^{†††} Torsten Sommer, MD^{†††}; on behalf of the EnRhythm MRI SureScan Pacing System Study Investigators

464 pacientes

1.5 T

RM craneal/lumbar

Annals of Internal Medicine

ORIGINAL RESEARCH

A Prospective Evaluation of a Protocol for Magnetic Resonance Imaging of Patients With Implanted Cardiac Devices

Saman Nazarian, MD; Rozann Hansford, RN, MPH; Ariel Roguin, MD, PhD; Dorith Goldsher, MD; Menekhem M. Zviman, PhD; Albert C. Lardo, PhD; Brian S. Caffo, PhD; Kevin D. Frick, PhD, MA; Michael A. Kraut, MD, PhD; Ihab R. Kamel, MD, PhD; Hugh Calkins, MD; Ronald D. Berger, MD, PhD; David A. Bluemke, MD, PhD; and Henry R. Halperin, MD, MA

555 RM en > 400
pacientes:

89 RM cardiacas

1.5 T

- Segura con secuencias y dispositivos apropiados
- Control marcapasos durante y después

CARDIO  ACTUALIDAD 2011

Imagen cardiaca

Wilkoff et al. Heart Rhythm 2011;8:65-73

Nazarian et al. Ann Int Med 2011;155:415-424

Telemedicina y telediagnóstico

Diagnostic Accuracy of Coronary Computed Tomography Angiography as Interpreted on a Mobile Handheld Phone Device

Troy M. LaBounty, MD,* Robert J. Kim, MD,* Fay Y. Lin, MD, MA,*
Matthew J. Budoff, MD,‡ Jonathan W. Weinsaft, MD,† James K. Min, MD†
New York, New York; and Torrance, California

102 pacientes

TC 64 coronas

Estación de trabajo

Móvil

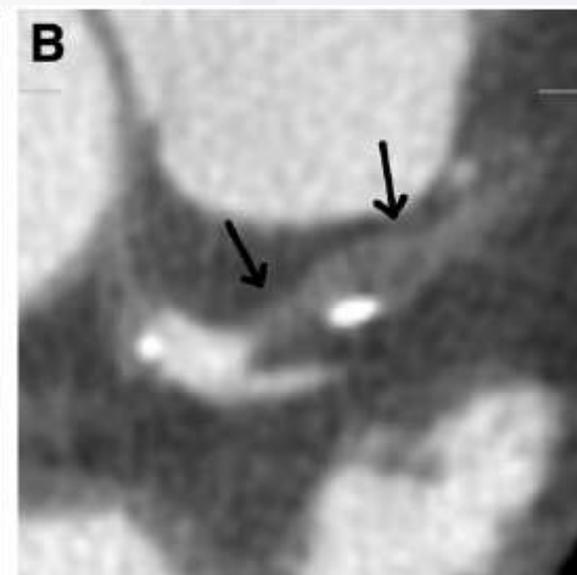
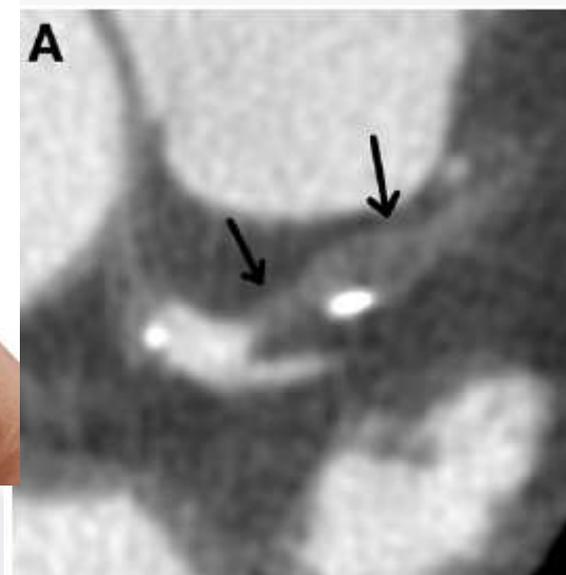
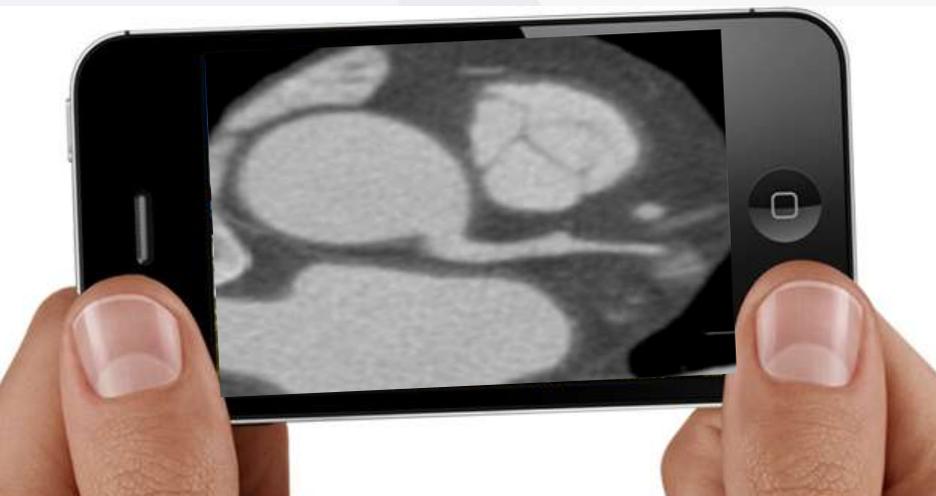


Imagen cardiaca

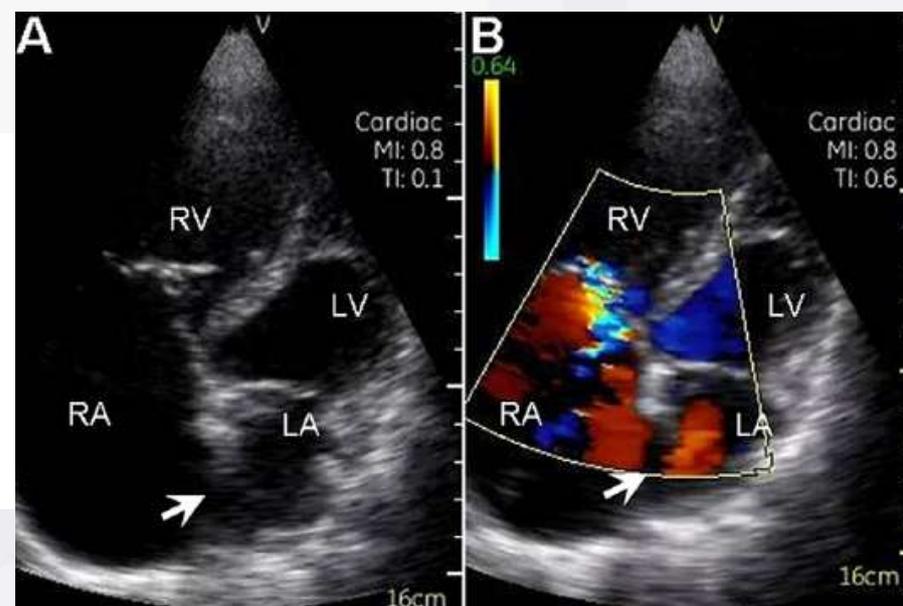
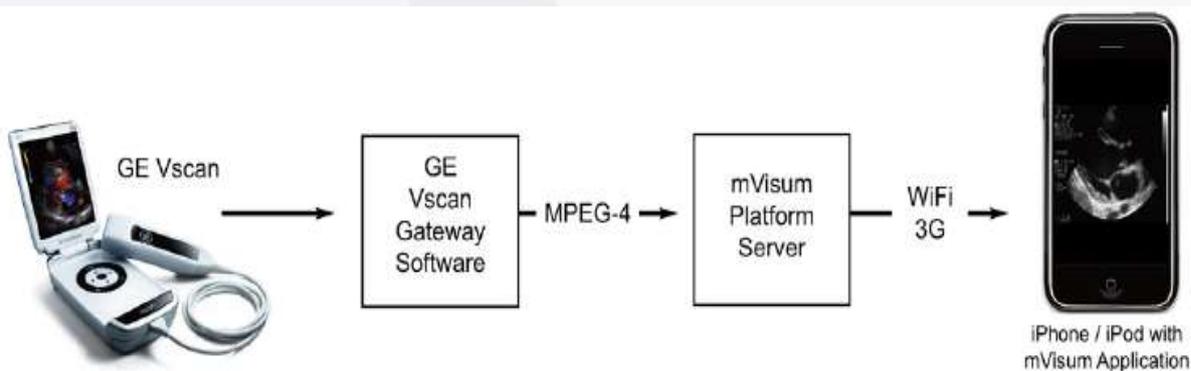
CARDIO  ACTUALIDAD 2011

Telemedicina y telediagnóstico

Interpretation of Remotely Downloaded Pocket-Size Cardiac Ultrasound Images on a Web-Enabled Smartphone: Validation Against Workstation Evaluation

Brian G. Choi, MD, MBA, Monica Mukherjee, MD, Praveen Dala, PhD, Heather A. Young, PhD, MPH, Cynthia M. Tracy, MD, Richard J. Katz, MD, and Jannet F. Lewis, MD, FASE, *Washington, District of Columbia; Camden, New Jersey*

89 pacientes
Pocket echo.



CARDIO  ACTUALIDAD 2011

Imagen cardiaca

Conclusiones

- extensión uso ecocardiografía
- mejor caracterización funcional y tisular

Implicaciones terapéuticas

- técnicas de imagen con mas precisión diagnóstica y pronóstica y menos efectos colaterales. **Implicaciones en prevención.**
- telemedicina: diagnóstico remoto. **Implicaciones en planificación sanitaria**

CARDIO  
ACTUALIDAD 2011

Imagen cardiaca

MSCT 2011: Valor pronóstico adicional

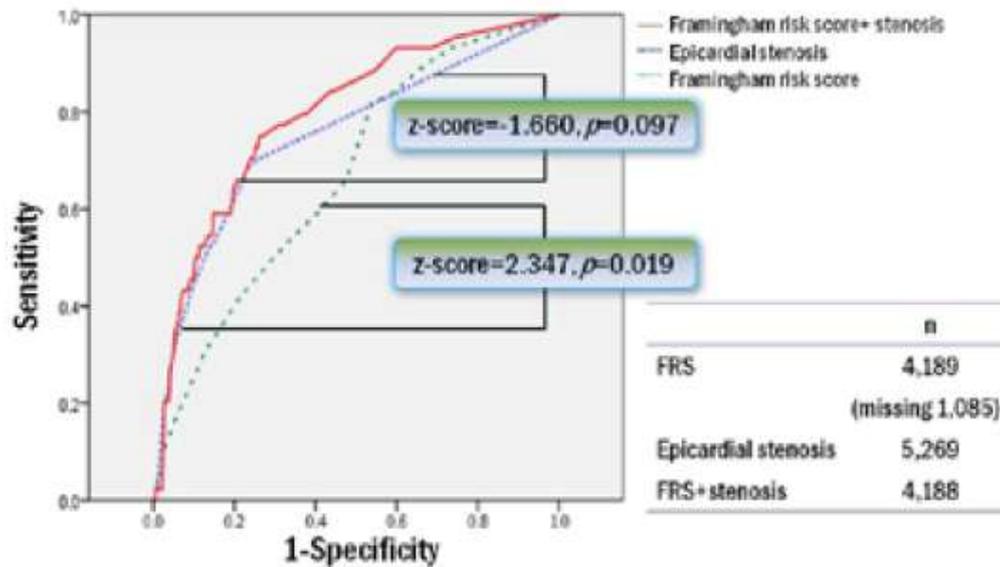
PARIS ESC Congress 2011
27-31 August

Abstract: 5352

Comparison of clinical versus 64-slice multidetector coronary computed tomography in predicting cardiovascular events in asymptomatic patients

Authors:

H.E. Park¹, G.Y. Cho², S.I. Choi², E.J. Chun², H.K. Kim¹, Y.J. Kim¹, D.W. Sohn¹, ¹Seoul National University Hospital - Seoul - Korea, Republic of, ²Seoul National University Bun-Dang Hospital - Seoul - Korea, Republic of,



ROC curve for cardiovascular events.

5200 pacientes, asintomáticos

FU 620 días

Estenosis a. epicardica predictor
mas potente de eventos CV

CARDIO  ACTUALIDAD 2011

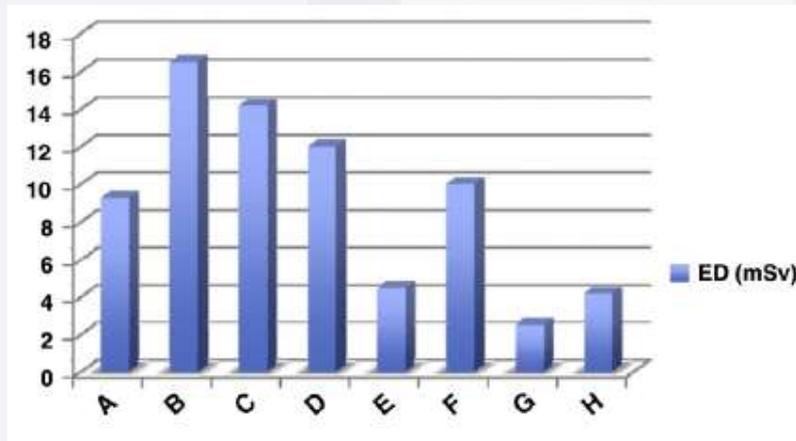
Imagen cardiaca

MSCT 2011: Irradiación

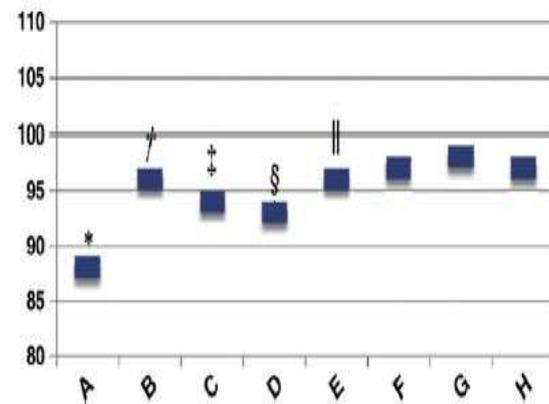
Radiation dose and diagnostic accuracy of multidetector computed tomography for the detection of significant coronary artery stenoses

A meta-analysis

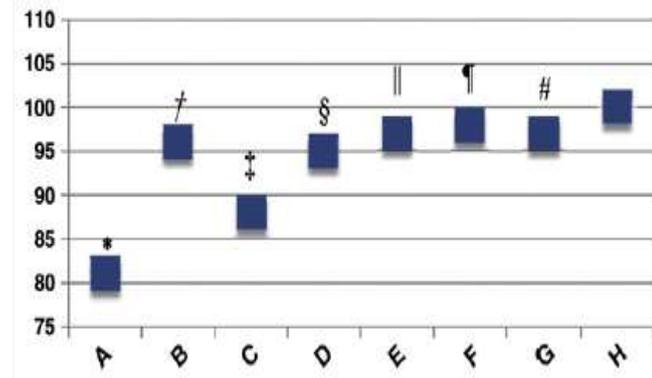
Gianluca Pontone ^{a,*}, Daniele Andreini ^a, Antonio L. Bartorelli ^{a,b}, Erika Bertella ^a, Saima Mushtaq ^a, Andrea Annoni ^a, Alberto Formenti ^a, Luisa Chiappa ^a, Sarah Cortinovia ^a, Andrea Baggiano ^a, Edoardo Conte ^a, Francesca Bovis ^a, Fabrizio Veglia ^a, Claudia Foti ^a, Giovanni Ballerini ^a, Cesare Fiorentini ^{a,b}, Mauro Pepi ^a



Irradiación



Precisión diagnóstica

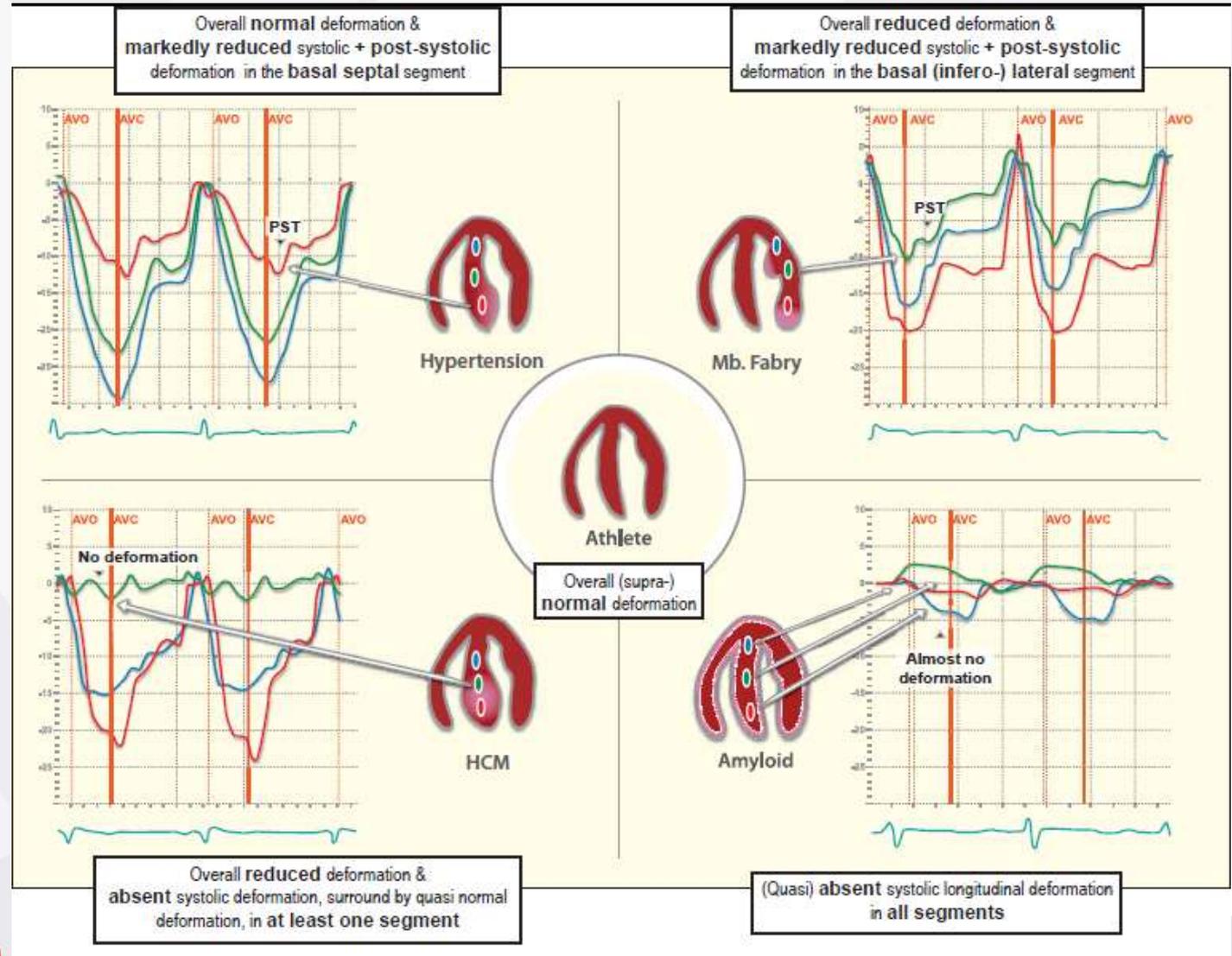
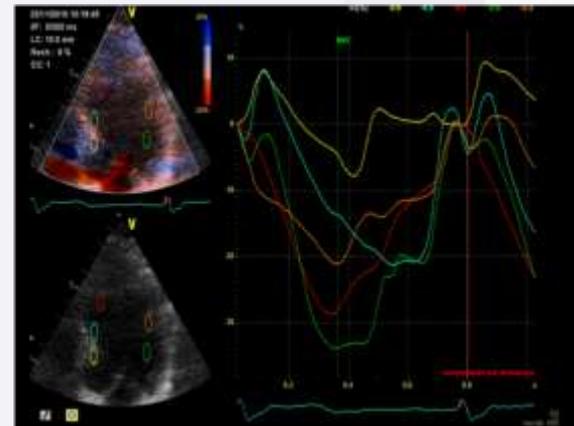


Factibilidad

G: Dual source + prospective ECG gating + BMI adapted

H: 320-MSCT + prospective ECG gating + BMI adapted

Deformación miocárdica: caracterización hipertrofia



CARDIO  ACTUALIDAD 2011

Imagen cardiaca

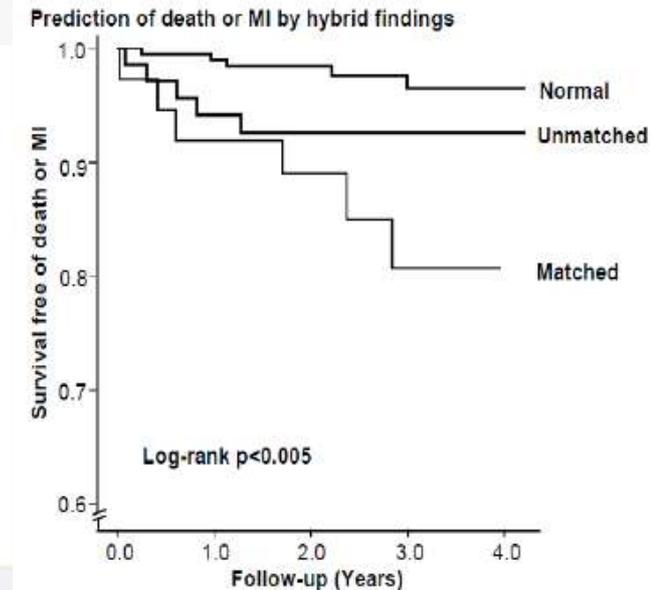
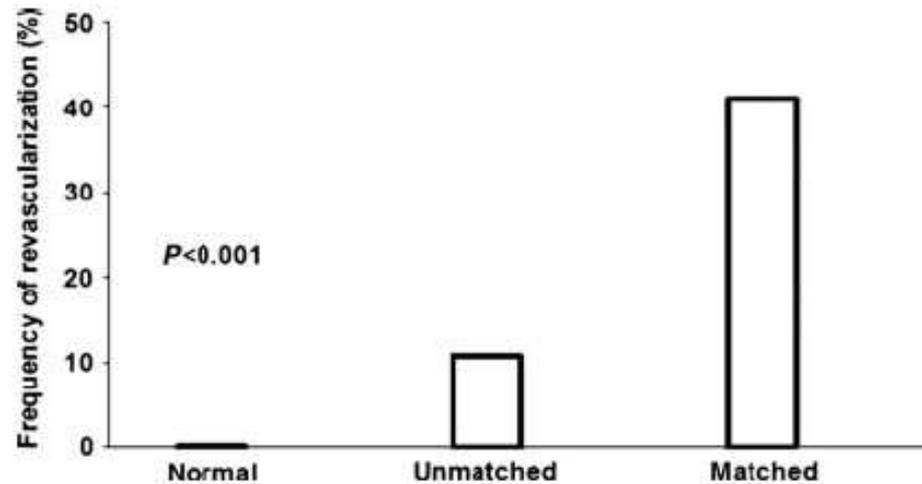
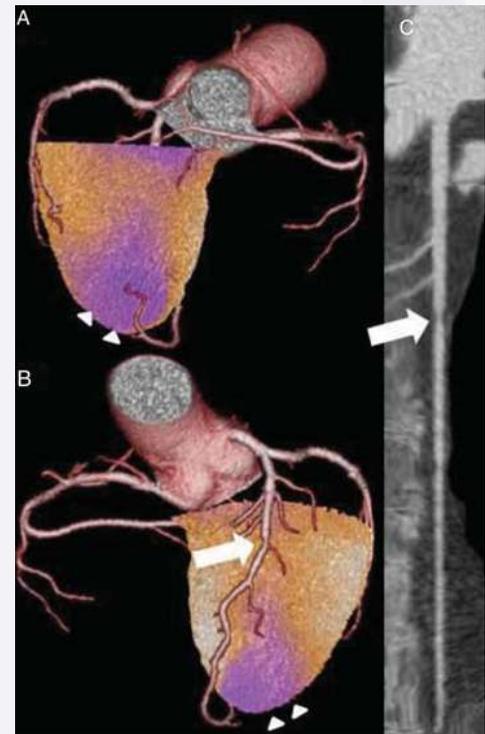
Imagen fusión/multimodal

Impact of cardiac hybrid single-photon emission computed tomography/computed tomography imaging on choice of treatment strategy in coronary artery disease

Aju P. Pazhenkottil^{1†}, Rene N. Nkoulou^{1†}, Jelena-Rima Ghadri¹, Bernhard A. Herzog¹, Silke M. Küest¹, Lars Husmann¹, Mathias Wolfrum¹, Robert Goetti¹, Ronny R. Buechel¹, Oliver Gaemperli^{1,2}, Thomas F. Lüscher², and Philipp A. Kaufmann^{1,3*}

318 pacientes

83% prob. baja-interm pre-test



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Imagen cardiaca