FONDAZIONE CENTRO CARDIOLOGIA
E CARDIOCHIRURGIA A. DE GASPERIS
Niguarda Ca' Granda

Azienda Ospedaliera
Ospedale Niguarda Ca'Granda

Dipartimento Cardiologico A. De Gasperis
Azienda Ospedaliera Niguarda Ca' Granda - Milano

RUOLO DELLA RM E DELLA TC NELLA CARATTERIZZAZIONE DI PAZIENTI CON PATOLOGIE VALVOLARI

Patrizia Pedrotti
Unità di RMN cardiaca – Ospedale Niguarda Cà Granda - Milano

ECOCARDIOCHIRURGIA 2010

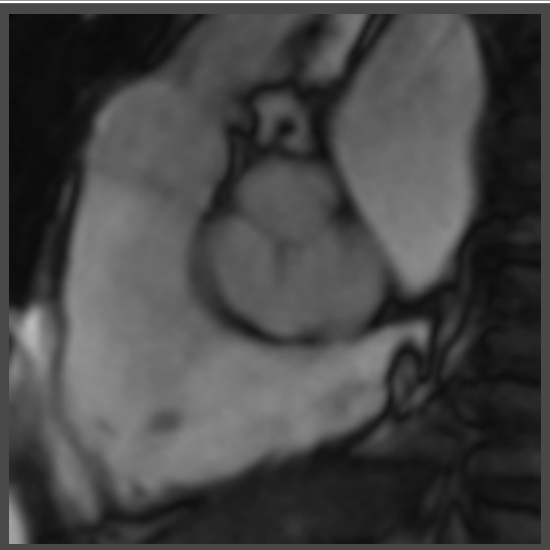
Milano, 10-12 Marzo 2010

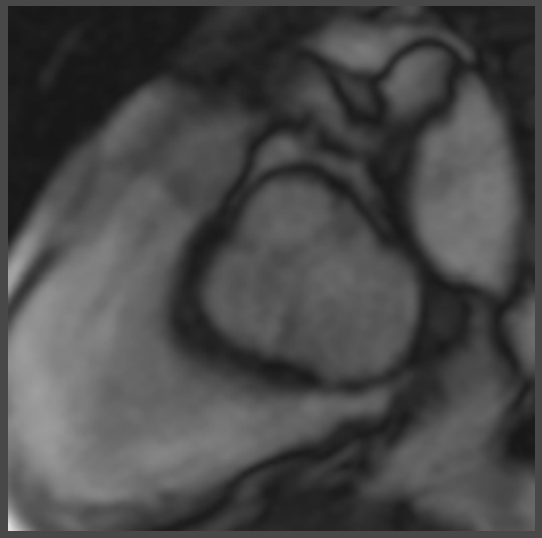
RM E TC IN VALVULOPATIE - AORTA

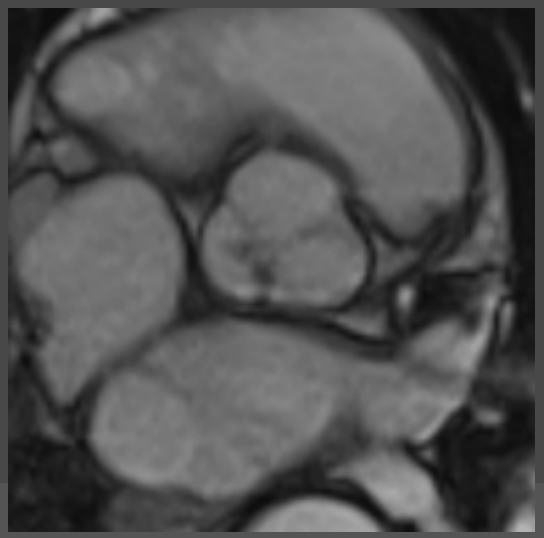
RMN CARDIACA

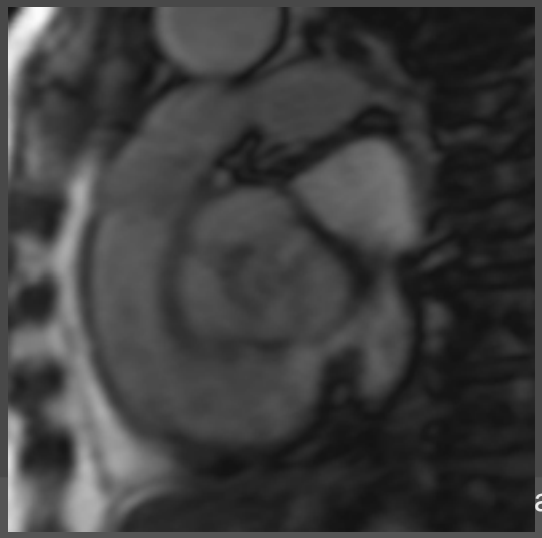
ANATOMIA E FUNZIONE VALVOLARE

SSFP CINE MRI



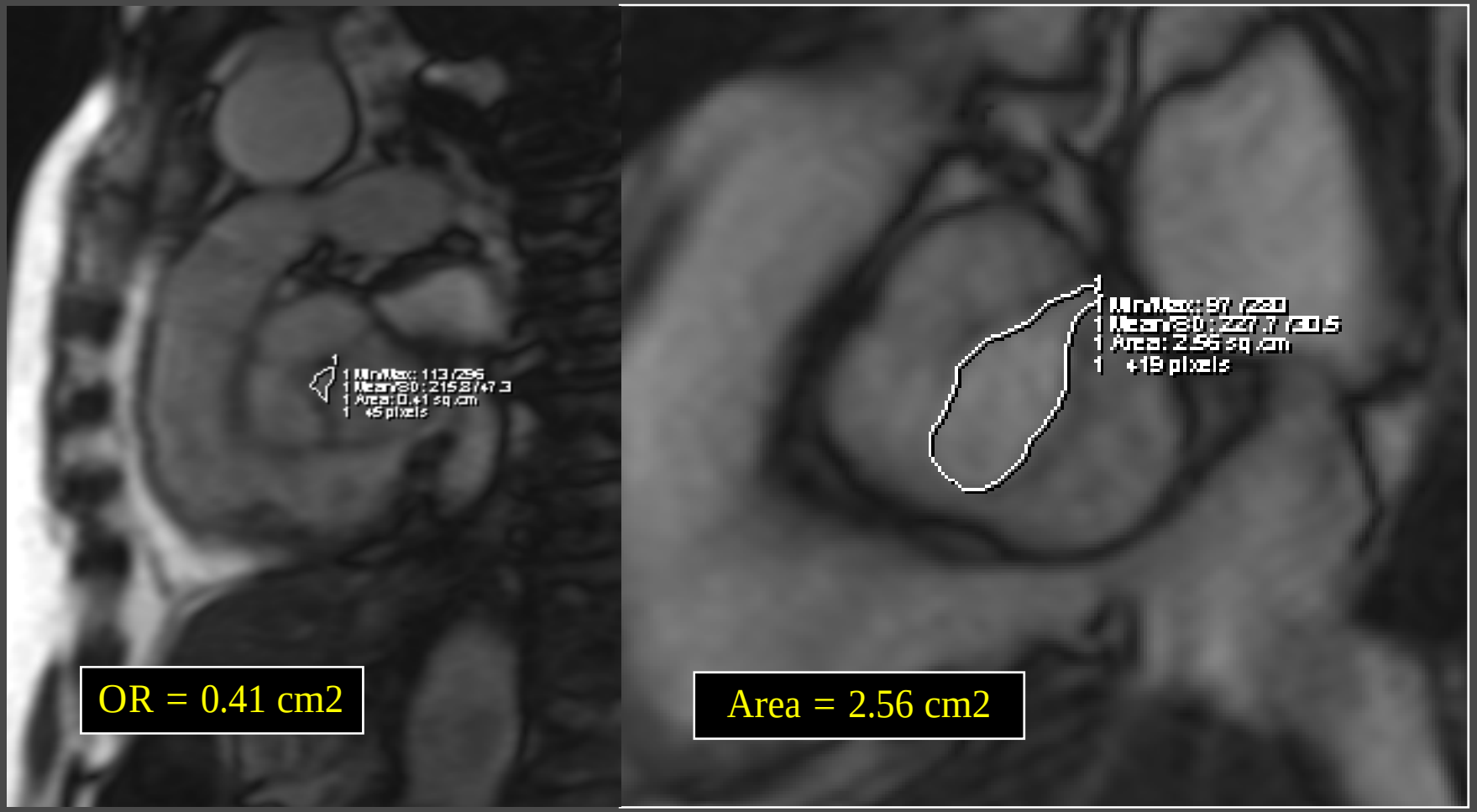






RM E TC IN VALVULOPATIE - AORTA

ANATOMIA VALVOLARE – SSFP CINE MRI

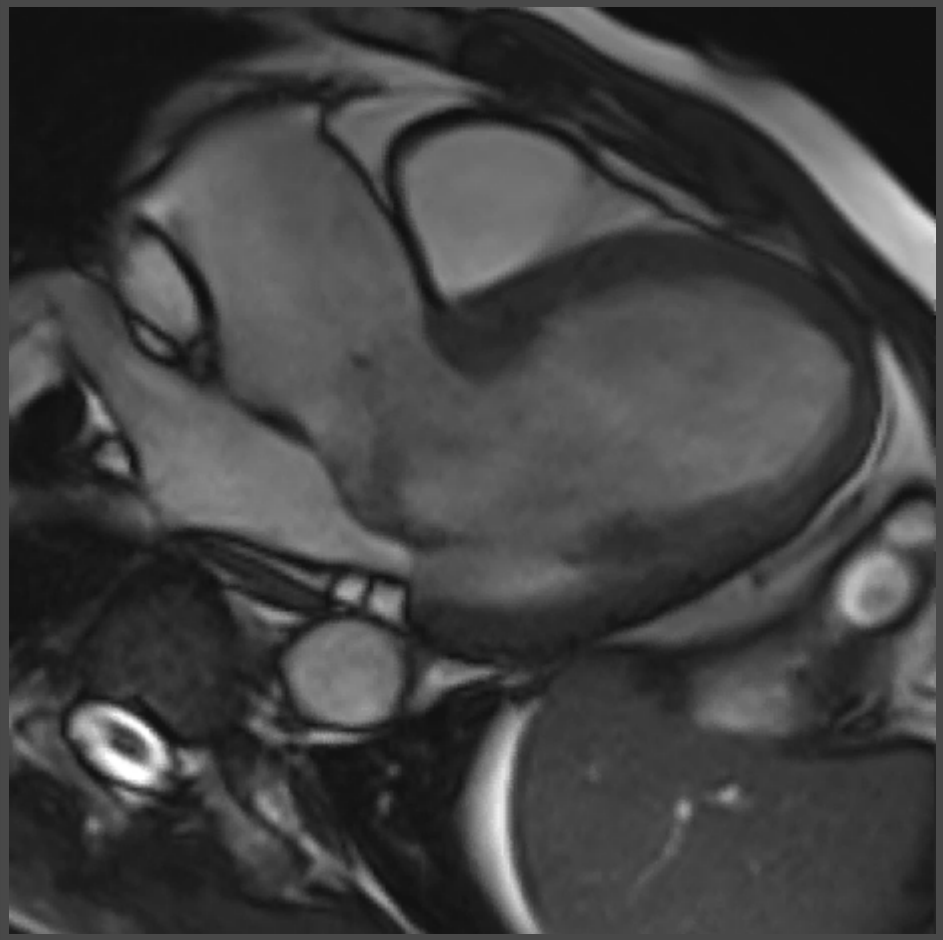


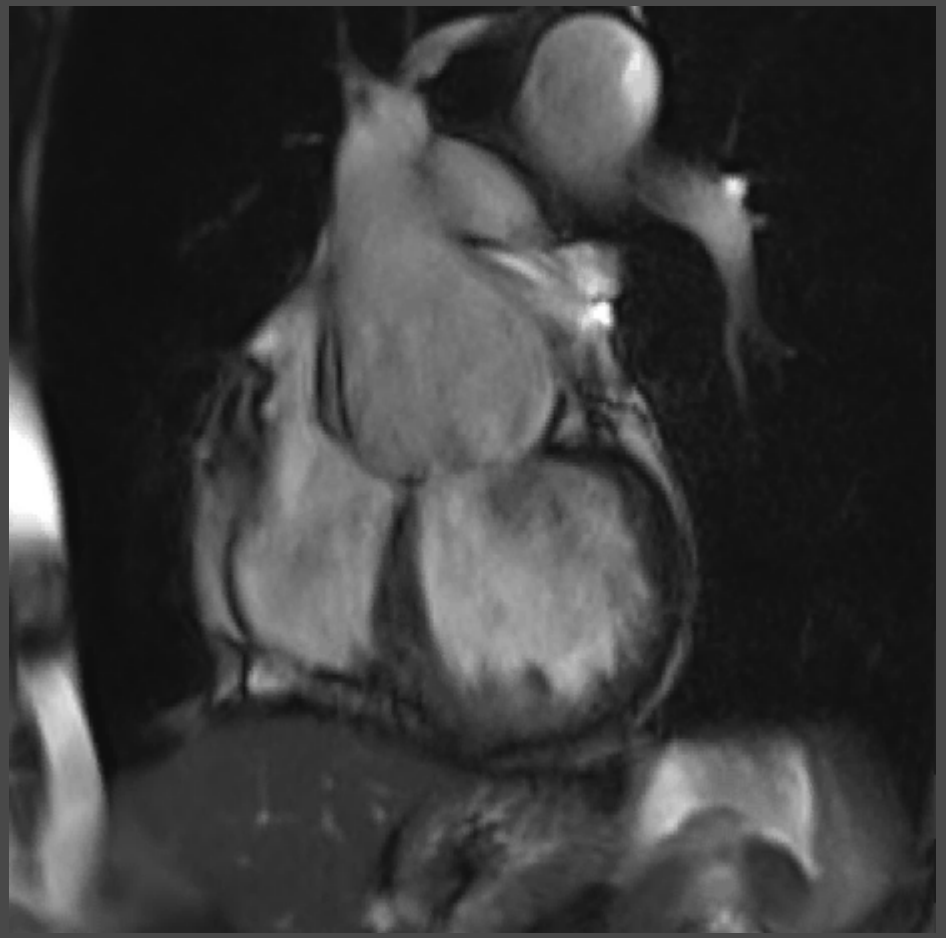
Circulation 2009; 119: 468-478

Titolo:
Autore:
Data:
Evento:

RM E TC IN VALVULOPATIE - AORTA

FUNZIONE VALVOLARE – SSFP CINE MRI

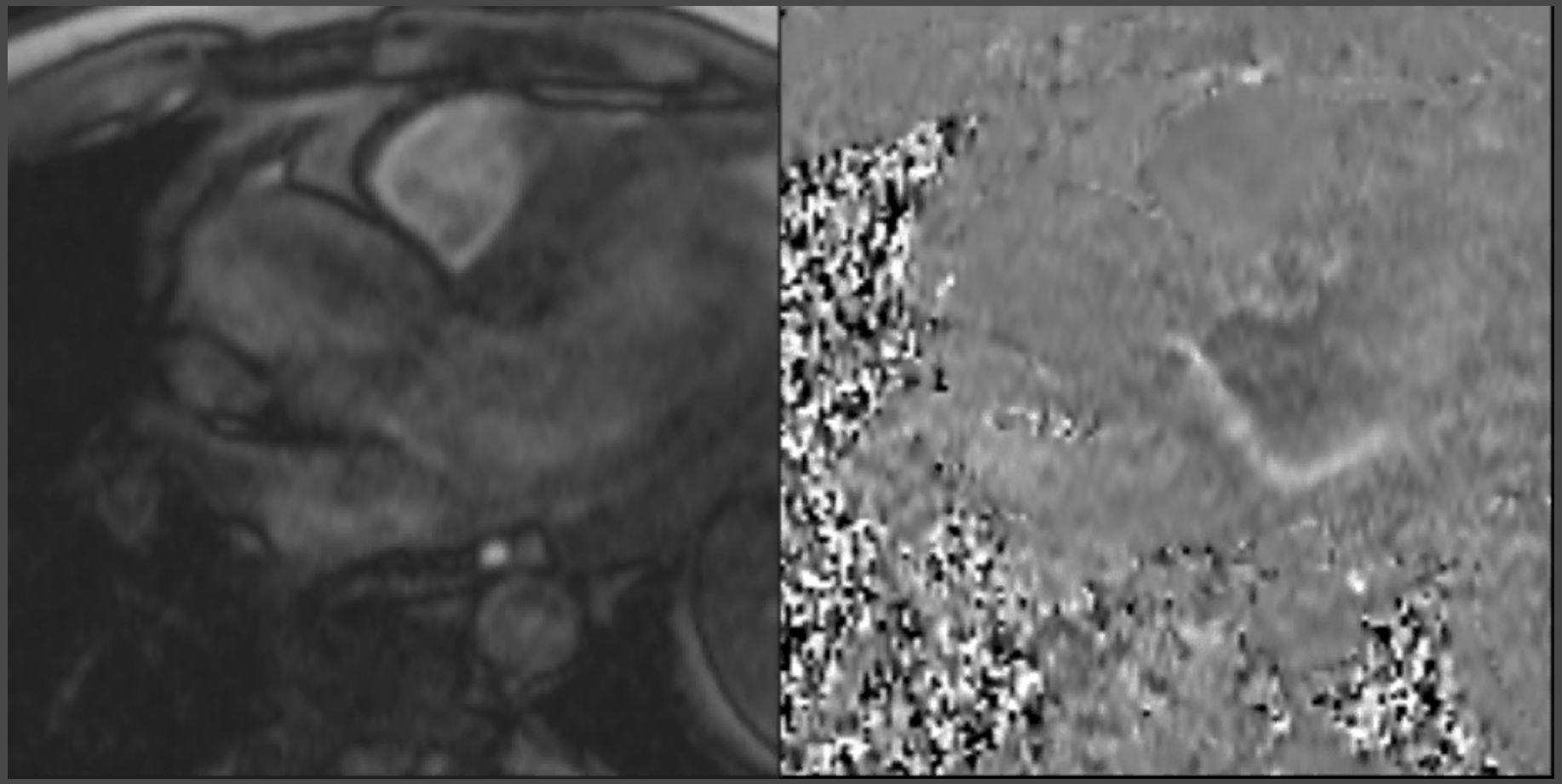




RM E TC IN VALVULOPATIE - AORTA

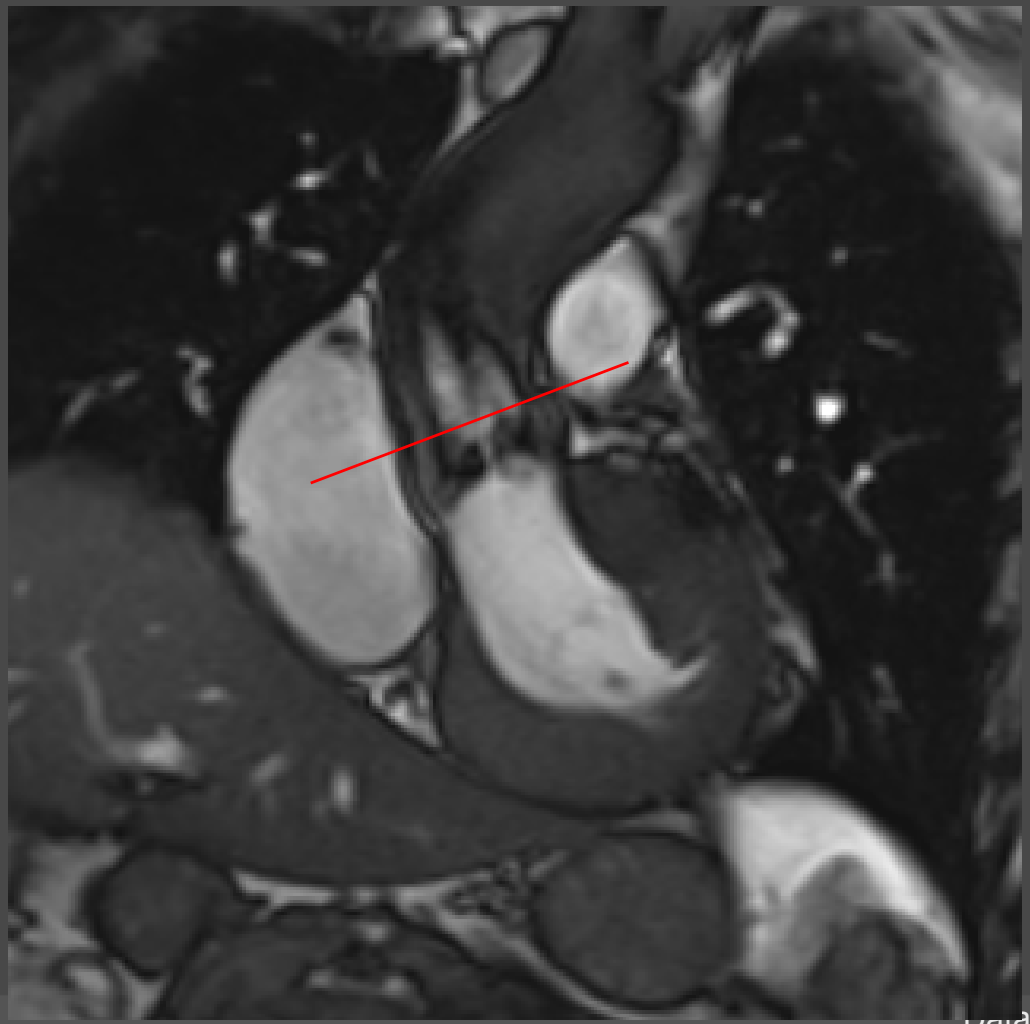
FUNZIONE VALVOLARE – PHASE-CONTRAST CINE MRI – IN PLANE

INSUFFICIENZA AORTICA



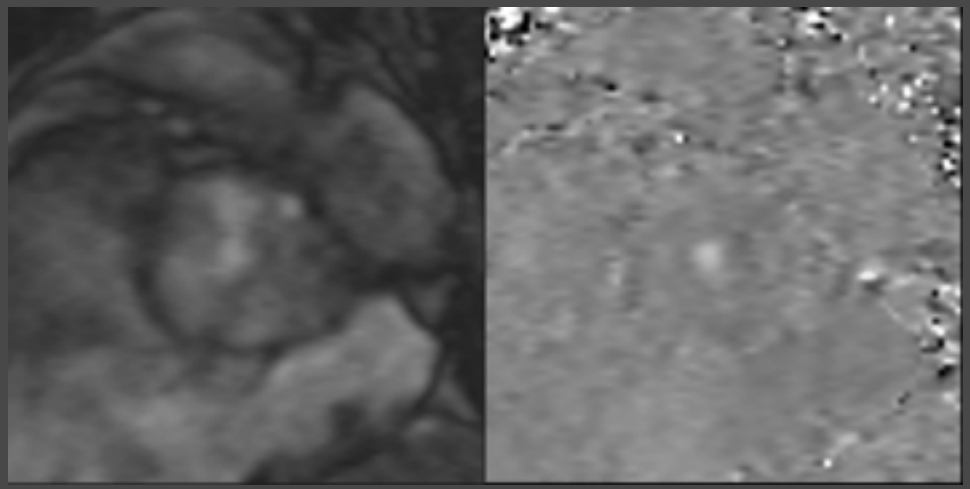
RM E TC IN VALVULOPATIE - AORTA

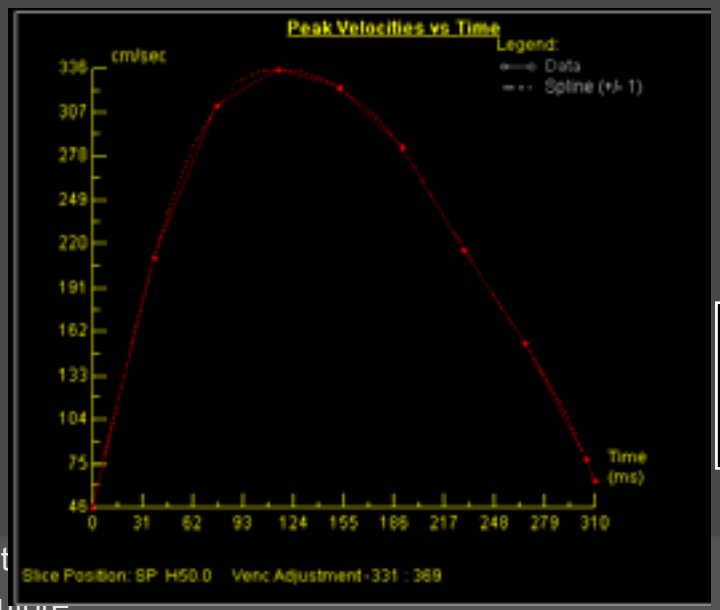
FUNZIONE VALVOLARE – PHASE-CONTRAST CINE MRI – THROUGH PLANE



RM E TC IN VALVULOPATIE - AORTA

FUNZIONE VALVOLARE – PHASE-CONTRAST CINE MRI - THROUGH PLANE

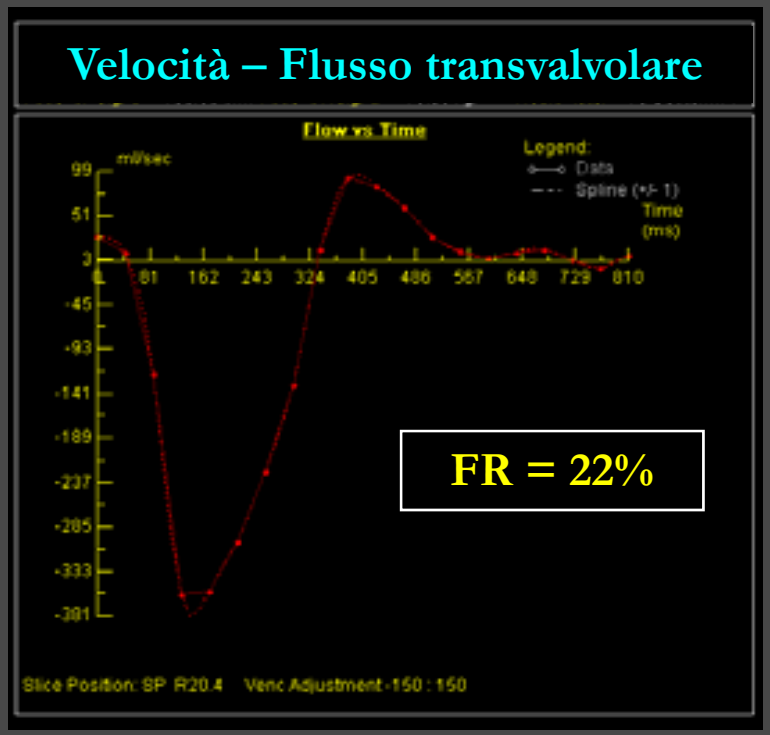




V max = 3.37 m/s

ΔP max = 45 mmHg

Velocità – Flusso transvalvolare



FR = 22%

Circulation 2009; 119: 468-478

RM E TC IN VALVULOPATIE - AORTA

FUNZIONE VALVOLARE – INSUFFICIENZA AORTICA

GRADING DELL'ENTITA' DEI RIGURGITI VALVOLARI: FRAZIONE DI RIGURGITO (FR) (J Cardiovasc Magn Reson 2006)

- **LIEVE = FR ≤ 15%**
- **MODERATA = FR 16-25%**
- **MODERATA-SEVERA = FR 26-48%**
- **SEVERA = FR > 48%**

GRADING DELL'ENTITA' DEL RIGURGITO AORTICO: AREA ORIFIZIO DI RIGURGITO (AOR) (Heart 2008)

- **MODERATA-SEVERA = AOR ≥ 0.28 cm2**
- **SEVERA = AOR ≥ 0.48 cm2**

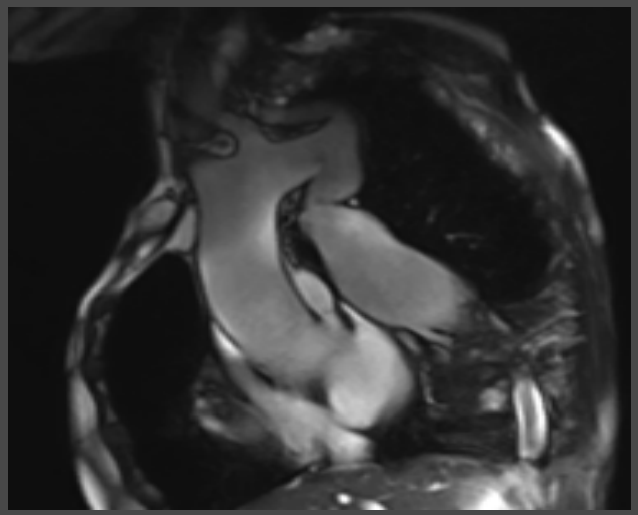
RM E TC IN VALVULOPATIE - AORTA

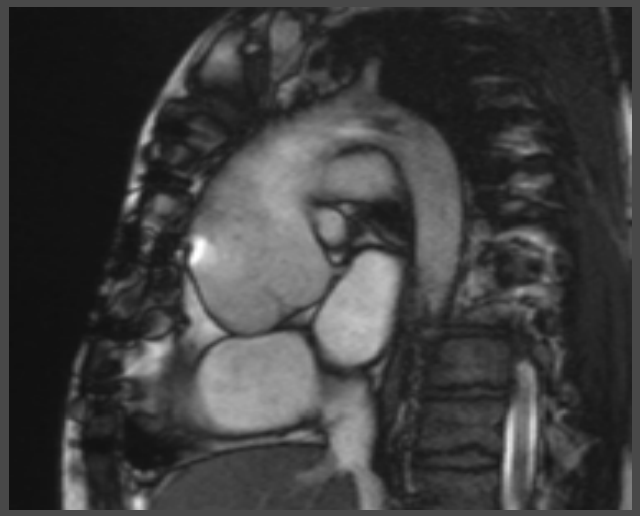
INFORMAZIONI AGGIUNTIVE - ANGIOGRAFIA

DIMENSIONI AORTA

RM E TC IN VALVULOPATIE - AORTA

INFORMAZIONI AGGIUNTIVE - ANGIOGRAFIA





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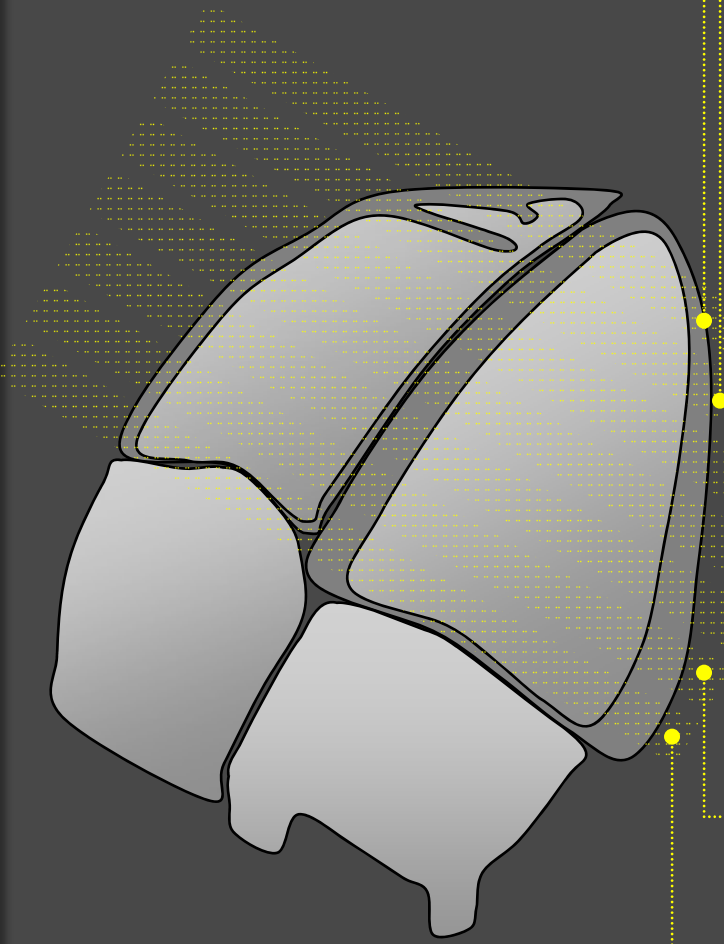
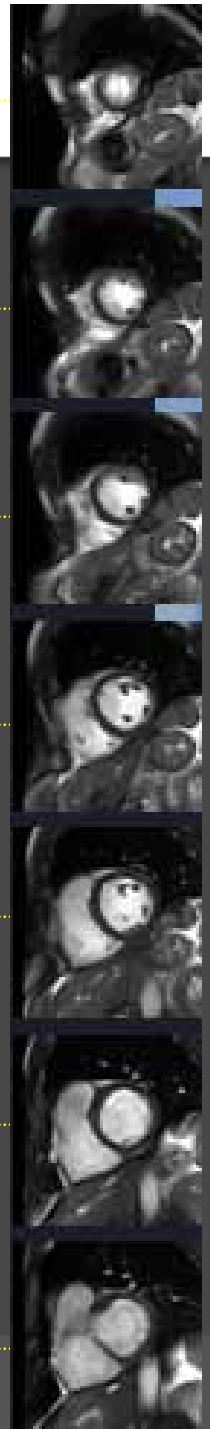
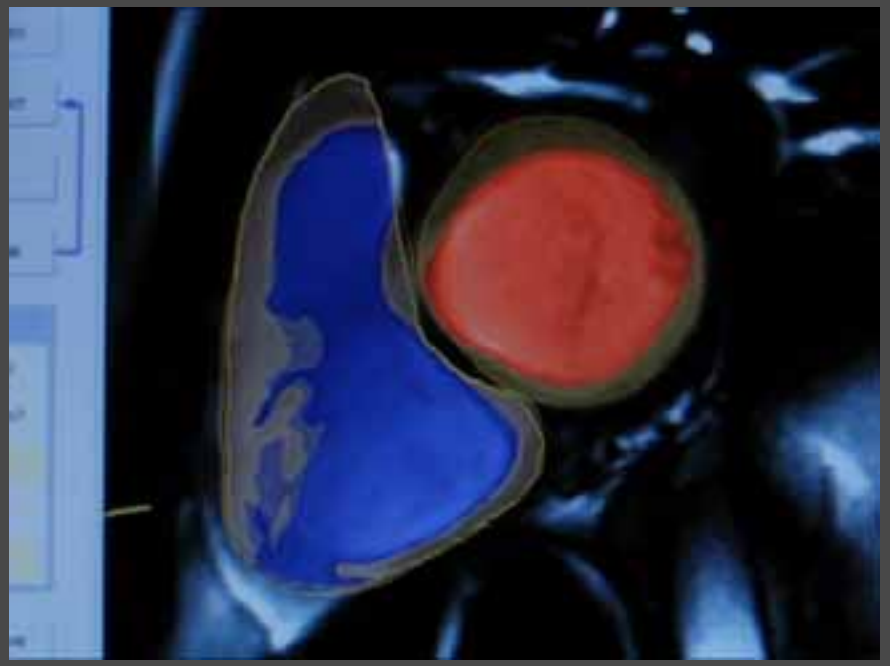
FUNZIONE VENTRICOLARE – SSFP CINE MRI



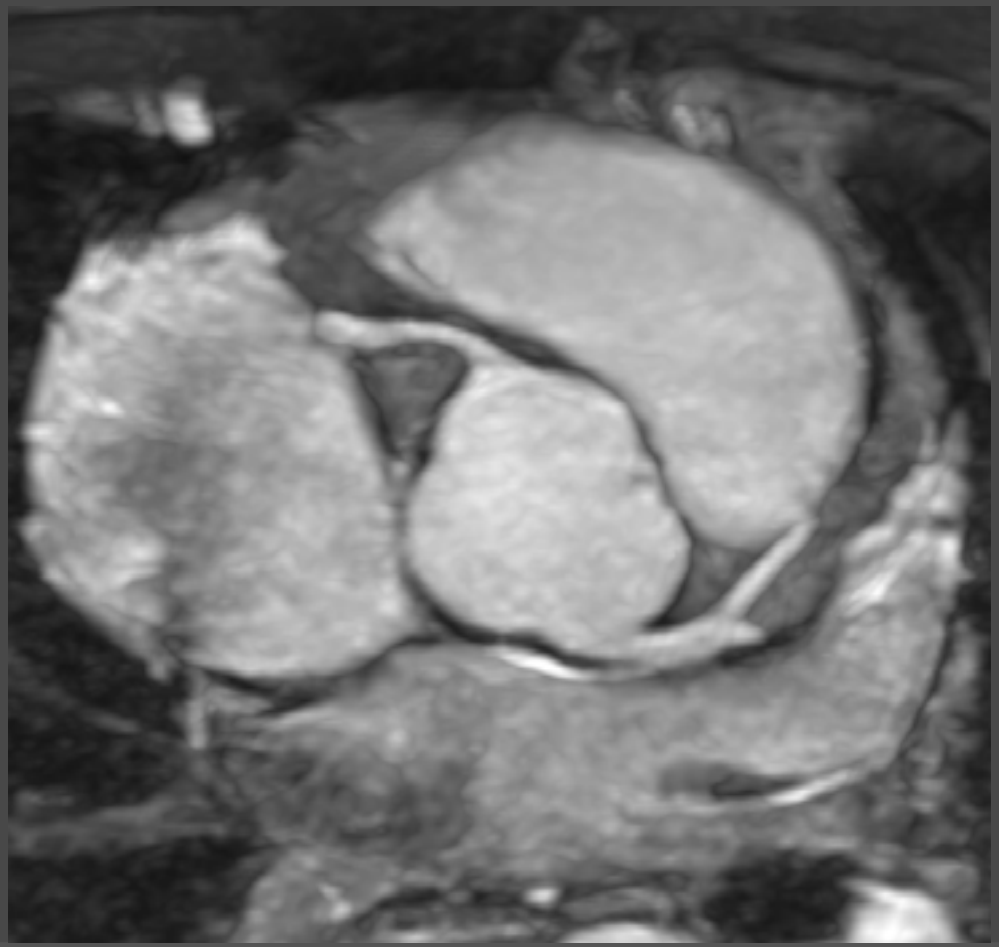


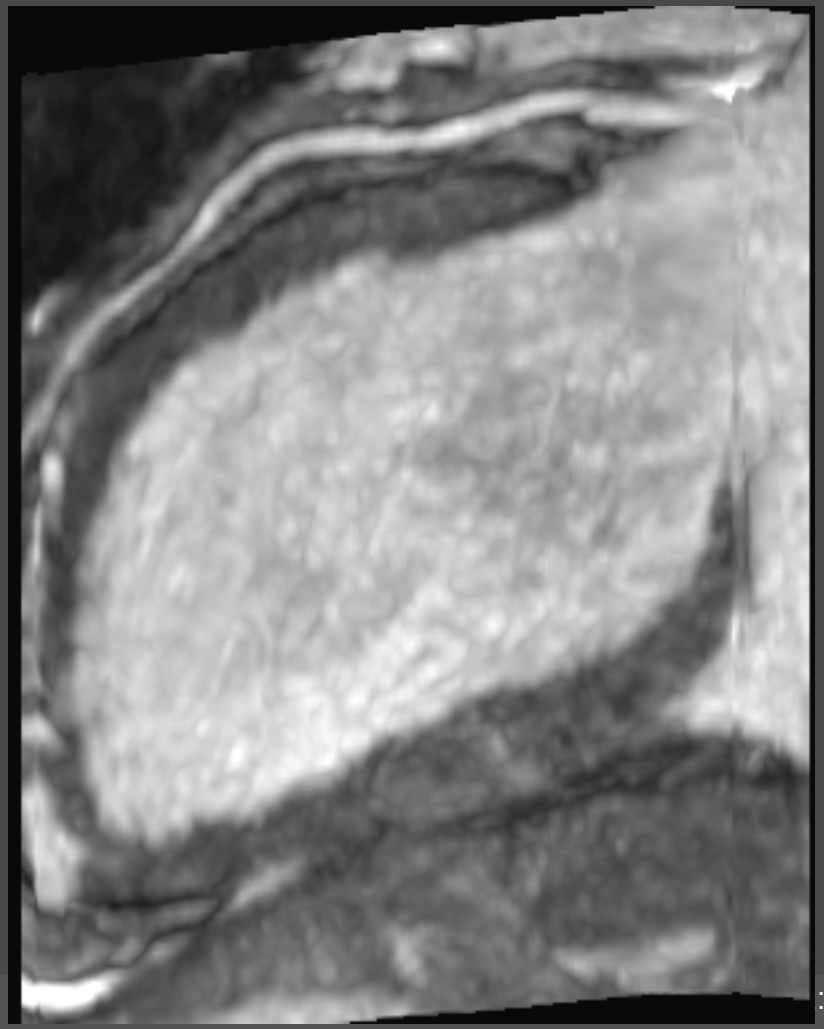


- RM cardiaca gold standard misurazione volumi e massa dei due ventricoli (Lancet 1985, Radiology 1990, 2005; J CMR 2003)
- F.u. pre e post-CCH
- Cinesi segmentaria

Cortesia Dr. S. Pedretti
H. Niguarda

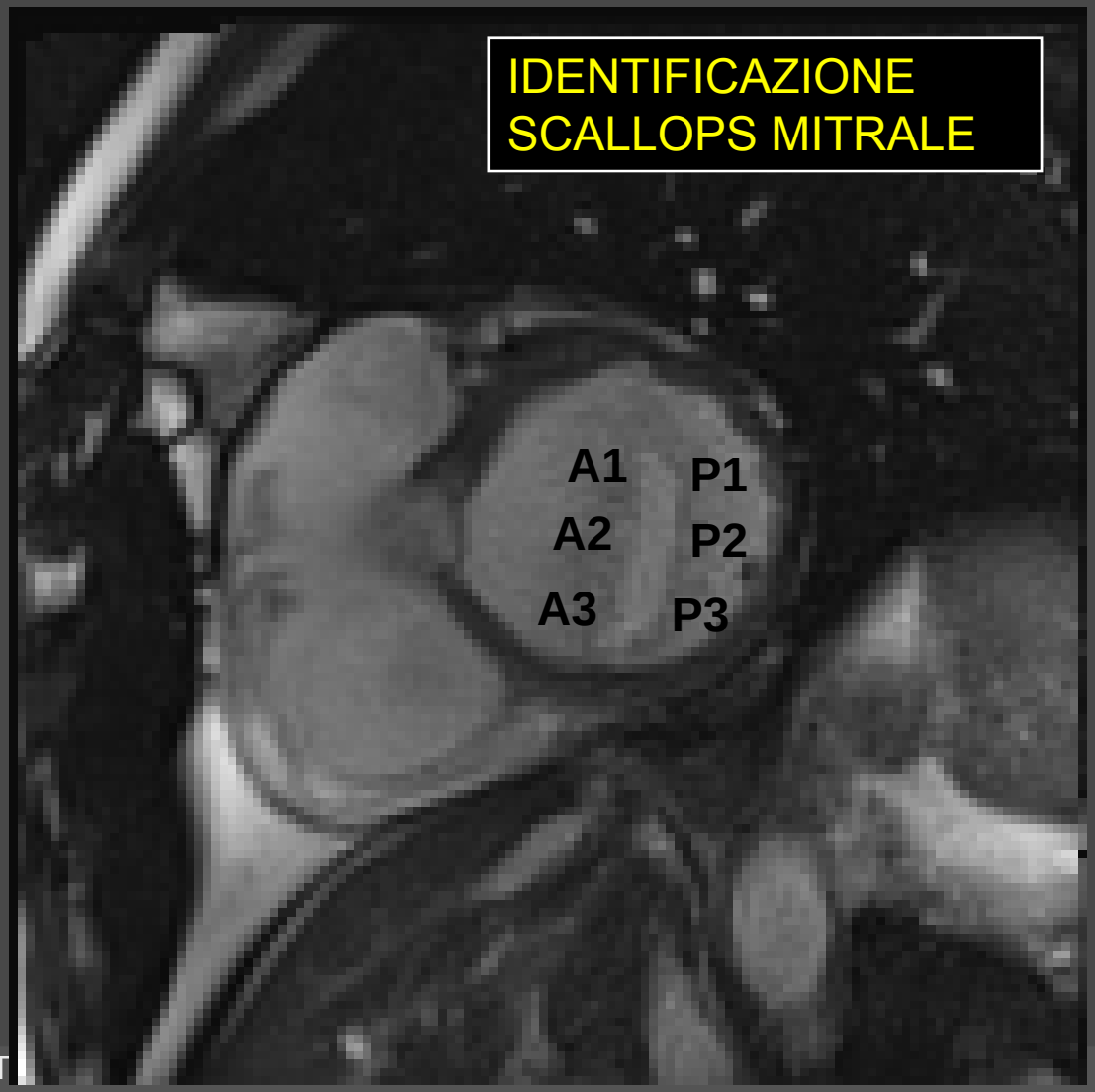
INFORMAZIONI AGGIUNTIVE – ORIGINE E DECORSO CORONARIE

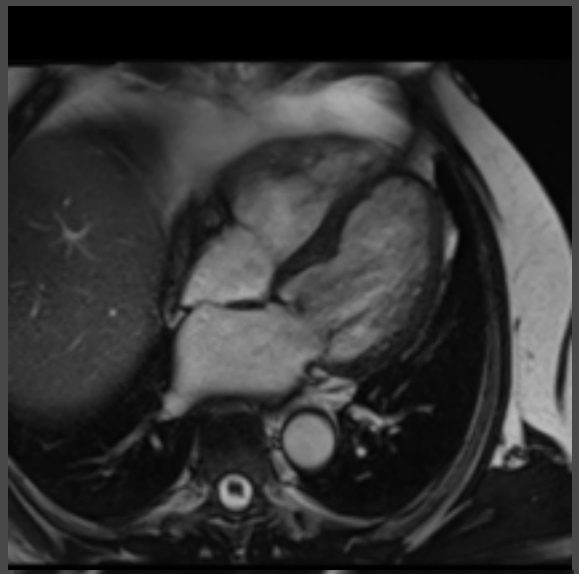


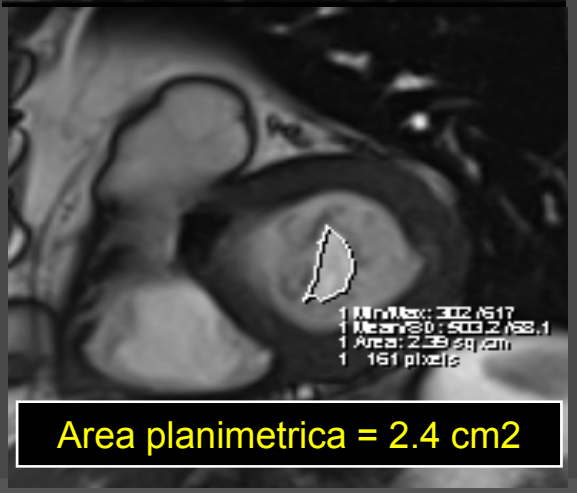


RM E TC IN VALVULOPATIE - MITRALE

ANATOMIA E FUNZIONE VALVOLARE – SSFP CINE MRI

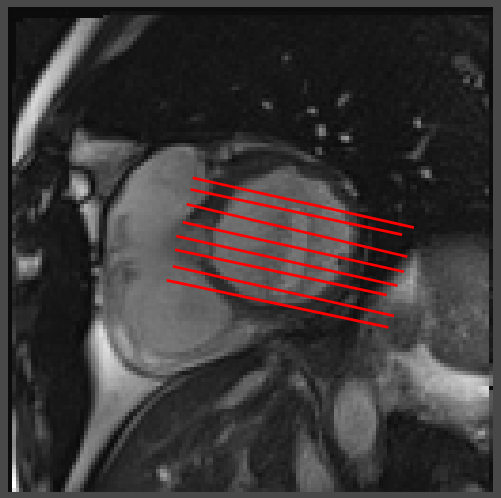


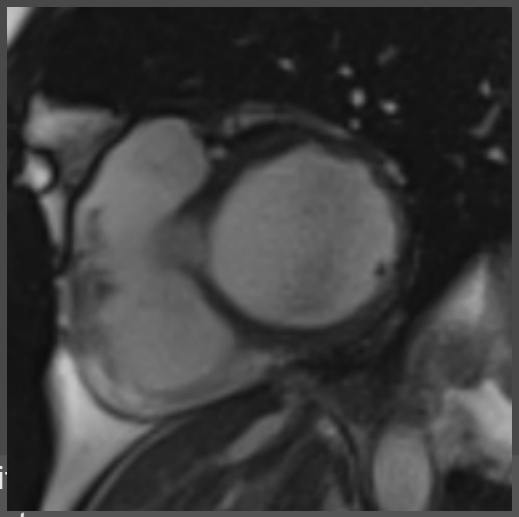


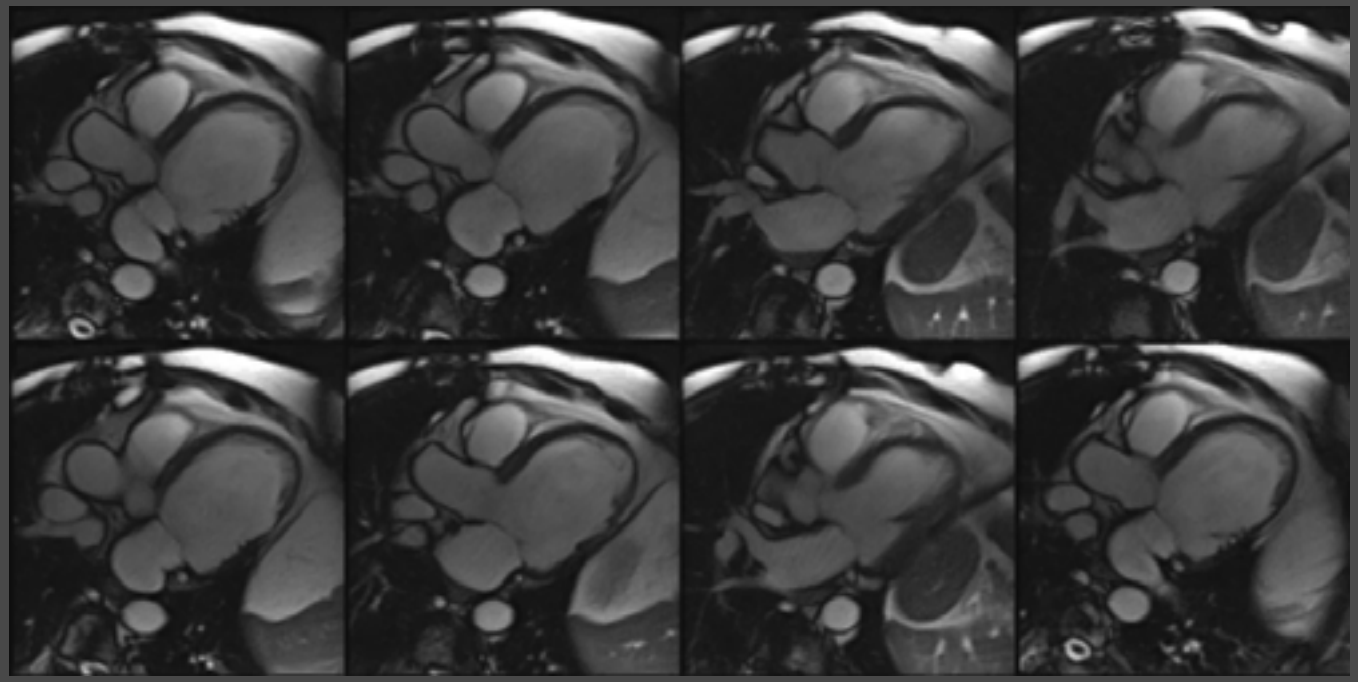


RM E TC IN VALVULOPATIE - MITRALE

ANATOMIA E FUNZIONE VALVOLARE – SSFP CINE MRI



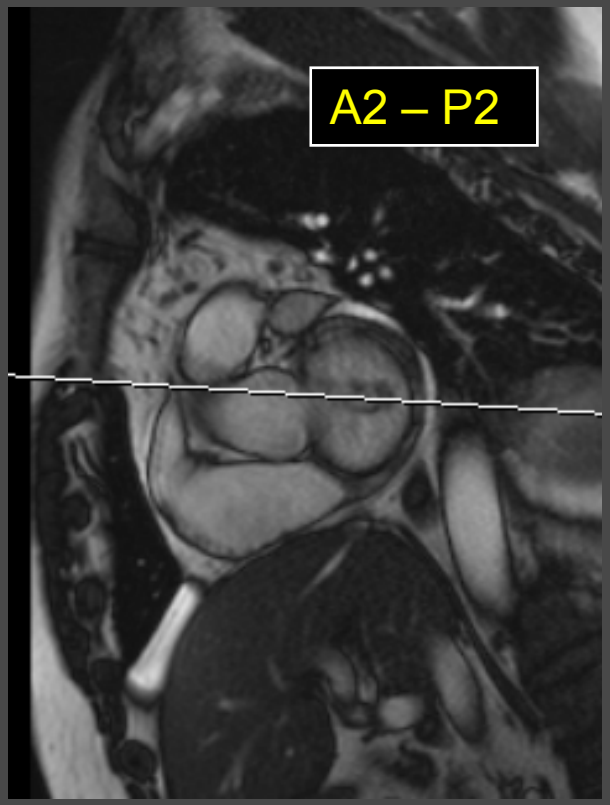


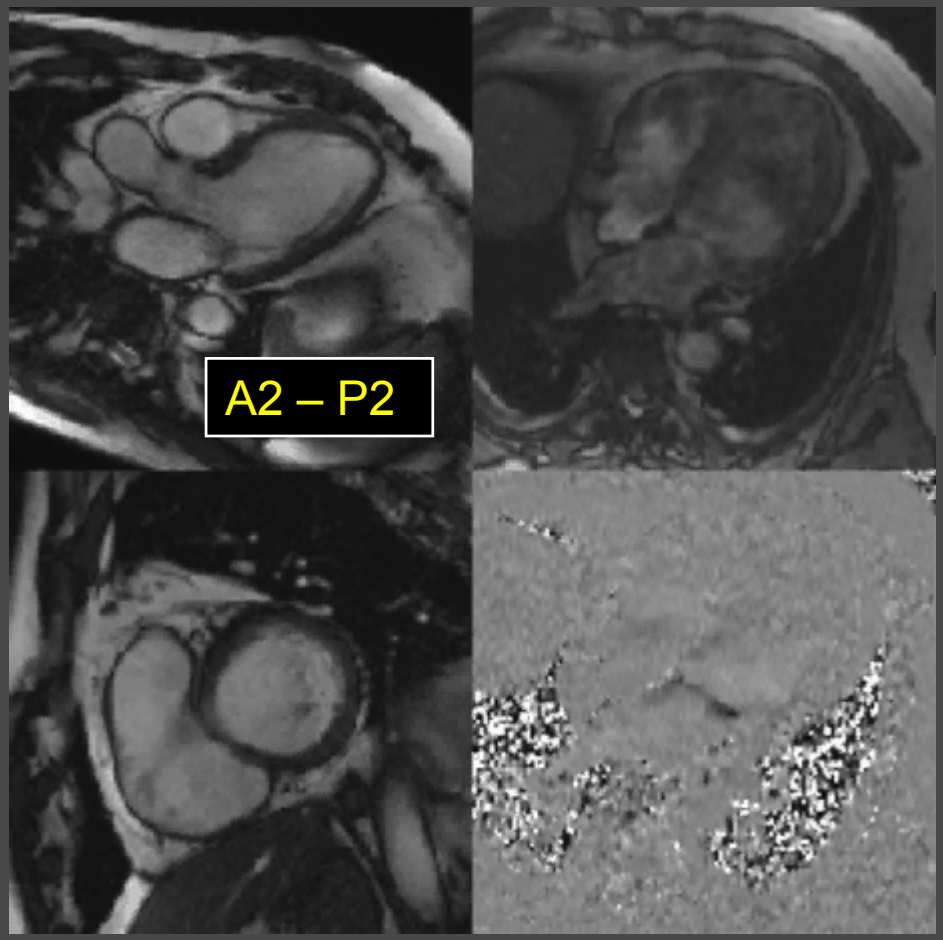


Chan KMJ et at. JCMR 2008;10:61

RM E TC IN VALVULOPATIE - MITRALE

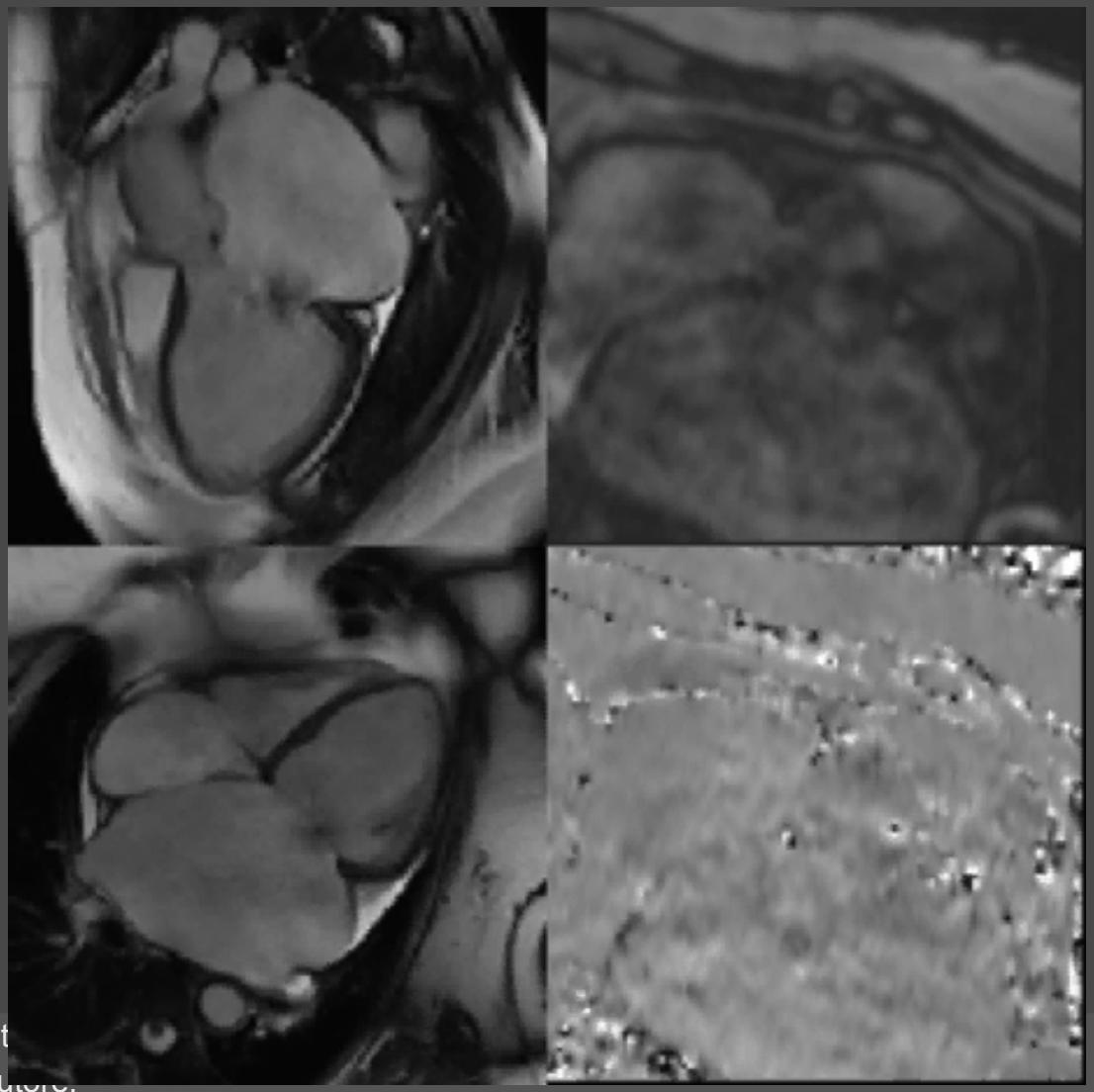
ANATOMIA E FUNZIONE VALVOLARE – SSFP CINE MRI – PHASE CONTRAST MRI

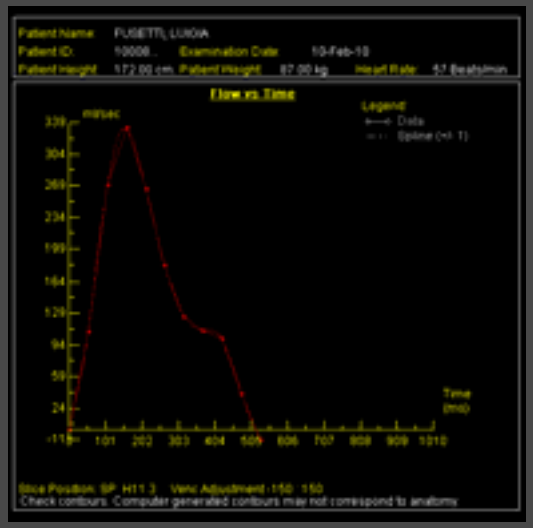




RM E TC IN VALVULOPATIE - MITRALE

ANATOMIA E FUNZIONE VALVOLARE – SSFP CINE MRI





QUANTIFICAZIONE IM

FR = LVSV – FWAo / LVSV

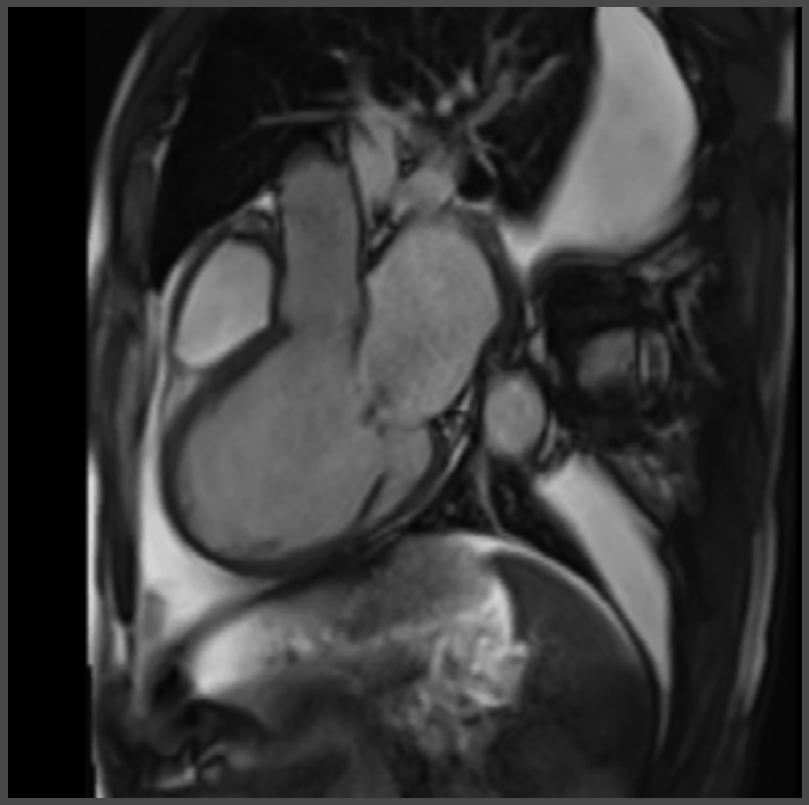
FR = LVSV – RVSV / LVSV

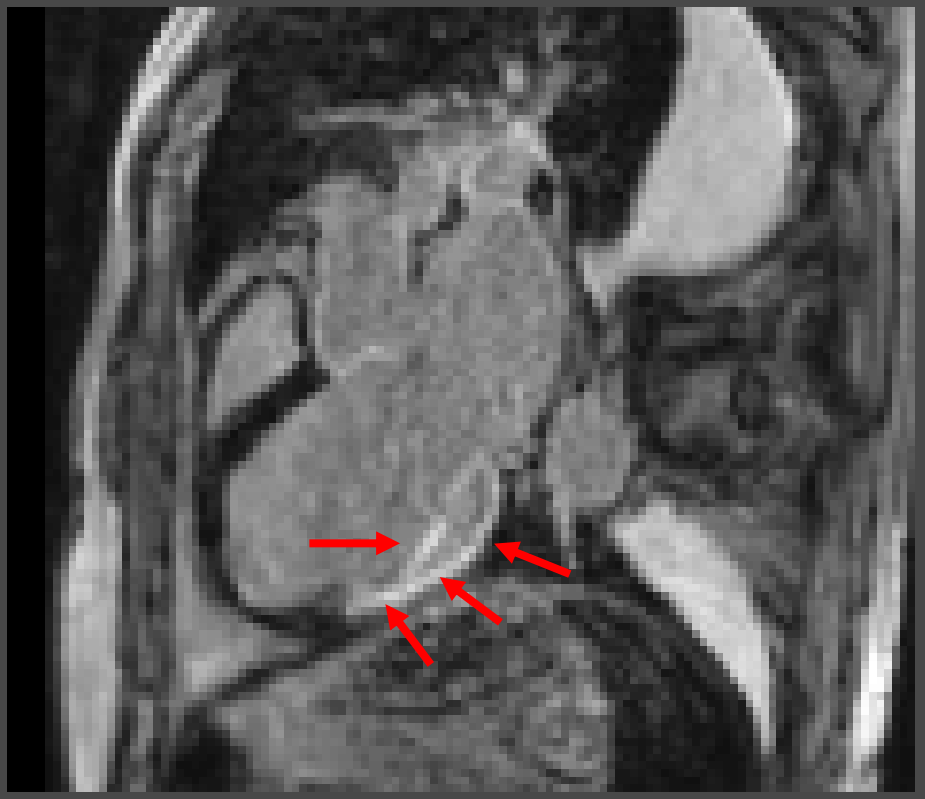
VR = 52ml, FR = 44%

Circulation 2009; 119: 468-478

RM E TC IN VALVULOPATIE - MITRALE

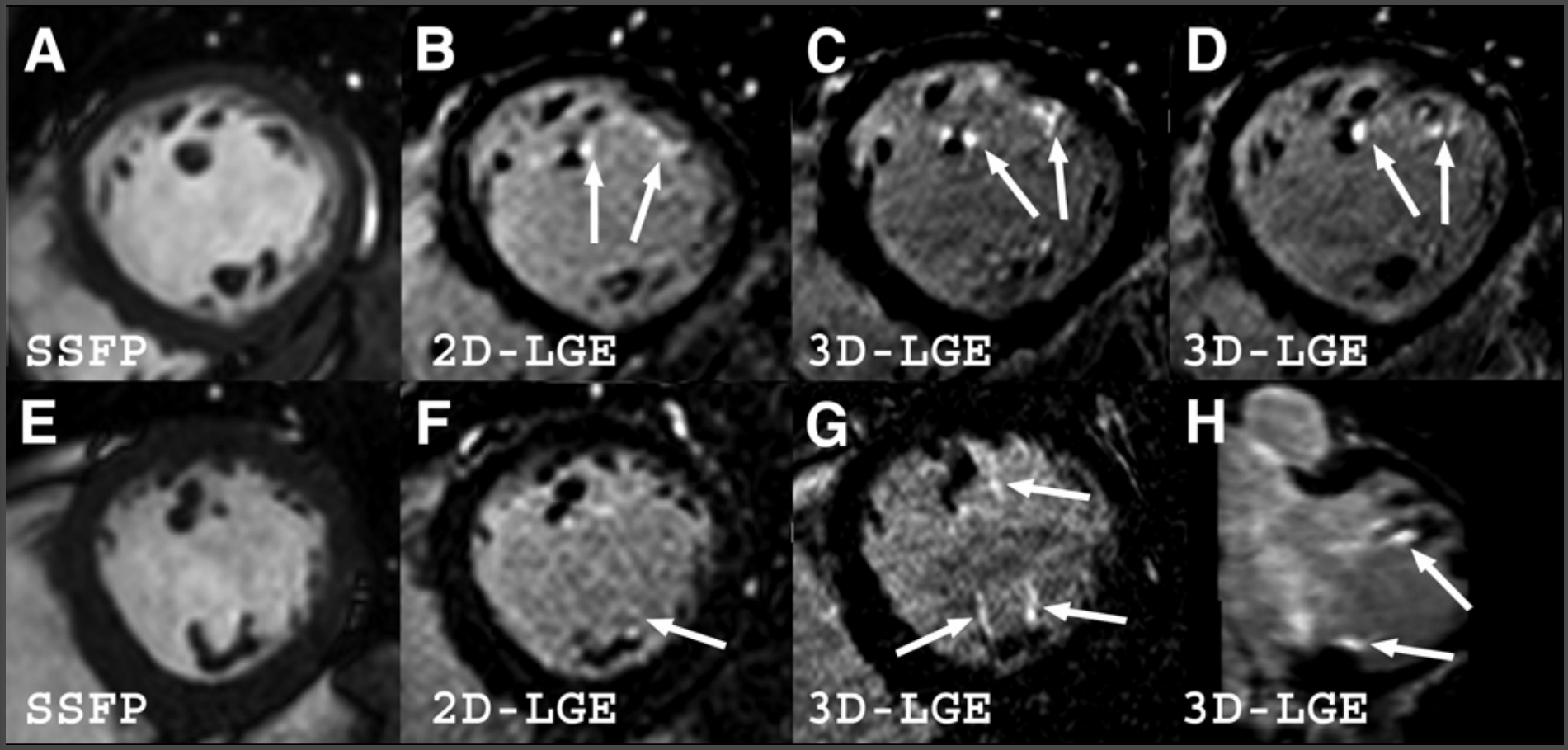
INFORMAZIONI AGGIUNTIVE – LATE ENHANCEMENT





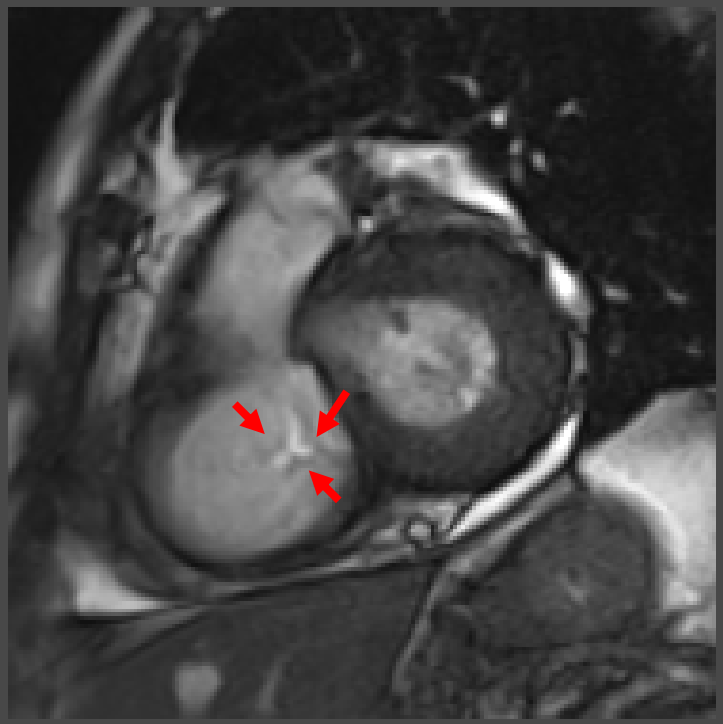
RM E TC IN VALVULOPATIE - MITRALE

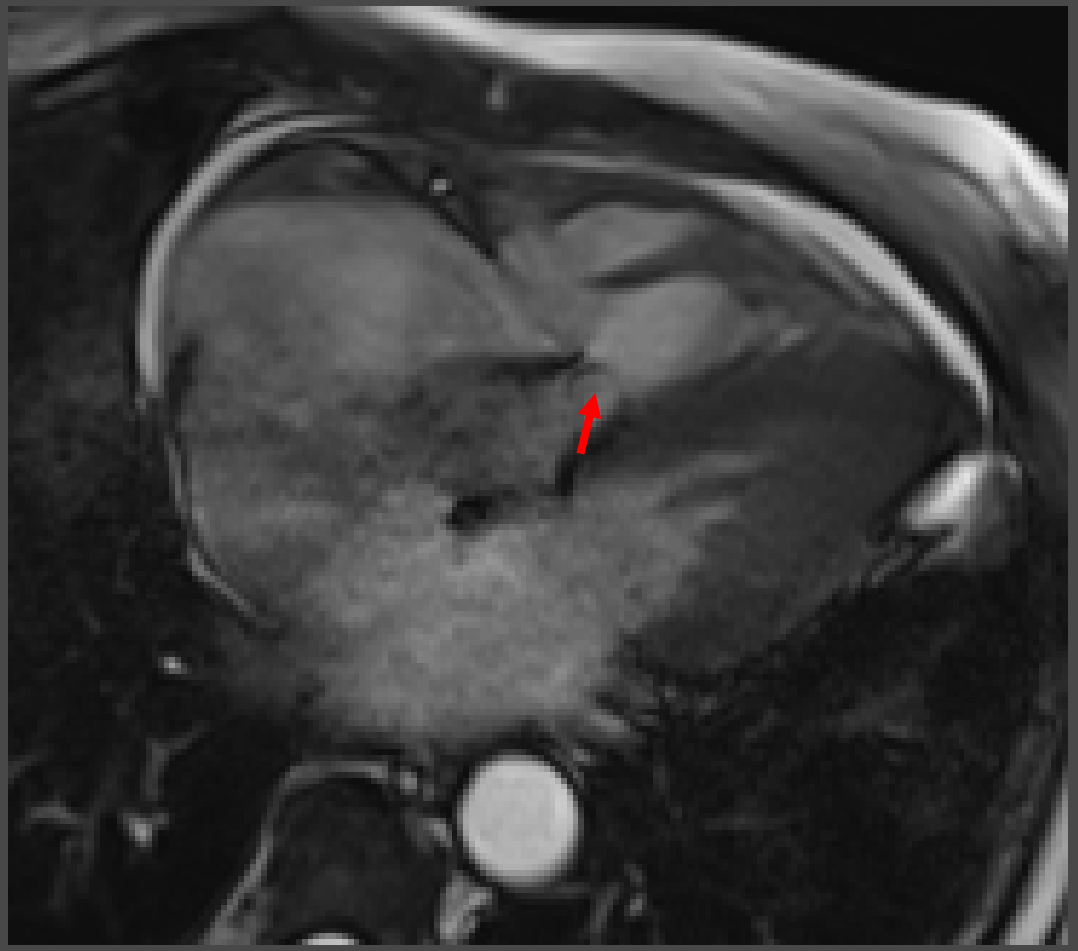
INFORMAZIONI AGGIUNTIVE – LATE ENHANCEMENT



PROLASSO MITRALICO: late enhancement muscoli papillari correlato con aritmie ventricolari complesse (JACC Cardiovascular Imaging 2008;1:294-303)

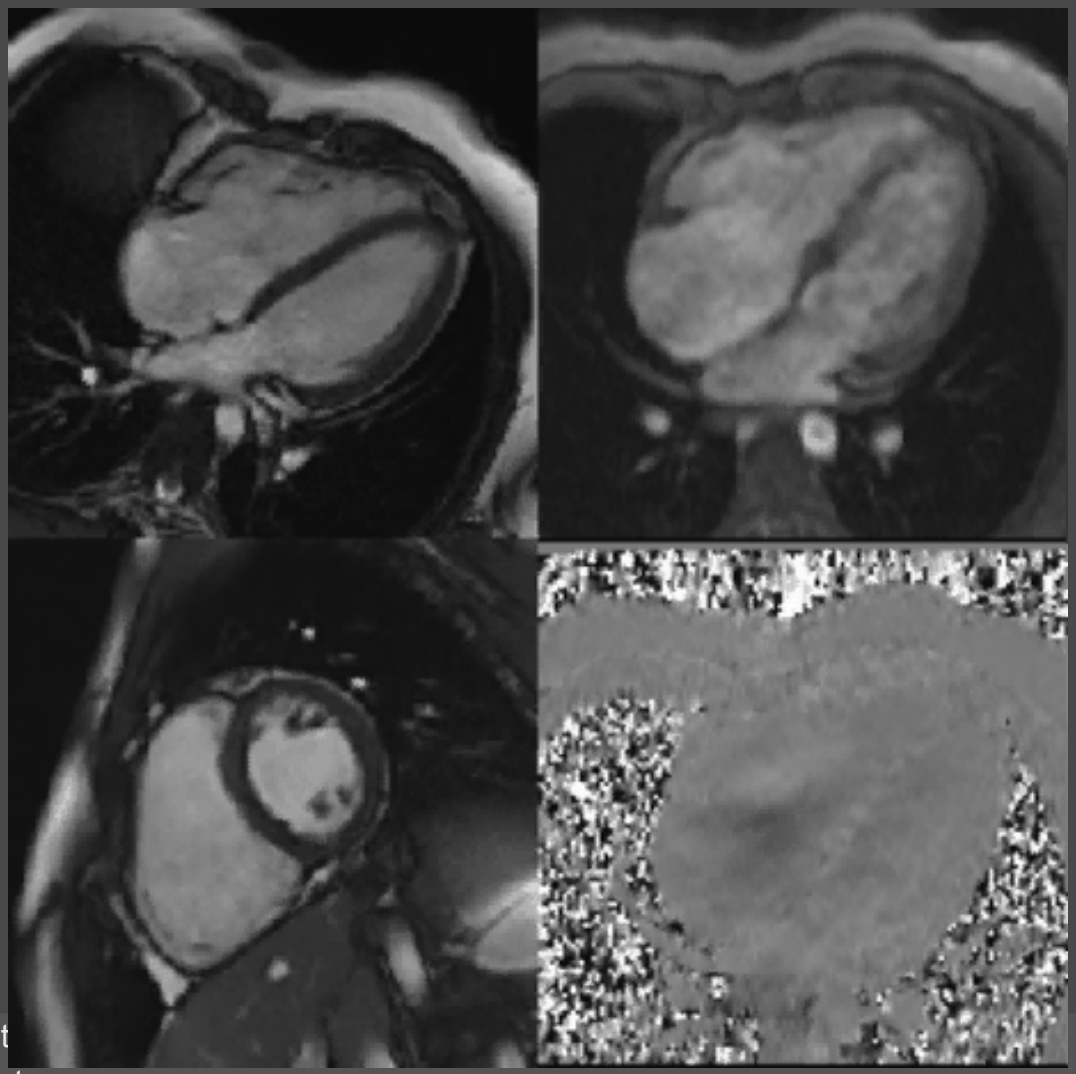
ANATOMIA E FUNZIONE VALVOLARE – SSFP CINE MRI





RM E TC IN VALVULOPATIE - TRICUSPIDE

ANATOMIA E FUNZIONE VALVOLARE – SSFP CINE MRI – PHASE CONTRAST



QUANTIFICAZIONE IT

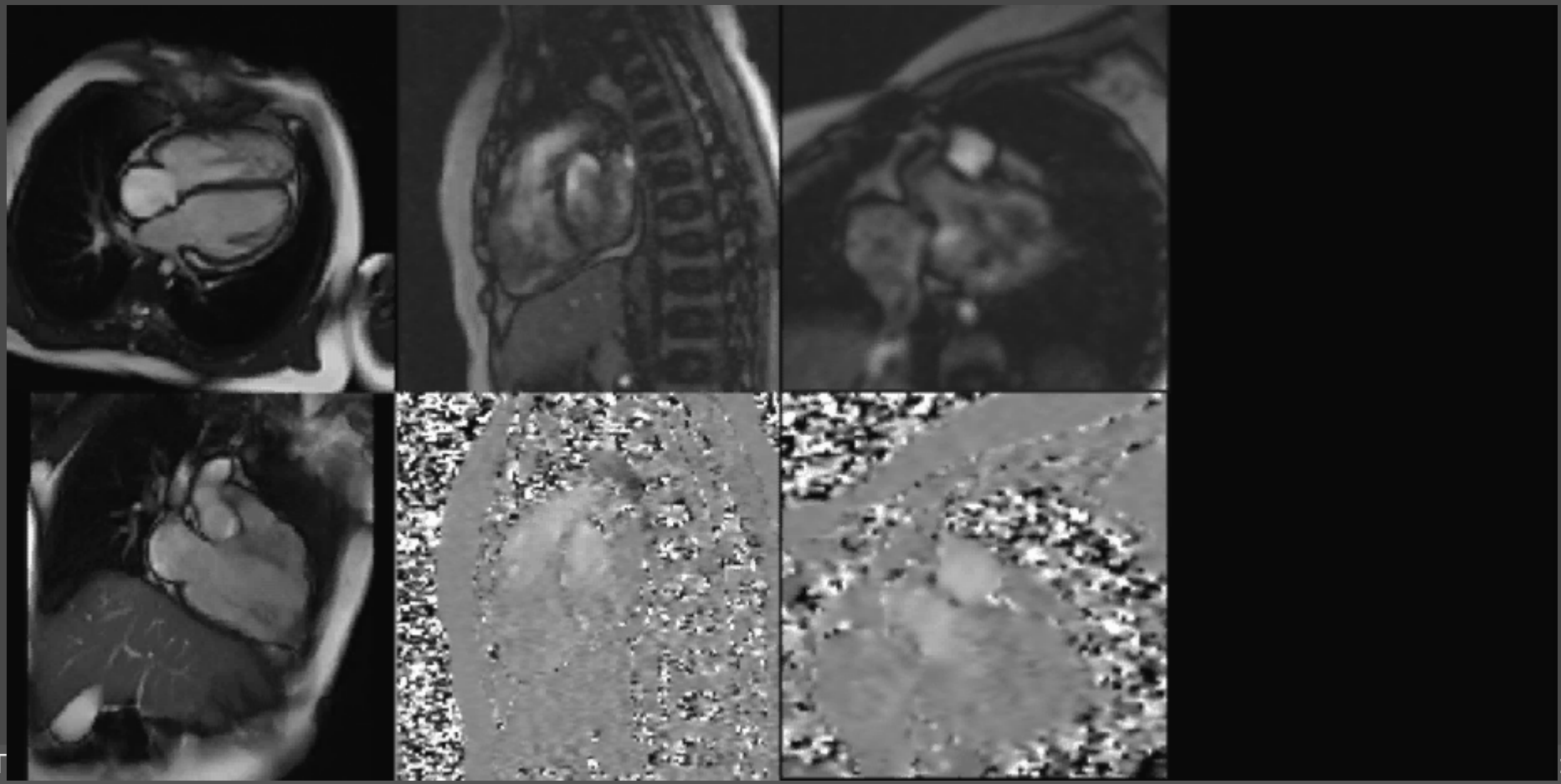
FR = RVSV – FWPo / RVSV

FR = RVSV – LVSV / RVSV

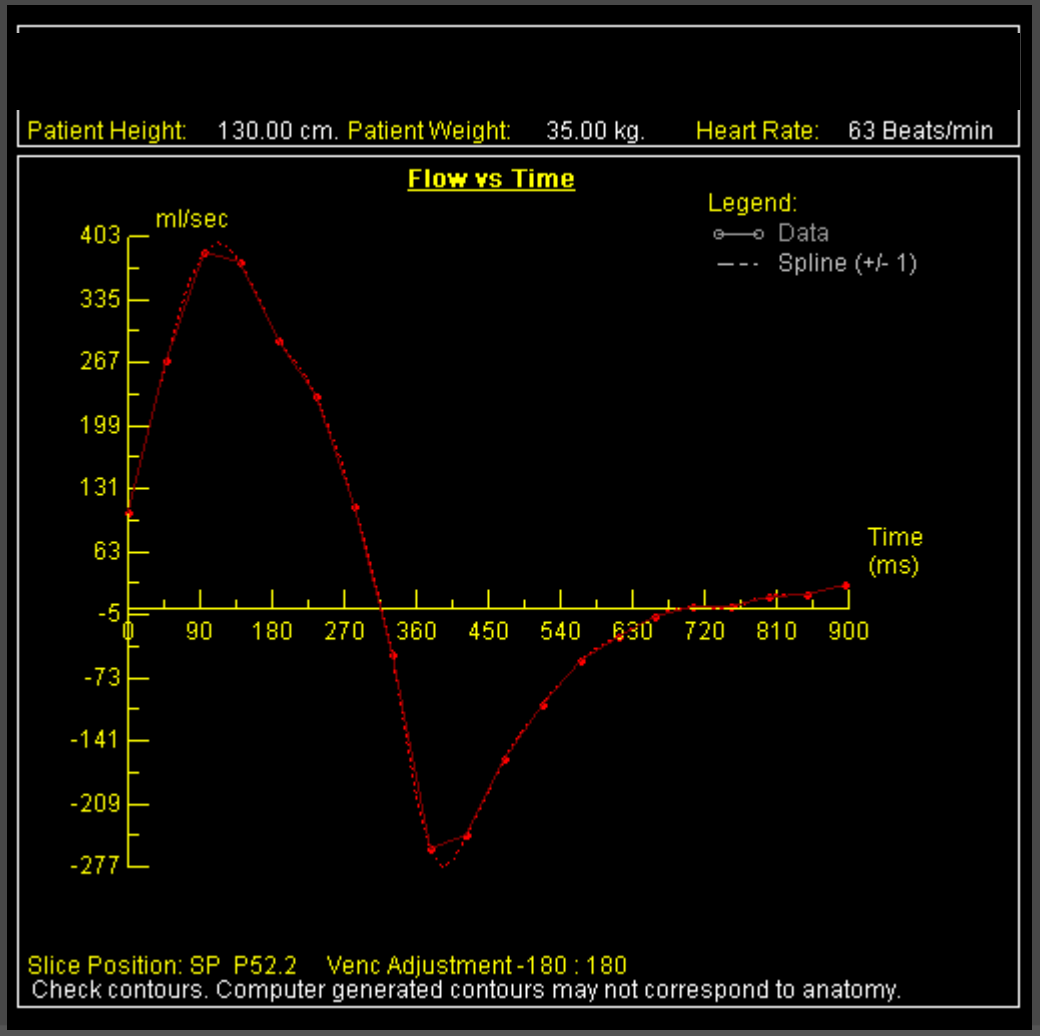
Circulation 2009; 119: 468-478

ANATOMIA E FUNZIONE VALVOLARE – SSFP CINE MRI – PHASE CONTRAST

TETRALOGIA DI FALLOT S/P - IP severa - ↑ VDX



FUNZIONE VALVOLARE – PHASE CONTRAST – THROUGH PLANE



VTD VS = 66 ml

VTS VS = 19 ml

FE VS = 71%

VTD VD = 139 ml

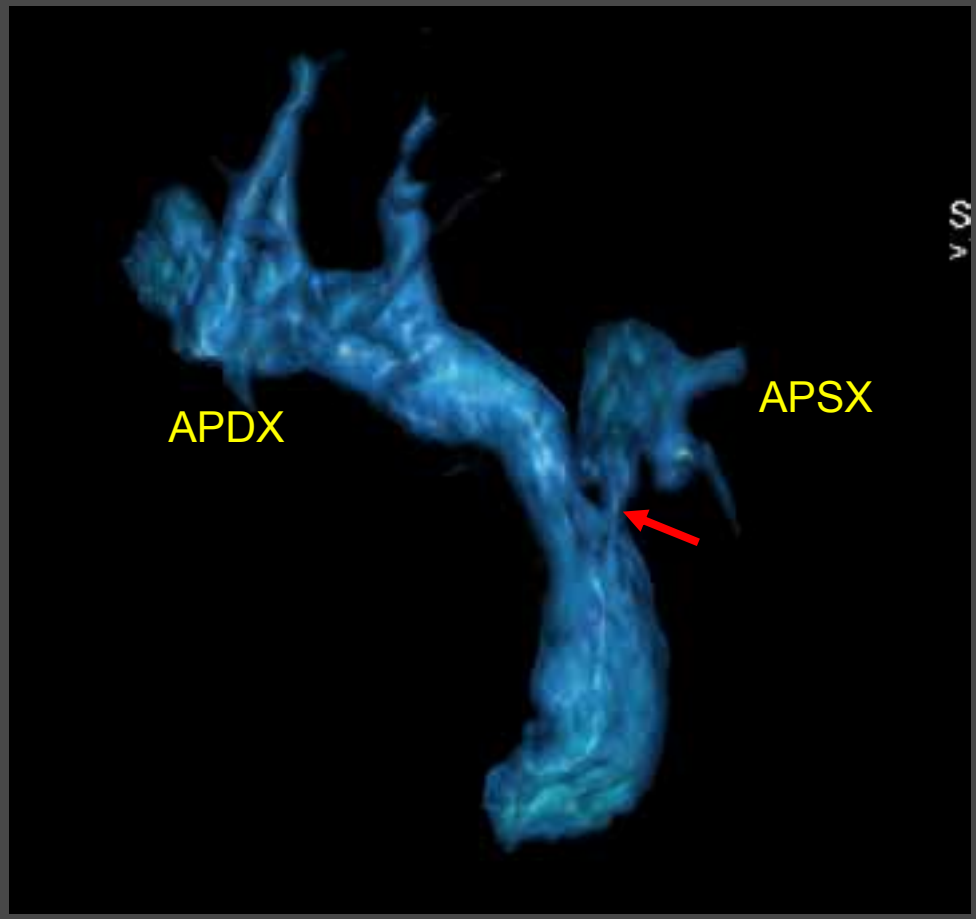
VTS VD = 46 ml

FE VD = 63%

FR = 51%

RM E TC IN VALVULOPATIE - POLMONARE

INFORMAZIONI AGGIUNTIVE - ANGIOGRAFIA



Stenosi APSX - Ipoperfusione polmone sx

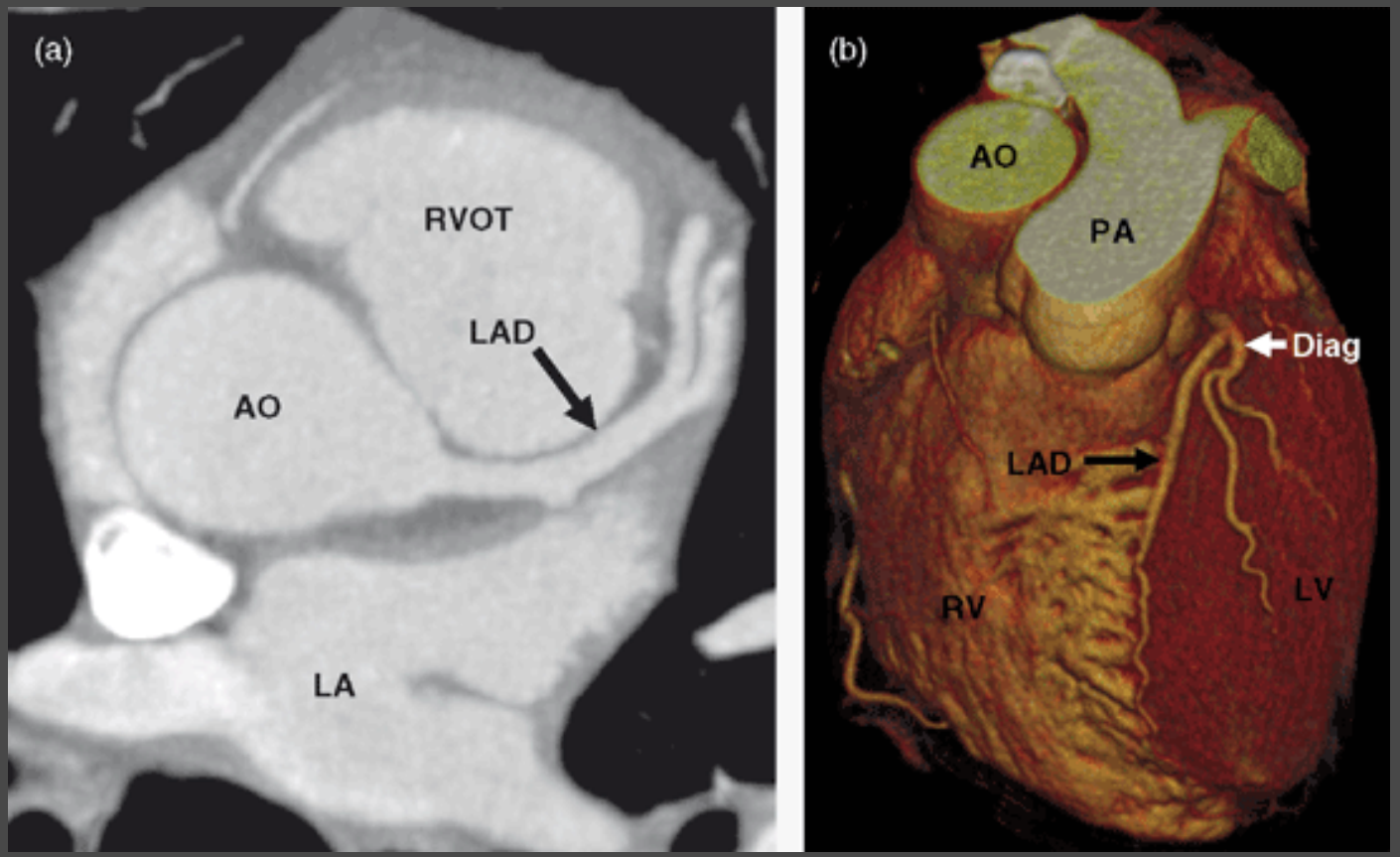
INFORMAZIONI AGGIUNTIVE – LATE ENHANCEMENT

LE in operati di Tetralogia di Fallot correlato a markers prognostici negativi

Circulation 2006; 113:405-413

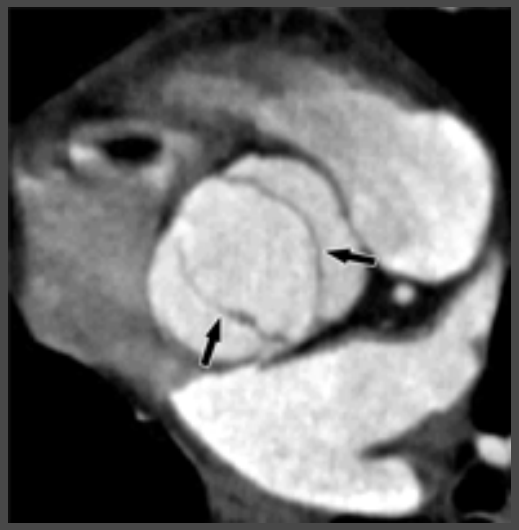
TAC – VISUALIZZAZIONE CORONARIE

TC multistrato single e dual source cardiosincronizzata

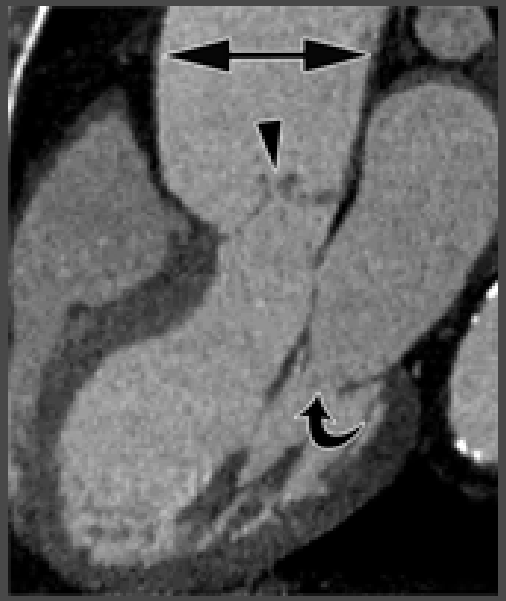


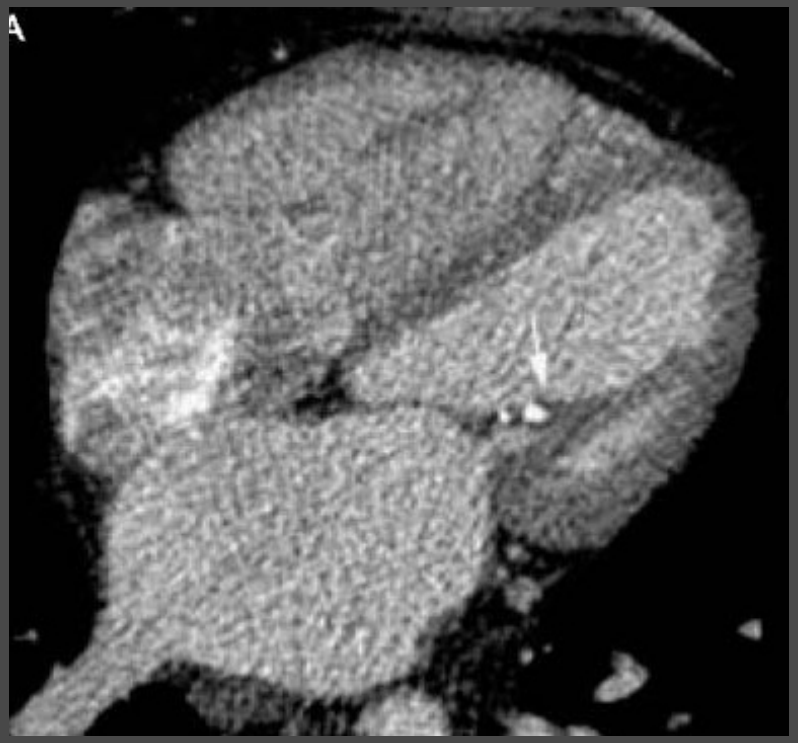
Anatomia delle coronarie: origine, decorso, stenosi

TAC – MORFOLOGIA VALVOLARE



Morfologia - Componente calcifica

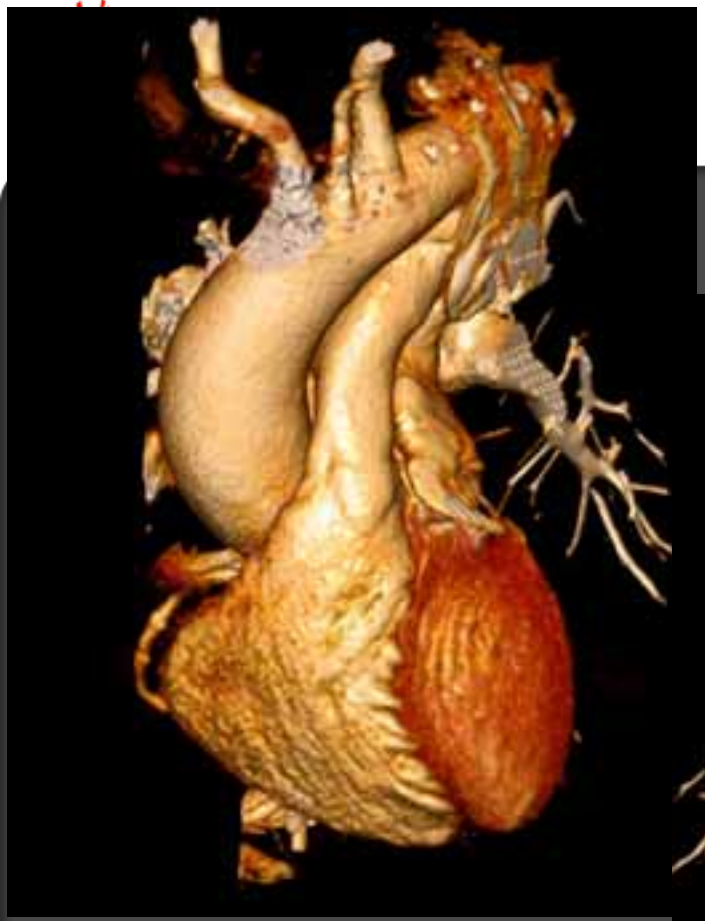




Br J Radiol 2008;81:275-290

RM E TC IN VALVULOPATIE

TAC – ANGIOGRAFIA



Anatomia, decorso, calcificazioni, aterosclerosi, trombi, dissecazione

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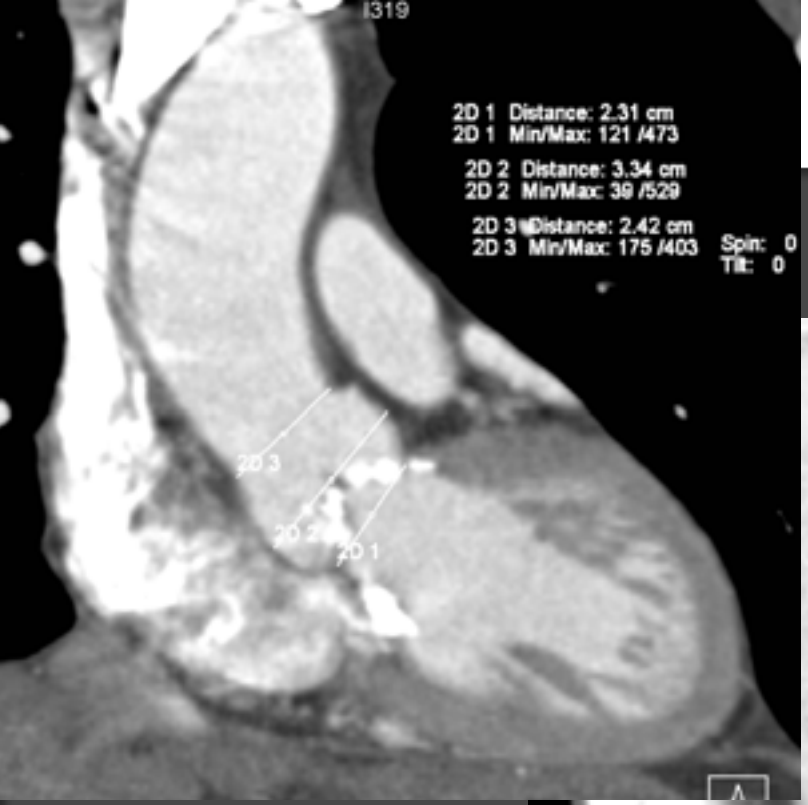
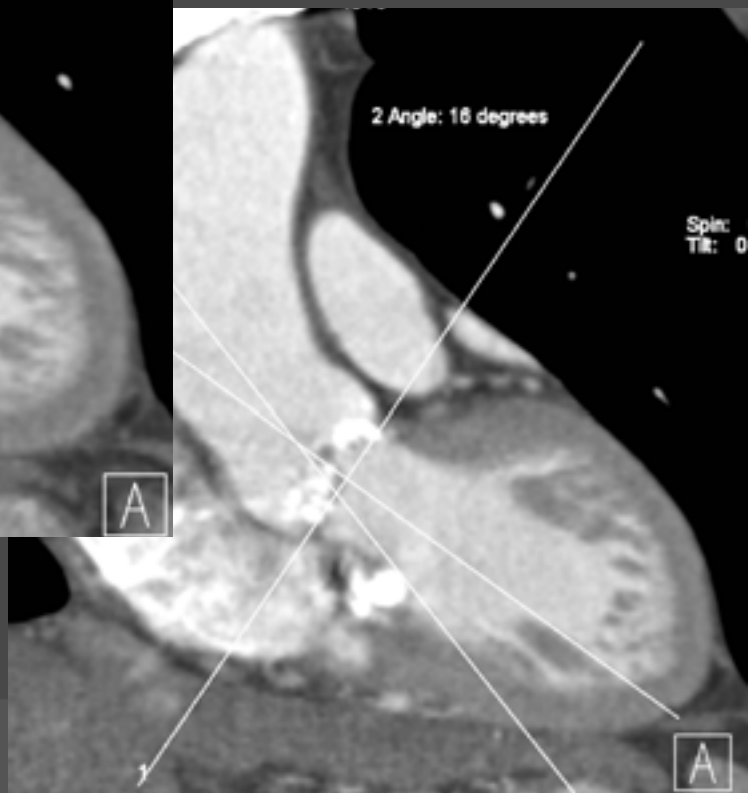
RM E TC IN VALVULOPATIE

TAC – IMPIANTO DI PROTESI AORTICA PERCUTANEA





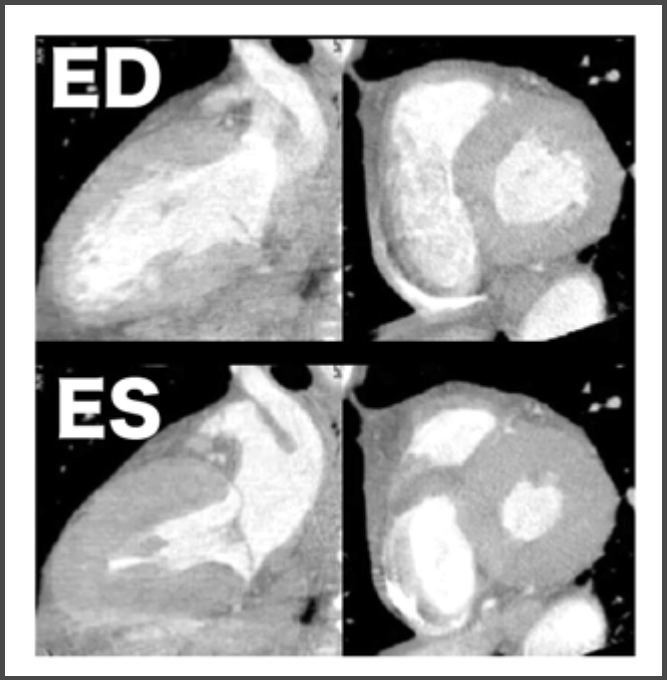
- Angolo tra anulus ed aorta
- Distanza anulus-osti coronarici
- Calcificazioni valvolari
- Stato dei vasi: aorta, aa iliache

Cortesia Dr. D. Artioli – H. Niguarda

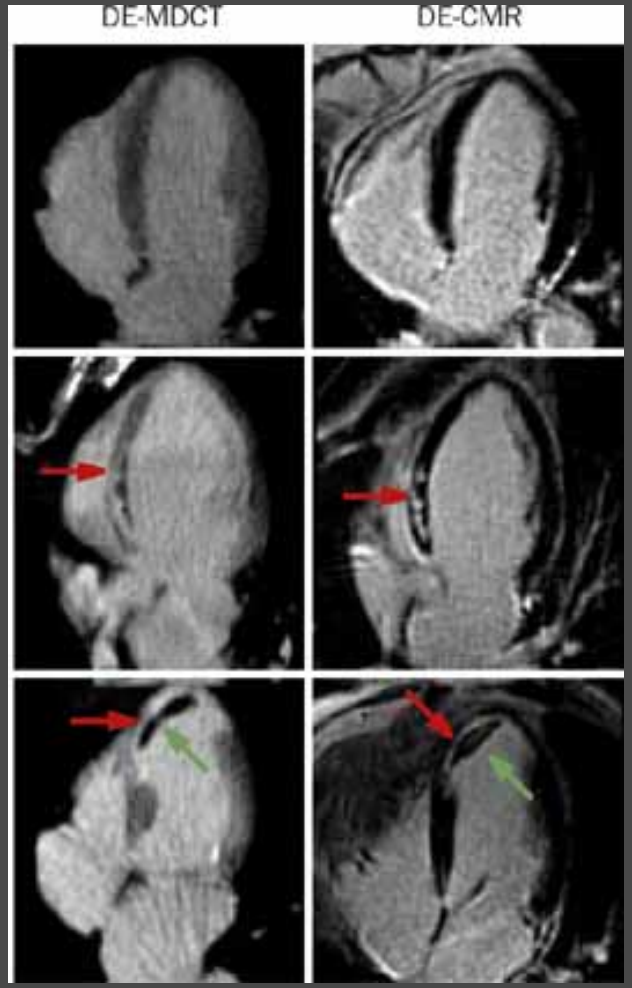
Titolo:
Autore:

RM E TC IN VALVULOPATIE

TAC – FUNZIONE VENTRICOLARE – VITALITA'



- Funzione ventricolare (software dedicati)
- Vitalità miocardica (late-enhancement, immagini post-contrasto)



Nat Rev Cardiol 2009;6:699-710

RM E TC IN VALVULOPATIE

TAC

- Elevata risoluzione spaziale e temporale
- Non immagini flussimetriche
- Radiazioni ionizzanti

- Pazienti con controindicazioni ad RMN (PM, ICD, device magnetoincompatibili)
- Indicazioni? Definire il gruppo di pazienti in cui utilizzare la metodica

RM E TC IN VALVULOPATIE

CONCLUSIONI

- RMN alternativa all'eco (ecogenicità scadente, controindicazione/rifiuto TEE)
- In tutti i pz con valvulopatie RMN può fornire informazioni aggiuntive e complementari a quelle ottenute con eco
- RMN: f.u. pazienti affetti da patologia valvolare, sia pre che post-operatorio
- Cardiopatie congenite RMN strumento indispensabile
- TAC: coronarie, grossi vasi, impianto protesi aortica percutanea; ruolo potenziale valutazione valvulopatie, funzione ventricolare, vitalità (identificazione dei pz con indicazione, radiazioni ionizzanti)

IMAGING INTEGRATO