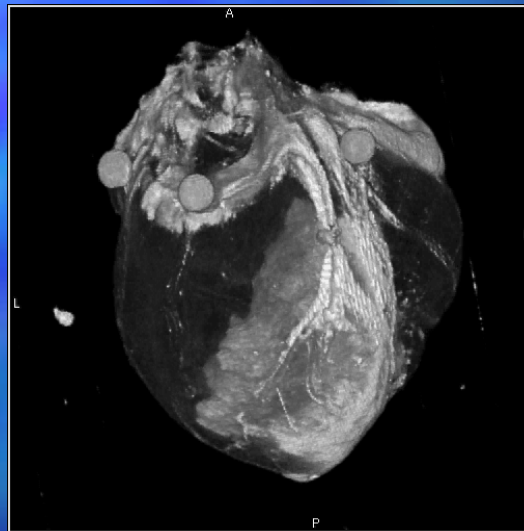


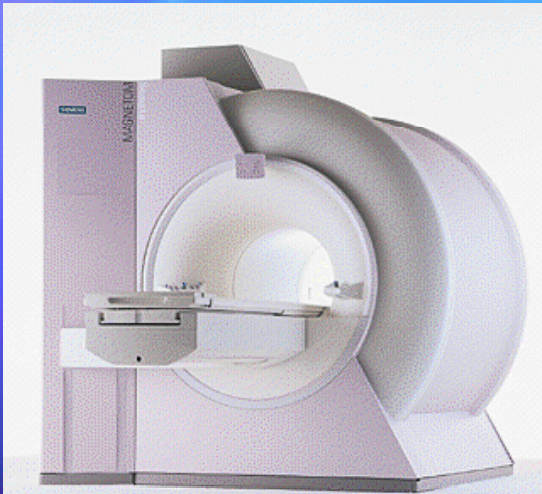
I.R.M. CARDIAQUE

L'OUTIL DU NOUVEAU MILLENAIRE



J.M. CUCCHI, P. BRUNNER, F. FUERXER, M.Y. MOUROU
Centre Hospitalier Princesse Grace - Centre d'Imagerie Médicale
MONACO

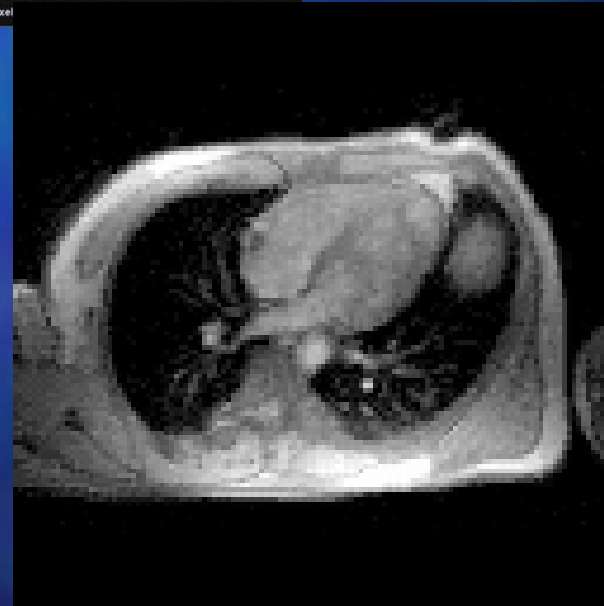
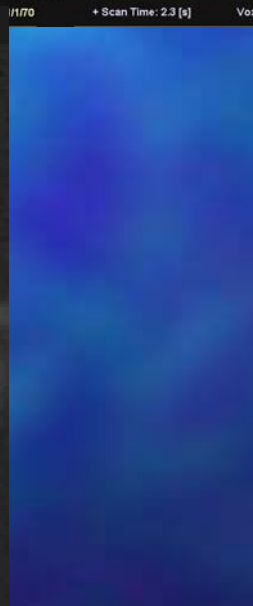
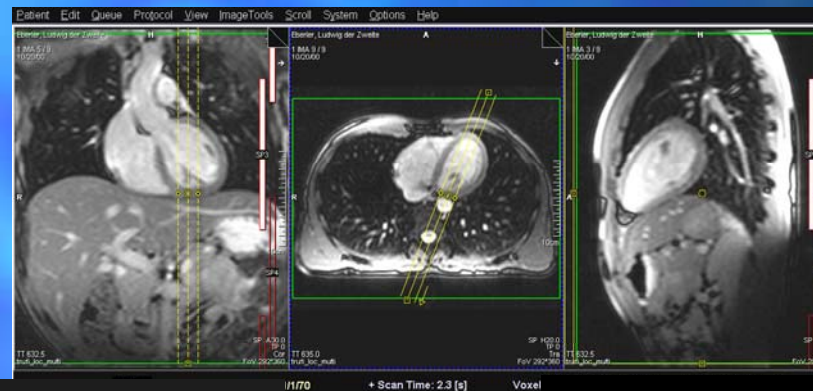
I.R.M. CARDIAQUE



- q technique non-invasive
- q étude morphologique
- q analyse fonctionnelle

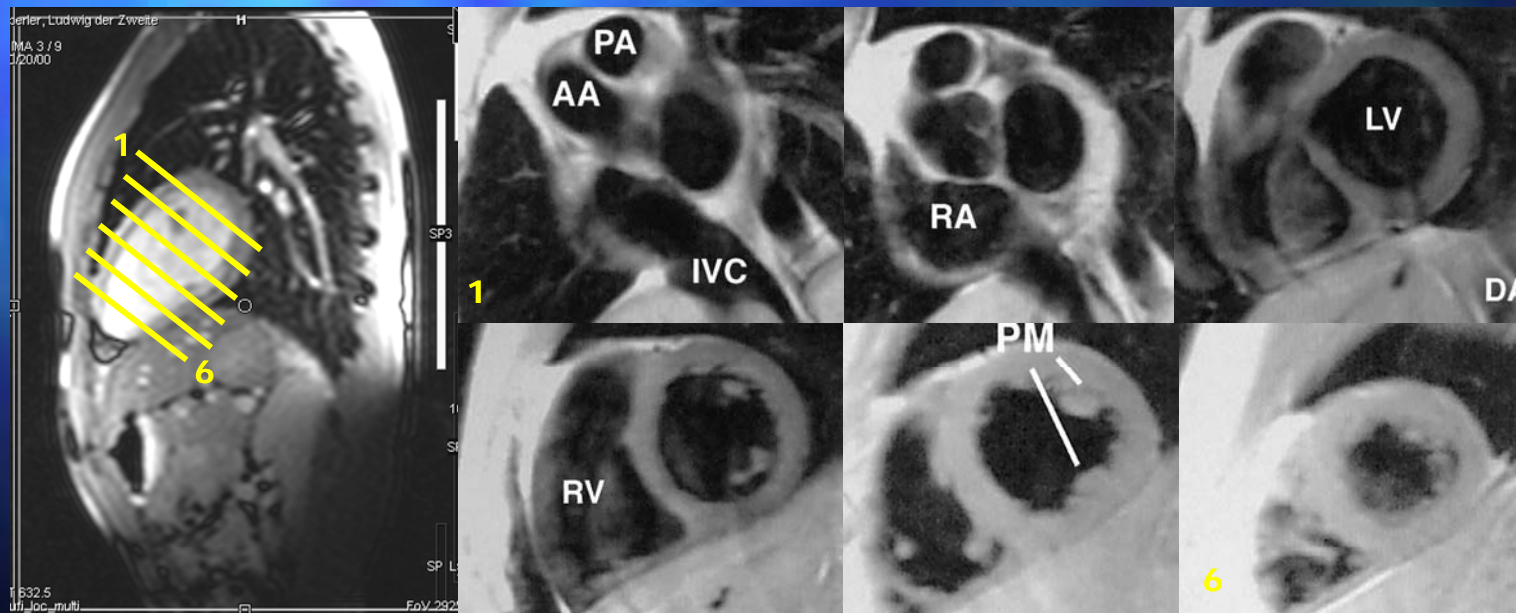


I.R.M. CARDIAQUE



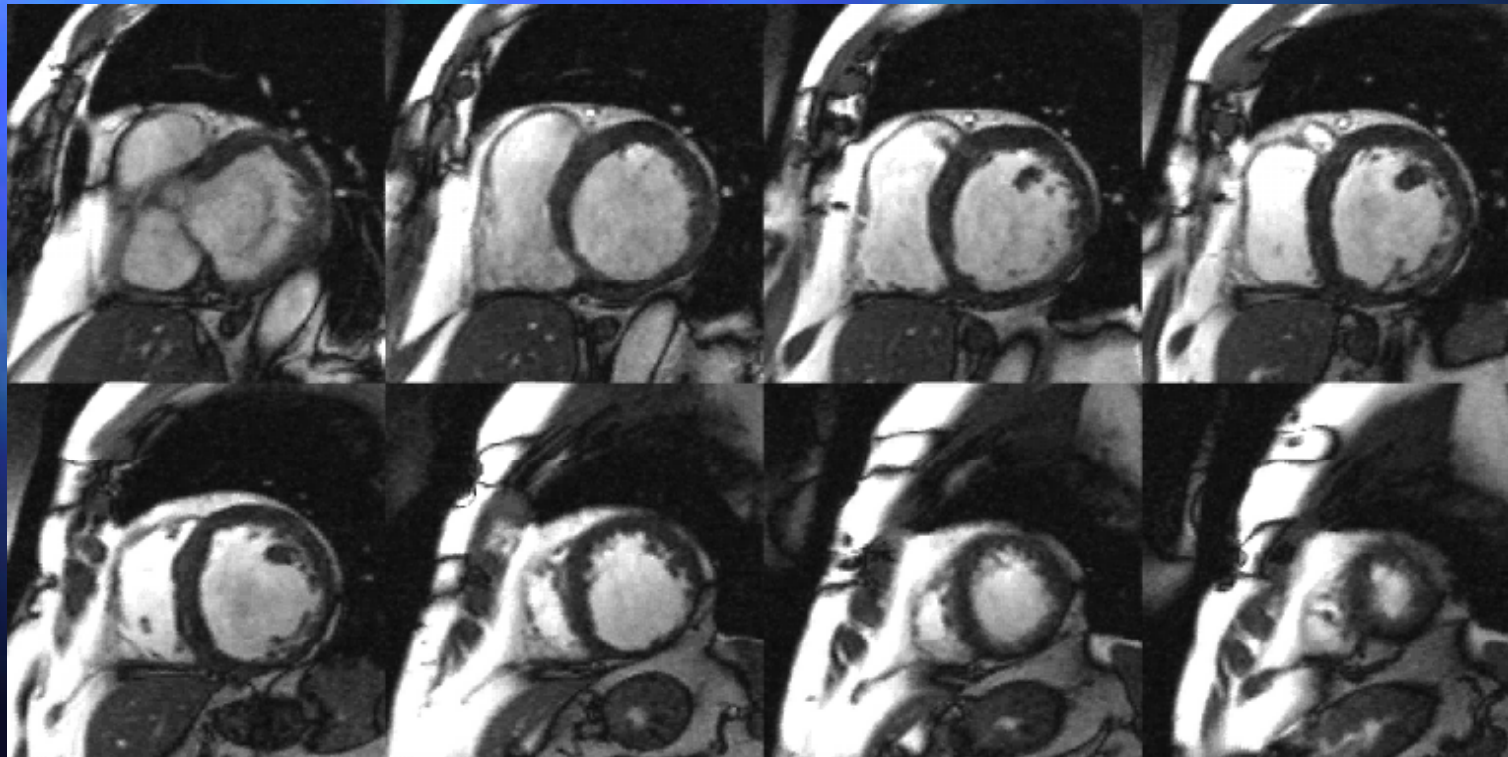
I.R.M. CARDIAQUE

ANATOMIE AXIALE



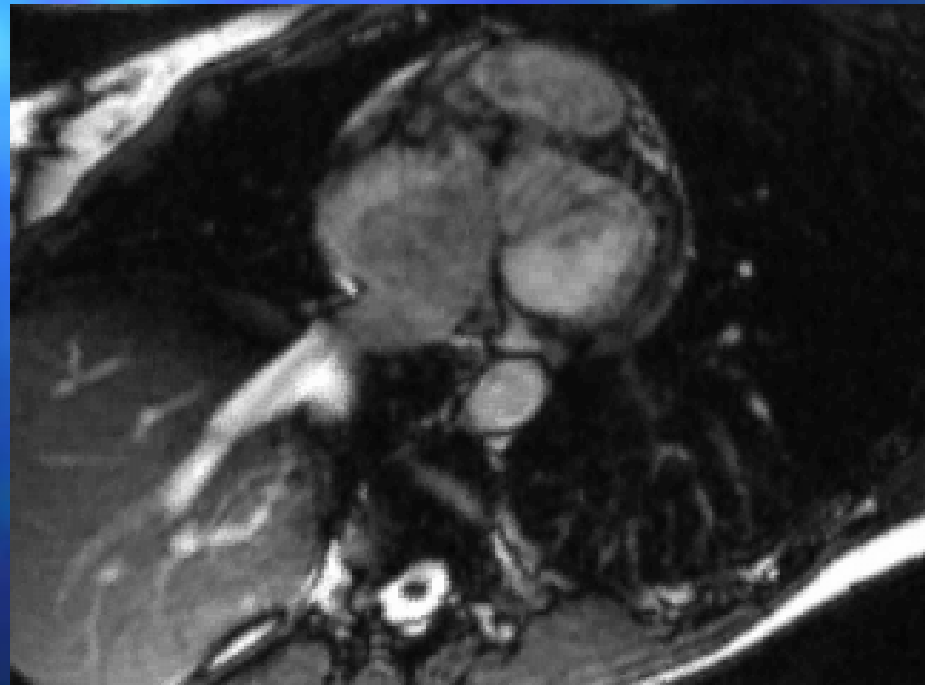
I.R.M. CARDIAQUE

CINE-MR



I.R.M. CARDIAQUE

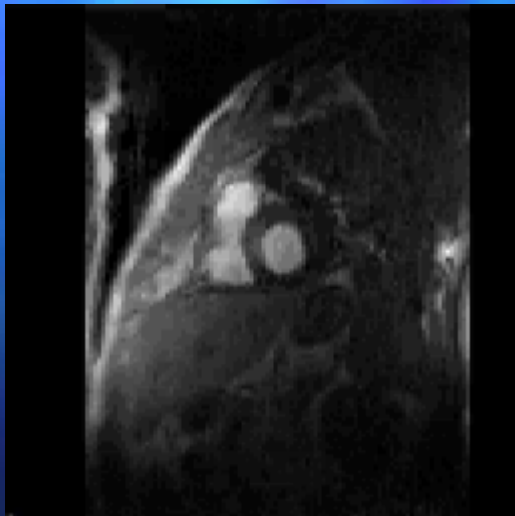
CINE-MR



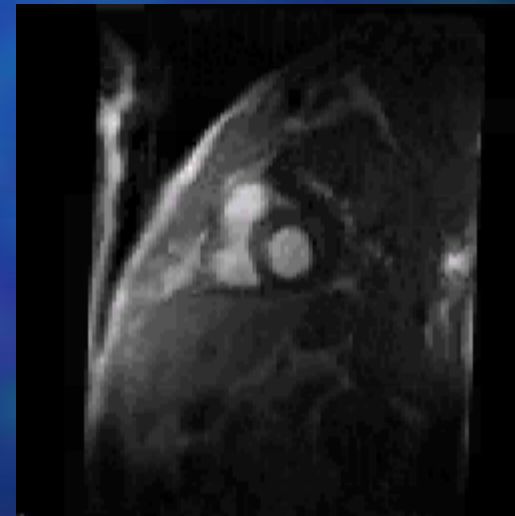
TA \approx 20 s.

I.R.M. CARDIAQUE

IMAGERIE EN TEMPS RÉEL

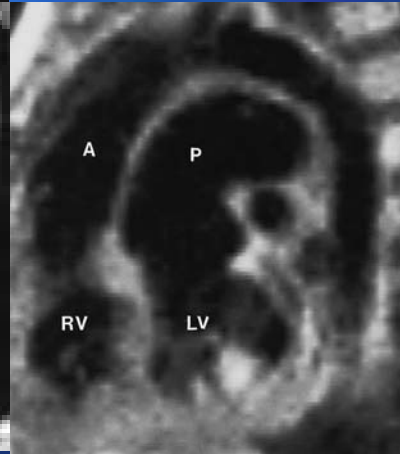
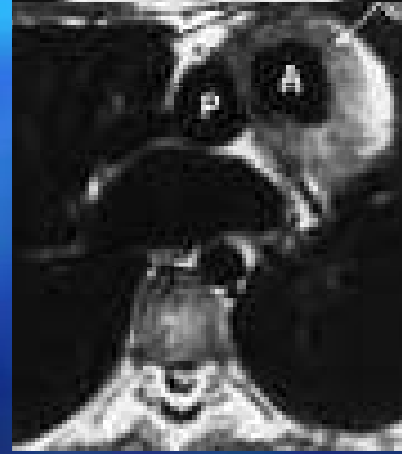
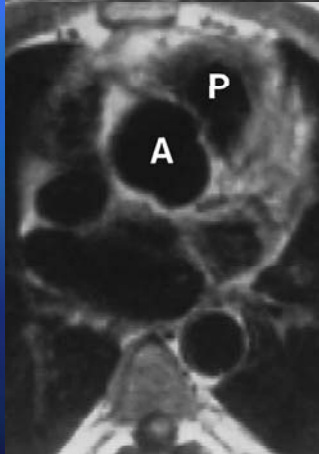
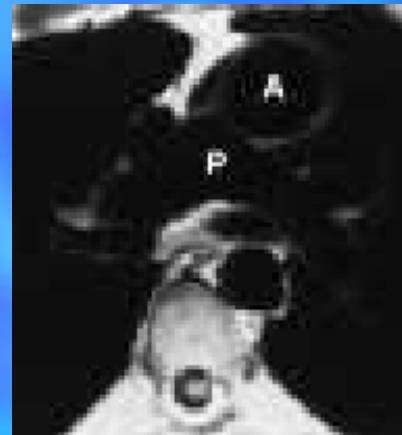
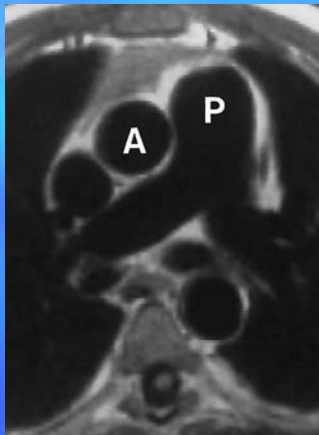


Sans correction de mvt.



Avec correction de mvt.

CARDIOPATHIES CONGENITALES

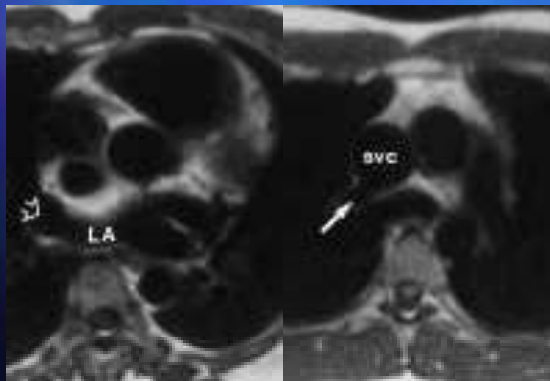


L. TRANSPOSITION

CARDIOPATHIES CONGENITALES



L. TRANSPOSITION
+
PERSISTANCE DE LA VCSG (☼)



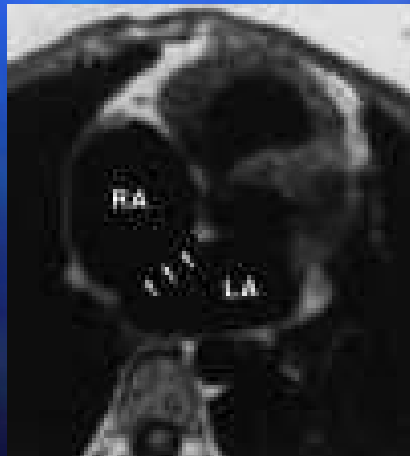
RETOUR VEINEUX ANORMAL
APSD (☼) DANS VCS

CARDIOPATHIES CONGENITALES

COMMUNICATION INTER-AURICULAIRE

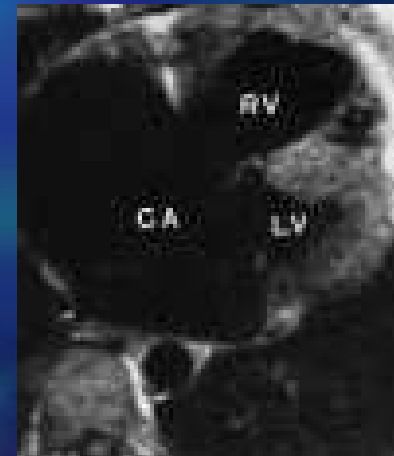
PARTIELLE

Ostium Secondaire



TOTALE

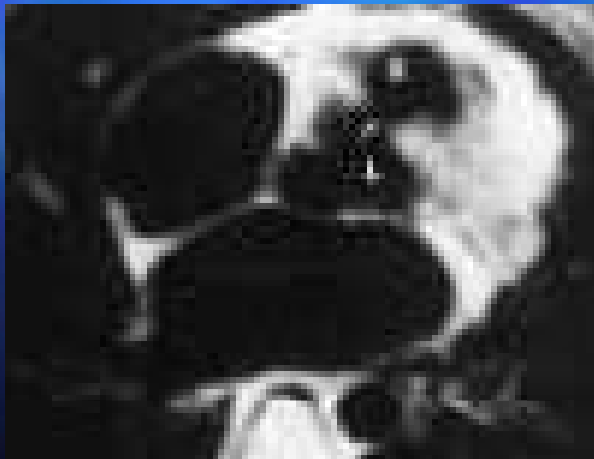
«Oreillette Unique»



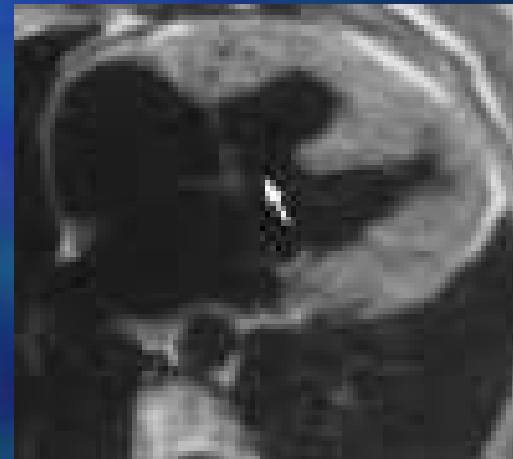
CARDIOPATHIES CONGENITALES

COMMUNICATION INTER-VENTRICULAIRE

Du septum musculueux

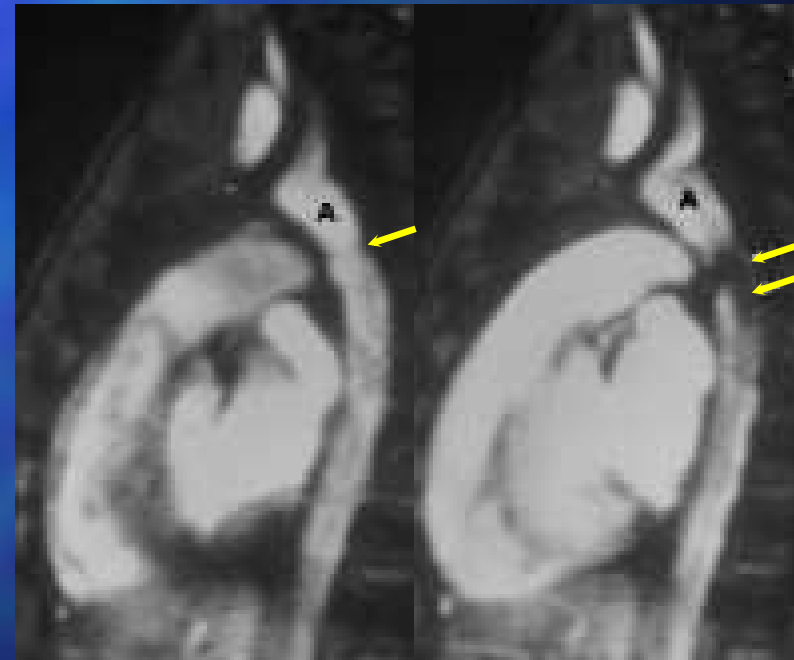


Du septum membraneux



CARDIOPATHIES CONGENITALES

COARCATION AORTIQUE

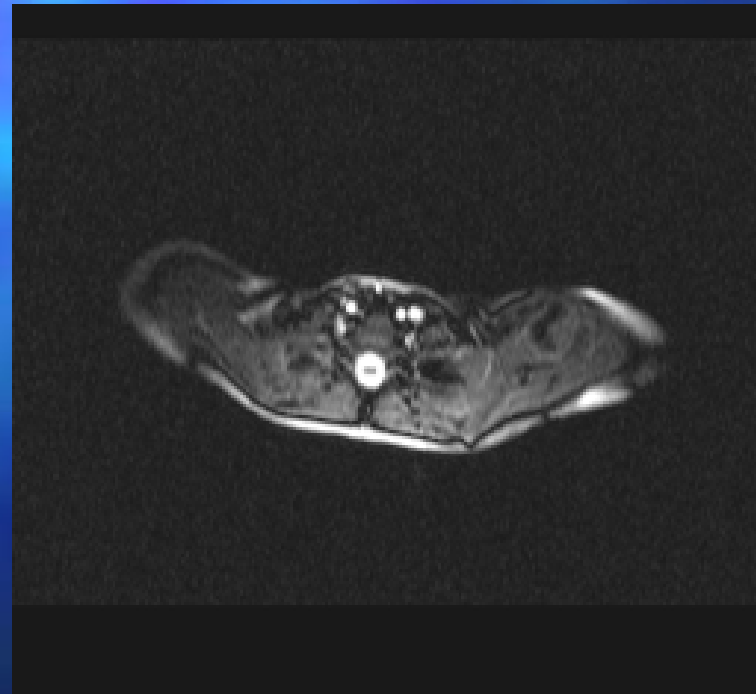


diastole

systole

CARDIOPATHIES CONGENITALES

DOUBLE ARC AORTIQUE



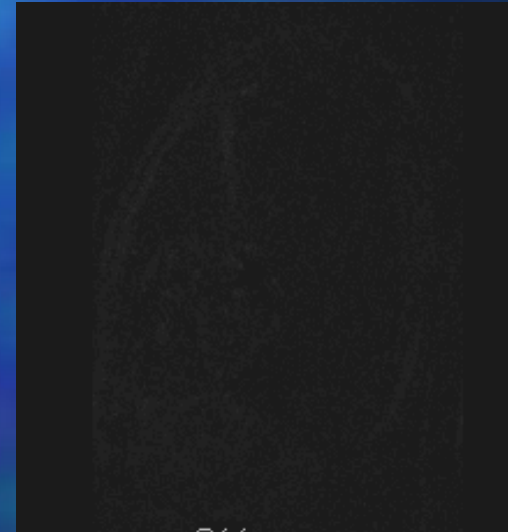
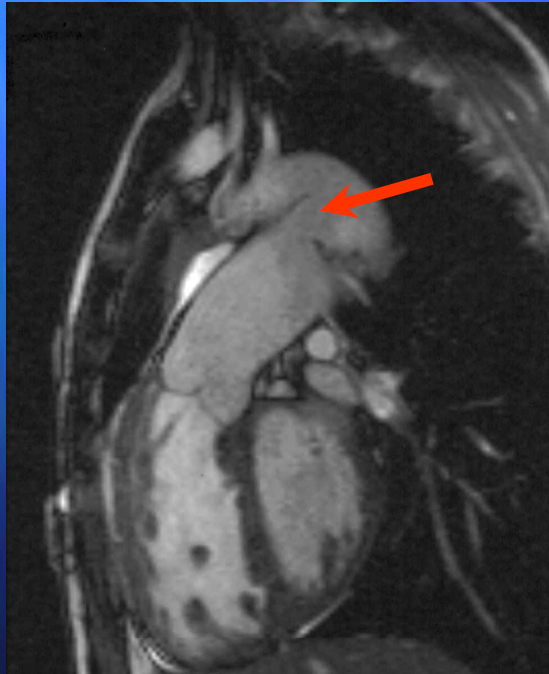
CARDIOPATHIES CONGENITALES

DILATATION AORTIQUE PROXIMALE



CARDIOPATHIES CONGENITALES

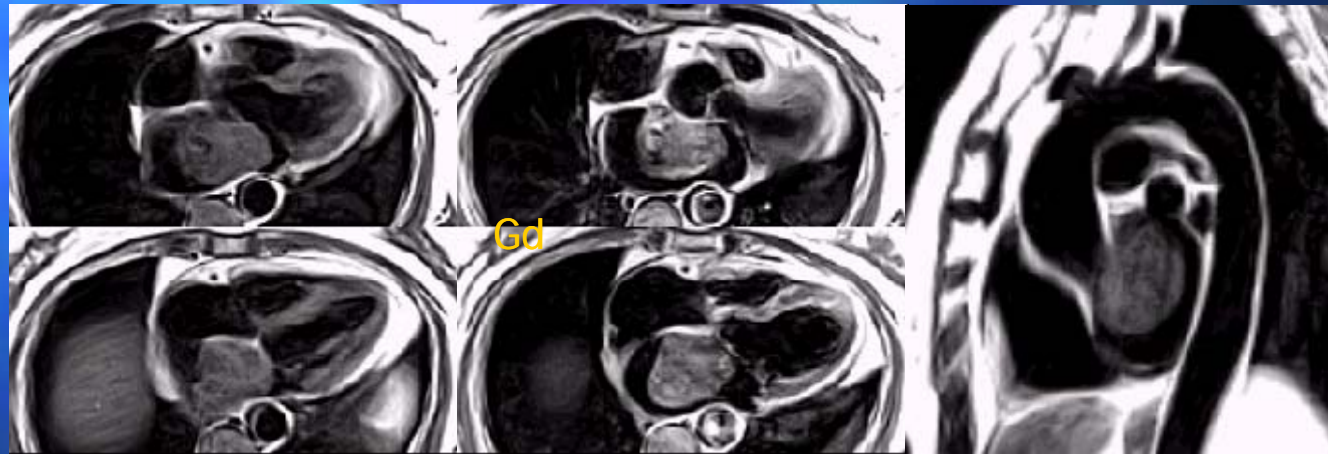
PERSISTANCE DU CANAL ARTERIEL



< 1sec. 3D MRA

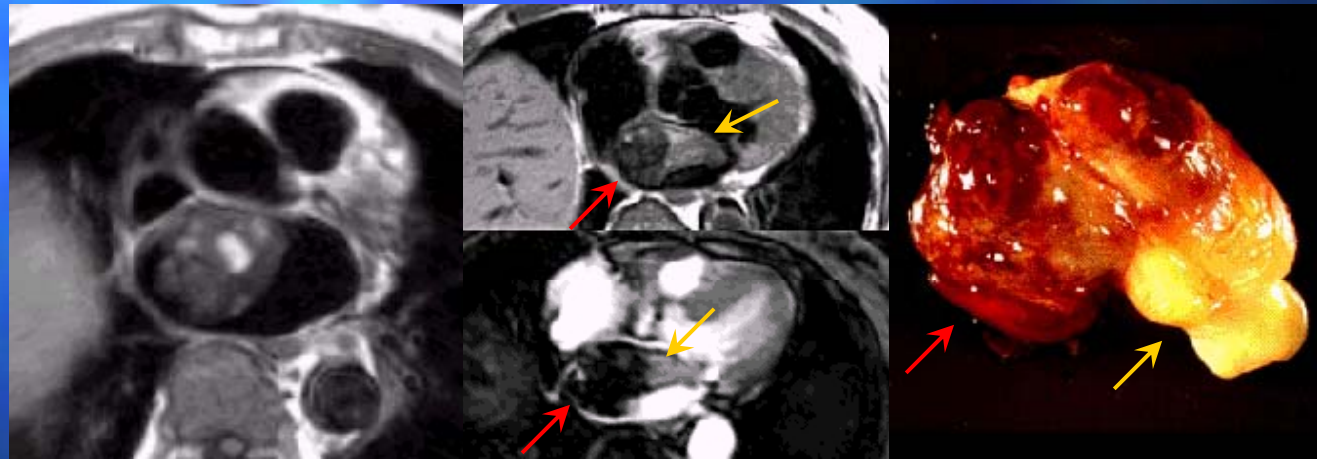
TUMEURS ET PSEUDO-TUMEURS

MYXOME OG



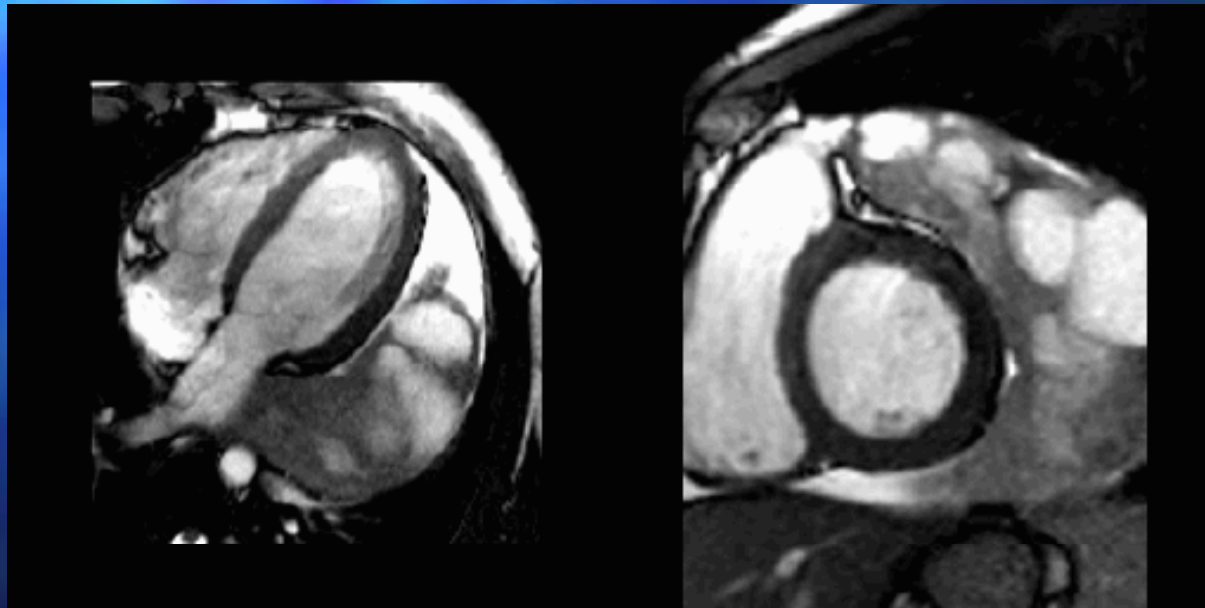
TUMEURS ET PSEUDO-TUMEURS

MYXOME HÉMORRAGIQUE OG



TUMEURS ET PSEUDO-TUMEURS

FIBROSARCOME



TUMEURS ET PSEUDO-TUMEURS

KYSTE HYDATIQUE

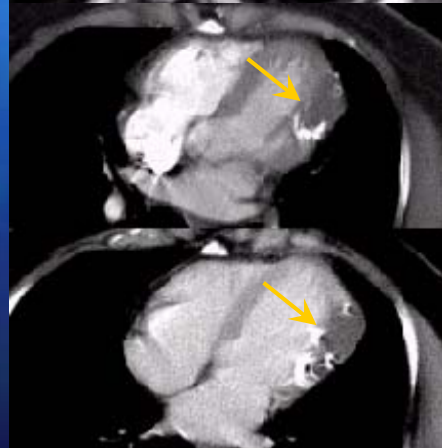
SE T1



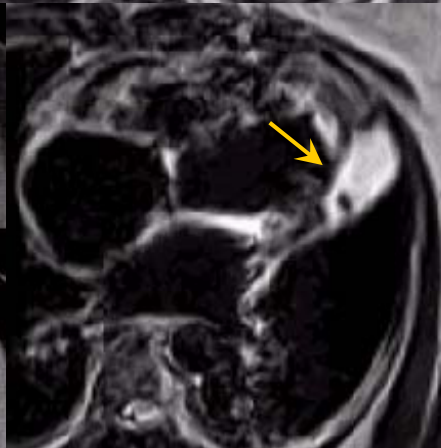
T1+Gd



TDM

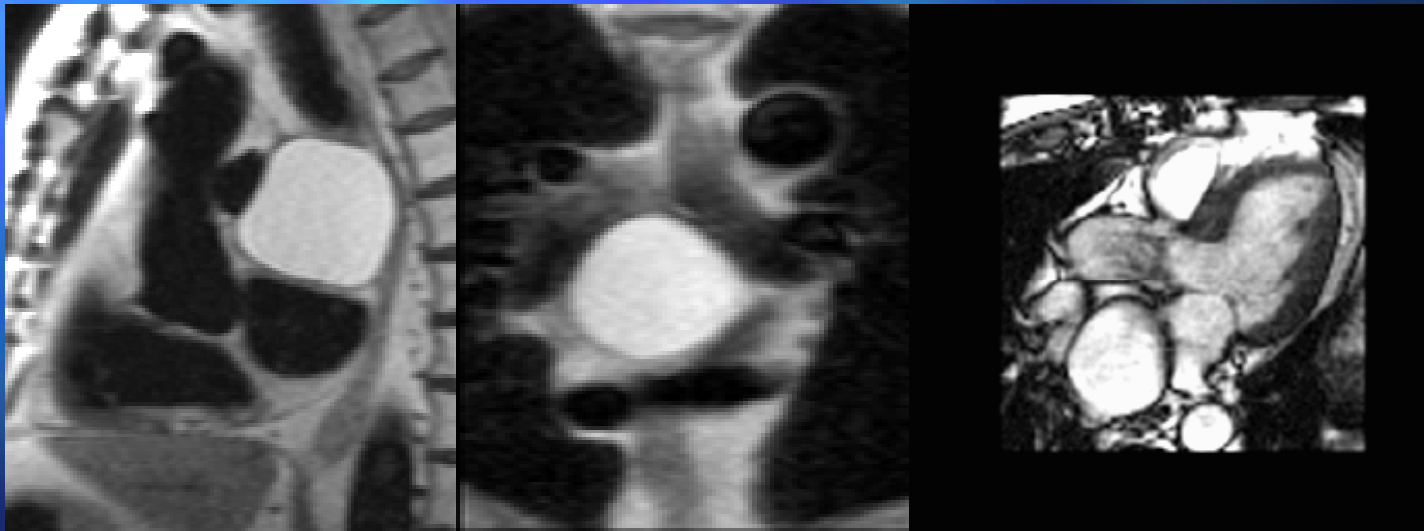


SE T2



TUMEURS ET PSEUDO-TUMEURS

KYSTE PÉRICARDIQUE

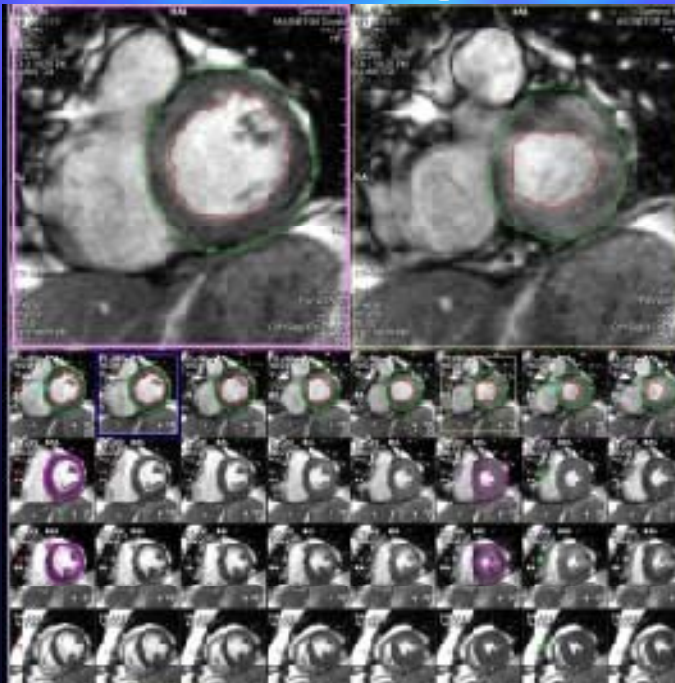


Compression OG - Insuffisance Aortique modérée

IRM ET FONCTION CARDIAQUE

FONCTION, VOLUME ET MASSE VENTRICULAIRE

diastole systole



- q Contourage automatique
- q Calcul:
 - masse myocardique
 - volume ventriculaire
 - fraction d'éjection
 - épaisseur du myocarde
- q Précision et reproductibilité ++

IRM ET FONCTION CARDIAQUE

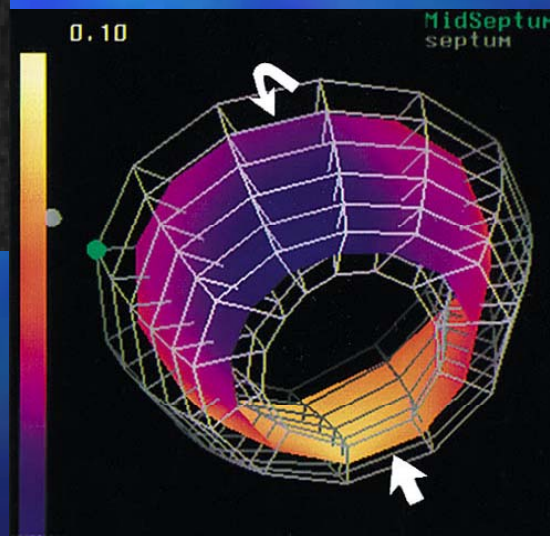
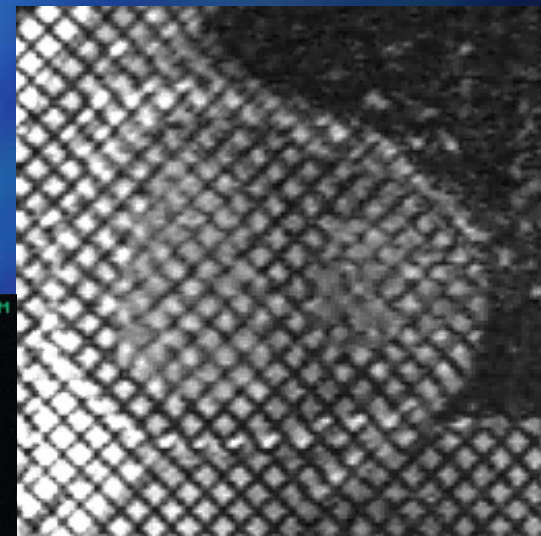
« TAGGING » CARDIAQUE



- q Marquage magnétique tissulaire local du myocarde.
- q Evaluation précise de la déformation myocardique normale et pathologique.

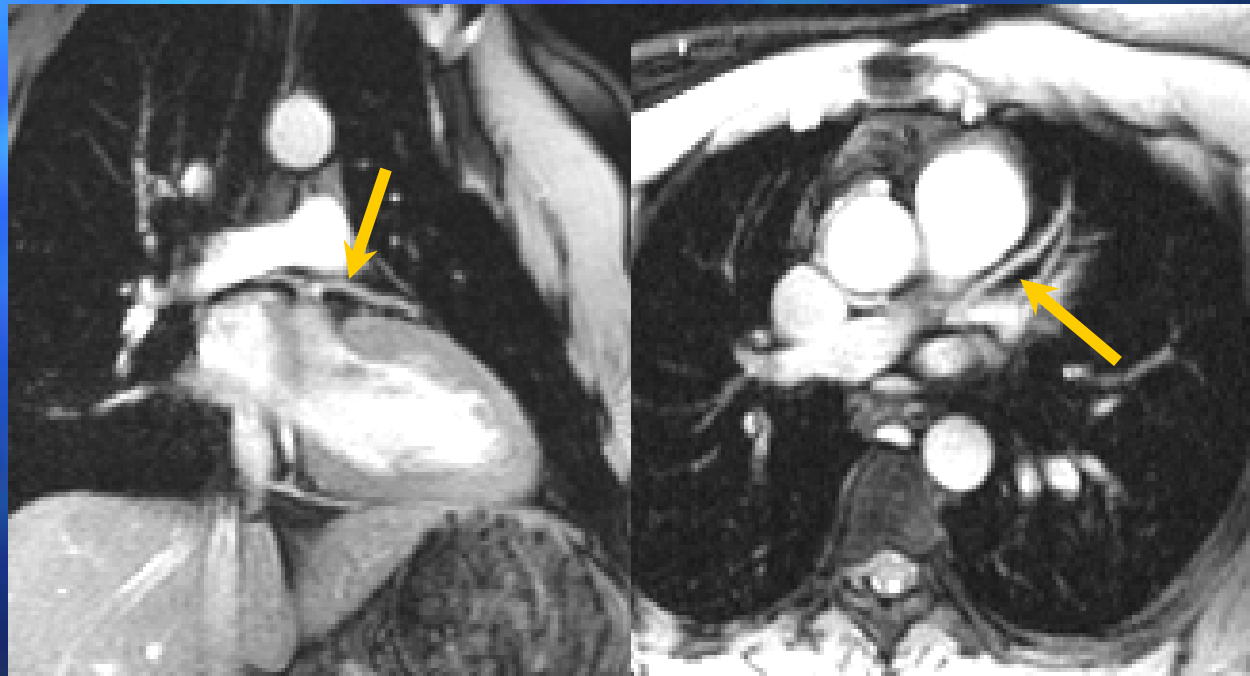
IRM ET FONCTION CARDIAQUE

« TAGGING » CARDIAQUE



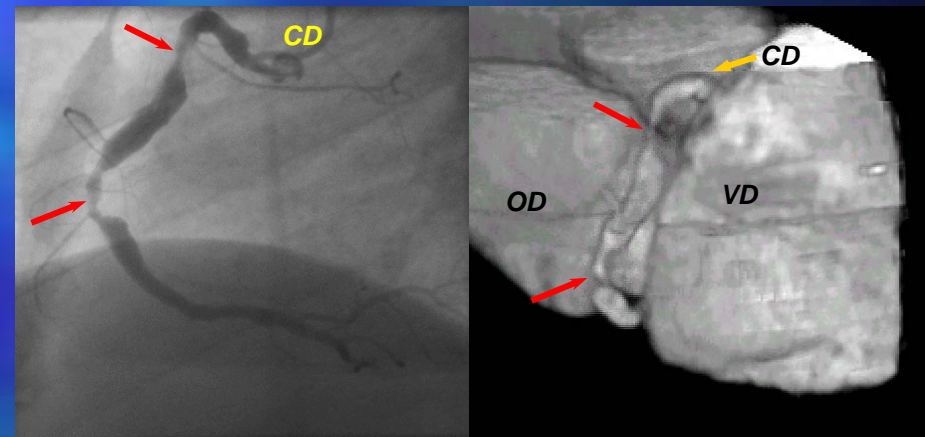
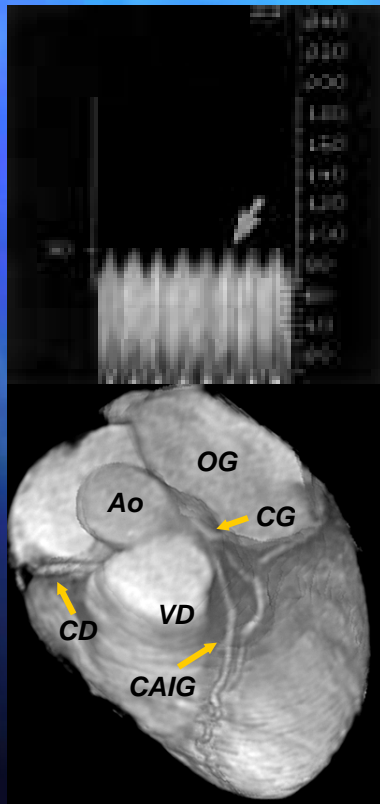
CORONARO-IRM

1ère Génération:EG 2D apnée



CORONARO-IRM

2ème Génération:EG 3D avec Navigateurs



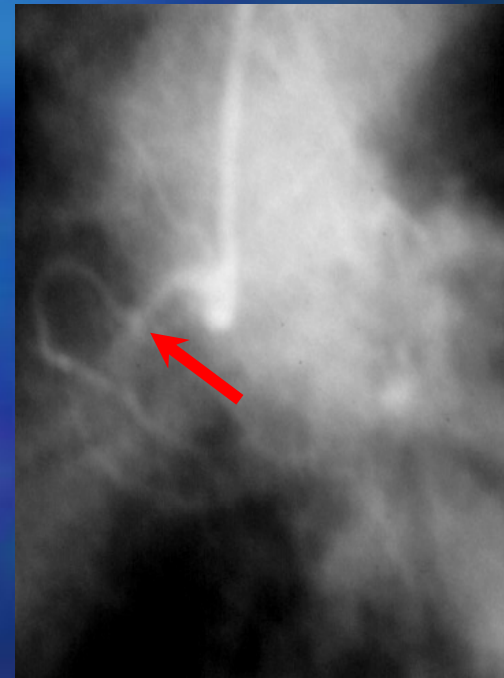
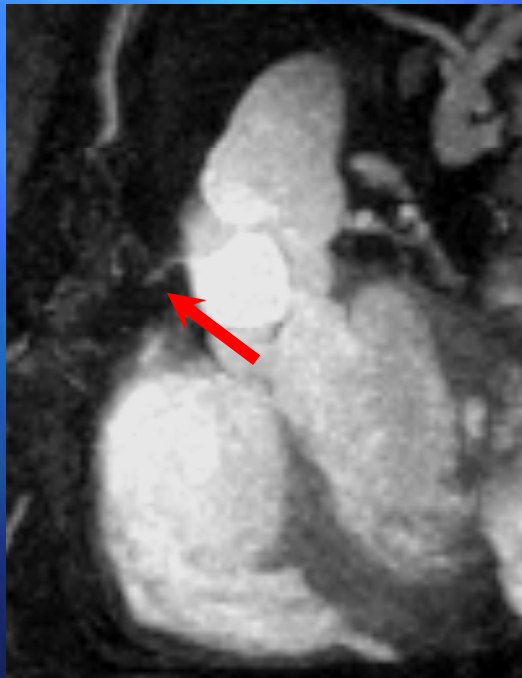
CORONARO-IRM

3ème Génération: 3D CE-MRA apnée



CORONARO-IRM

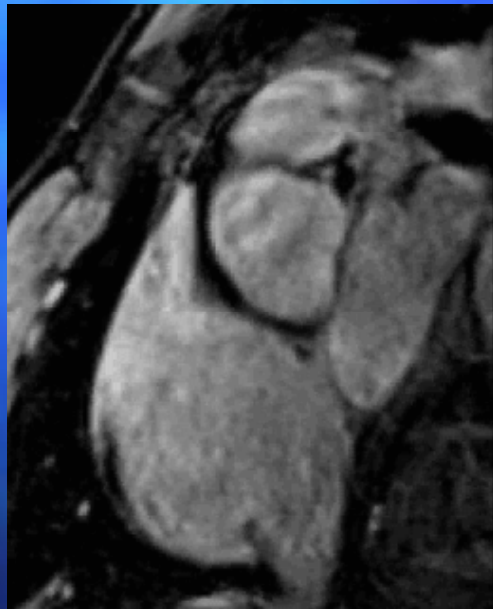
3D CE-MRA apnée



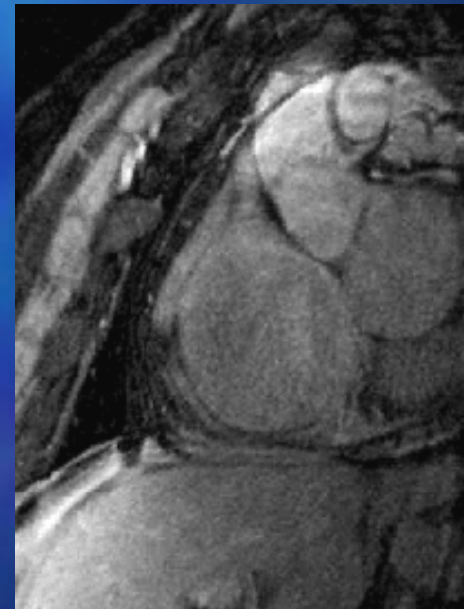
occlusion complète

CORONARO-IRM

4ème Génération:EG 3D CE-MRA

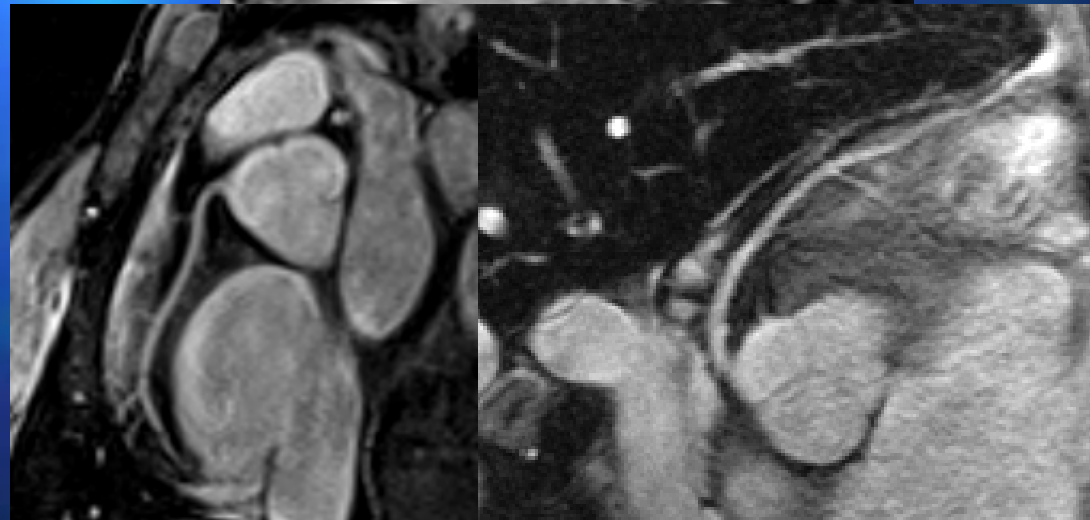
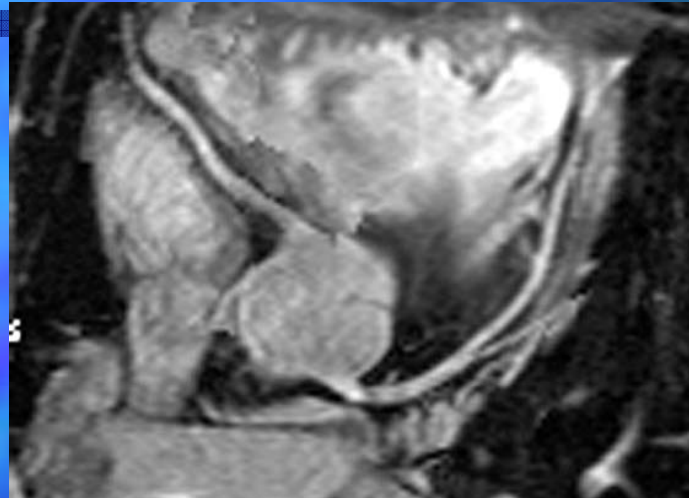


apnée



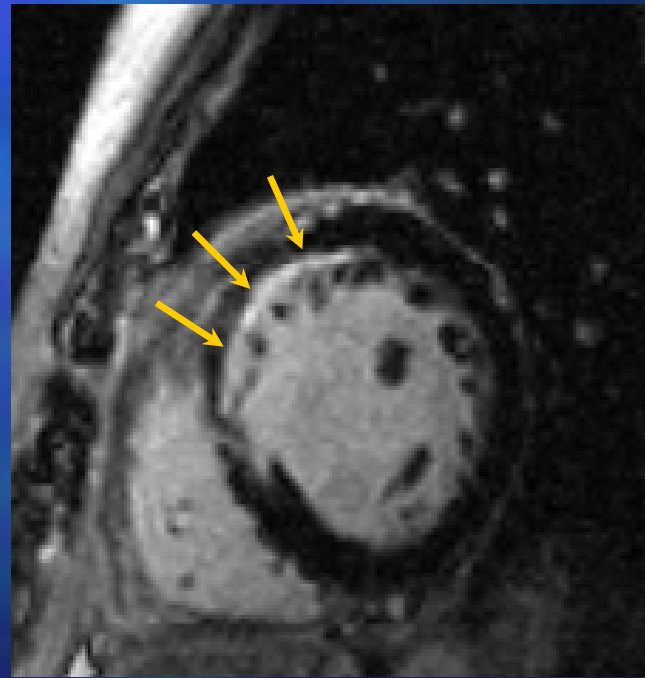
navigation

CORONARO-IRM



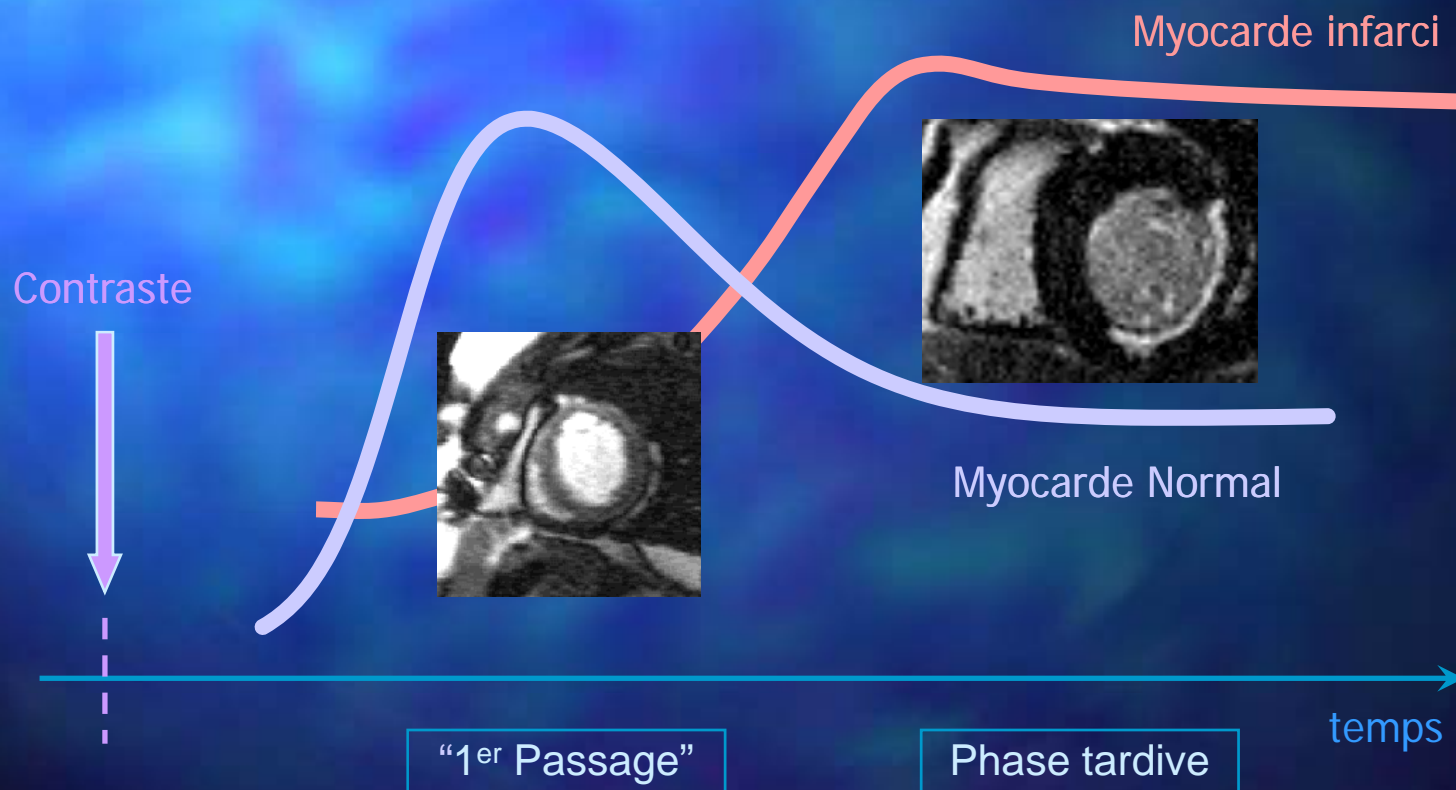
MYOCARDE : PERFUSION ET VIABILITÉ

Sténoses coronariennes
Conséquences myocardiques



MYOCARDE : PERFUSION ET VIABILITÉ

Prise de Contraste Précoce et Tardive



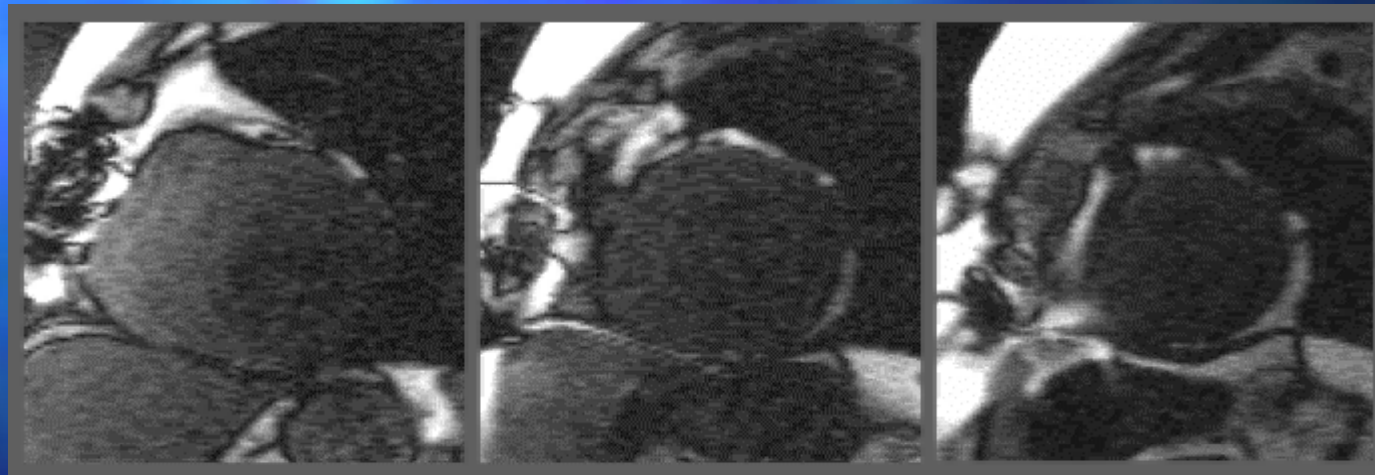
MYOCARDE : PERFUSION ET VIABILITÉ

IMAGERIE DE PERFUSION MYOCARDIQUE PRÉCOCE « First-Pass Imaging »

- q Appréciation de la **réserve de flux coronaire**
(flux à vasodilatation max / flux sanguin au repos)
- q Visualisation de l '**ischémie sous-endocardique**
=> atteinte microvasculaire (HTA, DBT,...)

MYOCARDE : PERFUSION ET VIABILITÉ

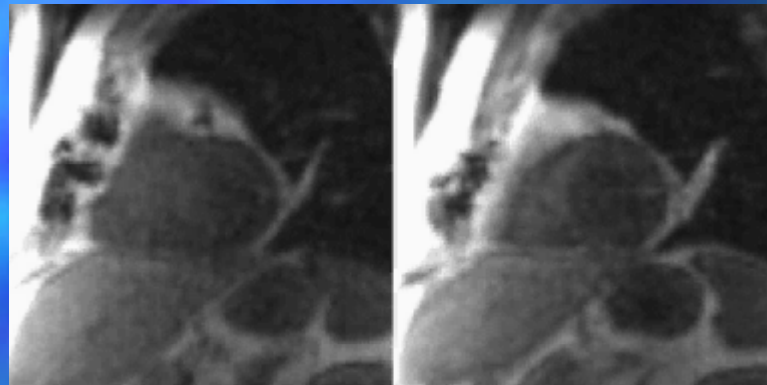
« First-Pass Imaging »



MYOCARDE : PERFUSION ET VIABILITÉ

« First-Pass Imaging »

REPOS



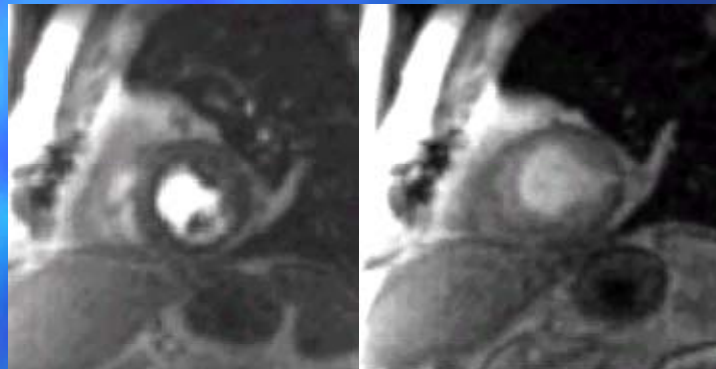
STRESS



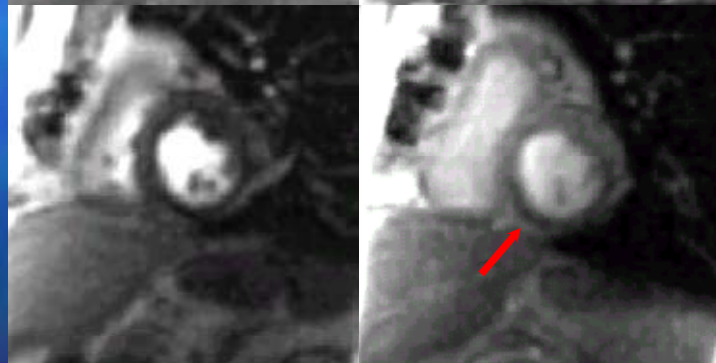
MYOCARDE : PERFUSION ET VIABILITÉ

« First-Pass Imaging »

REPOS



STRESS



t

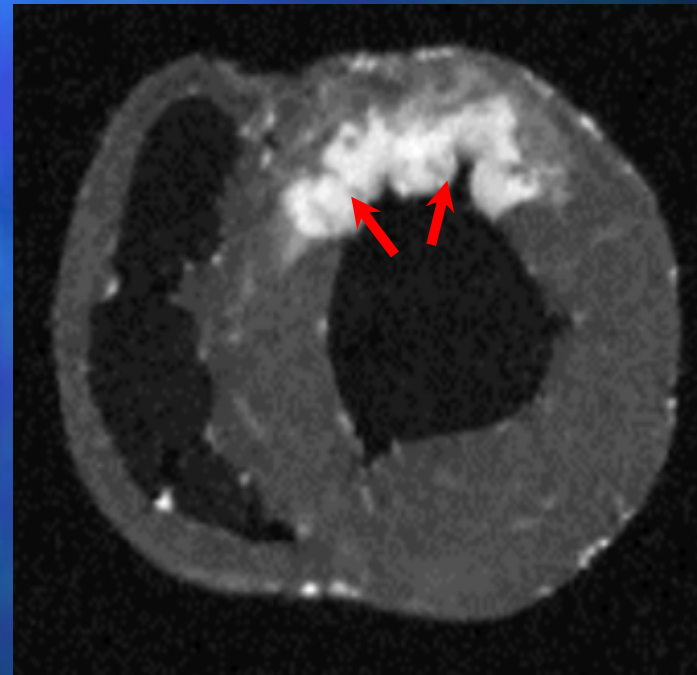
MYOCARDE : PERFUSION ET VIABILITÉ

PRISE DE CONTRASTE TARDIVE

- q Hyper-intensité \Rightarrow Hyper-concentration de Gd liée à une diminution du wash-out dans les territoires infarcis.
- q Hyper-intensité \Leftrightarrow Non-viabilité.

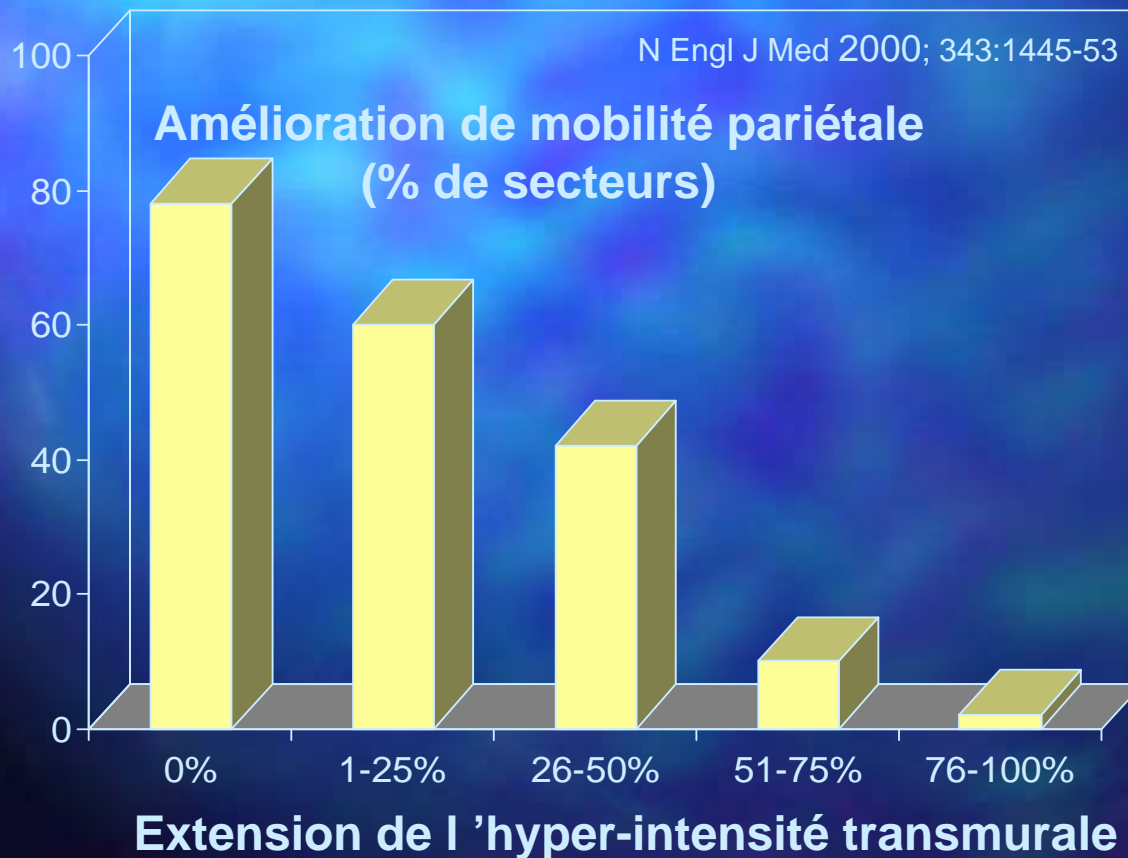
MYOCARDE : PERFUSION ET VIABILITÉ

Infarctus et Prise de Contraste



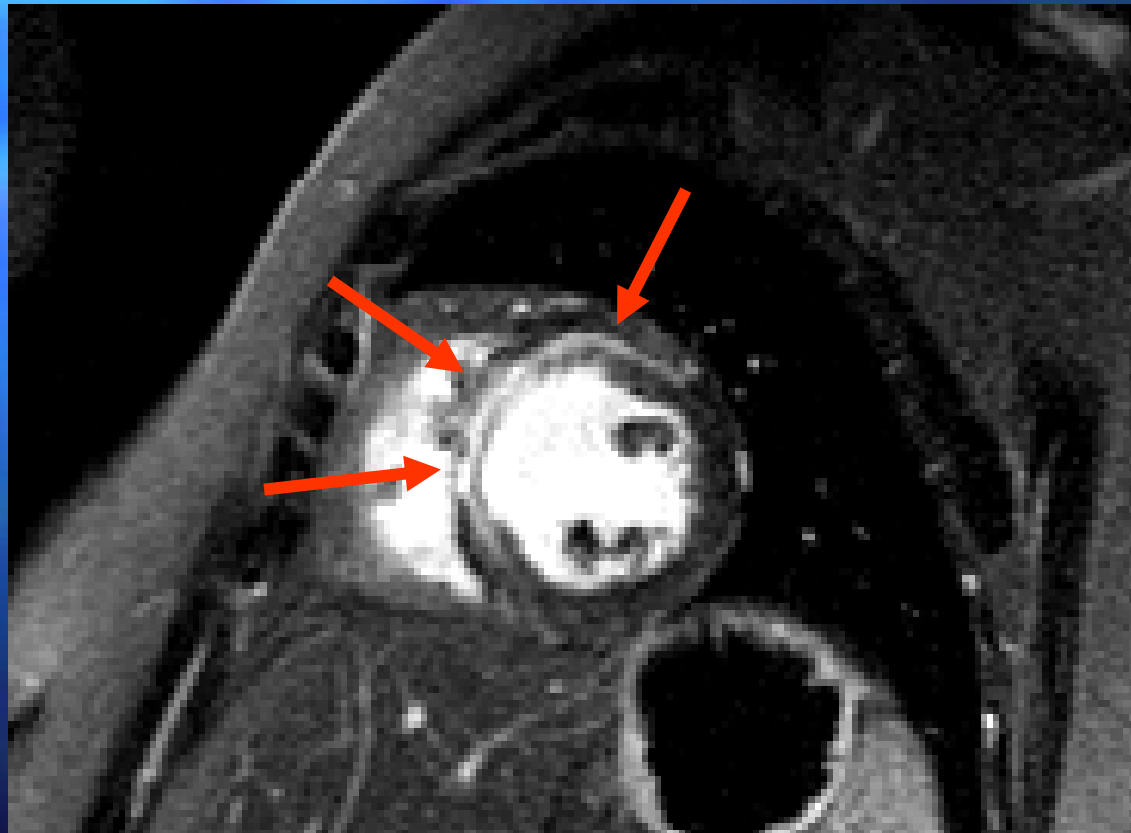
MYOCARDE : PERFUSION ET VIABILITÉ

Prévoir la Récupération de la Mobilité Pariétale



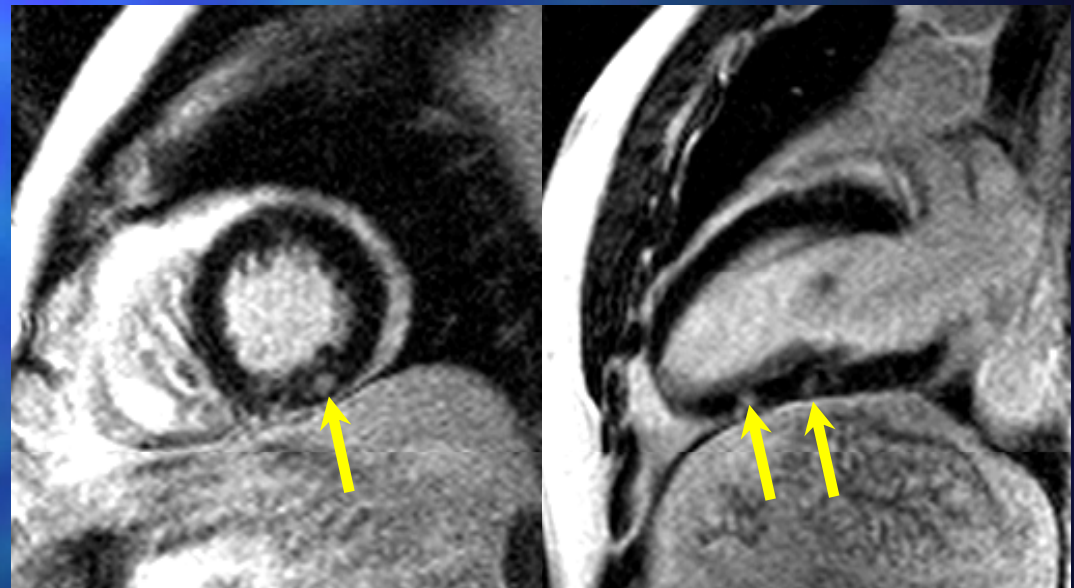
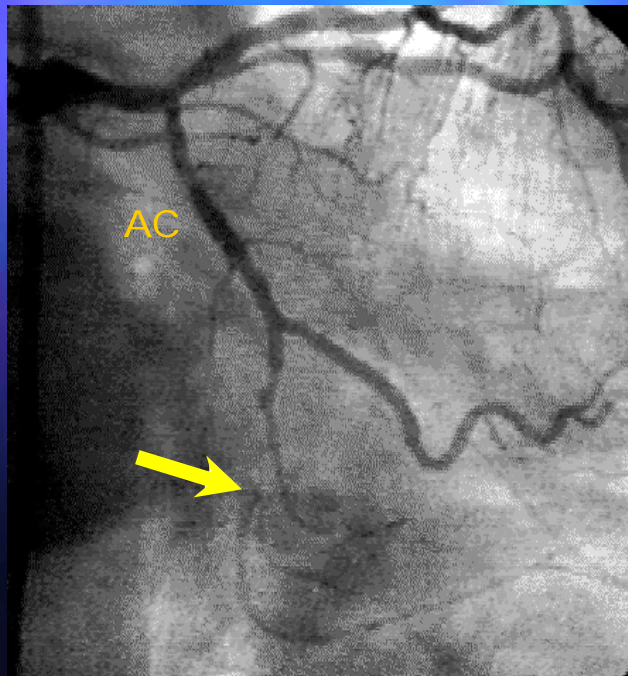
MYOCARDE : PERFUSION ET VIABILITÉ

Prise de Contraste Tardive



MYOCARDE : PERFUSION ET VIABILITÉ

Sténose d'une branche de l'artère coronarique

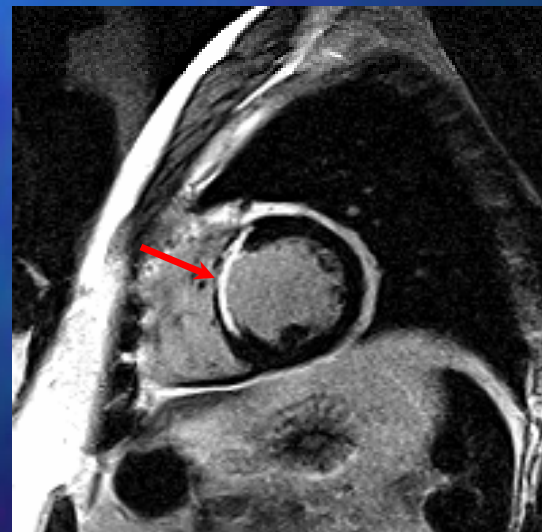
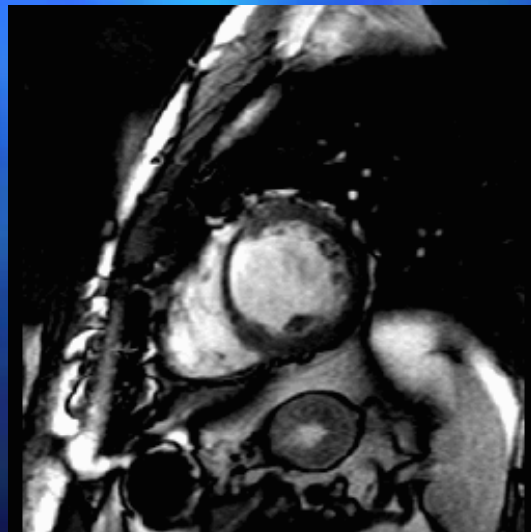


Hyperintensité => région non viable

MYOCARDE : PERFUSION ET VIABILITÉ

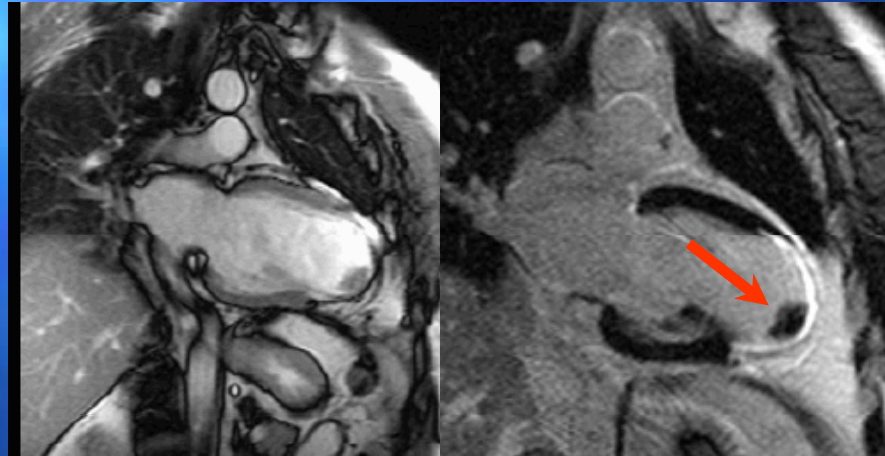
INFARCTUS ANCIEN

- q Amincissement pariétal (systole)
- q Réduction mobilité (Ciné)
- q Prise de contraste tardive (\pm)



MYOCARDE : PERFUSION ET VIABILITÉ

INFARCTUS ANCIEN



thrombus

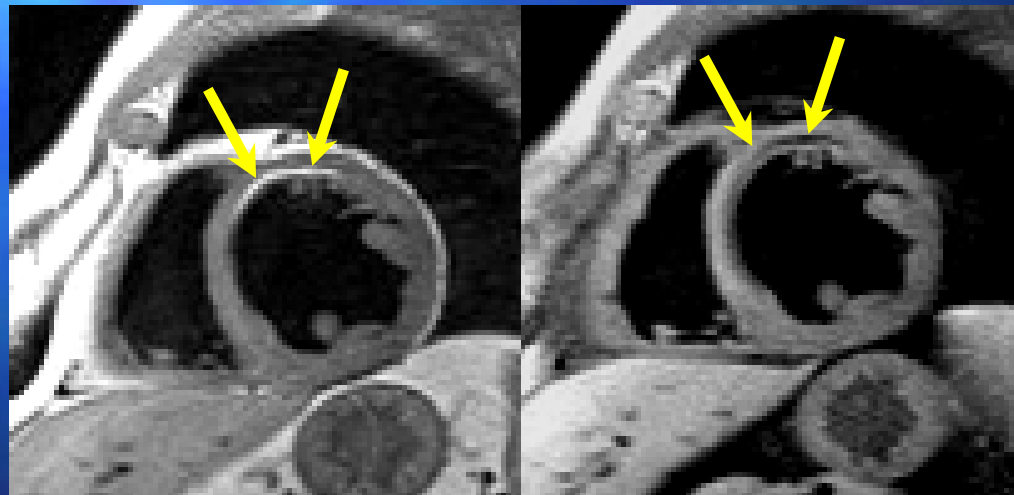
EG 3D Ciné

Réhaussement
tardif

MYOCARDE : PERFUSION ET VIABILITÉ

INFARCTUS ANCIEN

Infiltration graisseuse pariétale

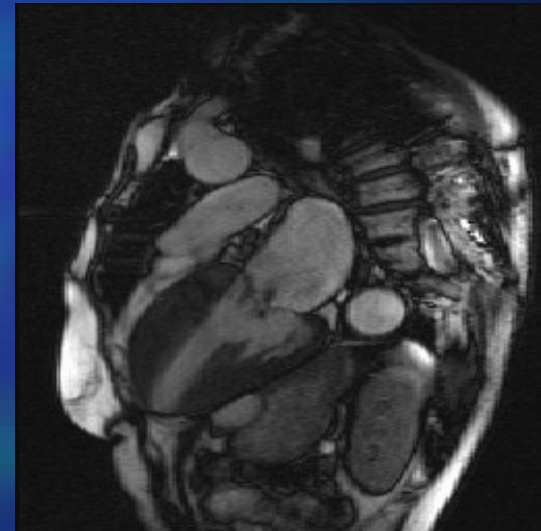
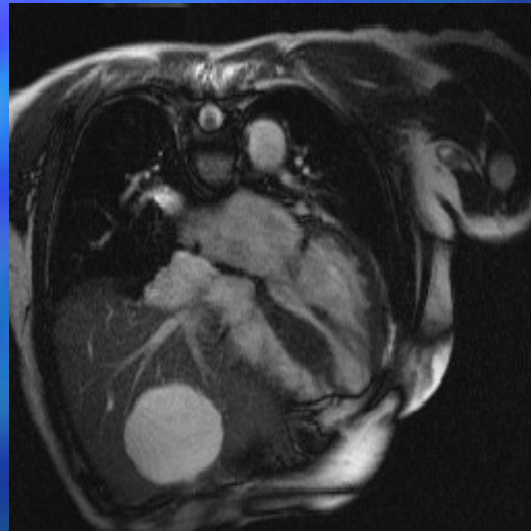
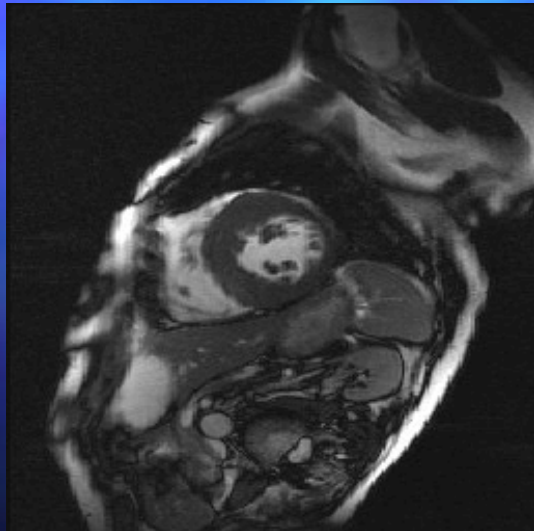


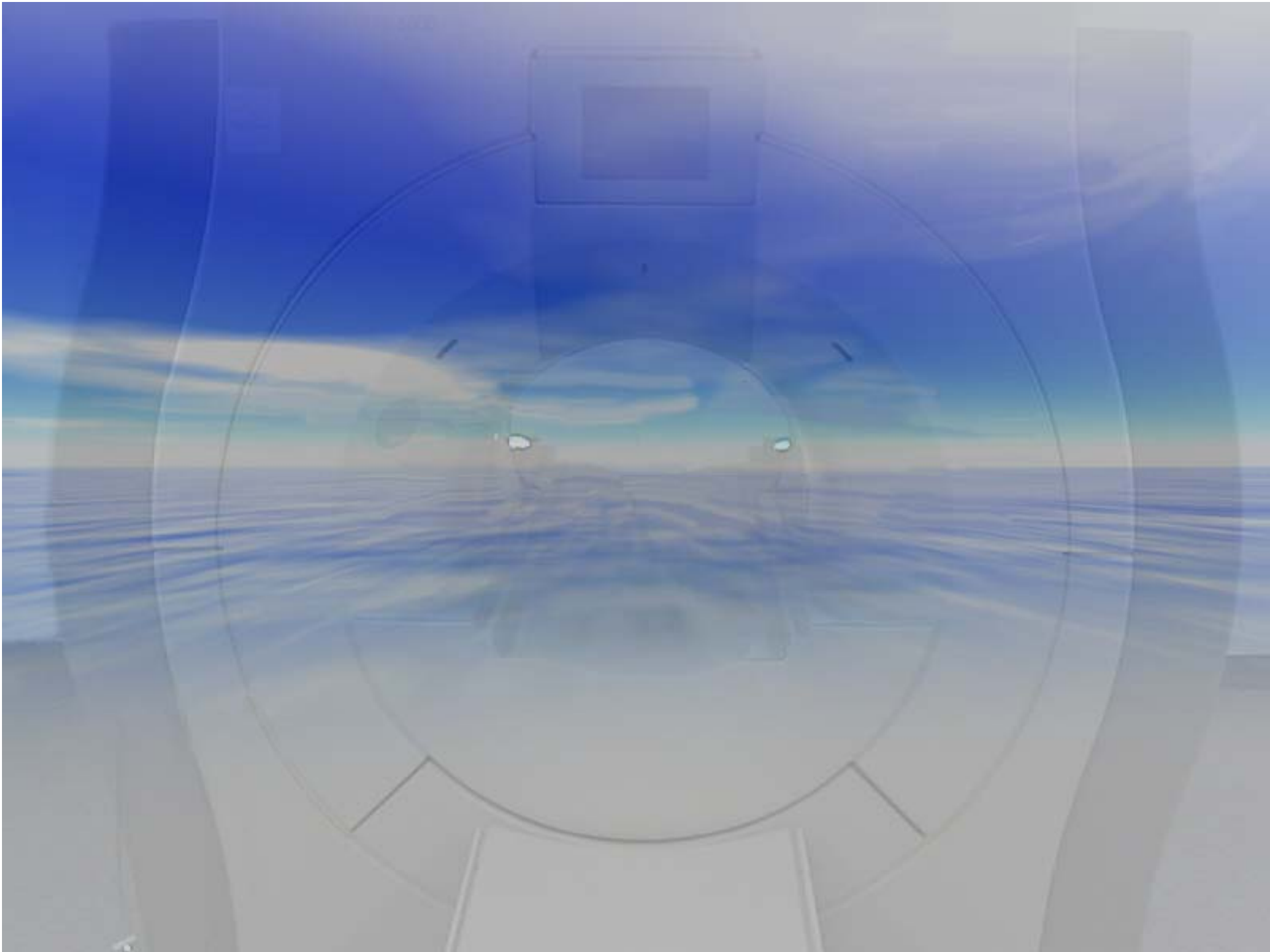
T1

T1 Fat-Sat

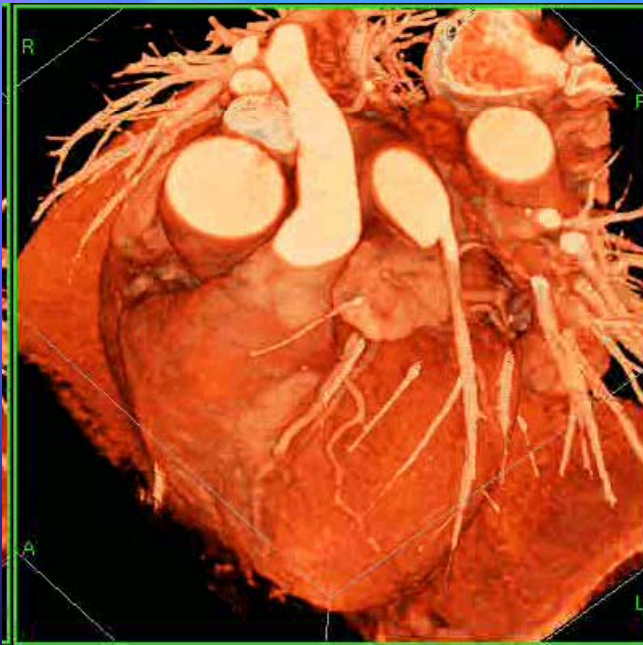
I.R.M. CARDIAQUE

CARDIOMYOPATHIE HYPERTROPHIQUE



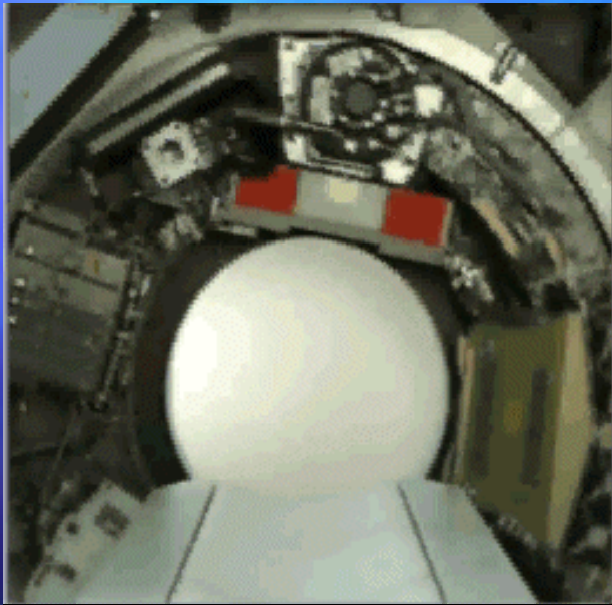


Et le SCANNER ?



L'apparition des nouveaux scanners hélicoïdaux multicoupes a révolutionné l'imagerie tomодensitométrique cardiaque.

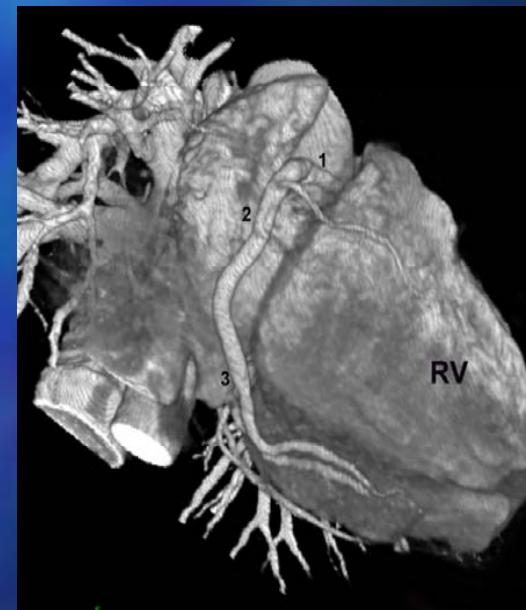
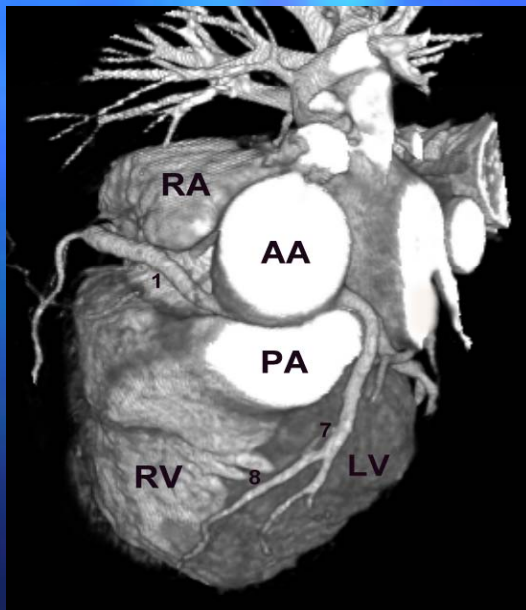
T.D.M. CARDIAQUE



- q Résolution temporelle $\approx 125\text{ms}$
- q Epaisseur de coupe de 1mm
- q Temps d'acquisition $\approx 30\text{s}$
- q Synchronisation avec l'ECG

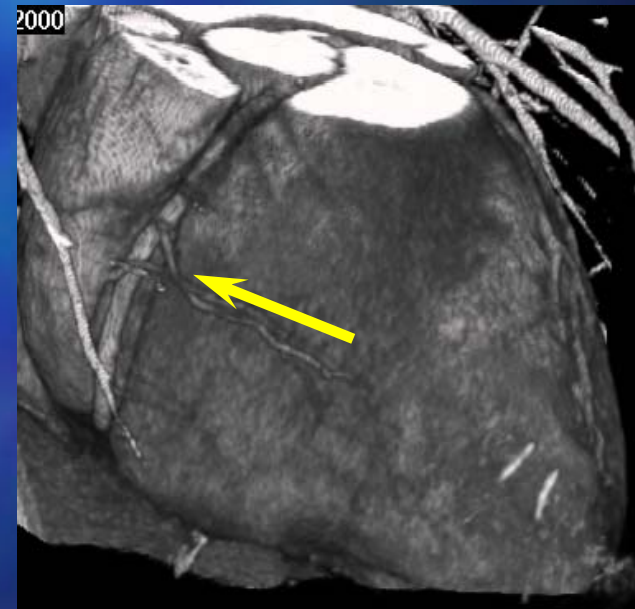
T.D.M. des CORONAIRES

3D VOLUME RENDERING



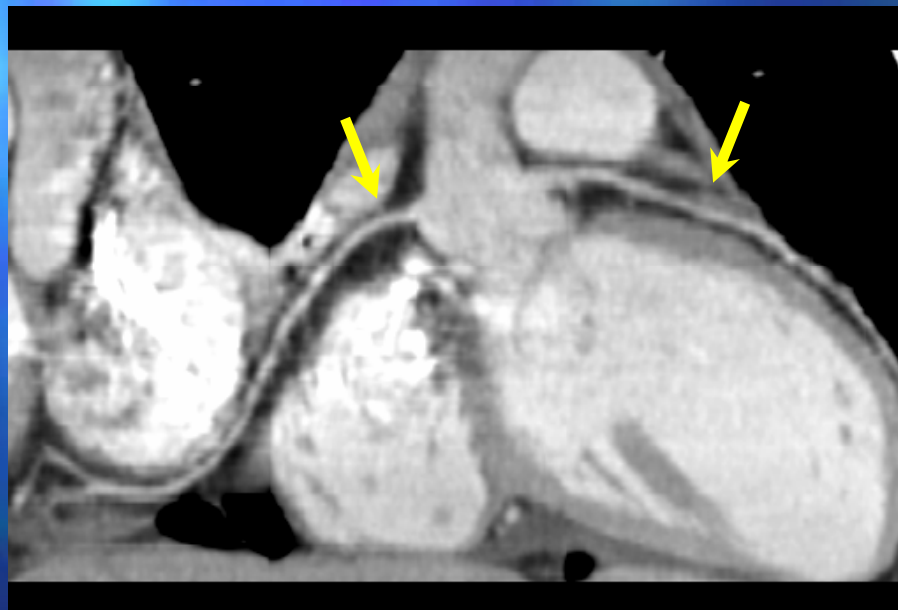
T.D.M. des CORONAIRES

3D VOLUME RENDERING



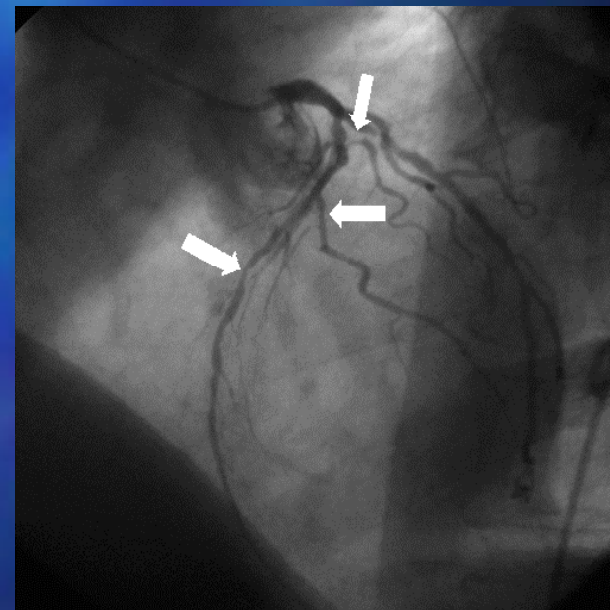
T.D.M. des CORONAIRES

2D MPR Curviligne



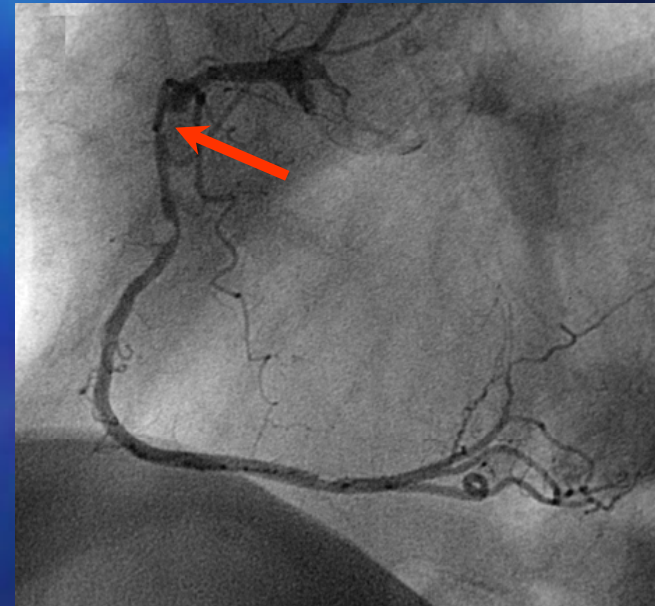
T.D.M. des CORONAIRES

Sténose branches diagonales ADG



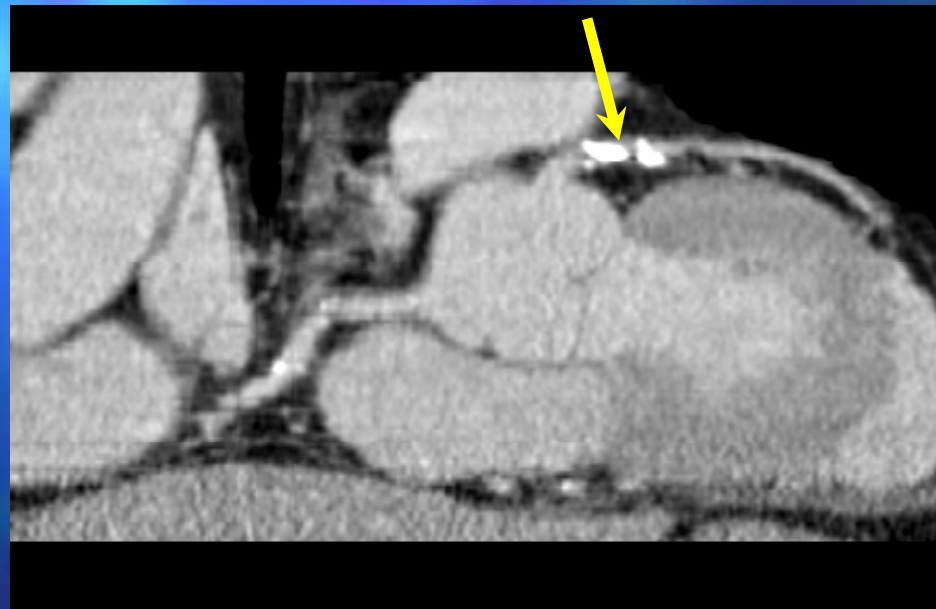
T.D.M. des CORONAIRES

Sténose proximale coronaire droite



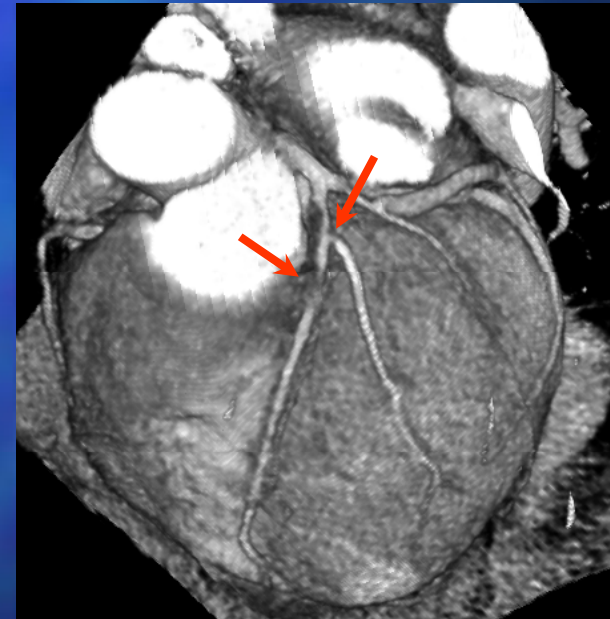
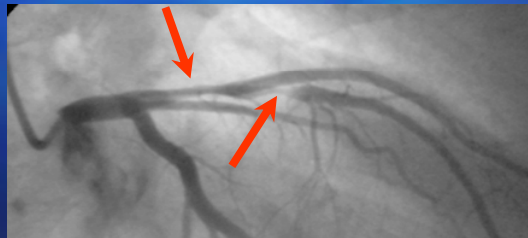
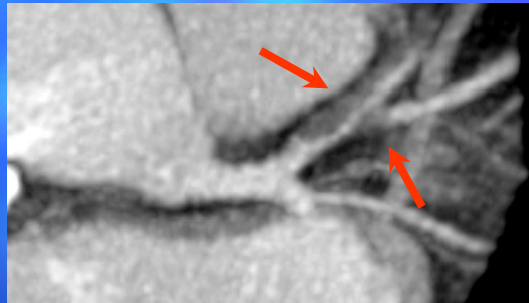
T.D.M. des CORONAIRES

Sténose serrée calcifiée ADG



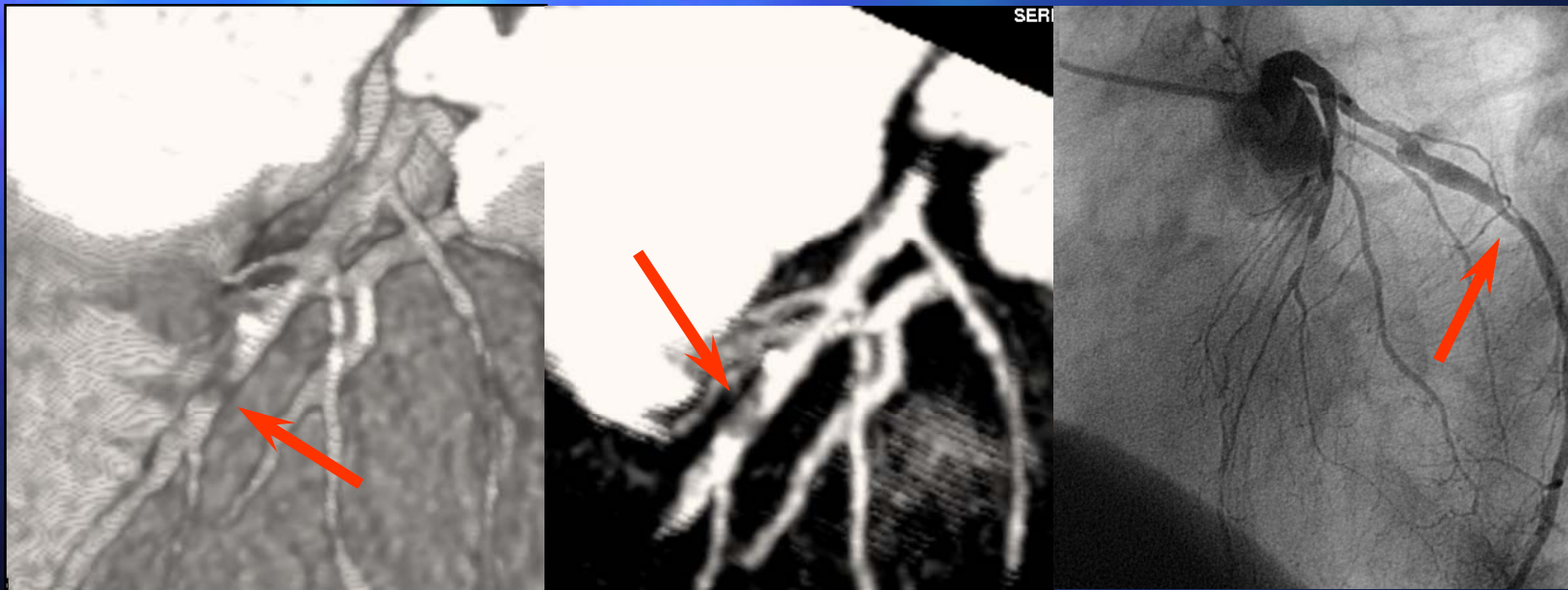
T.D.M. des CORONAIRES

Plaque non-calcifiée ADG prox.



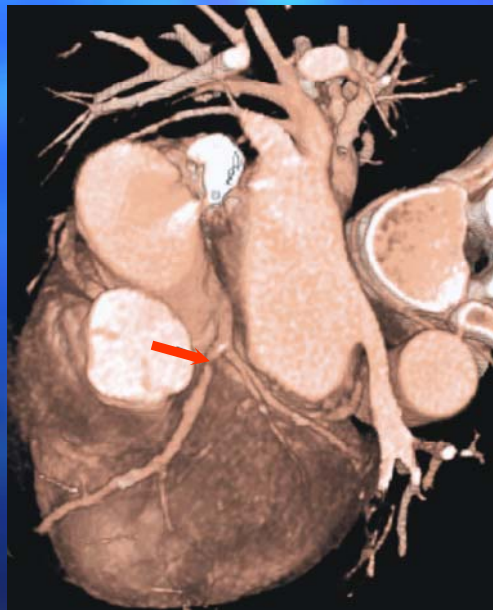
T.D.M. des CORONAIRES

Sténose serrée ADG



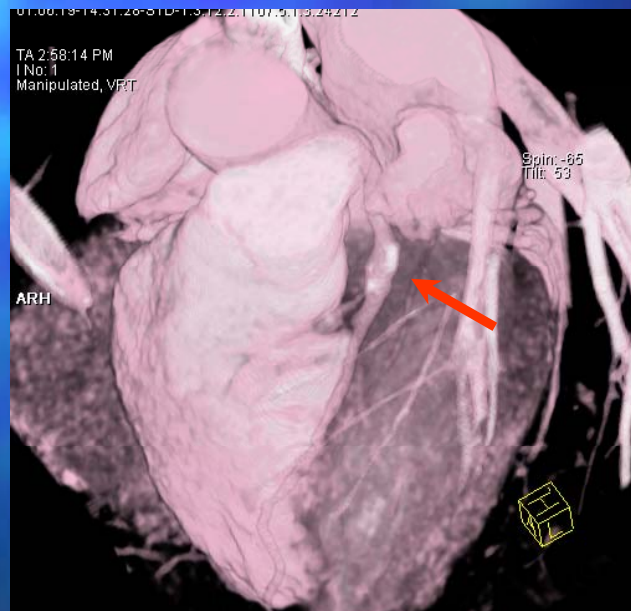
T.D.M. des CORONAIRES

Thombose ADG



T.D.M. des CORONAIRES

Anévrisme ADG



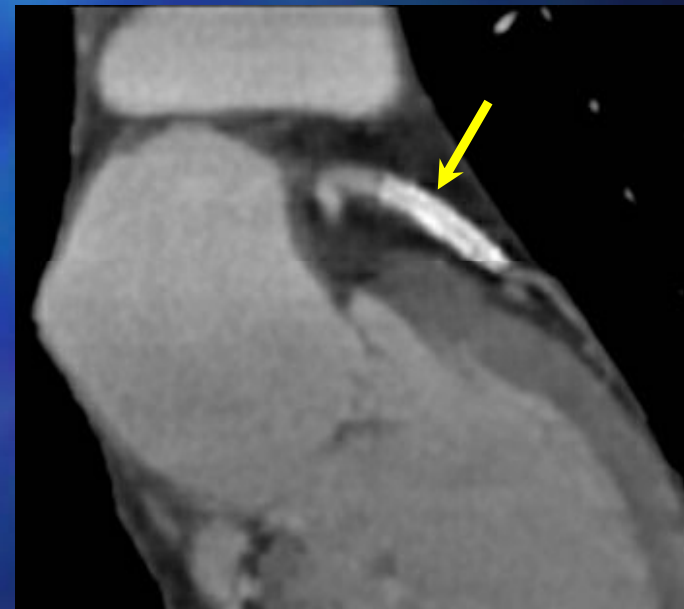
PONTAGES ET STENTS

Pontage ADG



PONTAGES ET STENTS

Stent ADG



MORPHOLOGIE CARDIAQUE

Valves Mitrale et Aortique



Double Oblique MPR

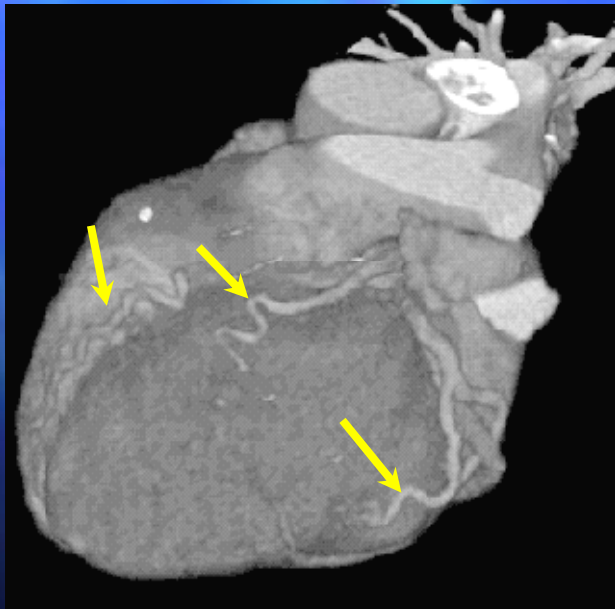
Muscles Papillaires



Sagittal MPR

MORPHOLOGIE CARDIAQUE

CARDIOPATHIE HYPERTENSIVE



Déformation des coronaires



MPR 4 cavités

FONCTION CARDIAQUE

CINE TDM

