JOURNÉES MÉDICALES
IBN EL JAZZAR DE KAIROUAN
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Anomalies de naissance des artères coronaires (ANOCOR) : cathétérisme et angioplastie

Pierre AUBRY pour le groupe ANOCOR

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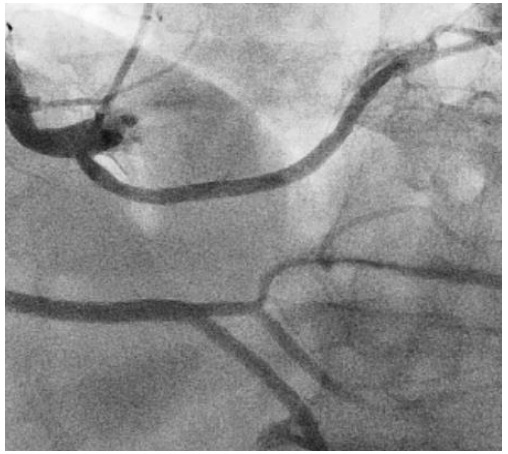
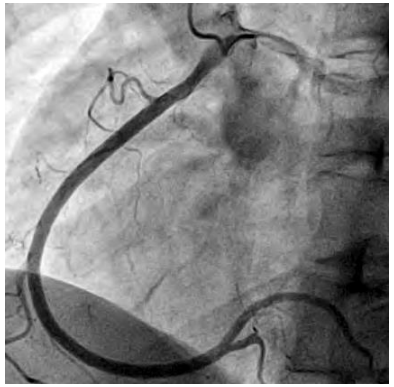
Groupement Hospitalier de Territoire
Saint-Denis Gonesse
Plaine de France

Prévalence angiographique



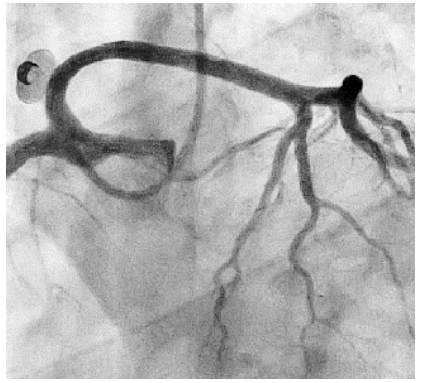
Circonflexe
- sinus droit
- coronaire droite

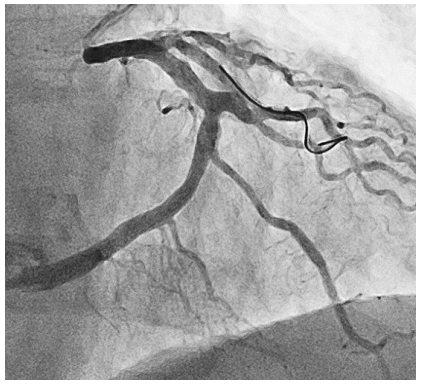
Prévalence angiographique
- **5/1000**

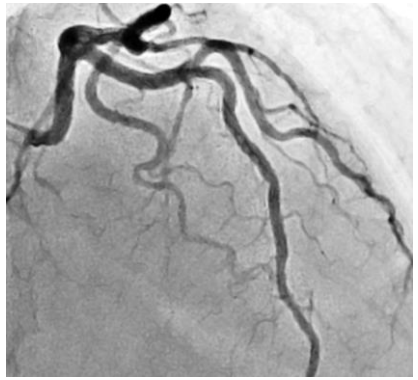


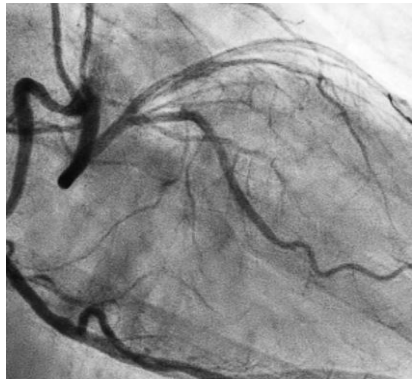
Coronaire droite
- sinus gauche

Prévalence angiographique
- **3/1000**









Tronc commun/IVA
- sinus droit
- coronaire droite

Prévalence angiographique
- **1/1000**

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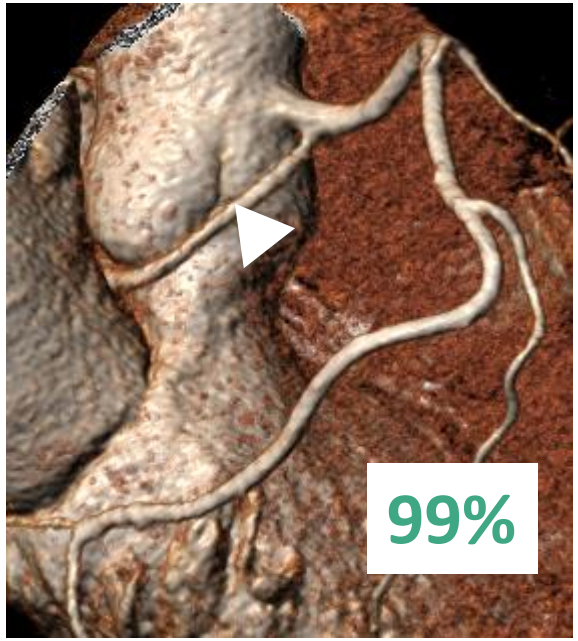
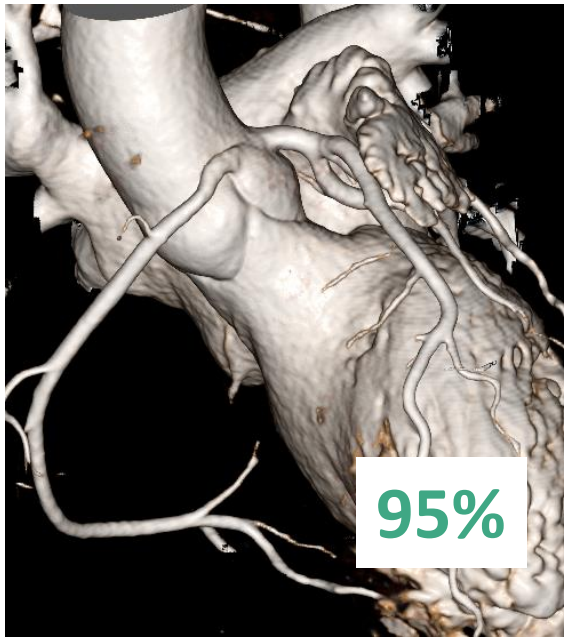
Trajets ectopiques circonflexe/droite

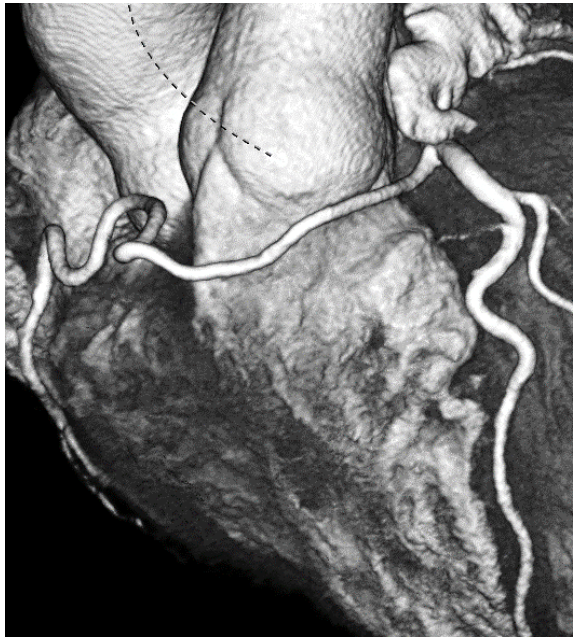
Circonflexe ⟵ Coronaire droite ⟶



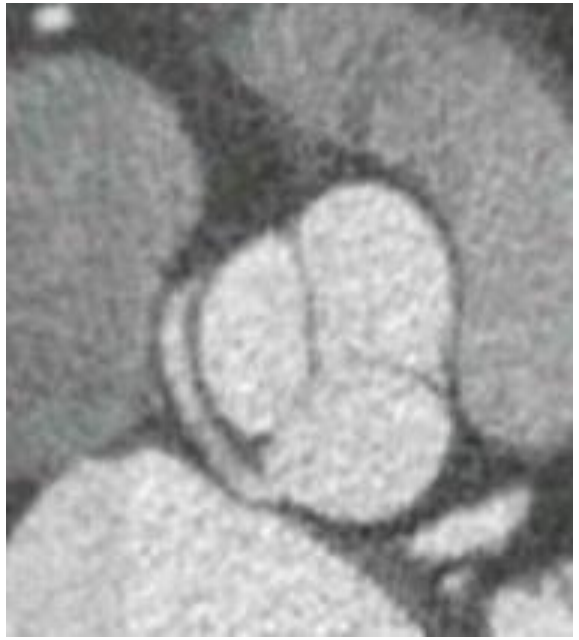
Rétroaortique



Interartériel

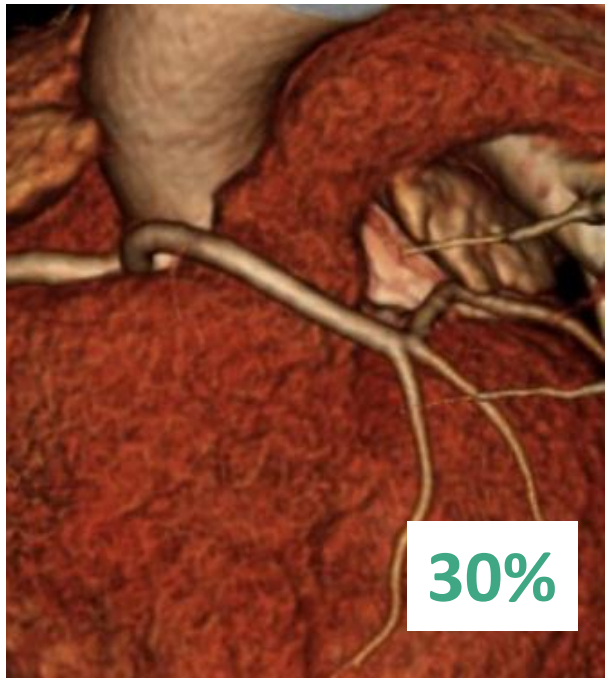


Prépulmonaire

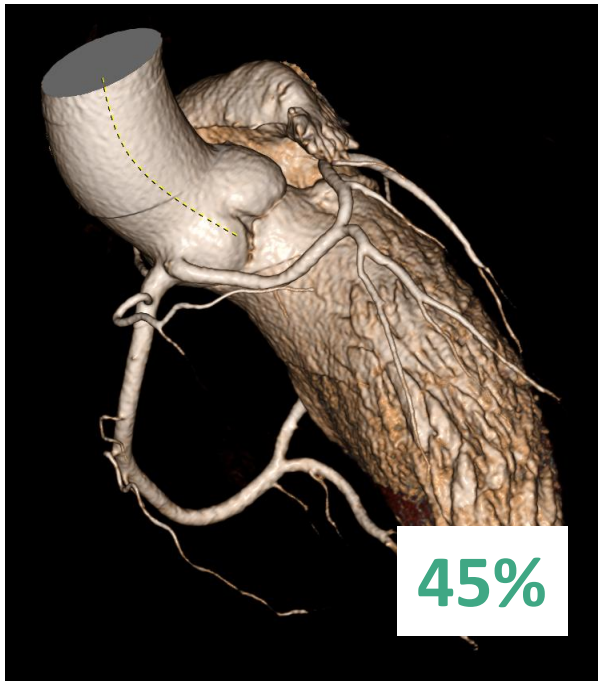


Rétroaortique

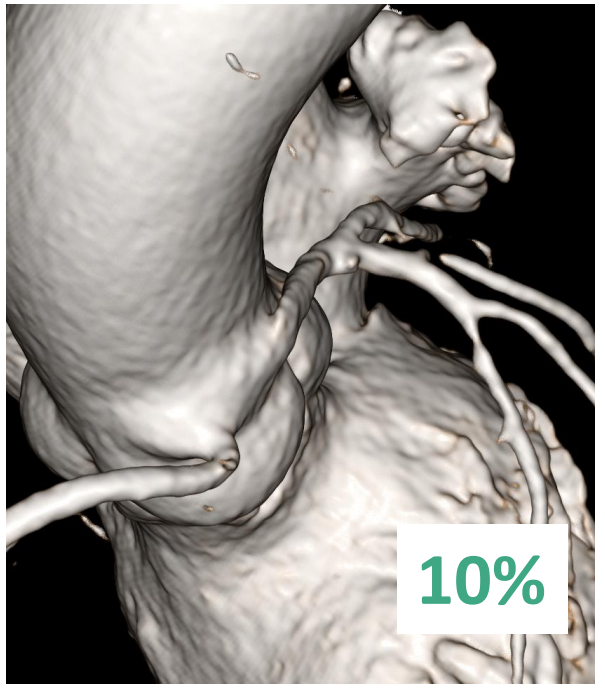
Trajets ectopiques tronc commun/IVA



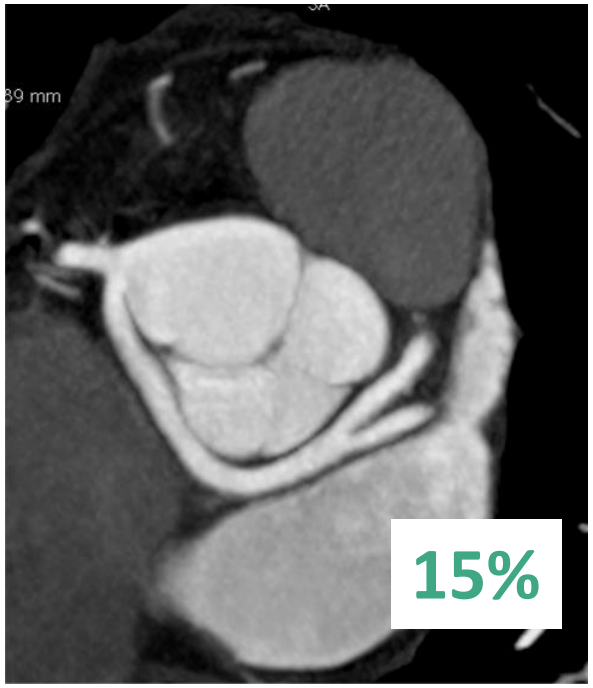
Prépulmonaire



Rétropulmonaire



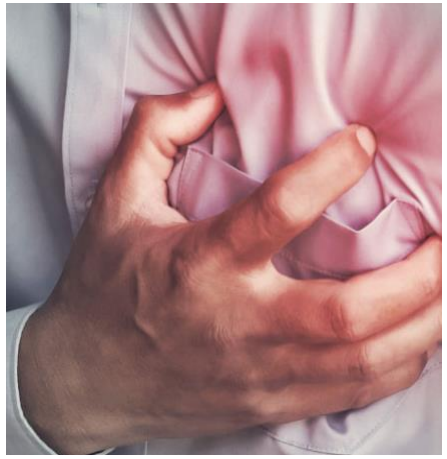
Interartériel



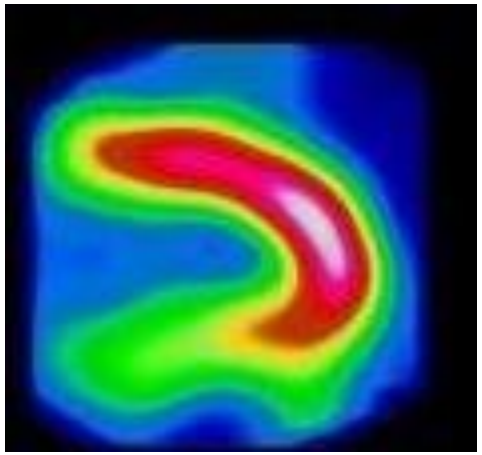
Rétroaortique

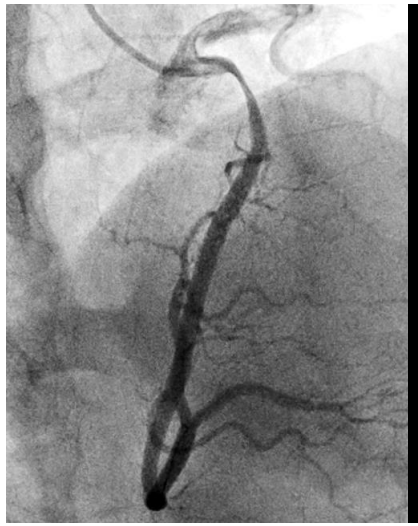
Manifestations

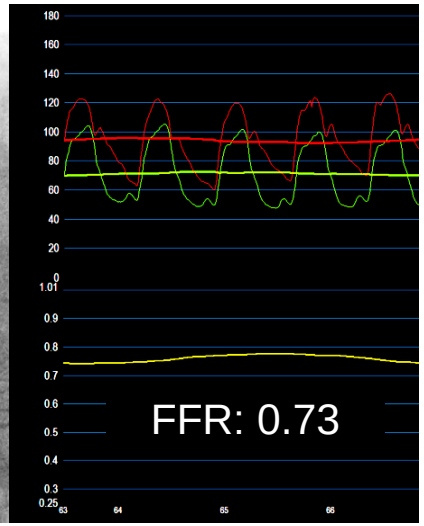
Symptômes ischémiques



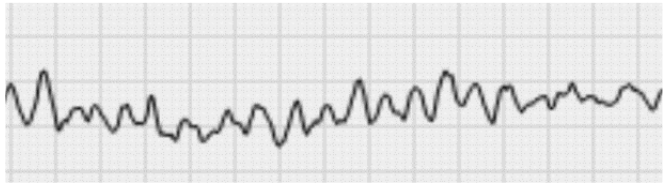
Ischémie myocardique

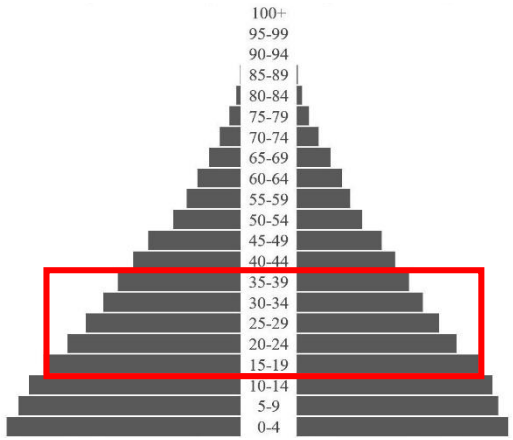






ACR/MS





Anomalies de naissance des artères coronaires

Cardiopathie congénitale à risque de mort subite	Prévalence**
ANOCOR* droite	**3/1000**
Cardiomyopathie hypertrophique	2/1000
Syndrome pré-excitation ventriculaire	1.5/1000
Syndrome de QT long	0.5/1000
Cardiomyopathie dilatée idiopathique	0.4/1000
Dysplasie ventriculaire droite arythmogène	0.4/1000
ANOCOR* gauche	**0.3/1000**
Syndrome de Brugada	0.2/1000
Tachycardie ventriculaire catécholergique	0.1/1000

* Anomalie de connexion avec trajet interartériel
** Prévalence en population générale (estimations)

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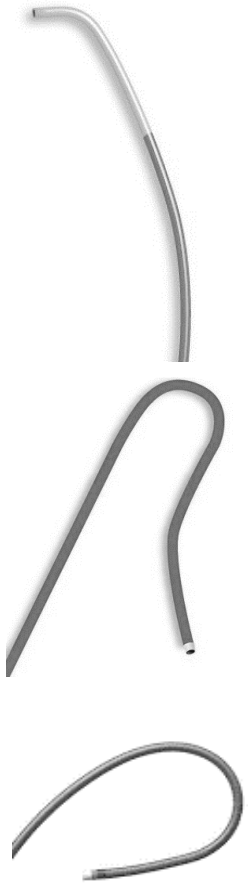
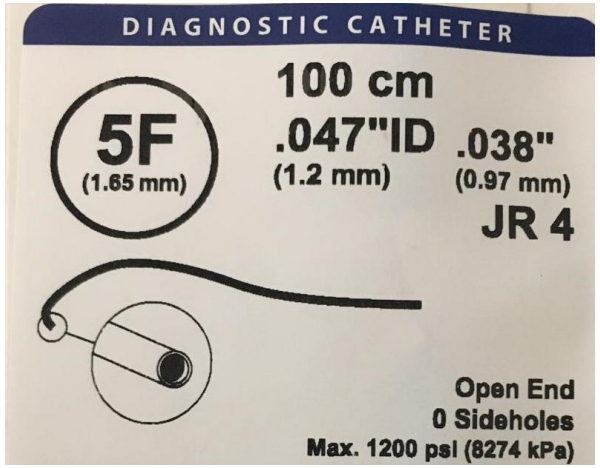
Anomalies de naissance des artères coronaires

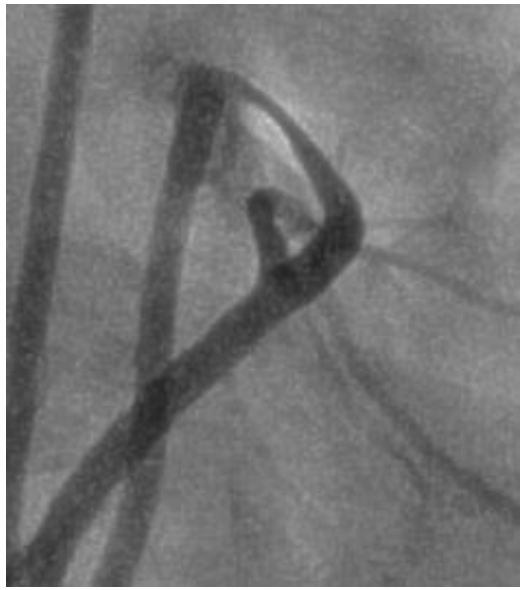
Cardiopathie congénitale à risque de mort subite	Incidence annuelle**
Tachycardie ventriculaire catécholergique	1.5%
Cardiomyopathie hypertrophique	1-2%
Syndrome de Brugada	1%
Syndrome de QT long	0.5-1%
Cardiomyopathie dilatée idiopathique	0.5-1%
Dysplasie ventriculaire droite arythmogène	0.5-1%
ANOCOR* gauche	**0.2%**
Syndrome pré-excitation ventriculaire	0.1%
ANOCOR* droite	**0.02%**

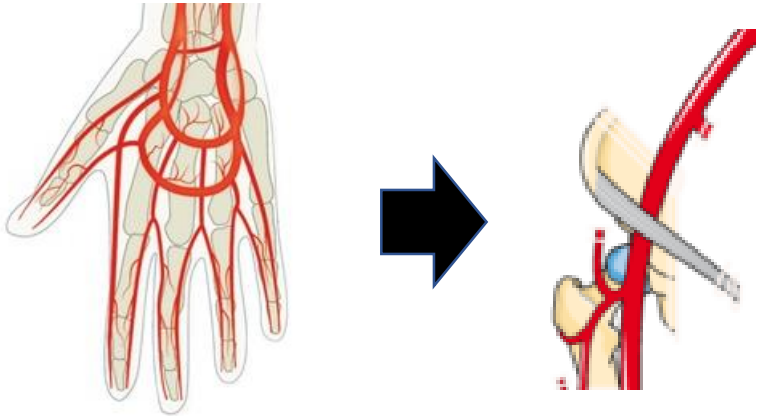
* Anomalie de connexion avec trajet interartériel
** Incidence annuelle de mort subite (estimations)

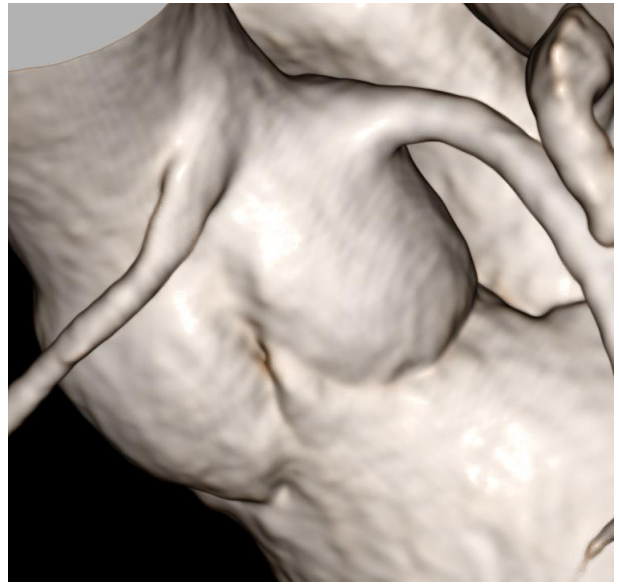
Cathétérisme



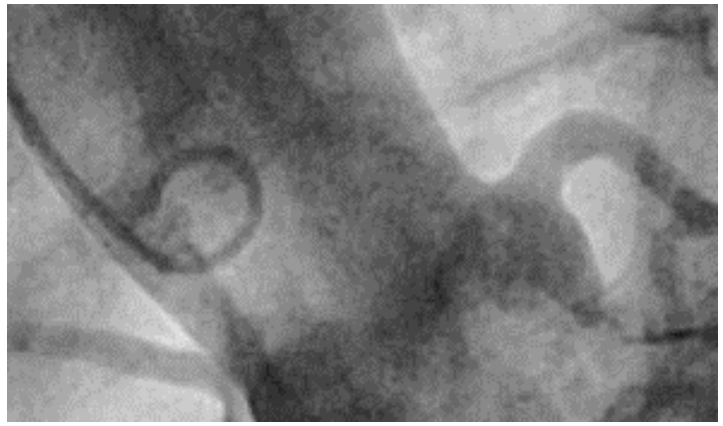


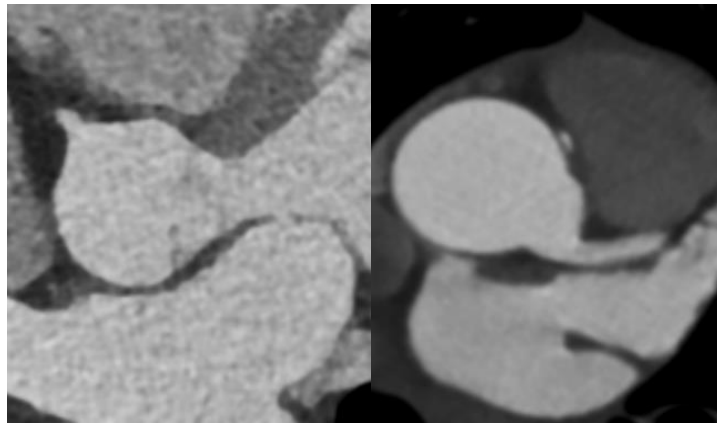


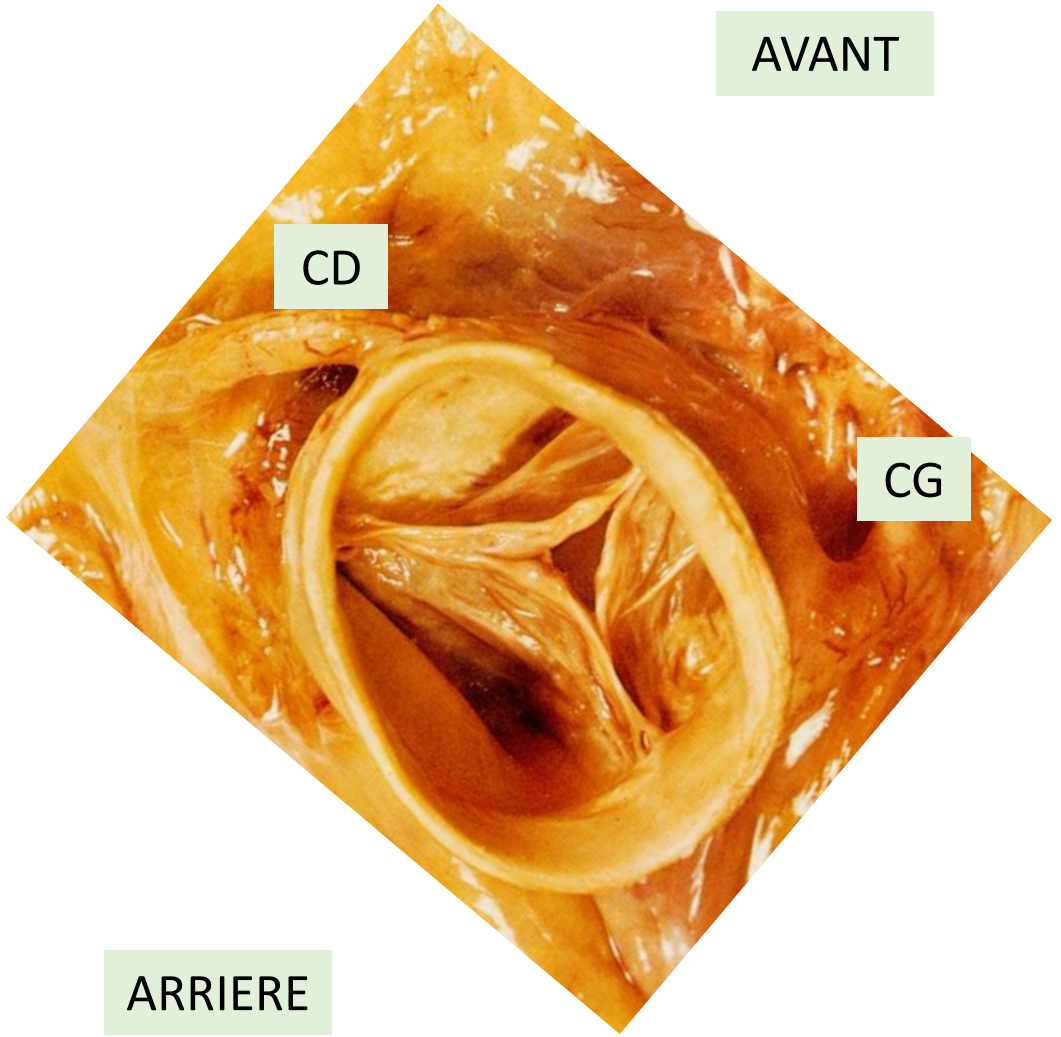


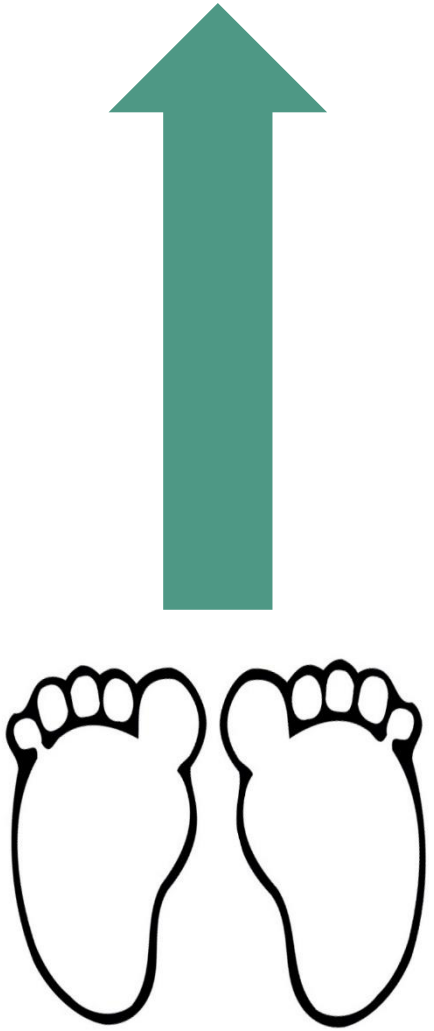


Vue radiologique

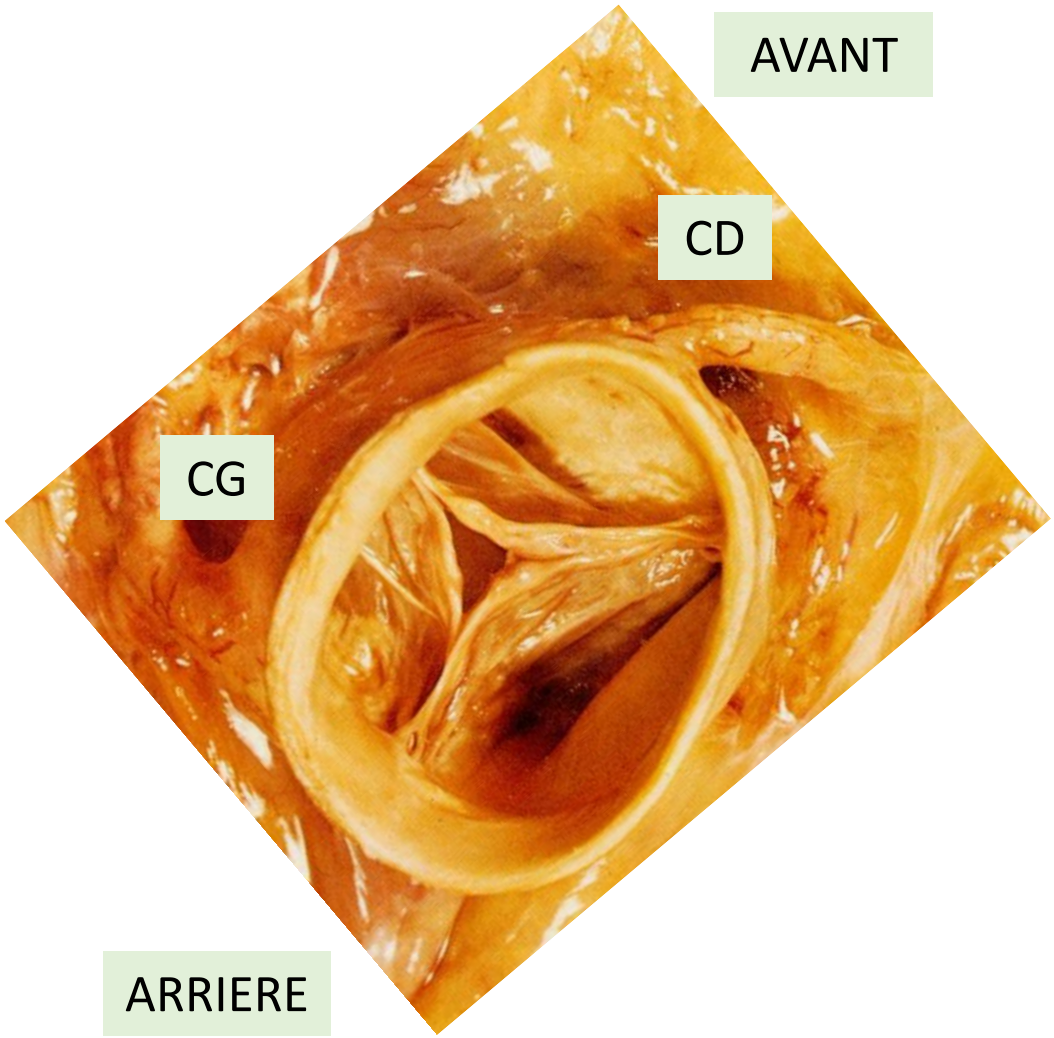








Vue chirurgicale

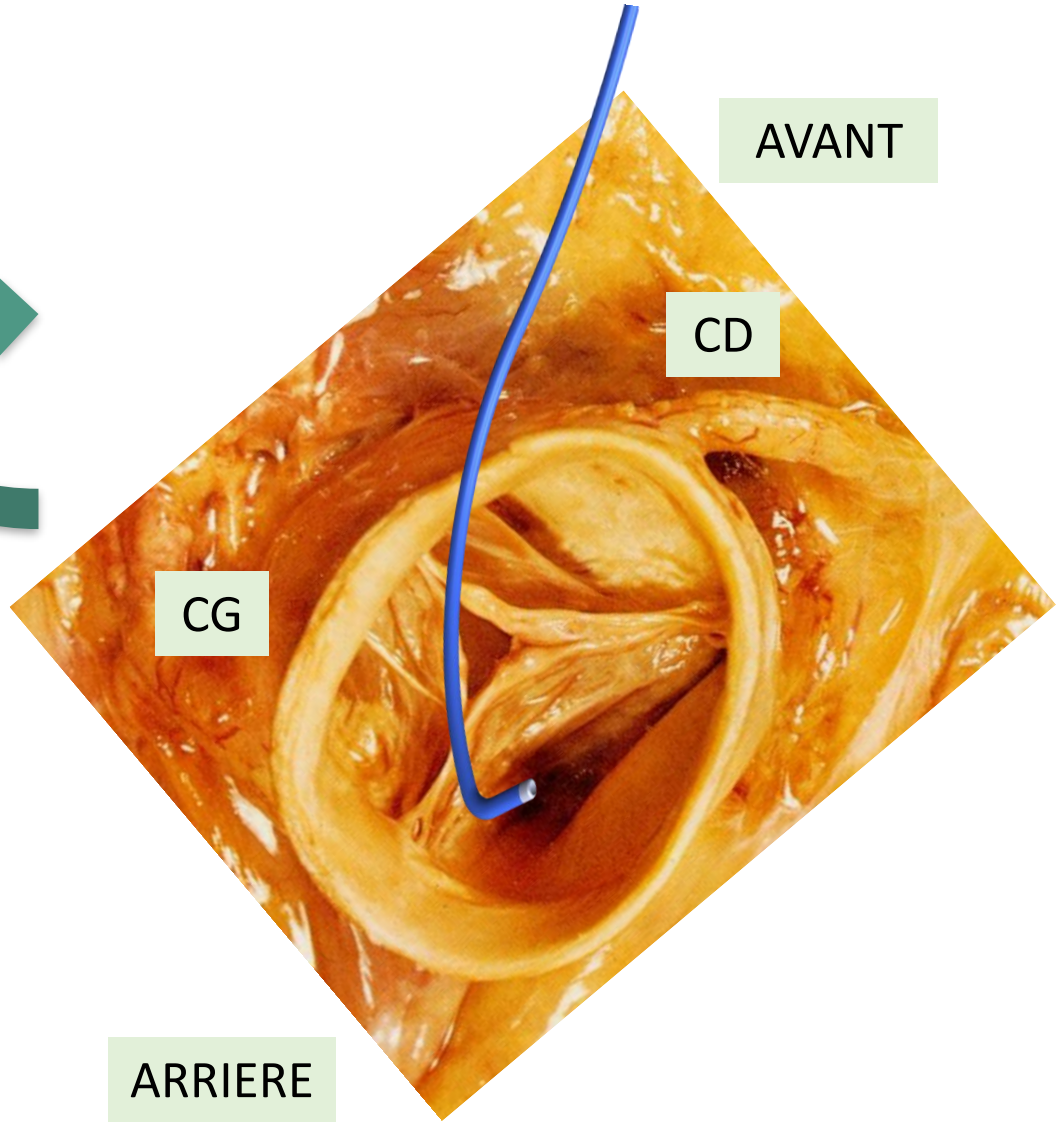


Manipulation des cathéters

DIRECTION ANTERIEURE

ROTATION HORAIRE

VERS LA DROITE



DIRECTION POSTERIEURE

ROTATION ANTI-HORAIRE

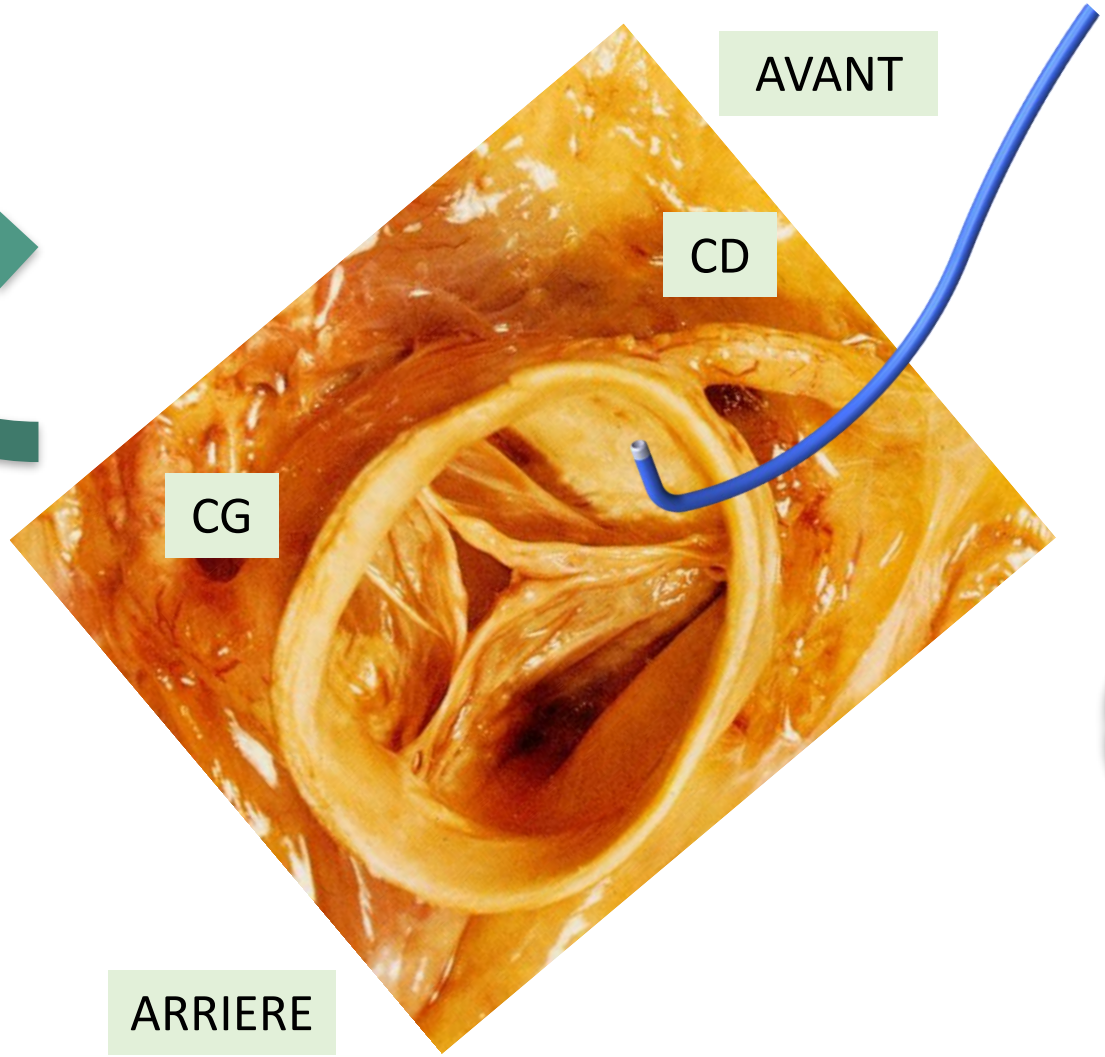
VERS LA GAUCHE

Manipulation des cathéters

DIRECTION ANTERIEURE

ROTATION HORAIRE

VERS LA DROITE



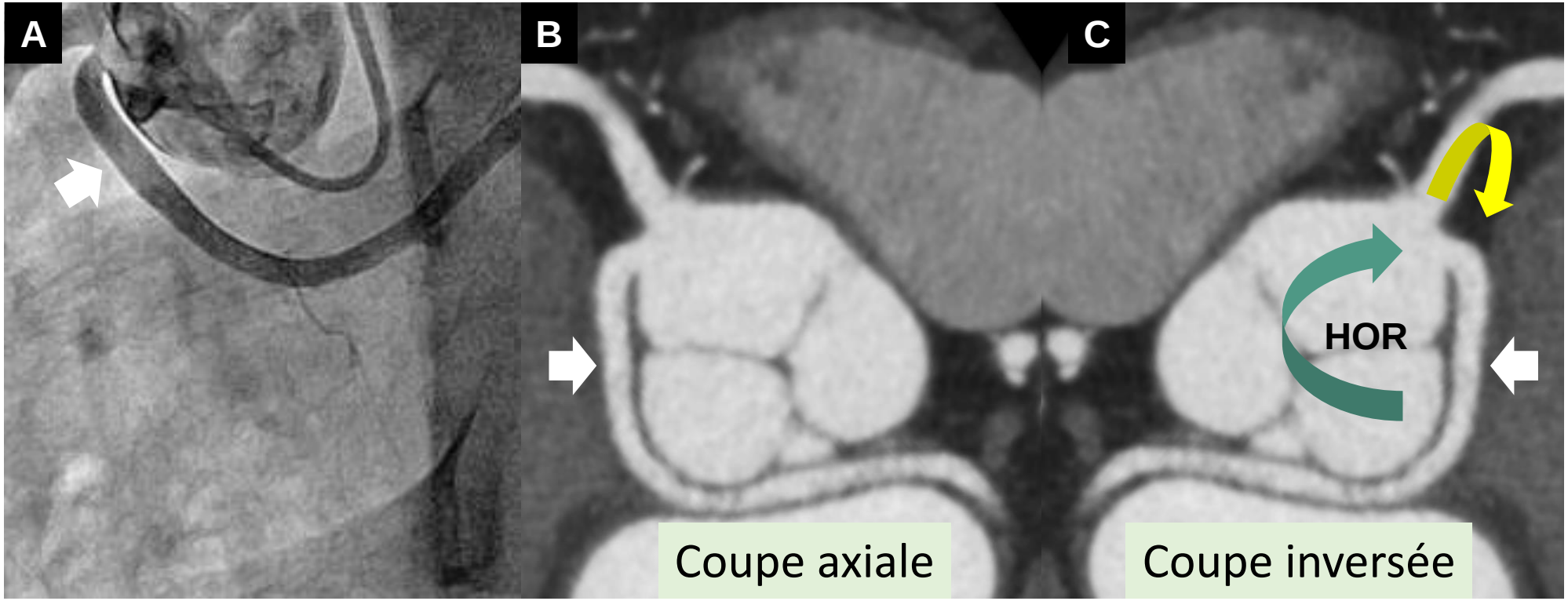
DIRECTION POSTERIEURE

ROTATION ANTI-HORAIRE

VERS LA GAUCHE

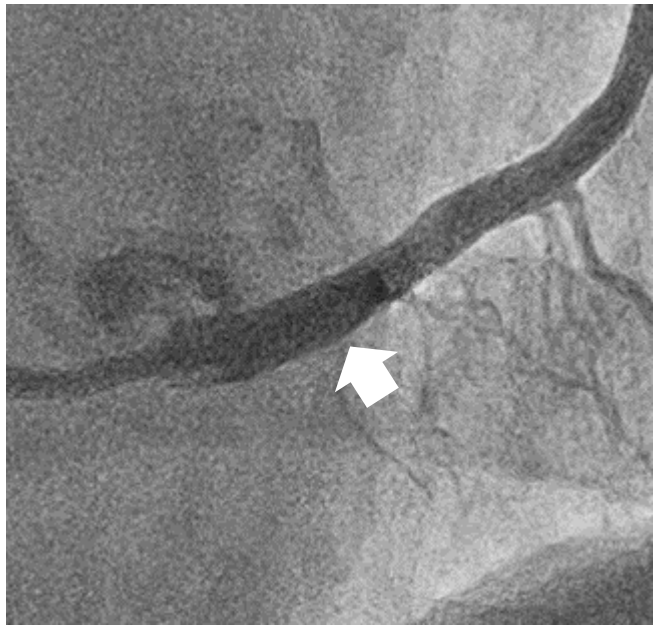
Cathétérisme/Angiographie

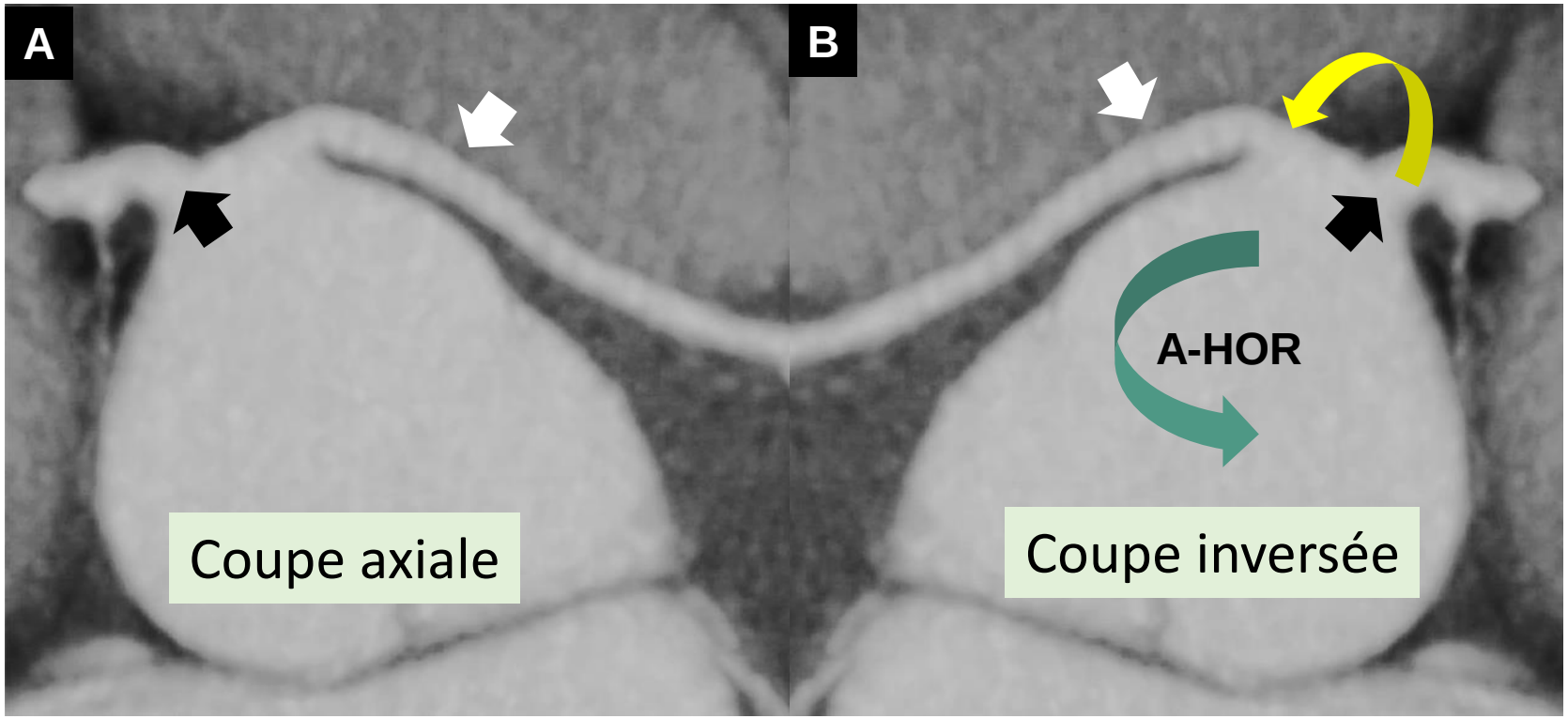
Circonflexe avec trajet rétroaortique



Cathétérisme/Angiographie

Tronc commun avec trajet rétropulmonaire

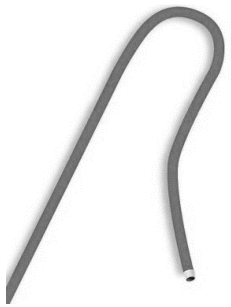




Anomalies de naissance des artères coronaires

Left main or Left anterior descending artery

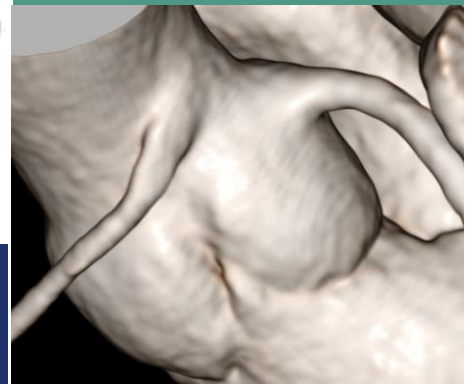
Site	Frequency	Ectopic course	Catheters
Right sinus	++++	Prepulmonic or subpulmonic or retroaortic	JR 4, AR 1-2, AL 1, MP
Right sinus	+	Interarterial	Standard left, JR 4, EBU
Right coronary artery	++	Prepulmonic or subpulmonic or retroaortic	Standard right
Right coronary artery	+	Interarterial	Standard right
Aorta	+	Absent or interarterial	AL 1-2, MP
Left sinus	+	Absent or interarterial	Standard left
Non-coronary sinus	+	Retroaortic	Standard left/right
Single coronary	+	Not applicable	Standard right



Circumflex artery

Site	Frequency	Ectopic course	Catheters
Right sinus	+++++	Retroaortic	JR 4, AR 1-2, AL 1, MP
Right coronary artery	+++++	Retroaortic	JR 4, AR 1-2, AL 1
Single coronary	+	Not applicable	Standard right

Right coronary artery



Site	Frequency	Ectopic course	Catheters
Left sinus	+++++	Interarterial	EBU, AL 0.75-1-2, XB, CLS
Left main	+	Interarterial	Standard left
Left anterior descending	+	Prepulmonic	Standard left
Aorta	+	Absent or interarterial	AL 1-2, MP
Right sinus	+	Absent or interarterial	Standard right
Non-coronary sinus	+	Retroaortic	Standard right/left
Single coronary	+	Not applicable	Standard left

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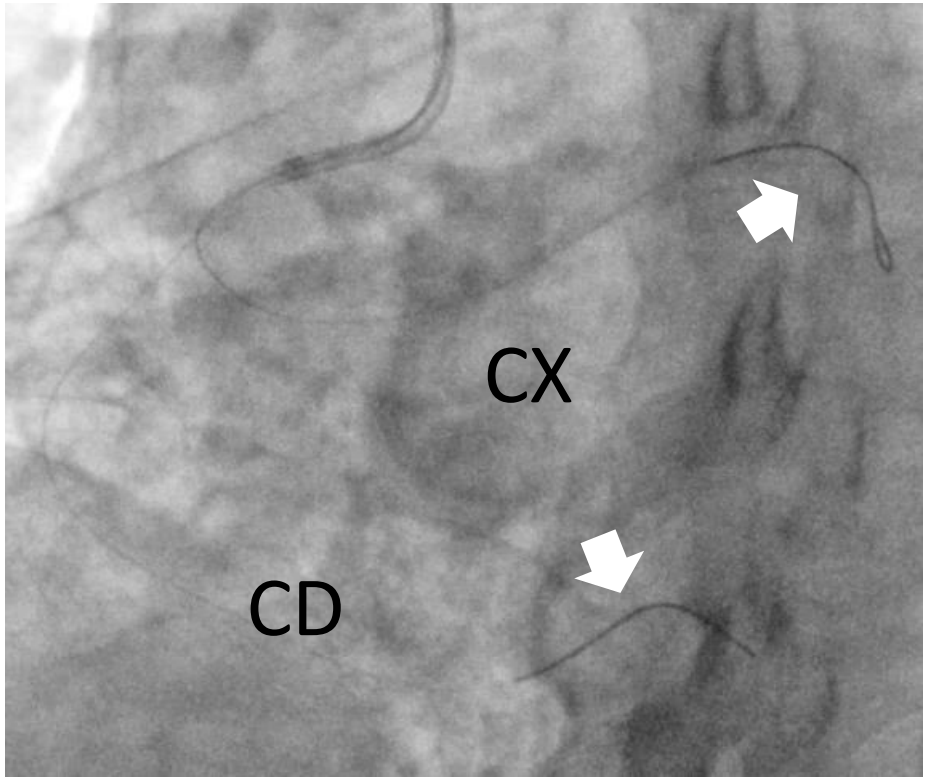
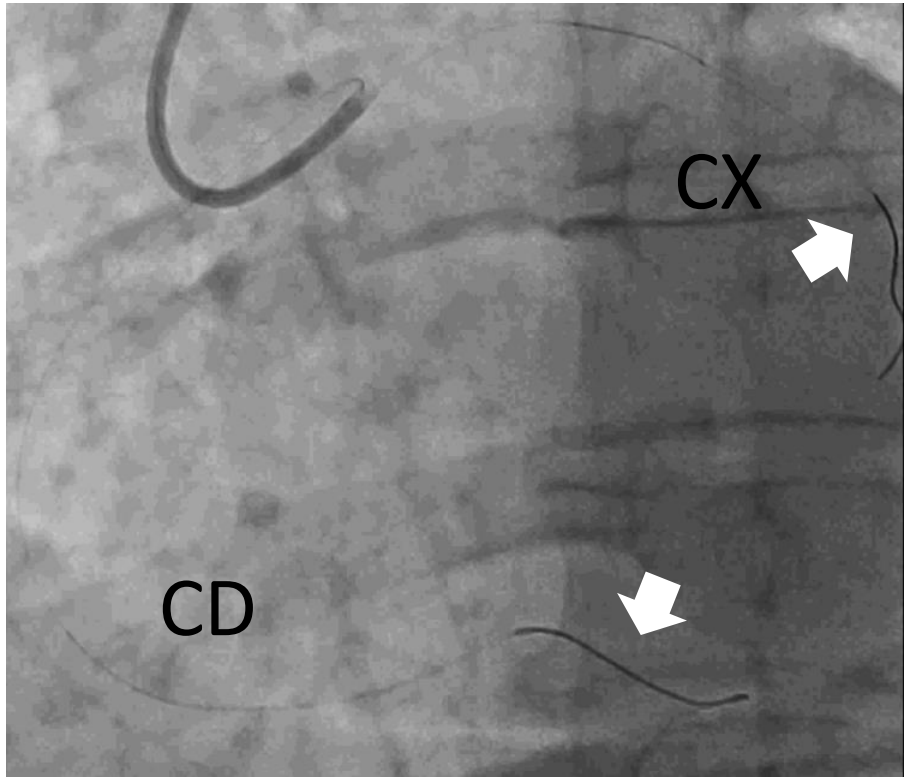
Cathétérisme/Angiographie

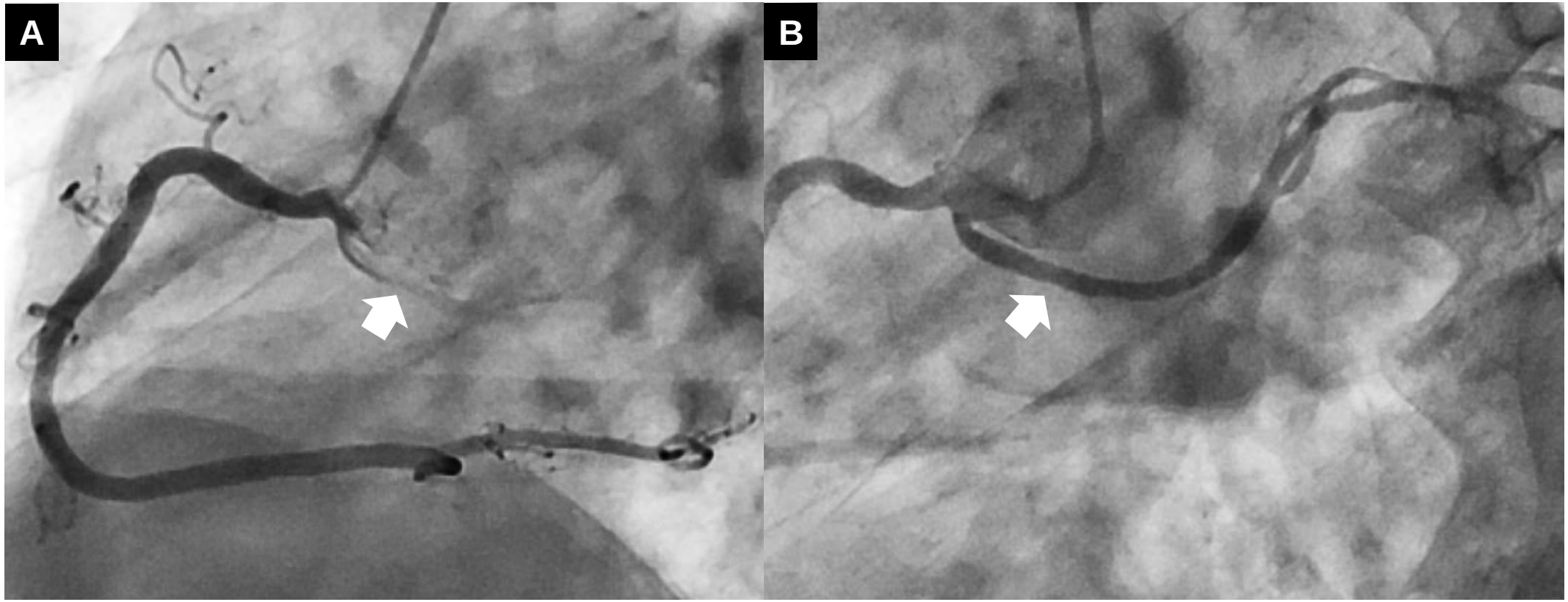
Guides intra coronaires





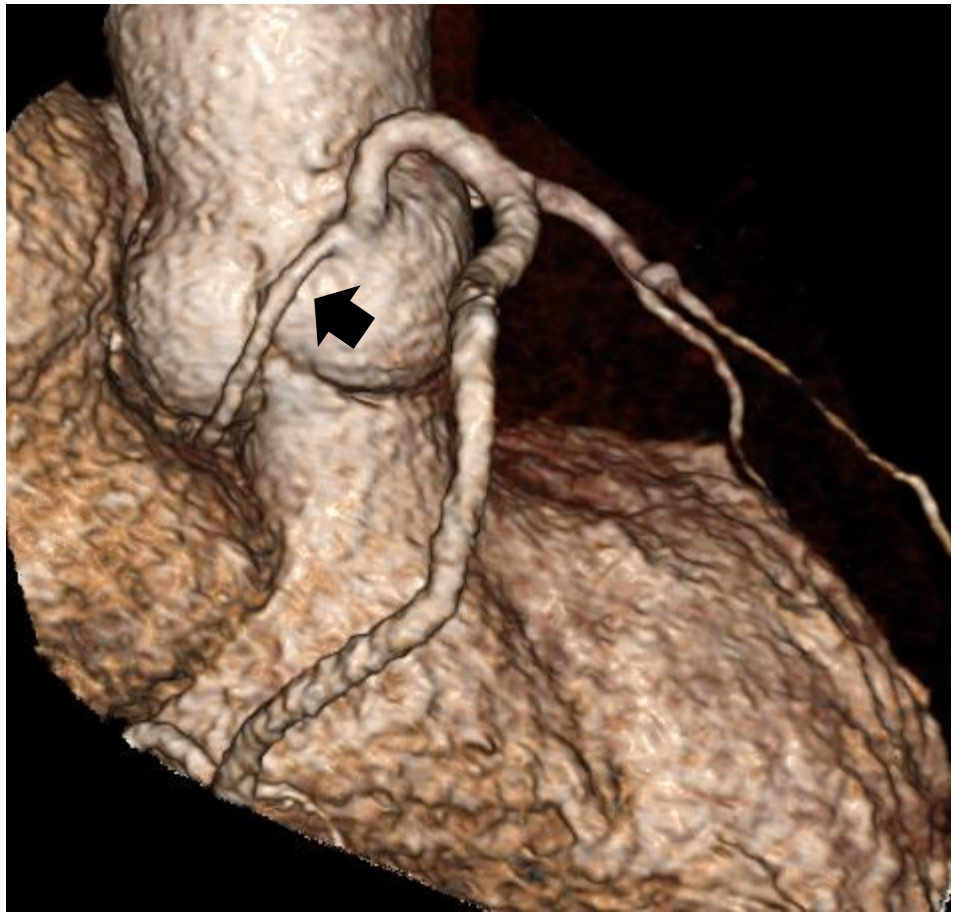
Cathétérisme/Angiographie

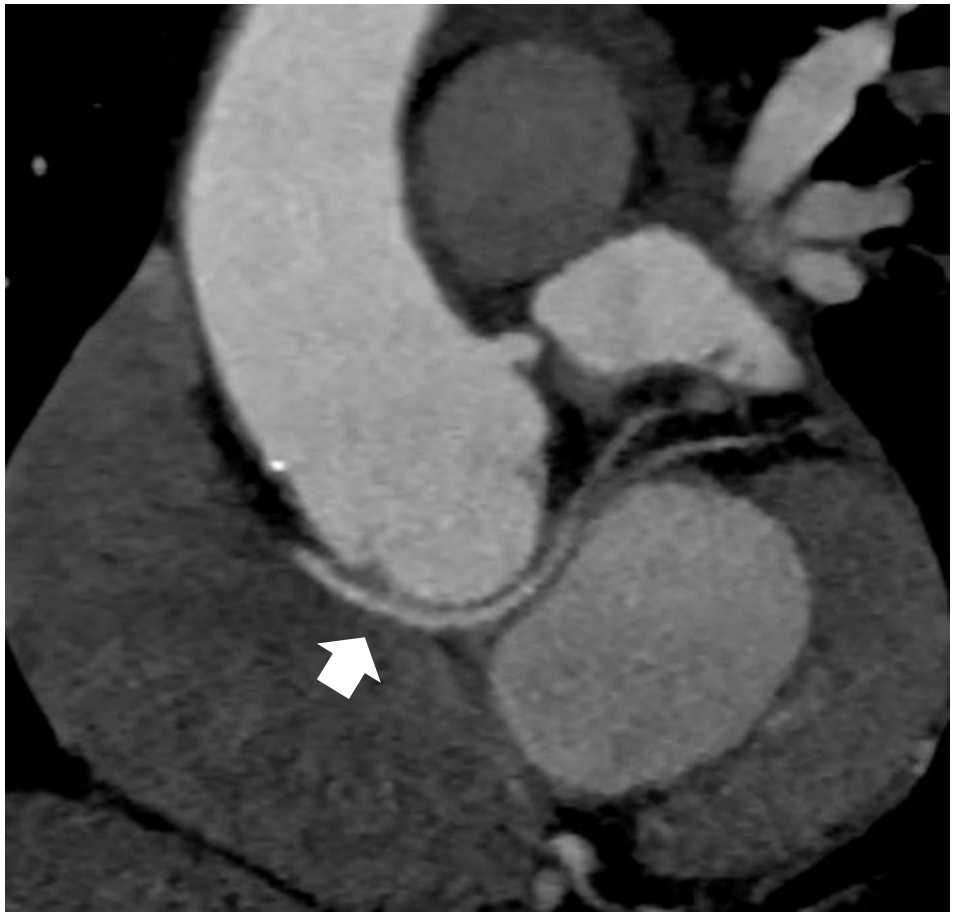
Circonflexe avec trajet rétroaortique



Scanner

Circonflexe avec trajet rétroaortique





Cathétérisme coronaire droite ectopique

Coronary intervention in anomalous origin of the right coronary artery (ARCA) from the left sinus of valsalva (LSOV): A single center experience

Kalaichelvan Uthayakumaran [a,*], *Vijayakumar Subban* [a], *Anitha Lakshmanan* [b], *Balaji Pakshirajan* [a], *Ramkumar Solirajaram* [c], *Jaishankar Krishnamoorthy* [c], *Ezhilan Janakiraman* [c], *Ulhas M. Pandurangi* [c], *Latchumanadhas Kalidoss* [c], *Mullasari Ajit Sankaradas* [d]

Table 1 – Summary of 17 cases of PCI in Anomalous RCA originating from LSOV. The type of Take off, sequence of catheter tried and the successful catheter for engagement presented.

Patient no	Type of take off	Sequence of catheters	Successfully cannulated catheter	Amt of contrast (ml)	Fluoro time
1	A	JR 3.5,AR2; AL1; JL 4.0; JL 5.0	JL 5.0	210	17.5
2	C	JR 3.5; AR2; AL1	AL 1	120	12.2
3	B	JR 3.5; AR 2.0; AL 1; JL 4.0; JL 5.0; EBU 3.0	EBU 3.5	320	63.3
4	C	JR 3.5; AR 2.0; AL 1.0; JL 5.0; AL 2.0	AL -2	220	17.3
5	A	JR 3.5; AL 1.0; JL 4.0	JL 4.0	130	12.2
6	A	JR 3.5; JL 4.0; JL 5.0	JL 5.0	150	13.5
7	C	JR 3.5; AR 2; JL 5.0; AL 1	AL 1	200	17.8
8	B	JR 3.5; AR 2.0; AL 1; JL 5.0; EBU 3.5	EBU 3.5	280	23.8
9	A	JR 3.5; AR 2; AL 1; JL 4.0; JL 5.0	JL 5.0	270	22.5
10	C	JR 3.5; AR 2.0; JL 5.0; AL 1	AL1	180	15.4
11	C	JR 3.5; AR 2.0; AL1; AL 2.0, JL 4.0	JL 4.0	300	51.3
12	A	JR 3.5; AL 1; JL 4.0	JL 4.0	150	12.5
13	B	JR 3.5; AR 2.0; AL 1, JL 4.0	JL 4.0	180	21.5
14	A	JR 3.5; AL 1; JL 4.0; JL 5.0	JL 5.0	200	17.4
15	A	JR 3.5; JL 4.0; JL 5.0	JL 5.0	170	14.2
16	C	JR 3.5; AR 2.0; JL 5.0; AL 1	AL 1	180	15.6
17	A	JR 3.5; AL 1; JL 4.0: JL 5.0	JL 5.0	200	15.7

EBU/XB/CLS

AL

JR/AR

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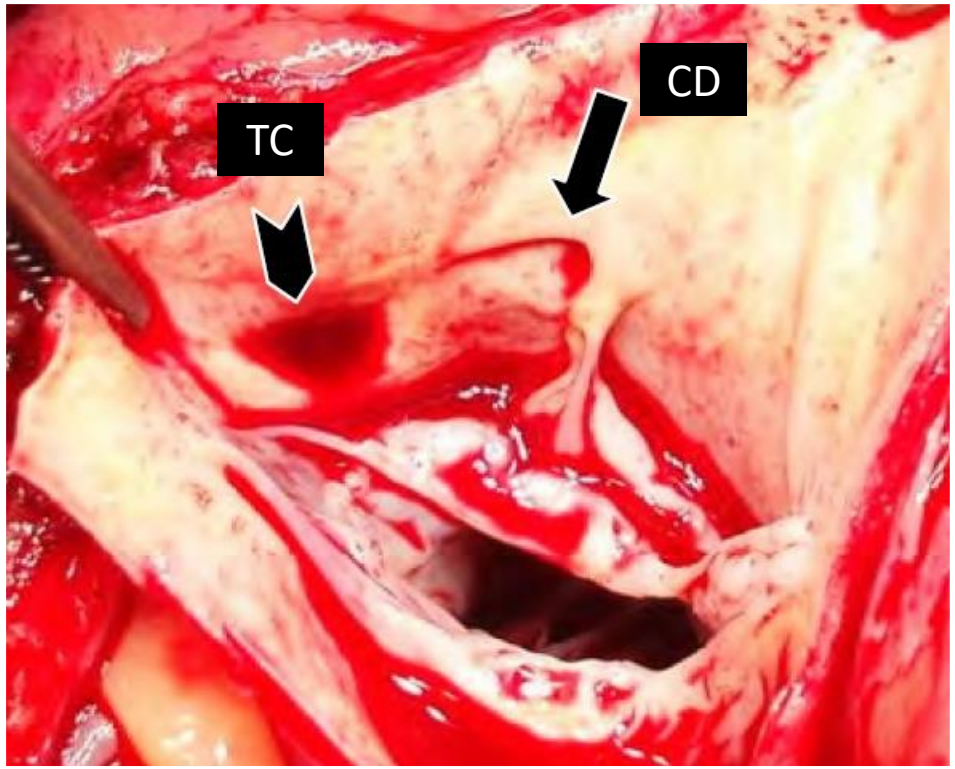
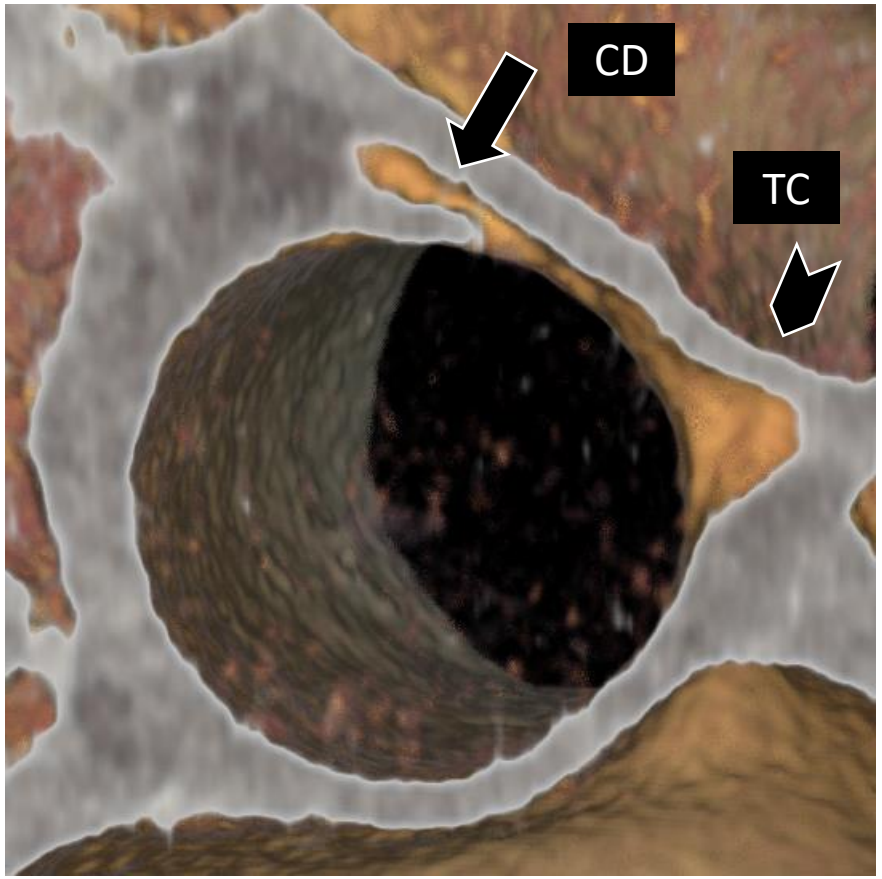
Cathétérisme/Angiographie

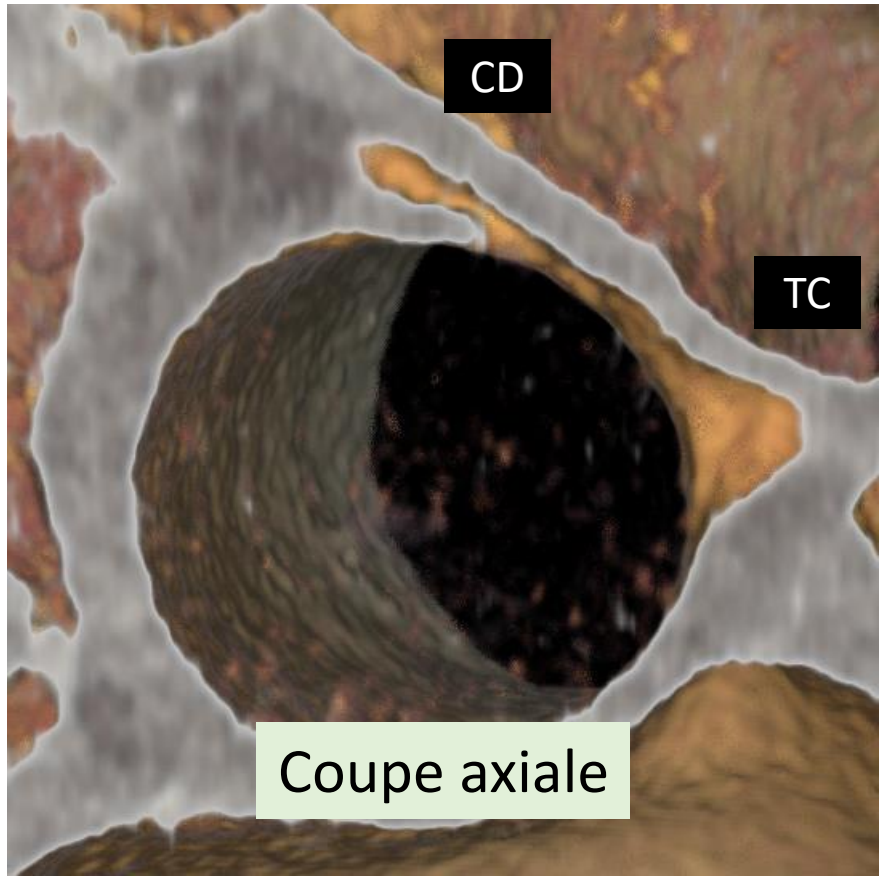
Coronaire droite ectopique avec trajet interartériel

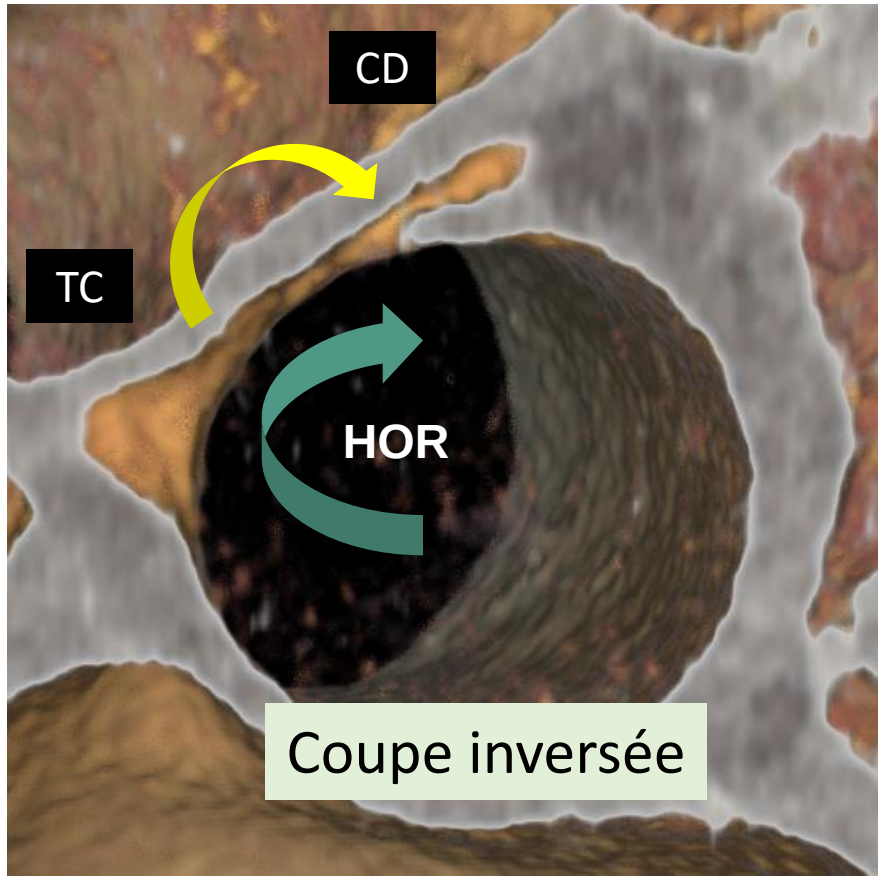




Cathétérisme/Angiographie

Coronaire droite ectopique avec trajet interartériel



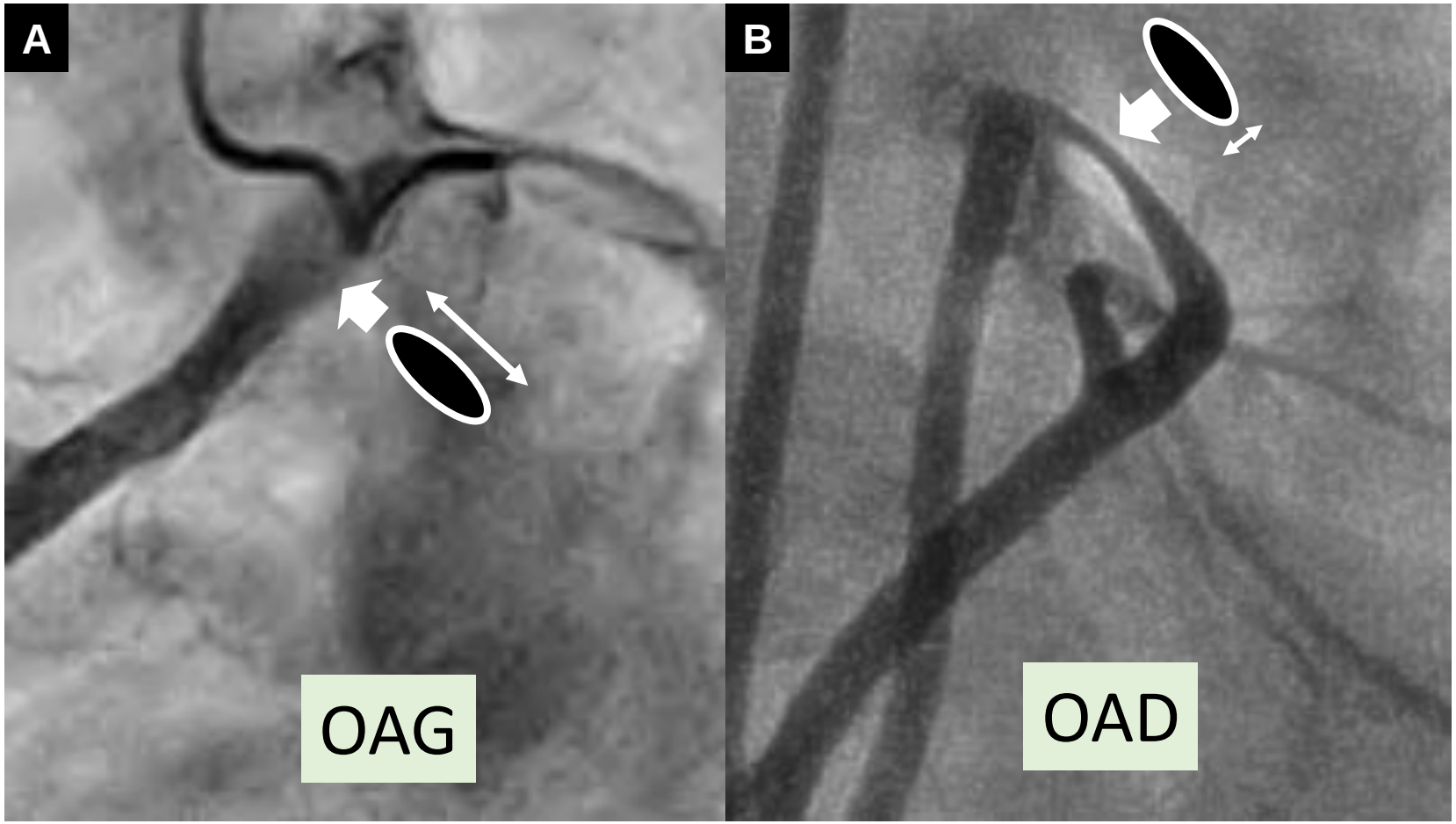


Slowly

Gently

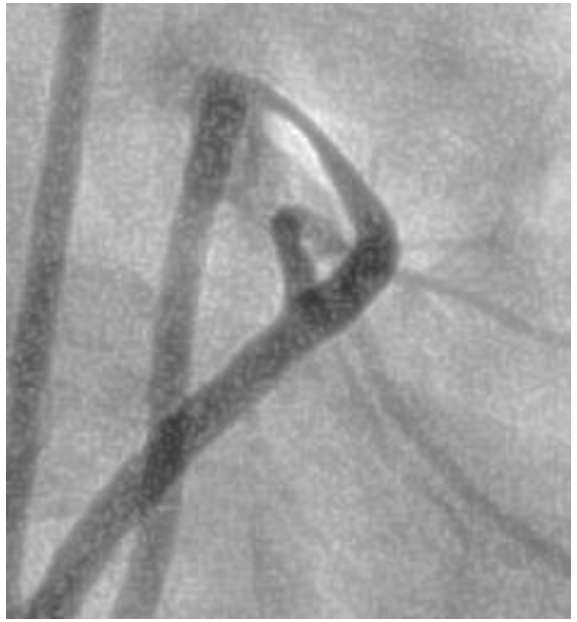
Coronaire droite ectopique avec trajet interartériel

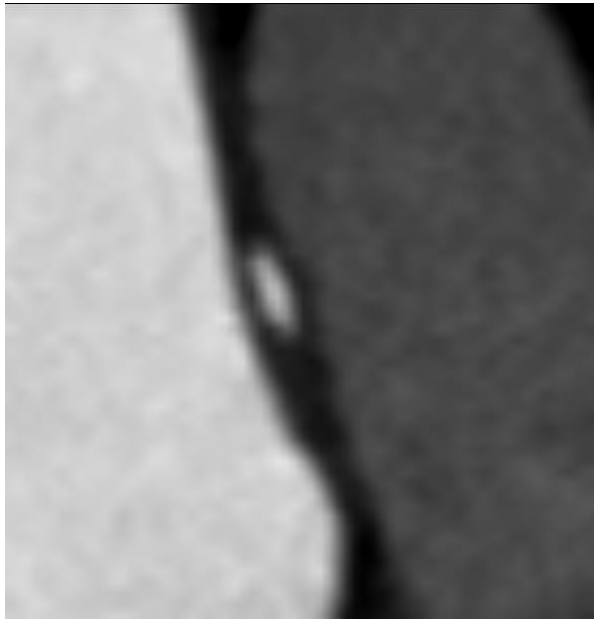
Passage intramural aortique

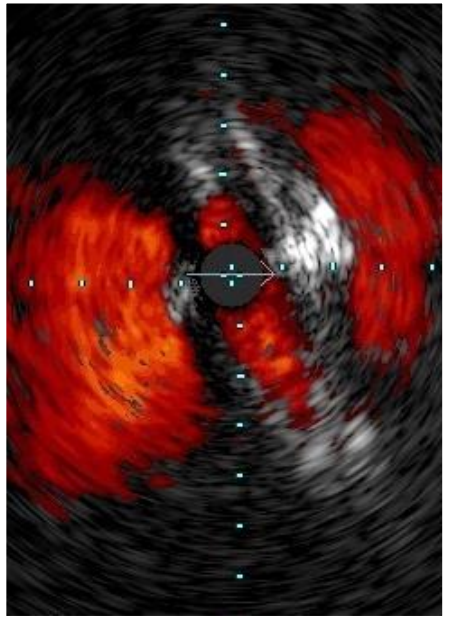


Coronaire droite ectopique avec trajet interartériel

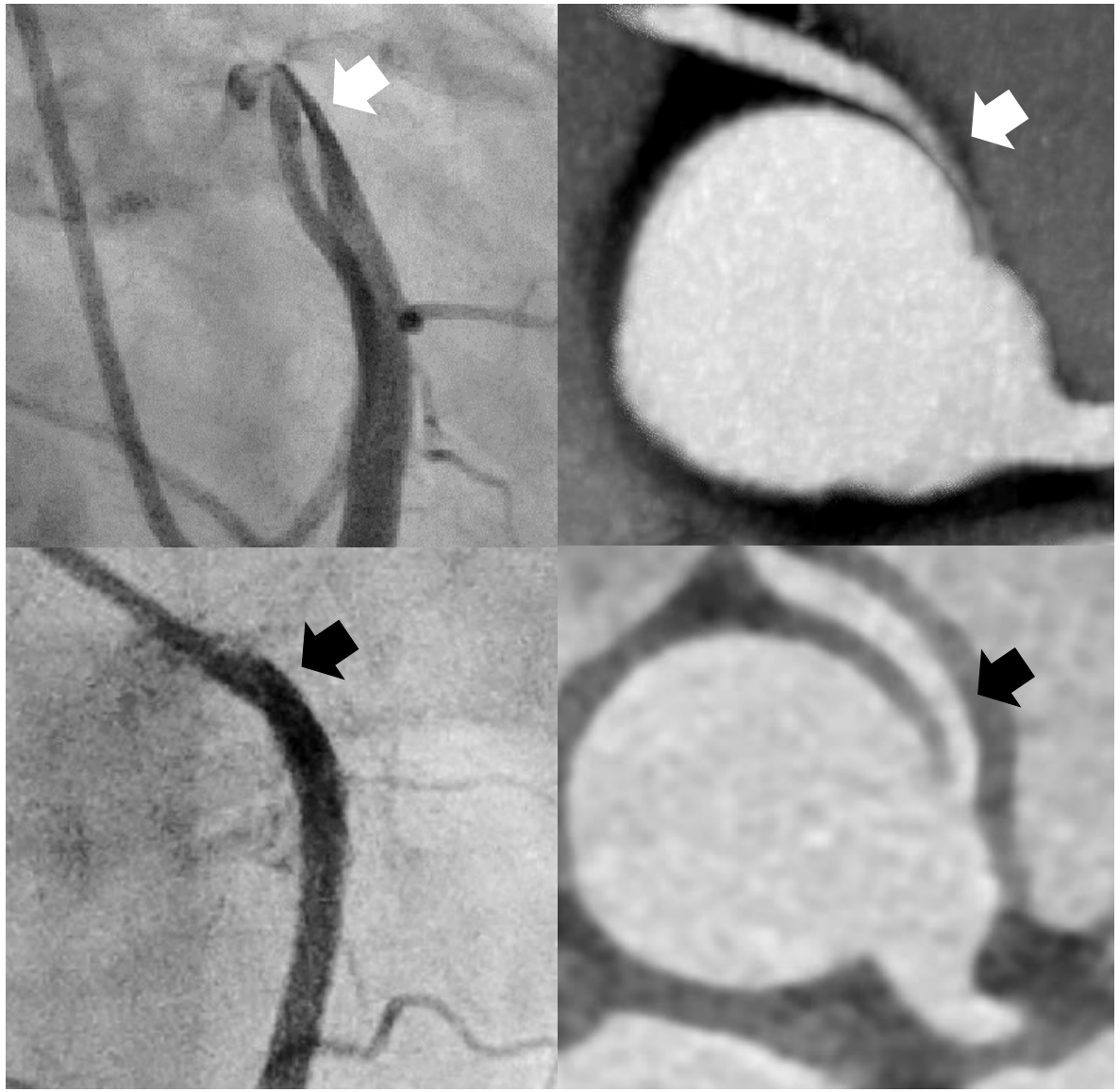
Passage intramural aortique







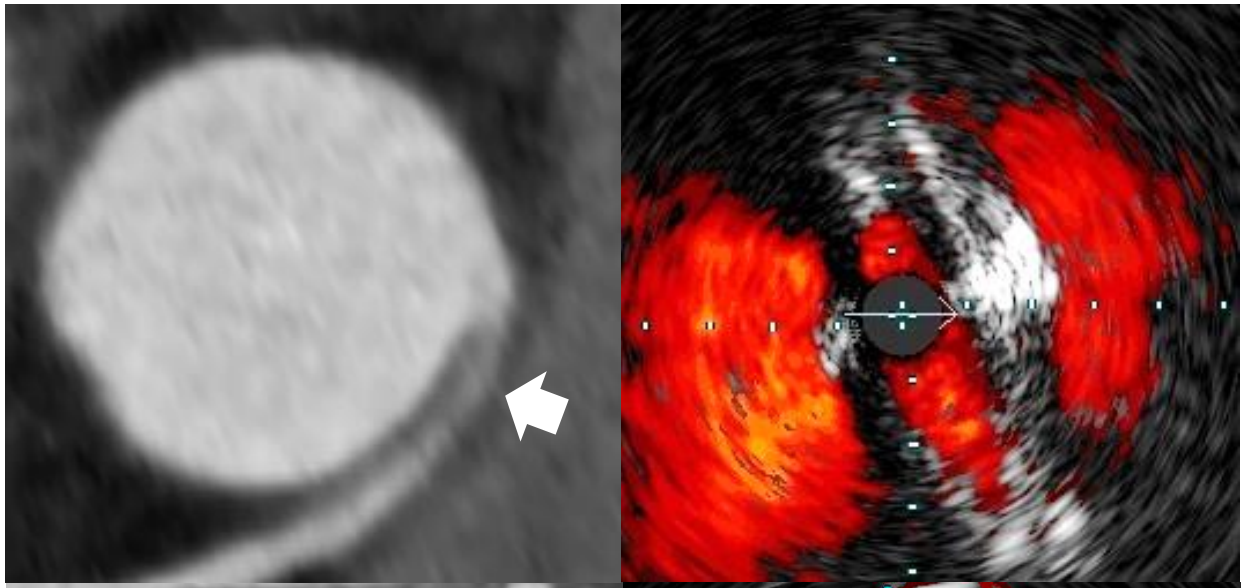
Coronaire droite ectopique avec trajet interartériel



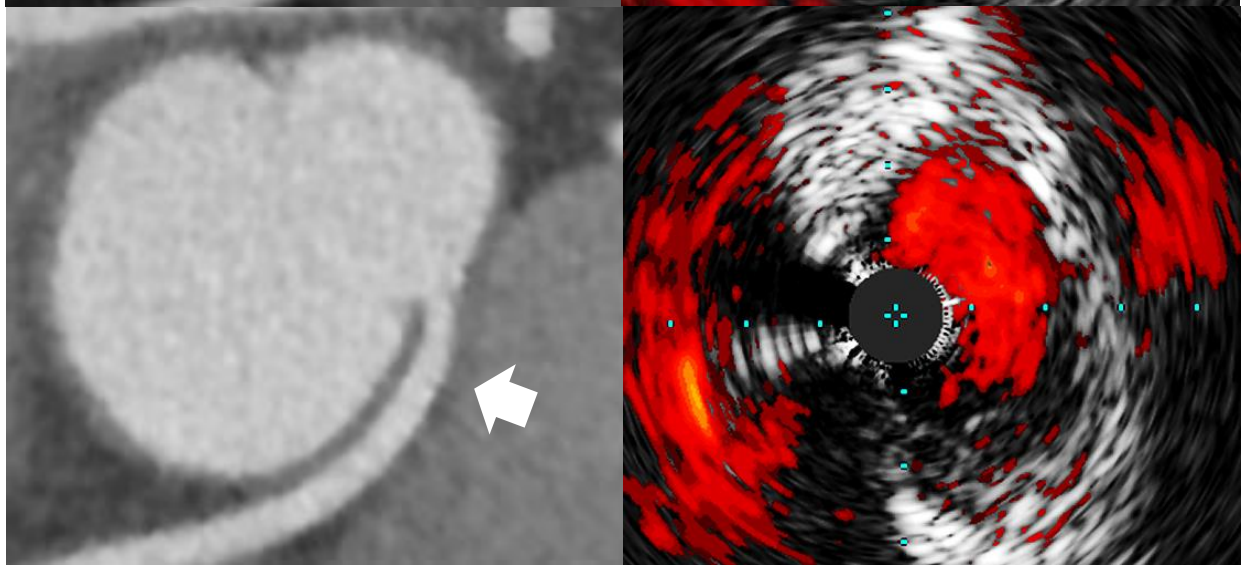
Passage intramural

Passage intramural

Coronaire droite ectopique avec trajet interartériel



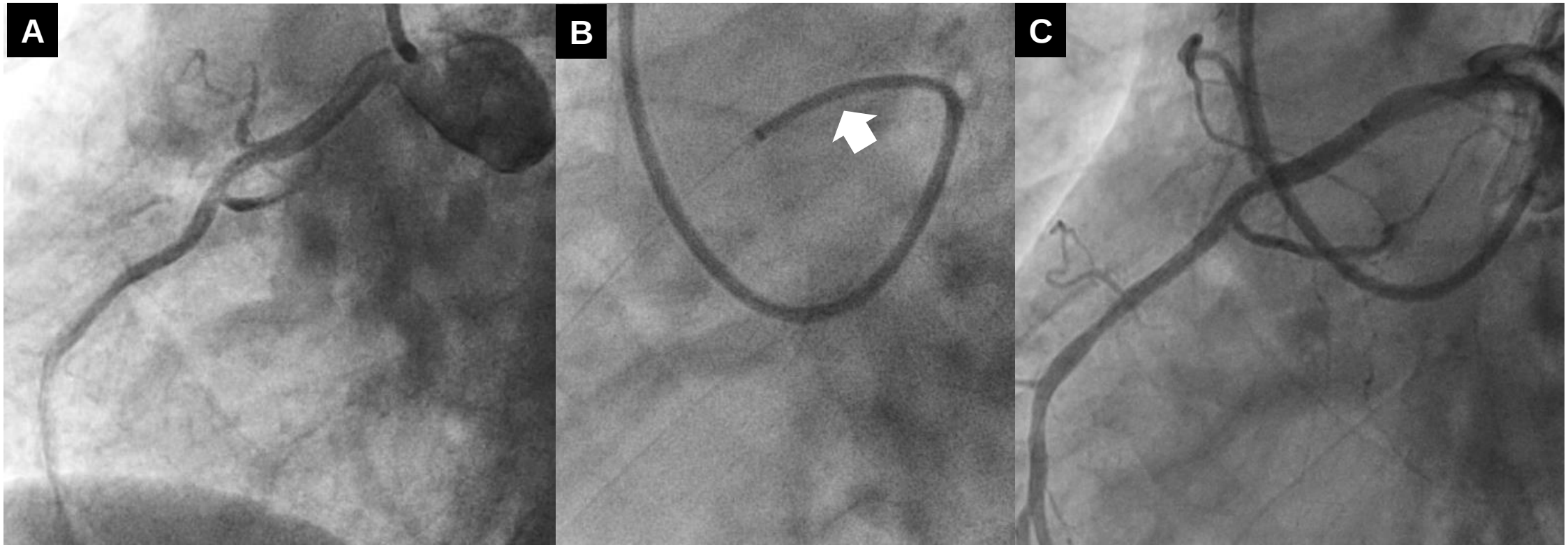
Passage intramural ✓



Passage intramural ✗

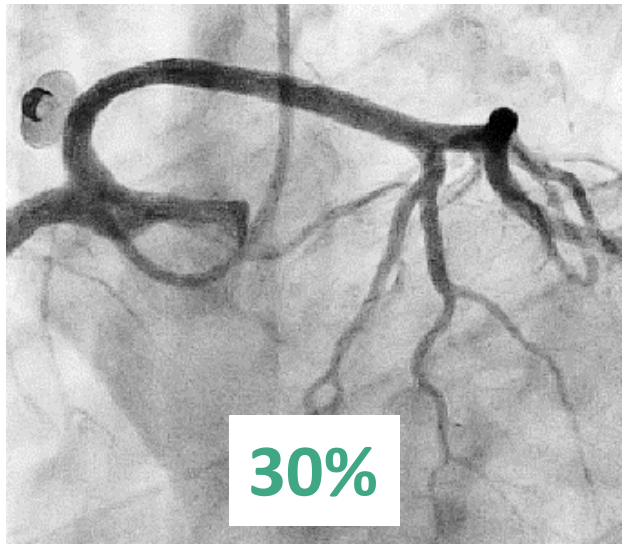
Cathétérisme/Angiographie

Extension de cathéter dans coronaire droite ectopique

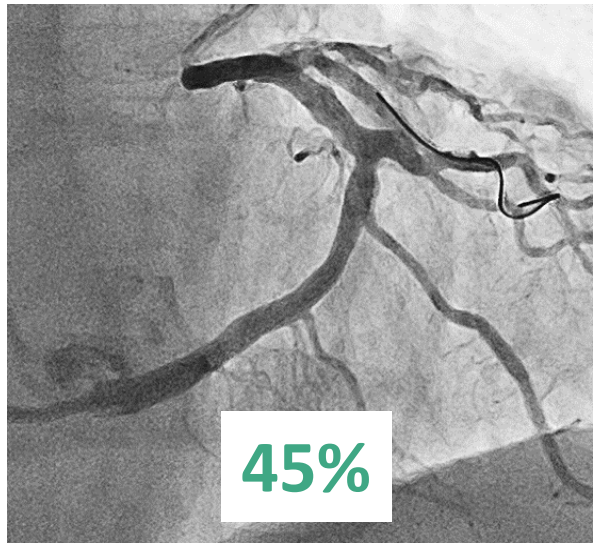


Cathétérisme/Angiographie

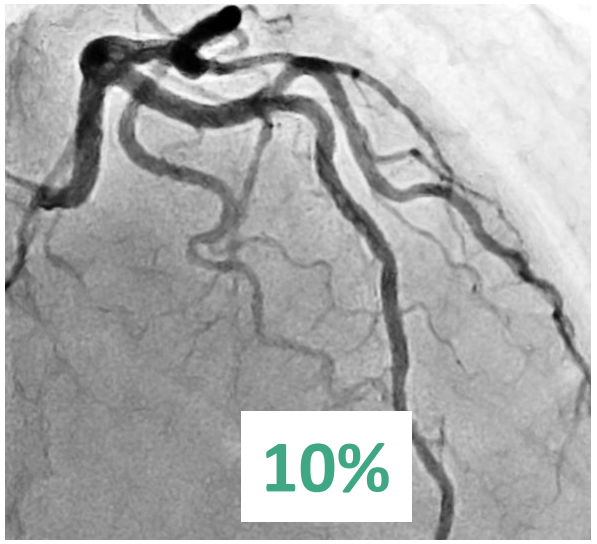
Trajets ectopiques tronc commun/IVA



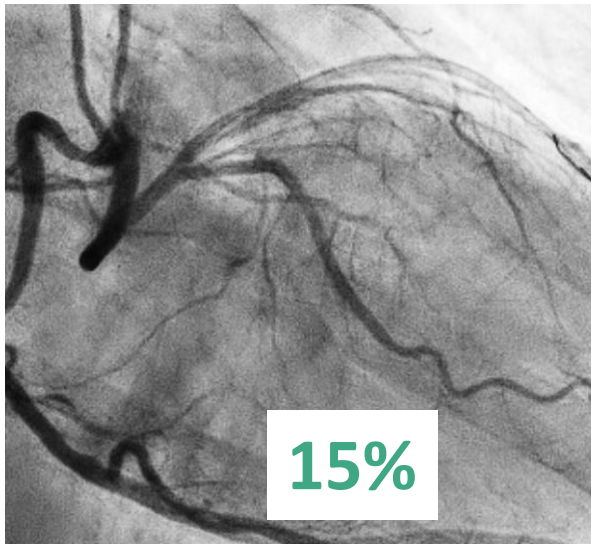
Prépulmonaire



Rétropulmonaire



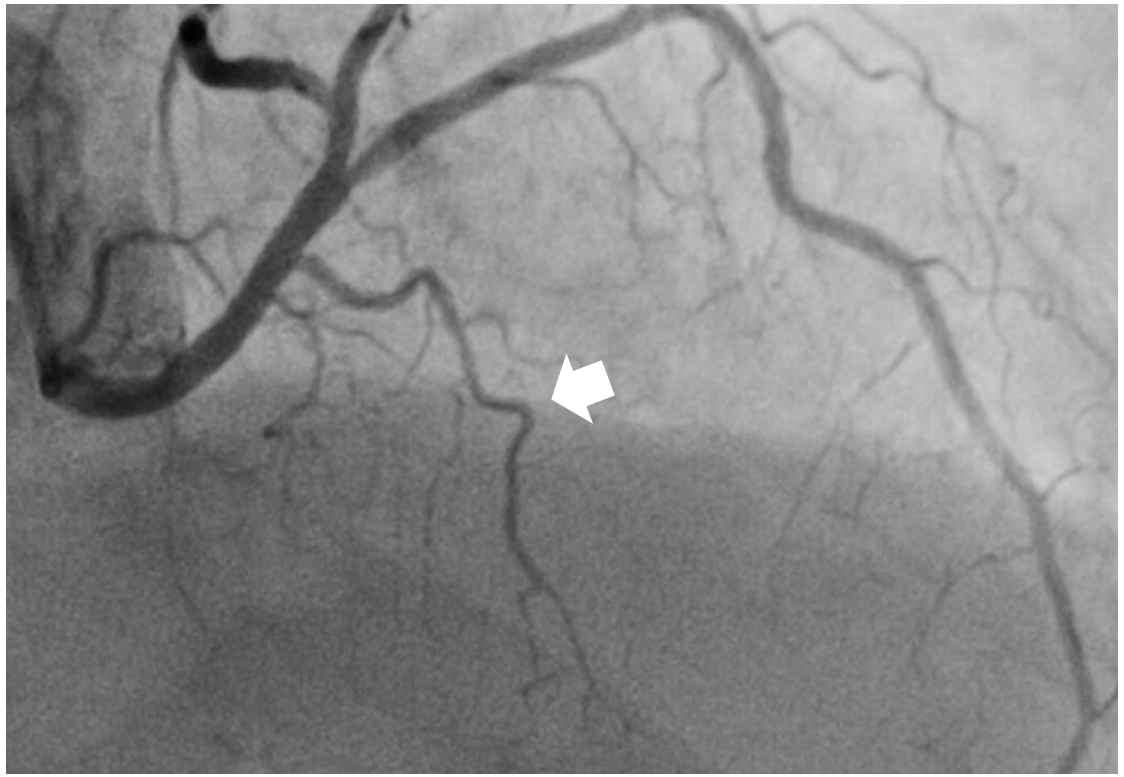
Interartériel



Rétroaortique

Cathétérisme/Angiographie

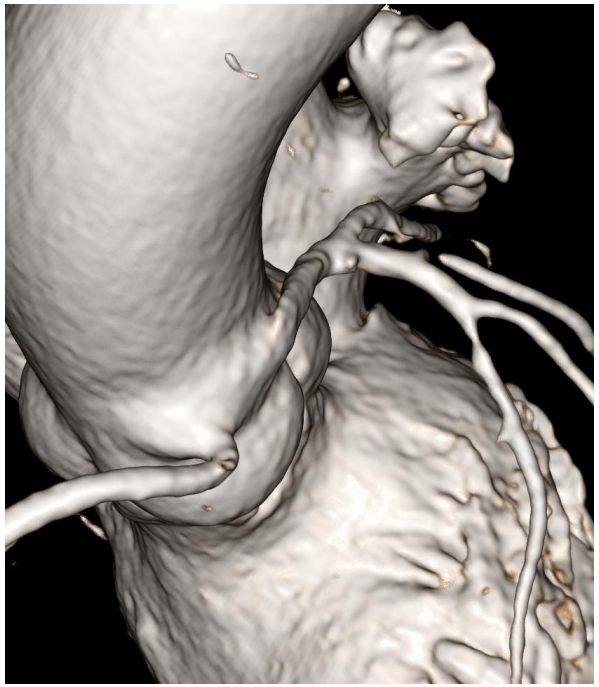
Trajets ectopiques tronc commun/IVA

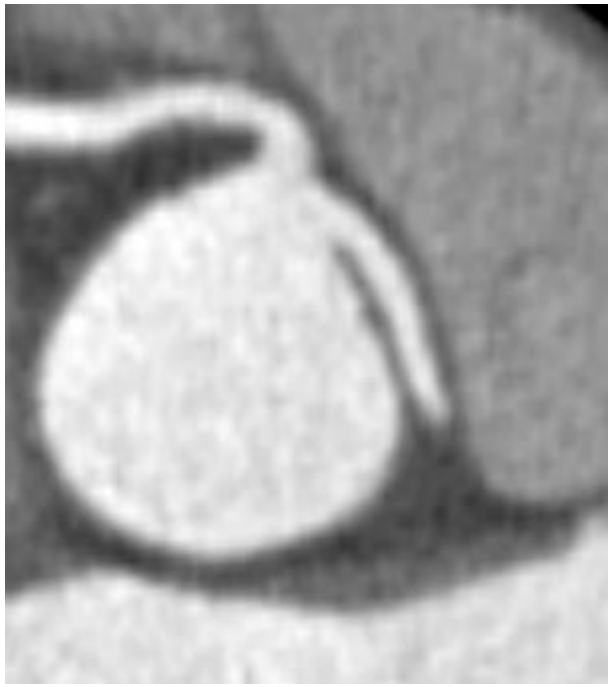


Rétropulmonaire

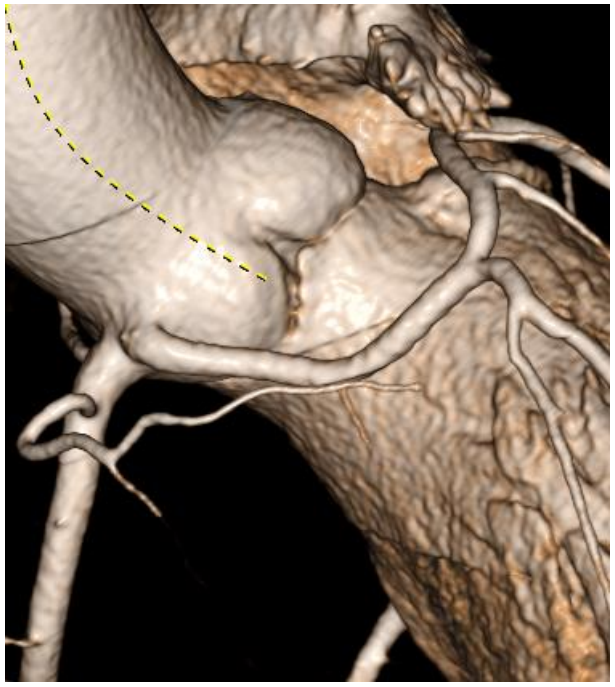
Scanner

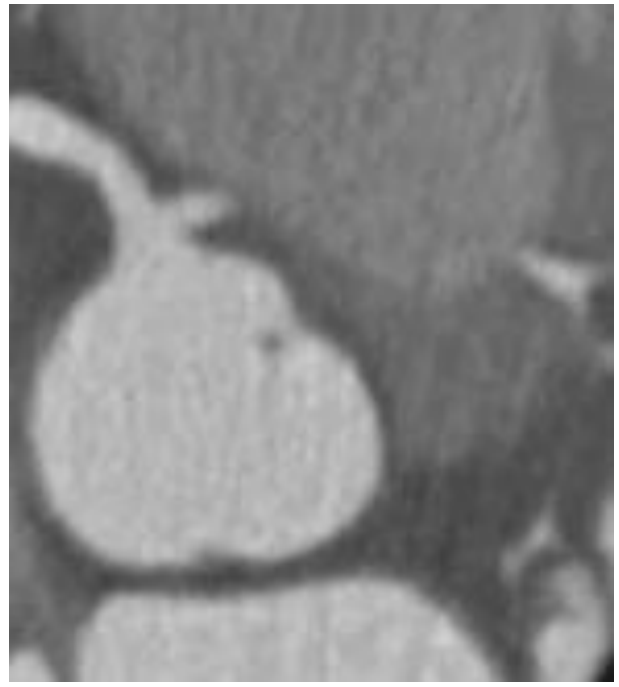
Connexions ectopiques tronc commun/IVA





Trajet interarteriel

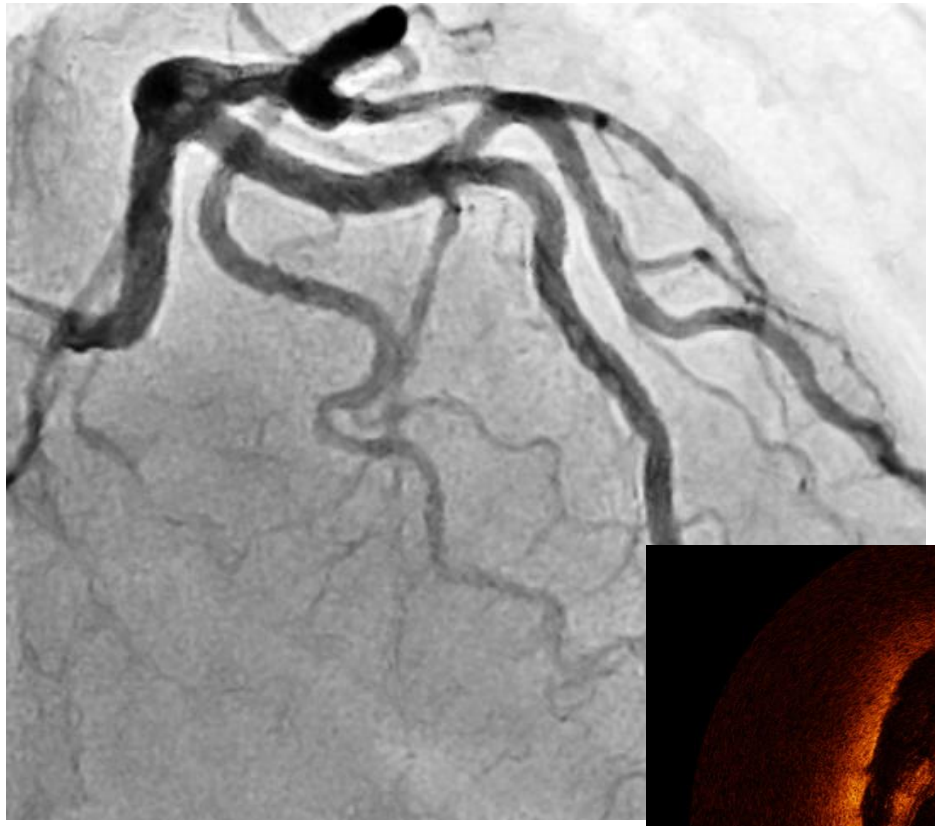


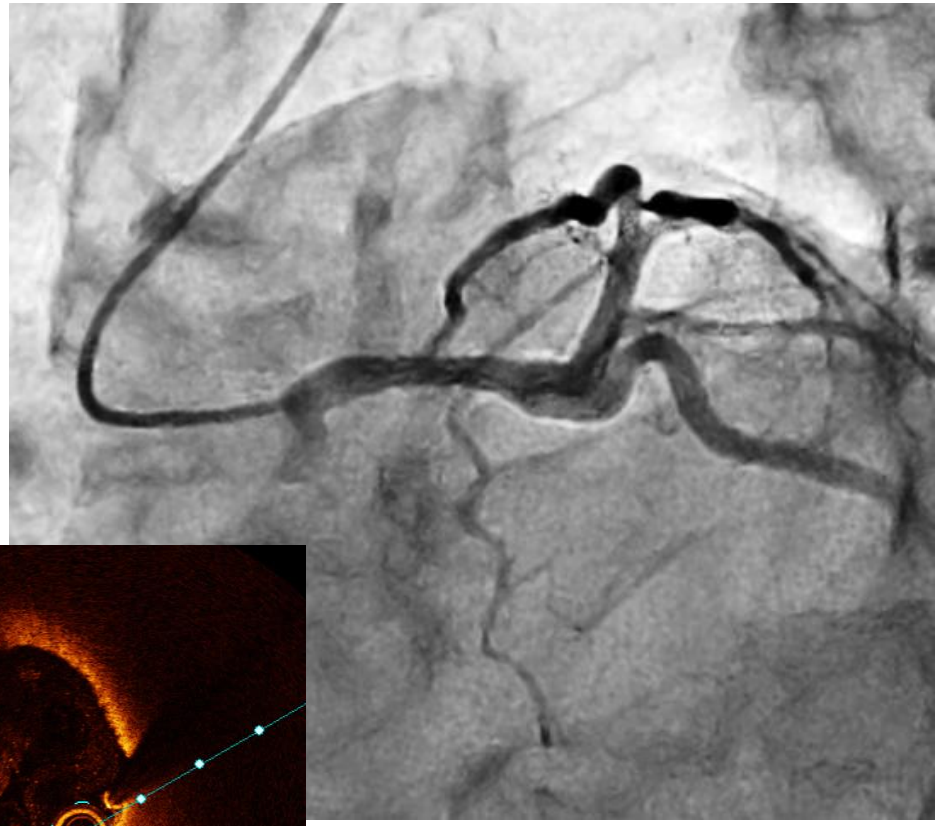


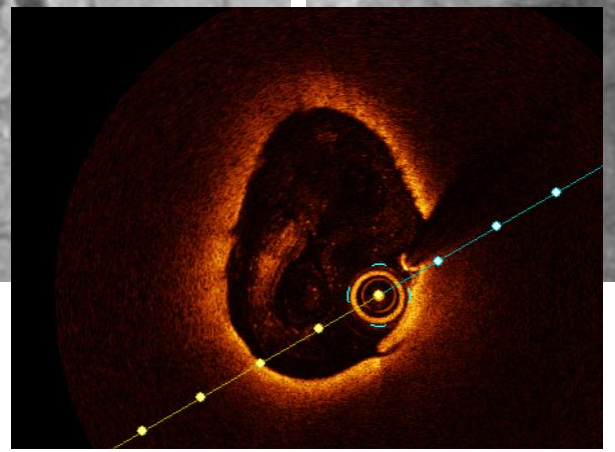
Trajet rétropulmonaire

Cathétérisme/Angiographie

Tronc commun ectopique avec trajet interartériel

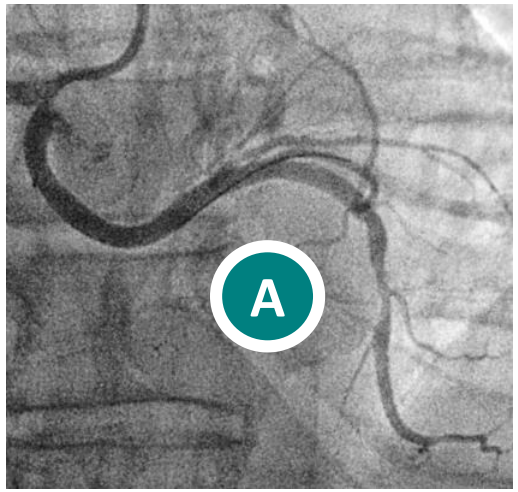


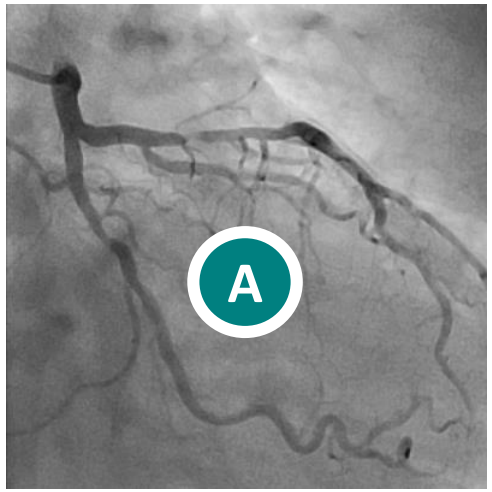


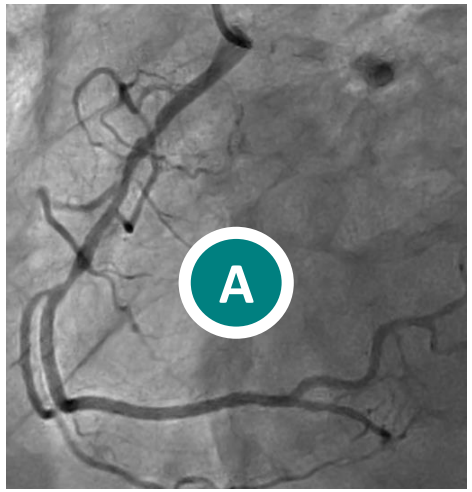


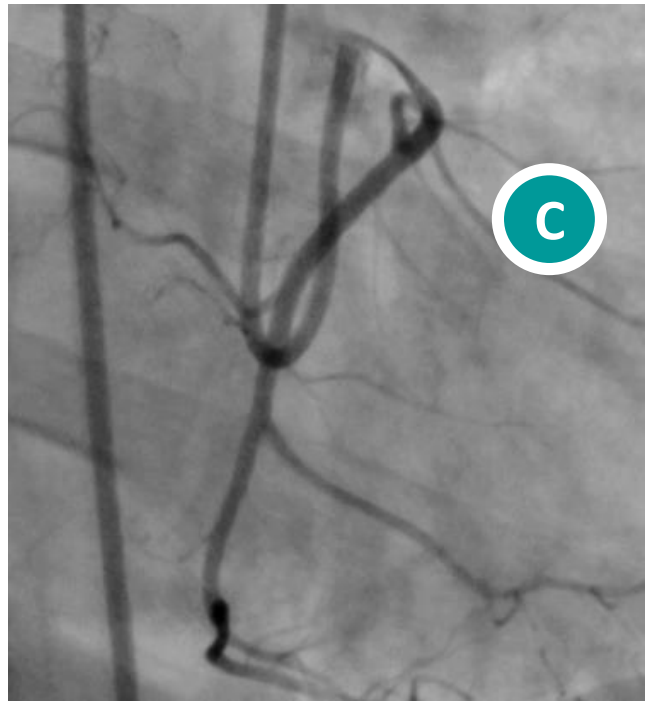
Angioplastie des anomalies coronaires

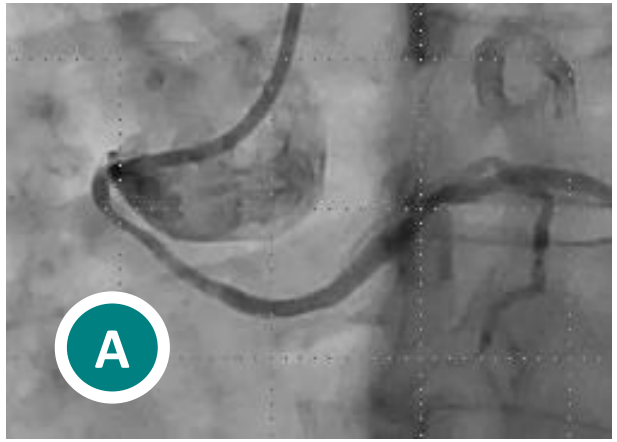
Sténoses athéromateuses/Sténoses congénitales





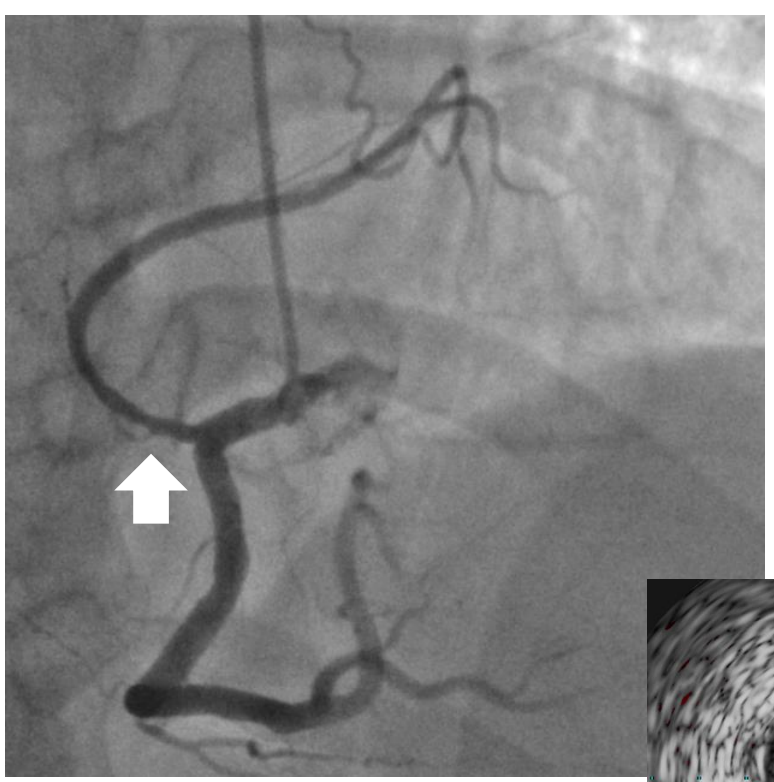


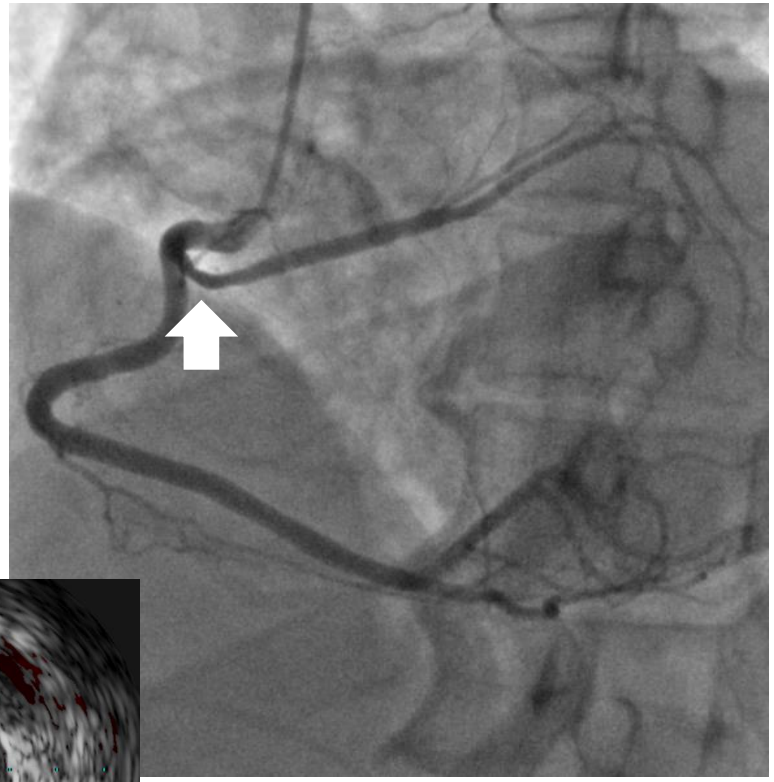


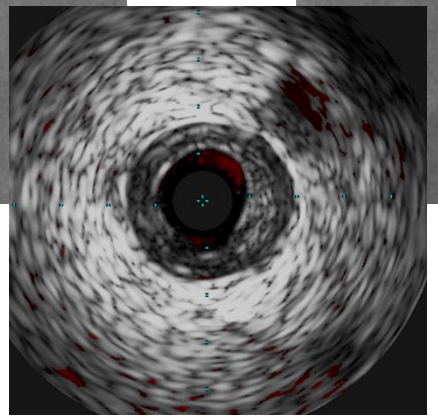


Athérome coronaire sur trajets ectopiques

Circonflexe ectopique avec trajet rétroaortique

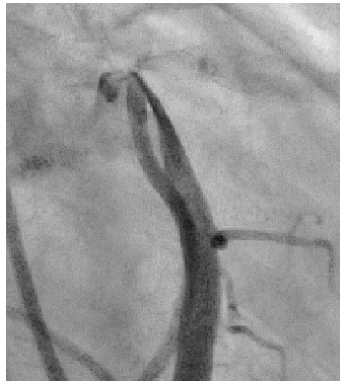




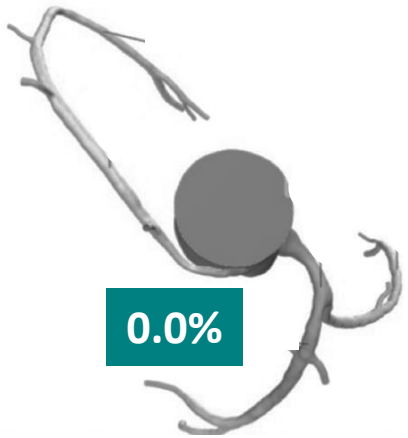


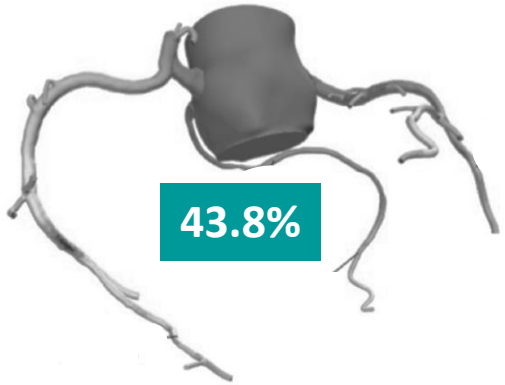
Prévalence athérome coronaire

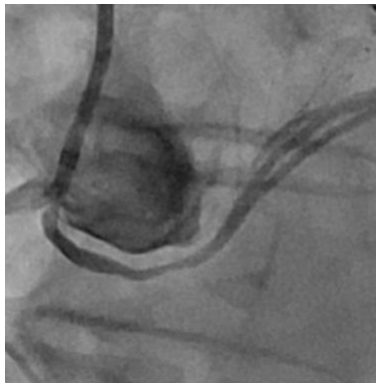
Trajets ectopiques



AAOCA (RCA)
with interarterial course

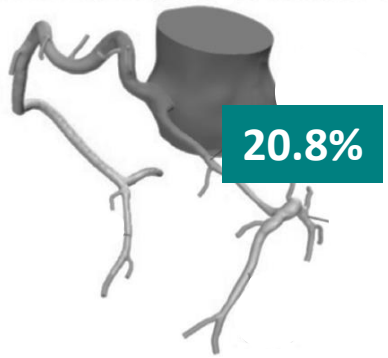






AAOCA (Cx artery)
with retroaortic course

AAOCA (LM artery)
with subpulmonic course

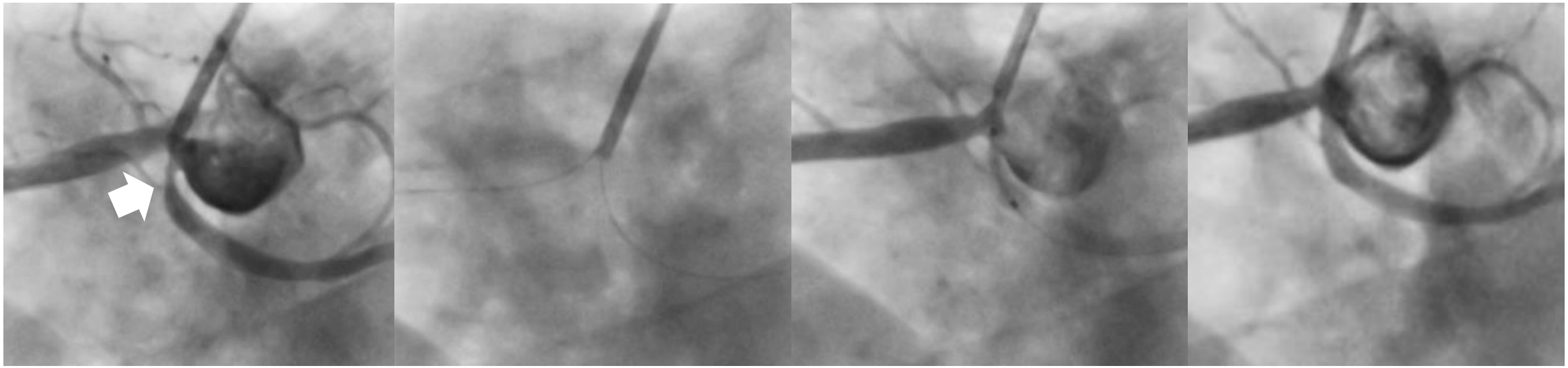


AAOCA (LM artery)
with prepulmonic course

Zendjebil S. et al Cor Art Dis. 2024

Angioplastie des sténoses athéromateuses sur le trajet ectopique

Circonflexe ectopique avec trajet rétroaortique



Angioplastie des sténoses congénitales

2018 AHA/ACC Guideline for the Management of Adults With Congenital Heart Disease: Executive Summary

COR	LOE	Recommendations
Therapeutic		
I	B-NR	1. Surgery is recommended for AAOCA from the left sinus or AAOCA from the right sinus for symptoms or diagnostic evidence consistent with coronary ischemia attributable to the anomalous coronary artery.[S4.4.5.2-1–S4.4.5.2-3]
IIa	C-LD	2. Surgery is reasonable for anomalous aortic origin of the left coronary artery from the right sinus in the absence of symptoms or ischemia.[S4.4.5.2-4–S4.4.5.2-6]
IIa	C-EO	3. Surgery for AAOCA is reasonable in the setting of ventricular arrhythmias.
IIb	B-NR	4. Surgery or continued observation may be reasonable for asymptomatic patients with an anomalous left coronary artery arising from the right sinus or right coronary artery arising from the left sinus without ischemia or anatomic or physiological evaluation suggesting potential for compromise of coronary perfusion (eg, intramural course, fish-mouth-shaped orifice, acute angle).[S4.4.5.2-4–S4.4.5.2-6]

Stout KK et al. Circulation 2019

Guidelines

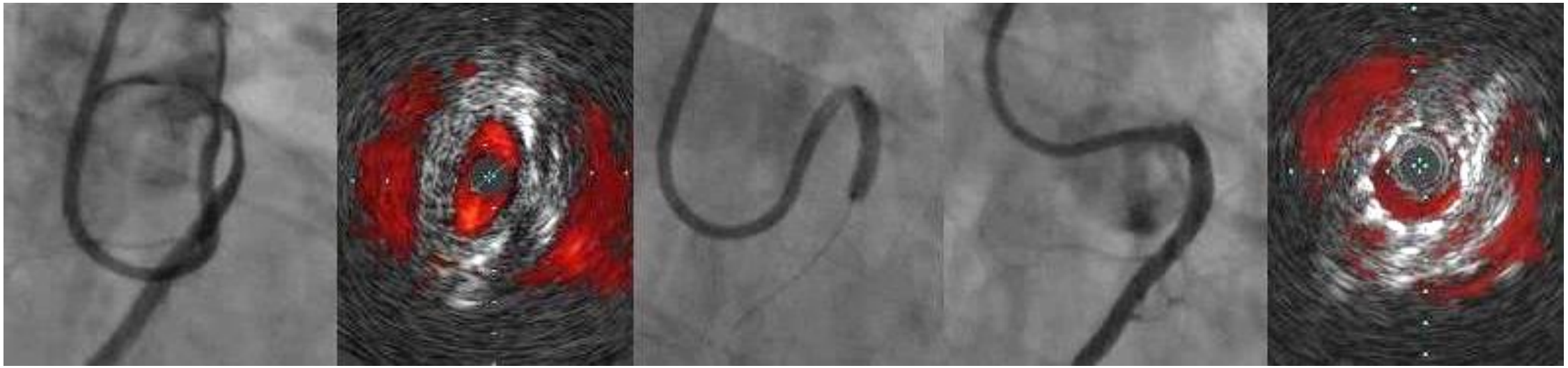
2020 ESC Guidelines for the management of adult congenital heart disease

Anomalous aortic origin of the coronary artery		
Surgery is recommended for AAOCA in patients with typical angina symptoms who present with evidence of stress-induced myocardial ischaemia in a matching territory or high-risk anatomy.[c]	I	C
Surgery should be considered in *asymptomatic* patients with AAOCA (right or left) and evidence of myocardial ischaemia.	IIa	C
Surgery should be considered in *asymptomatic* patients with AAOLCA and no evidence of myocardial ischaemia but a high-risk anatomy.[c]	IIa	C
Surgery may be considered for symptomatic patients with AAOCA even if there is no evidence of myocardial ischaemia or high-risk anatomy.[c]	IIb	C
Surgery may be considered for *asymptomatic* patients with AAOLCA without myocardial ischaemia and without high-risk anatomy[c] when they present at young age (<35 years).	IIb	C
Surgery is not recommended for AAORCA in asymptomatic patients without myocardial ischaemia and without high-risk anatomy.[c]	III	C

Baumgartner H et al. Eur Heart J 2020

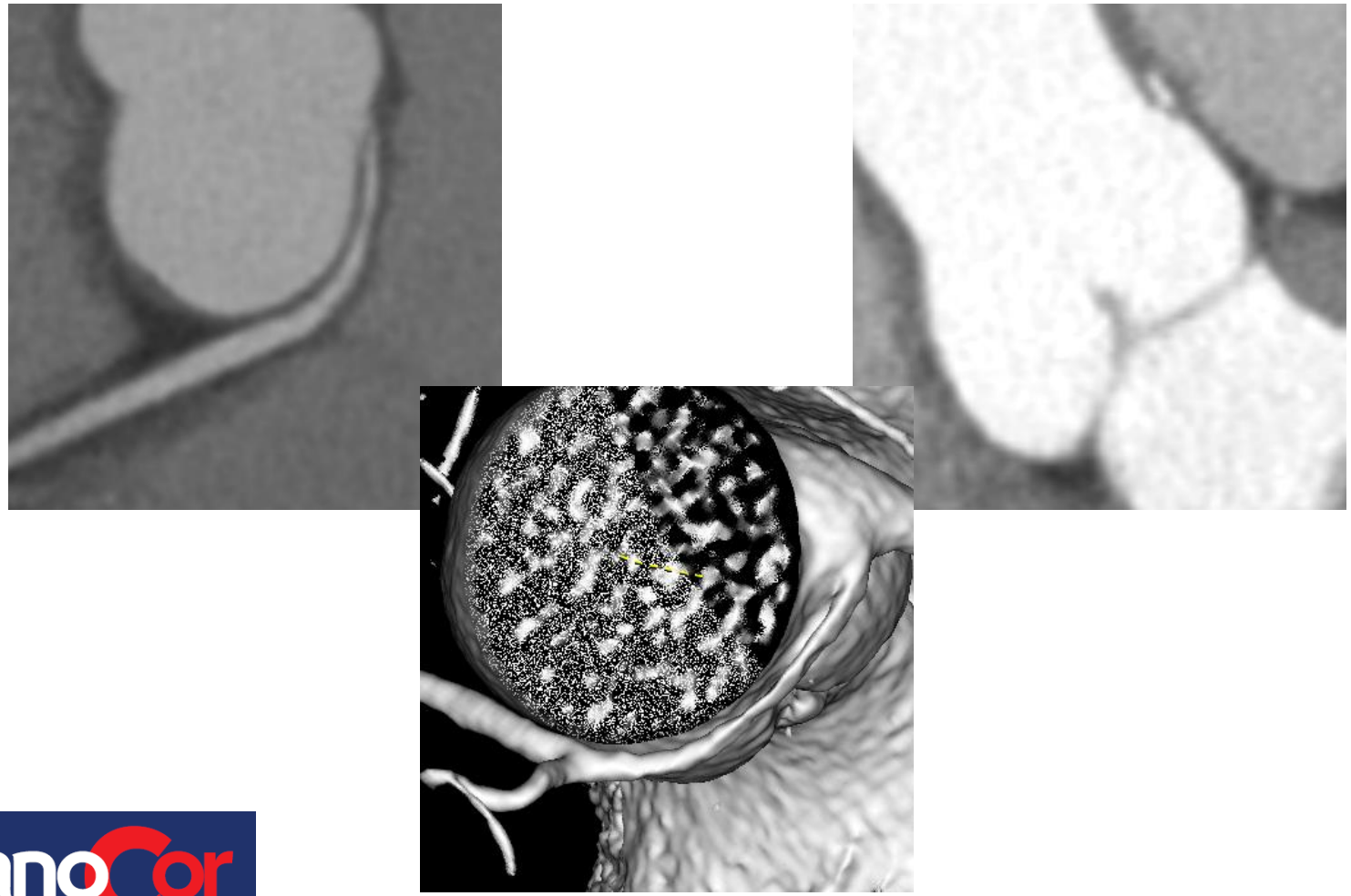
Angioplastie des sténoses congénitales

Est-ce possible ?



Angioplastie coronaire droite ectopique

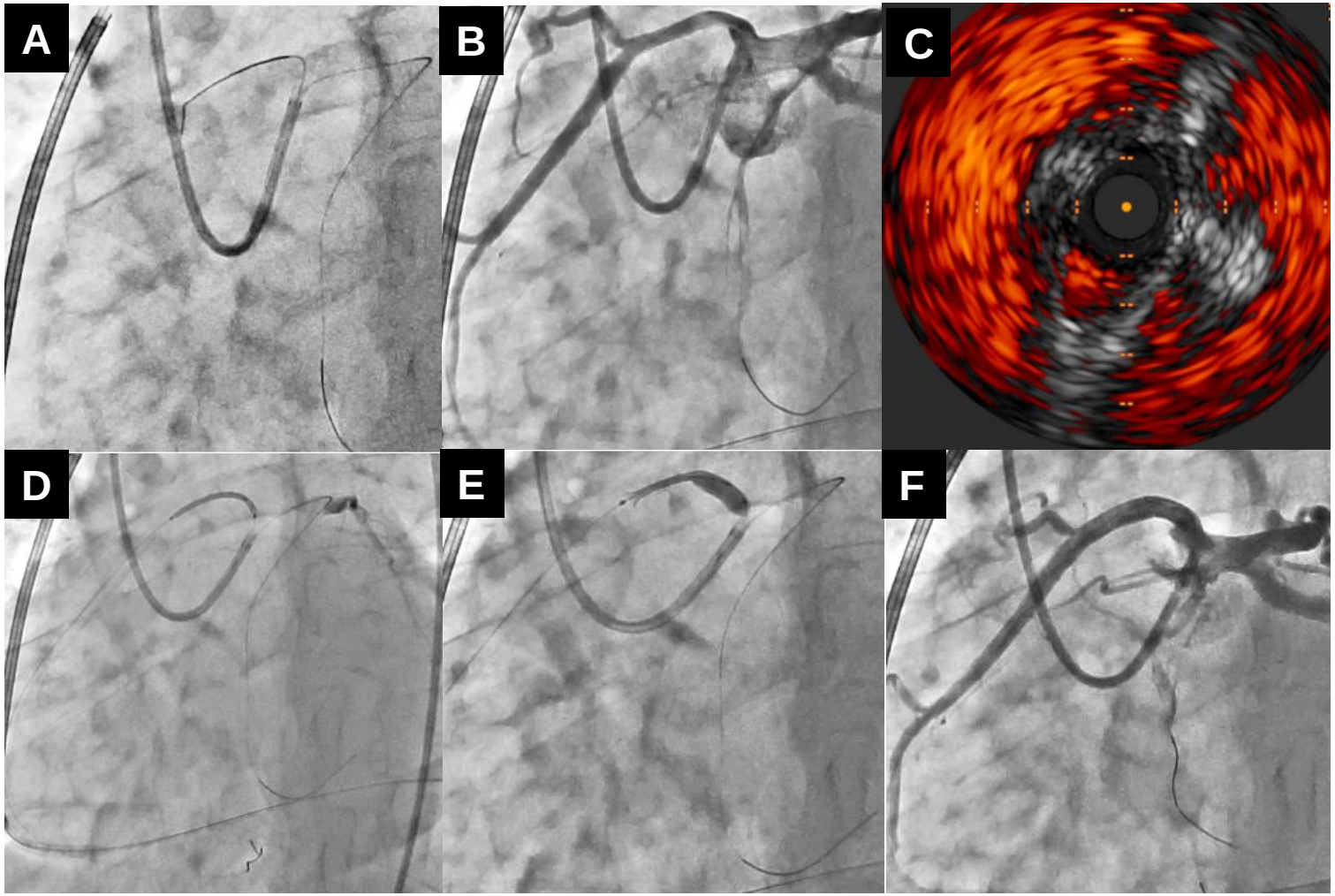
Sténose congénitale



- Homme de 50 ans
- Sportif
- ACR lors activité sportive (FV)
- ANOCOR droite
- Avis rythmologique
- DAI

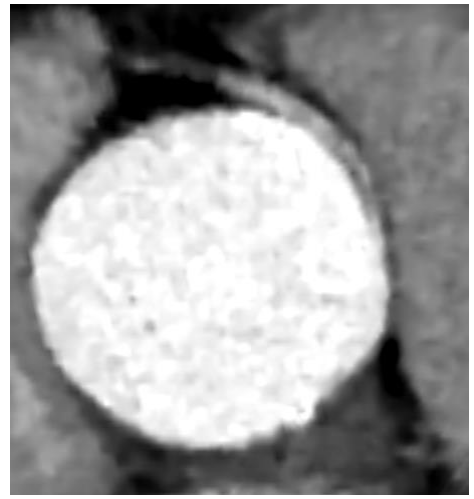
Angioplastie coronaire droite ectopique

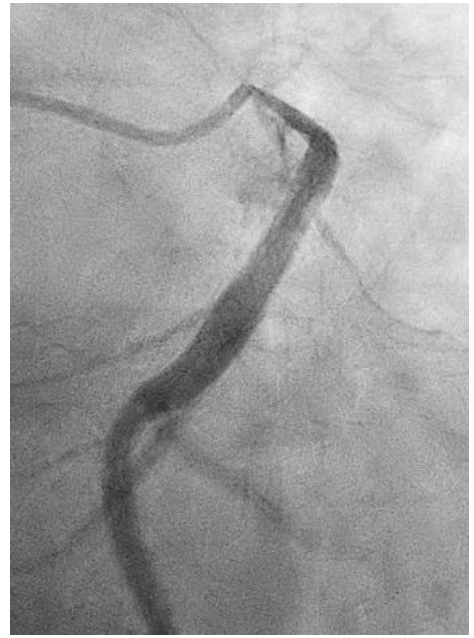
Sténose congénitale



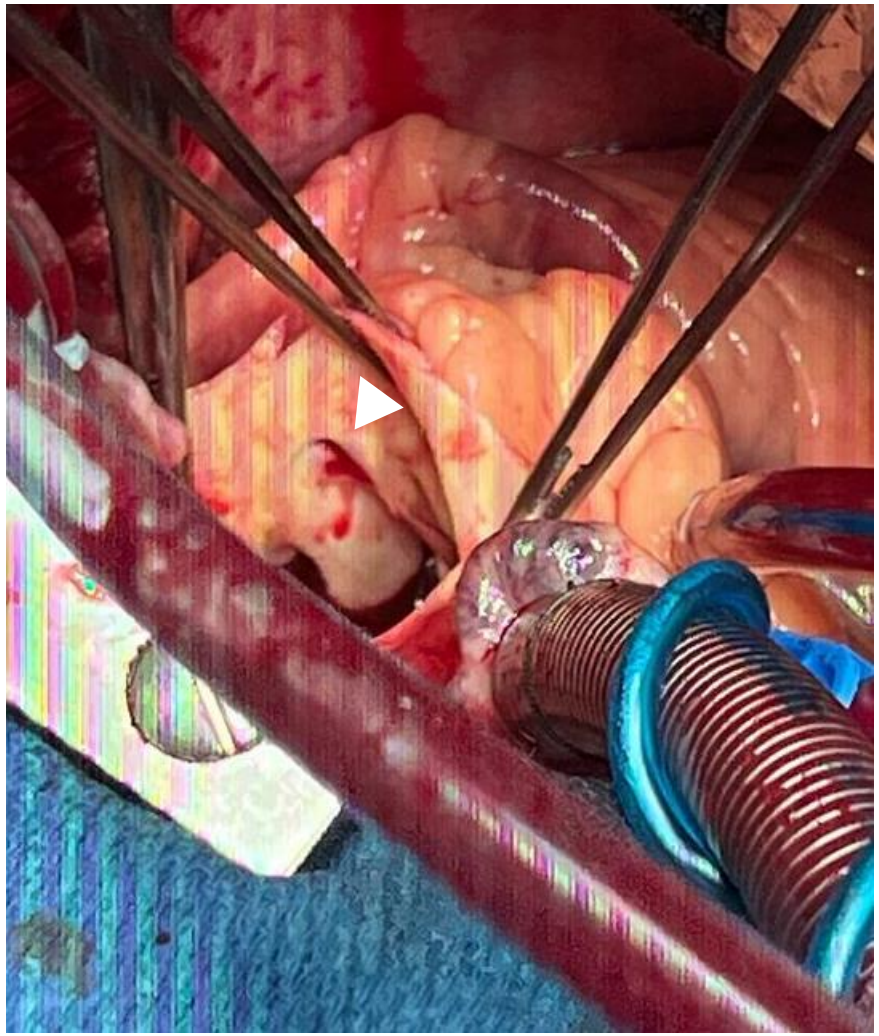
Anomalies de naissance des artères coronaires

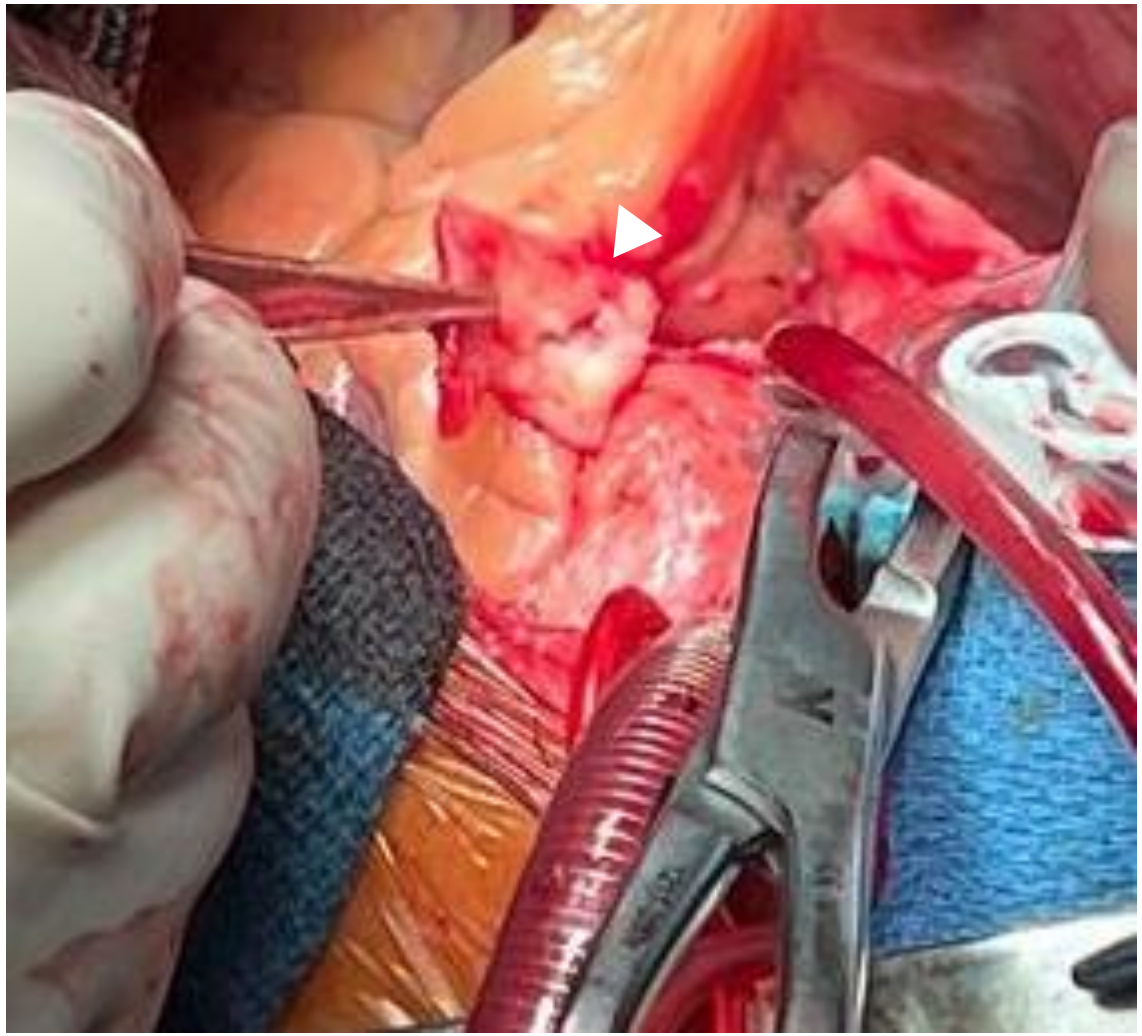
- Femme de 59 ans
- SCA ST- troponine +
- Dilatation aortique :
  55 mm (sinus), jonction (46 mm), tube (48 mm)
- FEVG 45%
- Coronarographie/scanner coronaire : ANOCOR droite
- IRM cardiaque : rehaussement tardif inférieur
- Staff médico-chirurgical :
  remplacement aortique
  valve mécanique aortique
  re implantation des coronaires



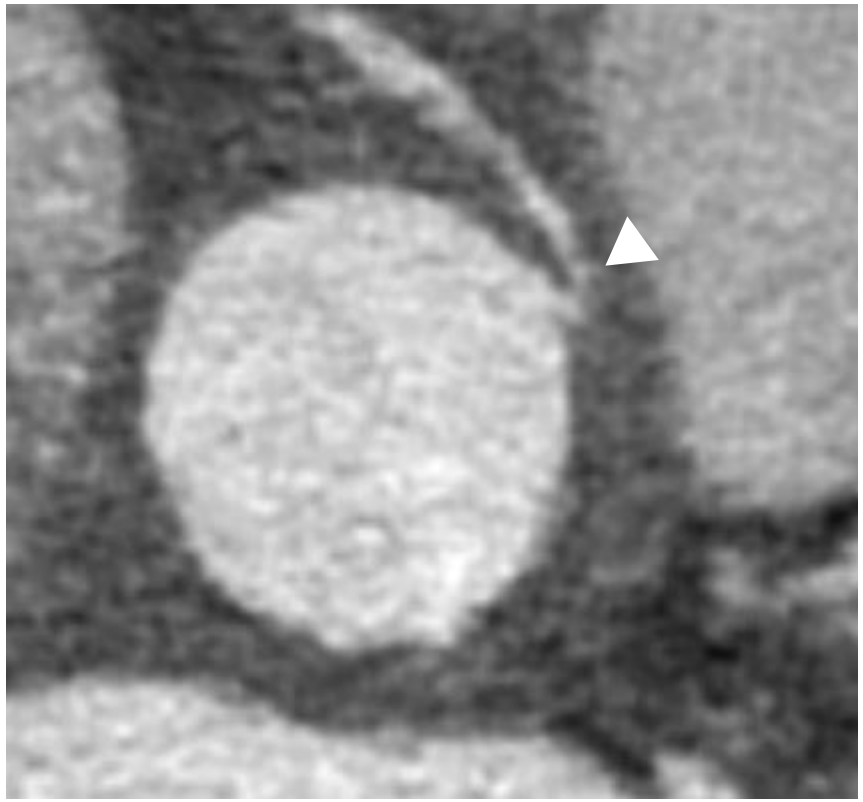


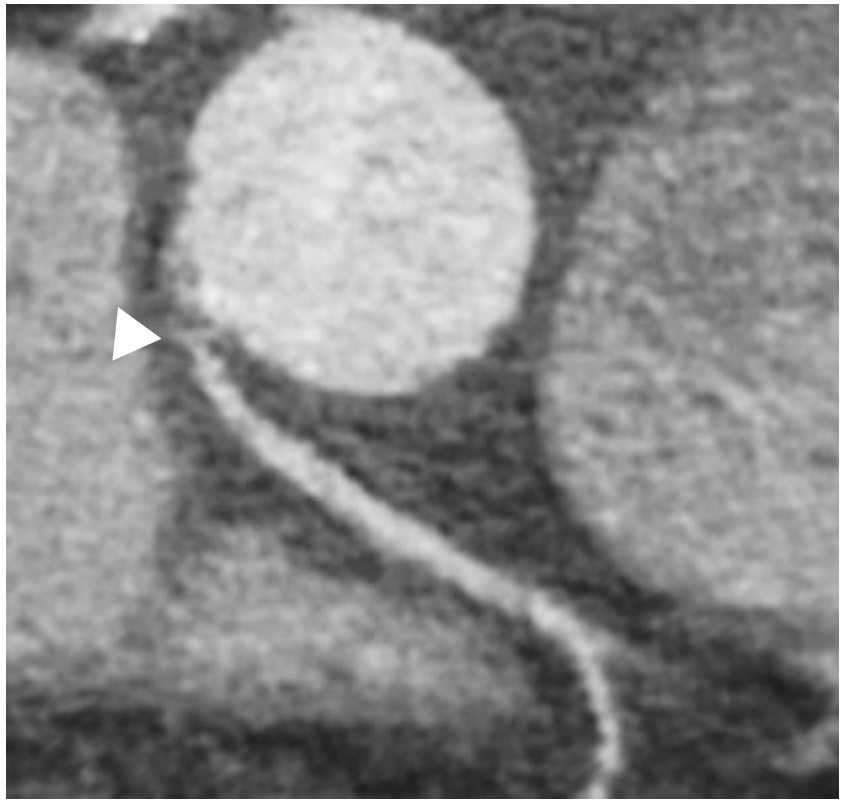
Intervention



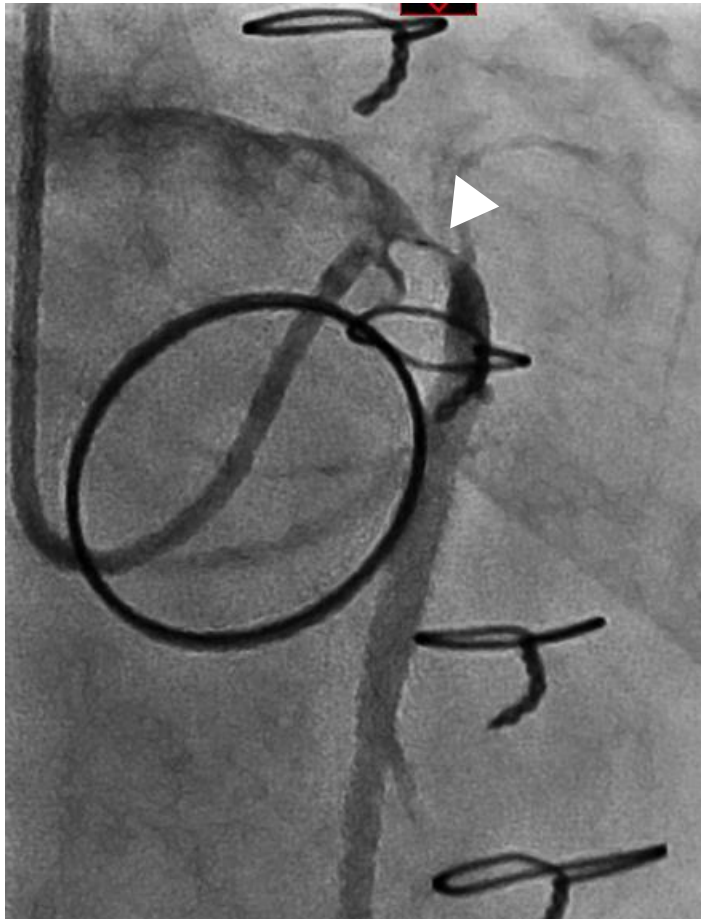


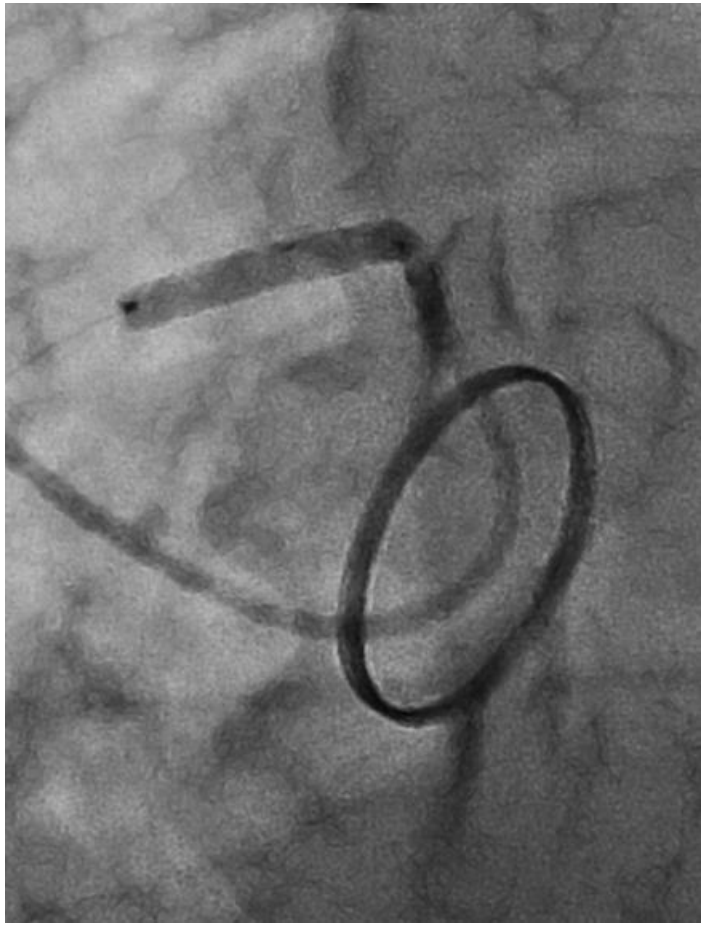
Scanner coronaire post opératoire

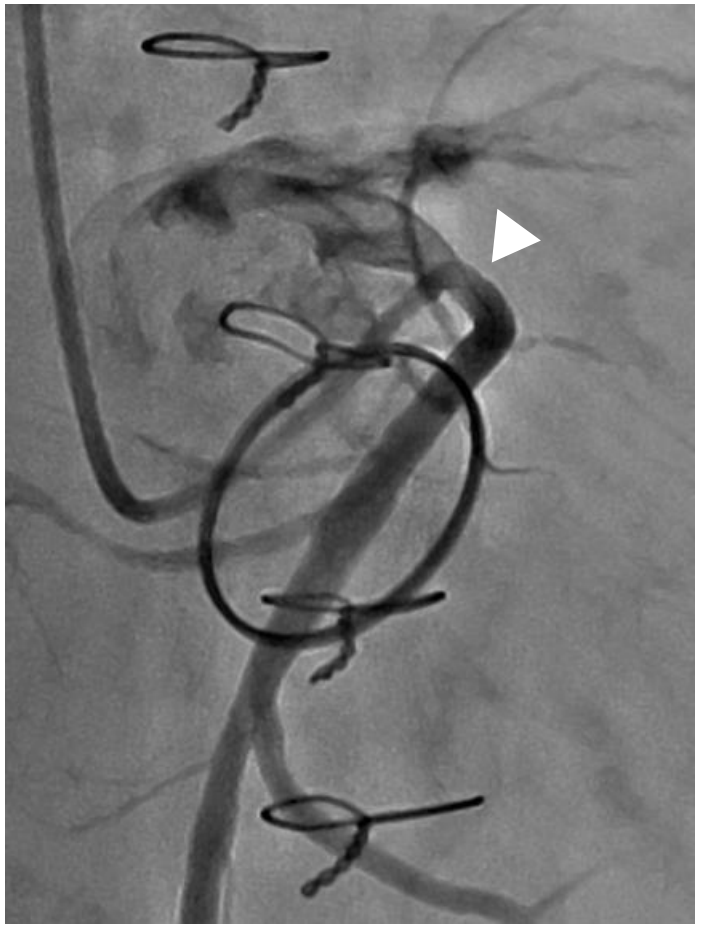




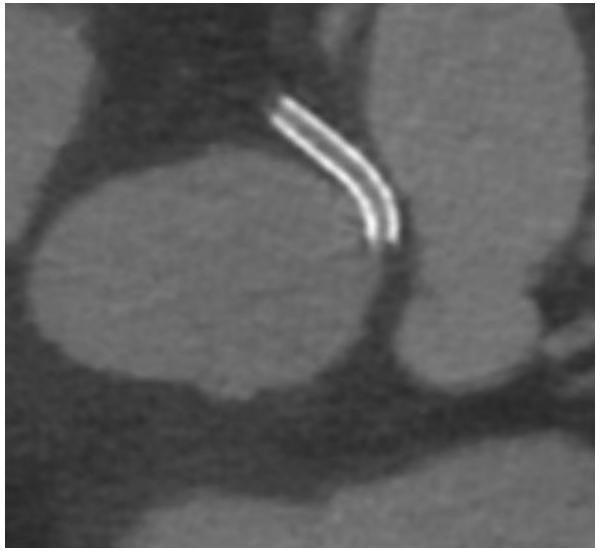
Angioplastie coronaire droite ectopique

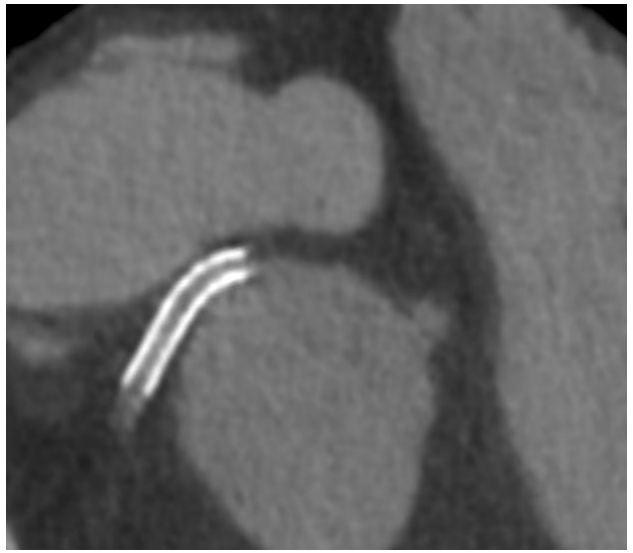


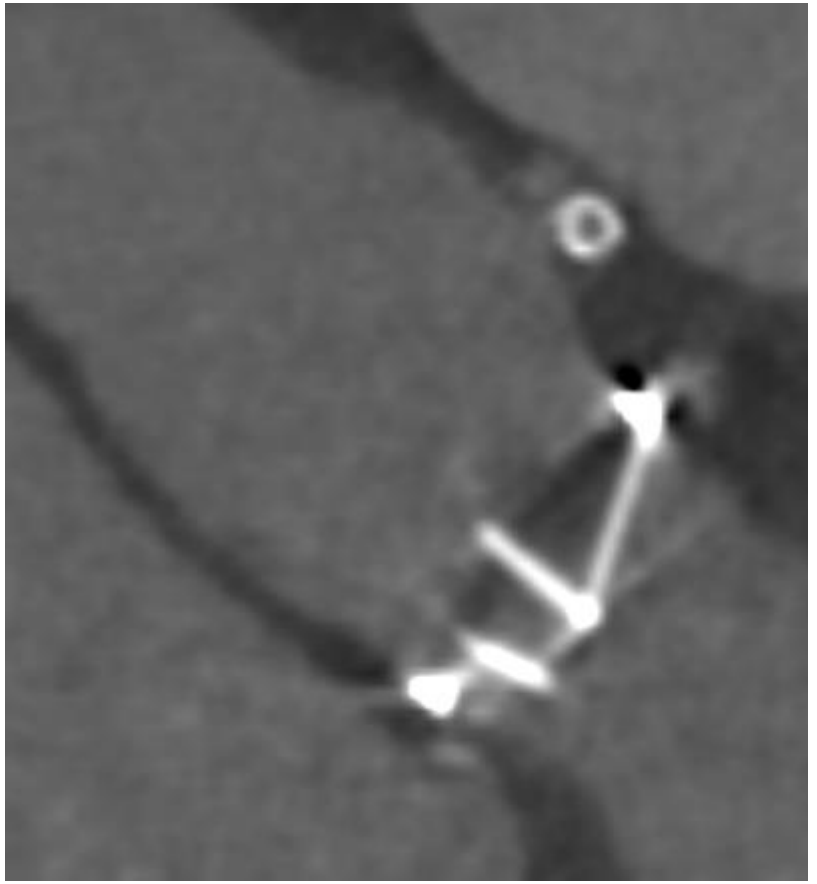




Scanner coronaire post angioplastie







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Anomalies de naissance des artères coronaires

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