

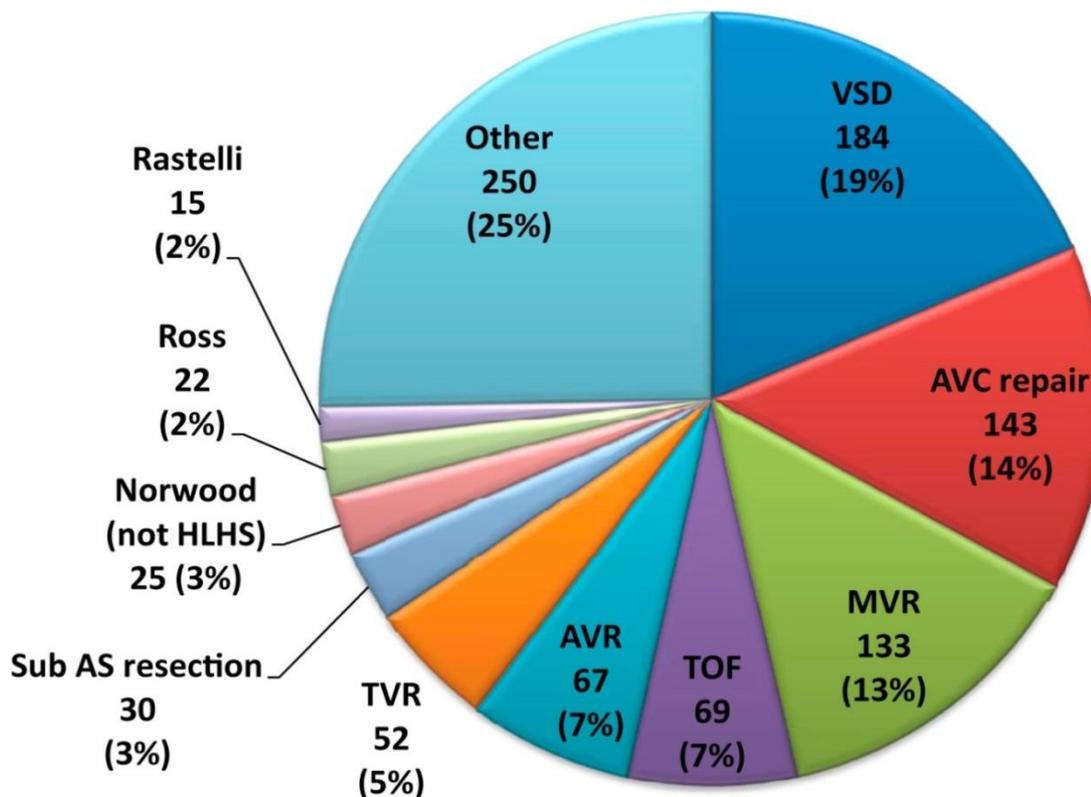
# Opérations à haut risque de troubles de la conduction

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39<sup>ème</sup> Séminaire de Cardiologie Congénitale et Pédiatrique

Paris-NEM 22-23 mars 2018

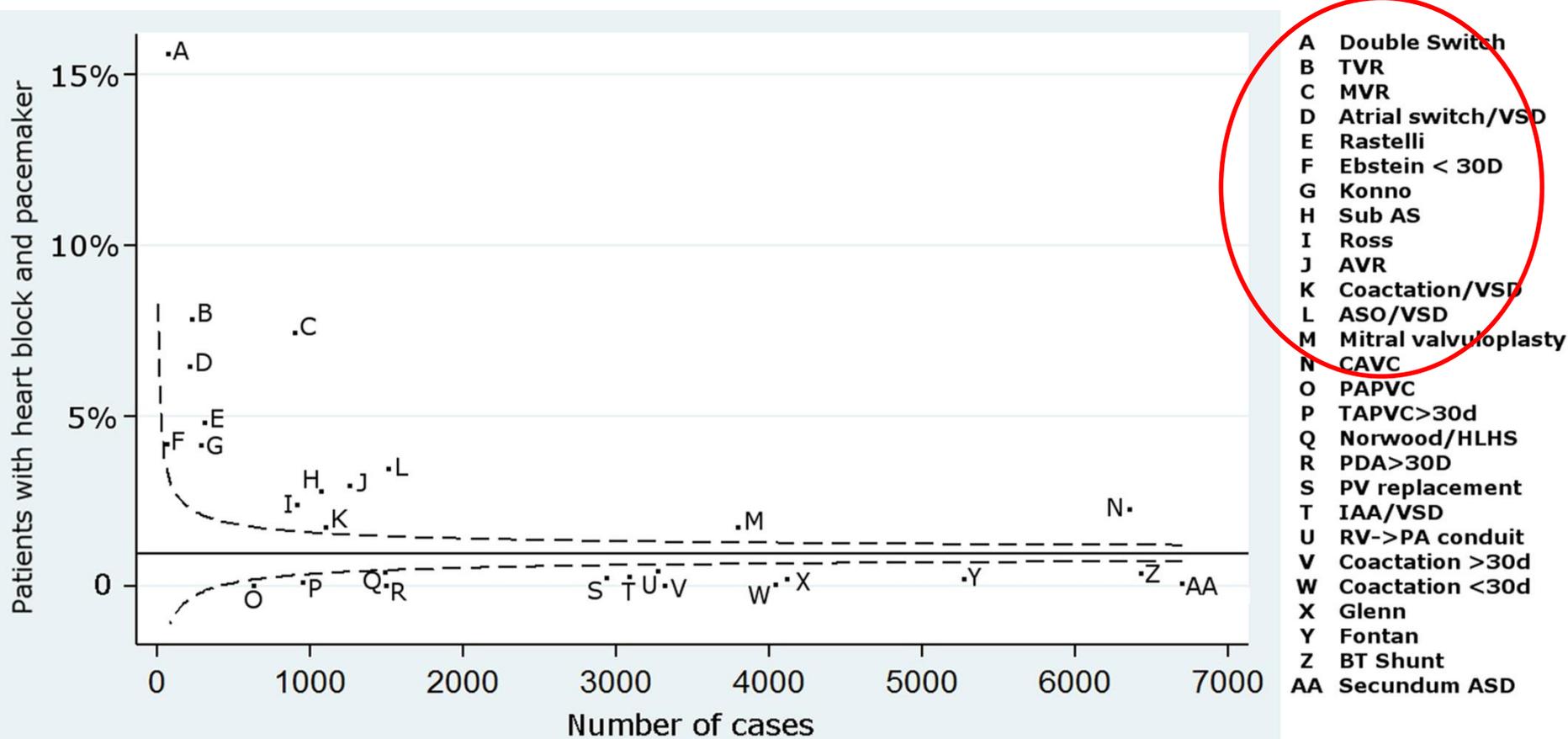
74571 patients / 101006 opérations - 4176 BAV postop (4,1%)  
2004 - 2013 990 BAV définitifs (PM) (1%)



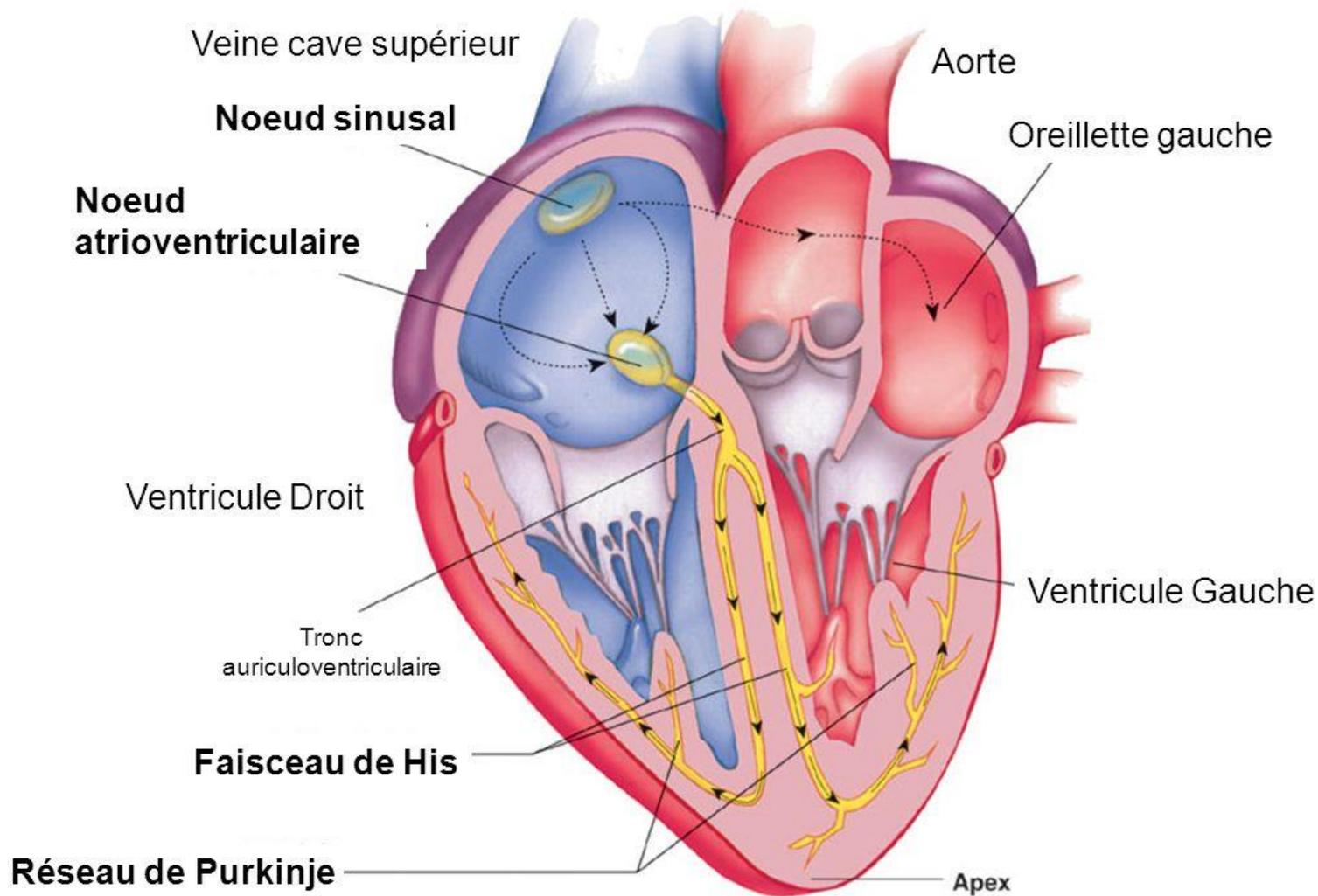
*Liberman L. et al. Incidence and characteristics of heart block after heart surgery in pediatric patients: a multicenter study J Thorac Cardiovasc Surg 2016;152:197-202*

<b>Surgery</b>	<b>Patients (n)</b>	<b>Pacemaker (n)</b>	<b>%</b>	<b>95% CI</b>	<b>P value</b>
Double switch operation	77	12	15.6	7.5-23.7	<.001
Tricuspid valve replacement	230	18	7.8	4.3-11.3	<.001
Mitral valve replacement	902	67	7.4	5.7-9.1	<.001
Atrial switch with VSD	217	14	6.5	3.1-9.7	<.001
Rastelli operation	313	15	4.8	2.4-7.1	<.001
Ebstein's repair <30 d	72	3	4.2	0-8.8	<.001
Konno operation	290	12	4.1	1.8-6.4	<.001
ASO with VSD	1517	52	3.4	2.5-4.3	<.001
Aortic valve replacement	1262	37	2.9	2.0-3.9	<.001
Sub-AS resection	1078	30	2.8	1.8-3.8	<.001
Ross operation	918	22	2.4	1.4-3.4	<.001
CAVC repair	6358	143	2.2	1.9-2.6	<.001
Mitral valvuloplasty	3802	66	1.7	1.3-2.2	<.001
Coarctation with VSD	1107	19	1.7	1.0-2.5	.01

*Liberman L. et al. Incidence and characteristics of heart block after heart surgery in pediatric patients: a multicenter study J Thorac Cardiovasc Surg 2016;152:197-202*



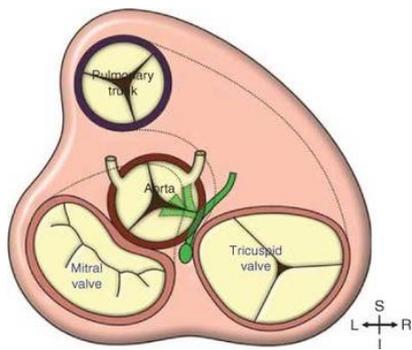
Liberman L. et al. Incidence and characteristics of heart block after heart surgery in pediatric patients: a multicenter study *J Thorac Cardiovasc Surg* 2016;152:197-202



## anatomie du tissu de conduction

- . anatomie normale
  - . lésion directe, traumatique
  - . lésion ischémique
- . anatomie modifiée par malformation
- . anatomie anormale

# anatomie normale : lésion directe



RVA  
sténose sous-Ao

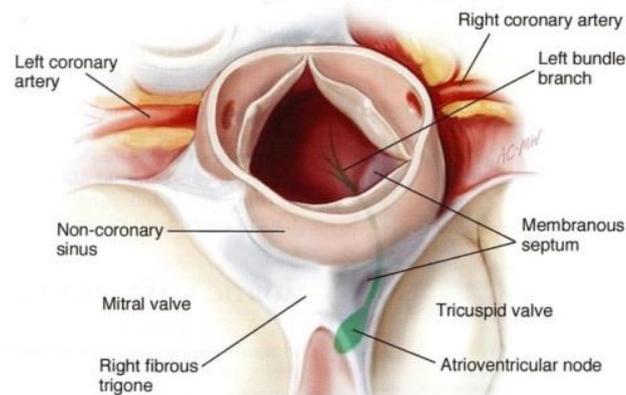


FIGURE 20-10

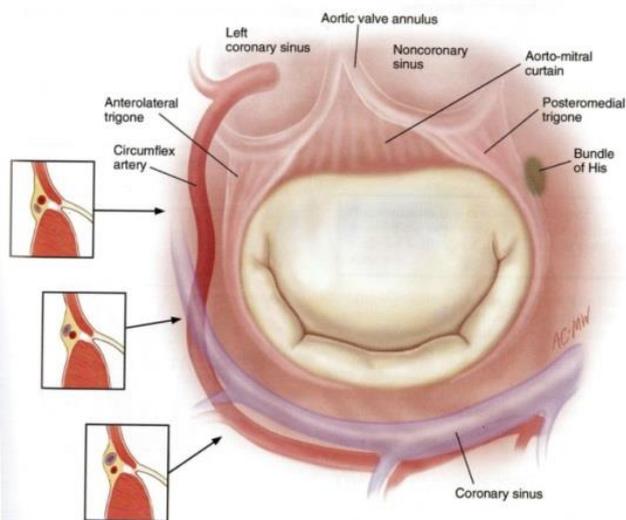


FIGURE 5-6

RVM  
plastie mit.

RVT  
plastie tric  
(Ebstein)

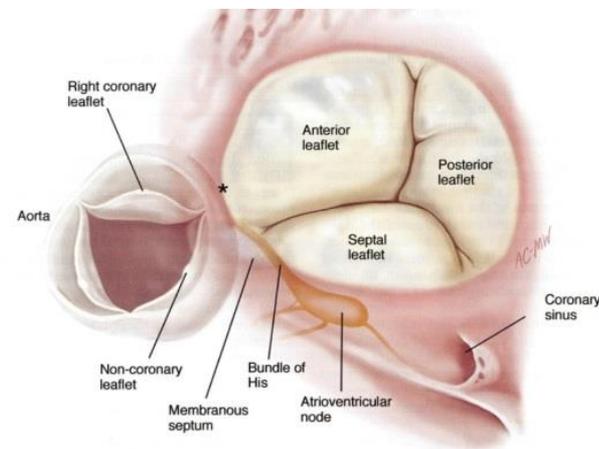
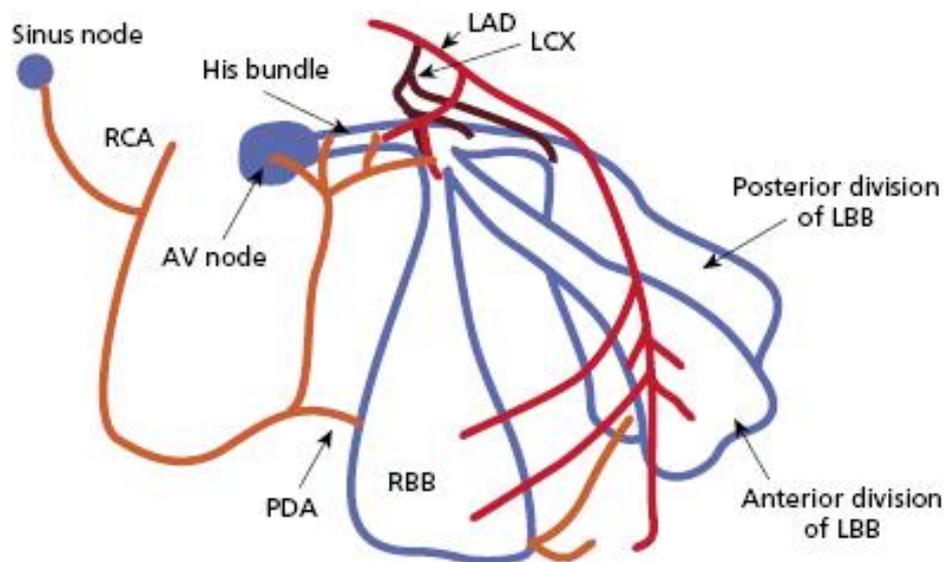


FIGURE 17-5

## anatomie normale : lésion ischémique

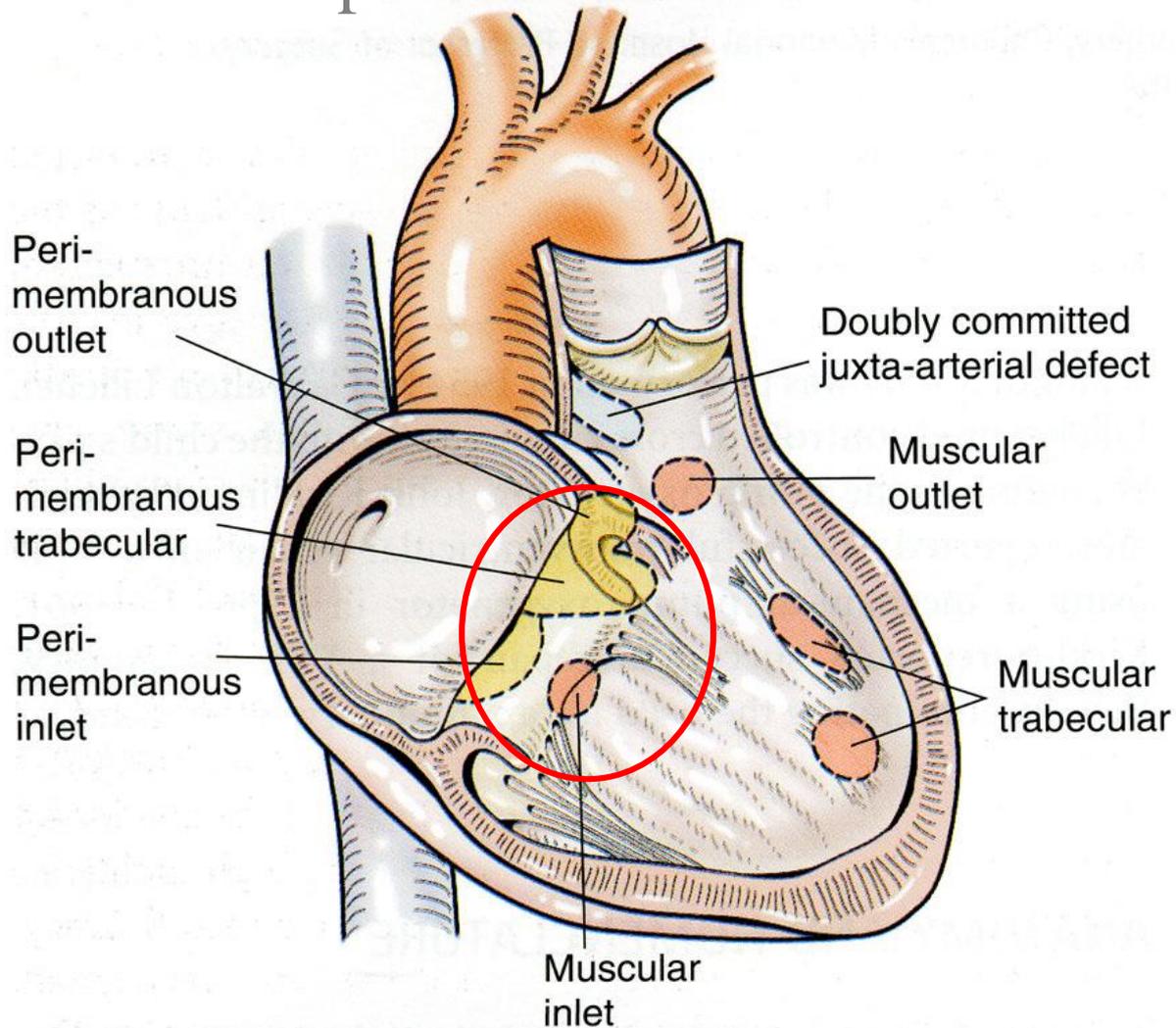


- . section artères septales
  - . Konno / Konno-Ross
  - . Konno modifié
  - . Ross
  - . élargissement CIV
- . lésion coronaire

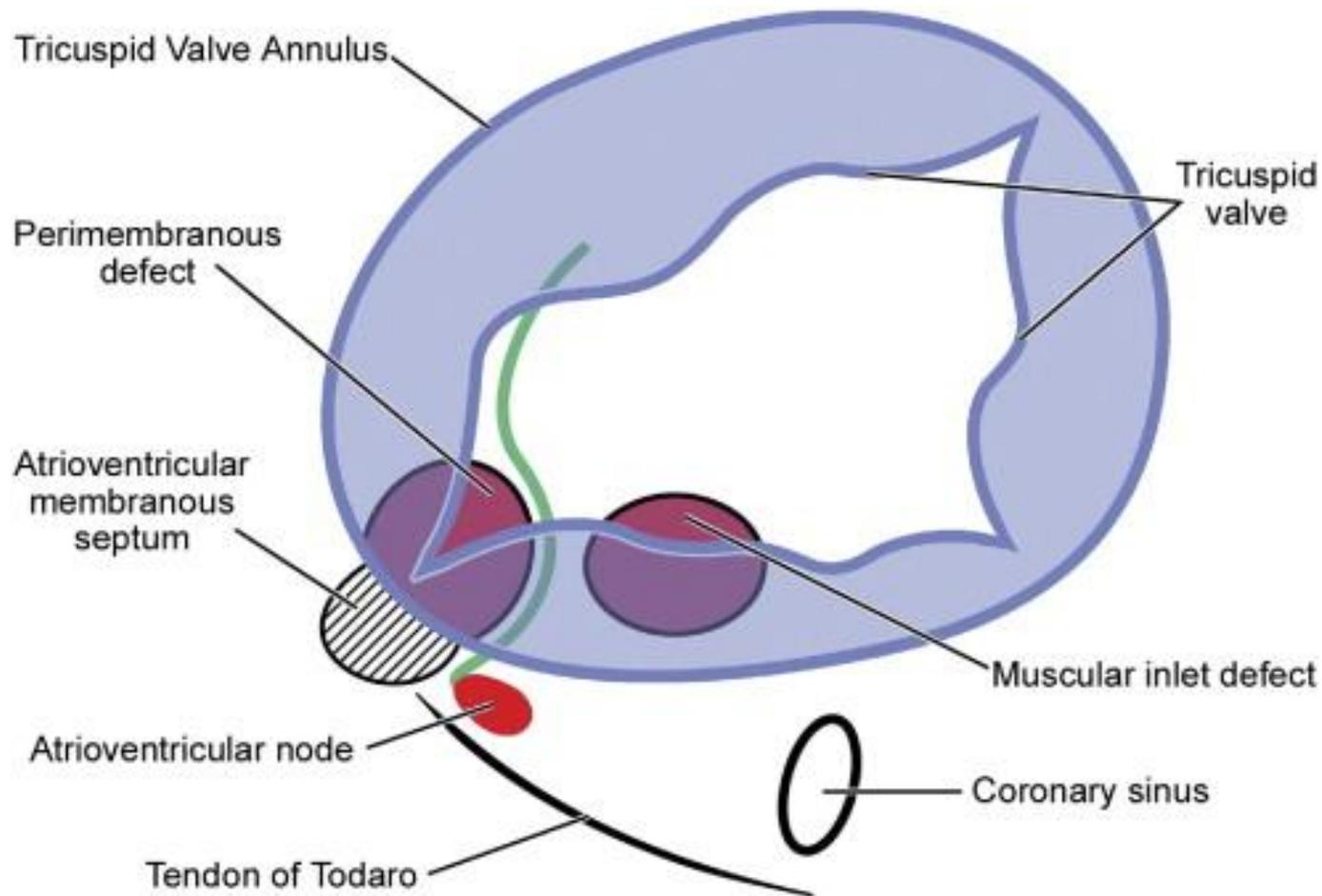
# anatomie du tissu de conduction

- . anatomie normale
- . anatomie modifiée par malformation
  - . CIV
  - . CAV
- . anatomie anormale

# anatomie modifiée par malformation : CIV

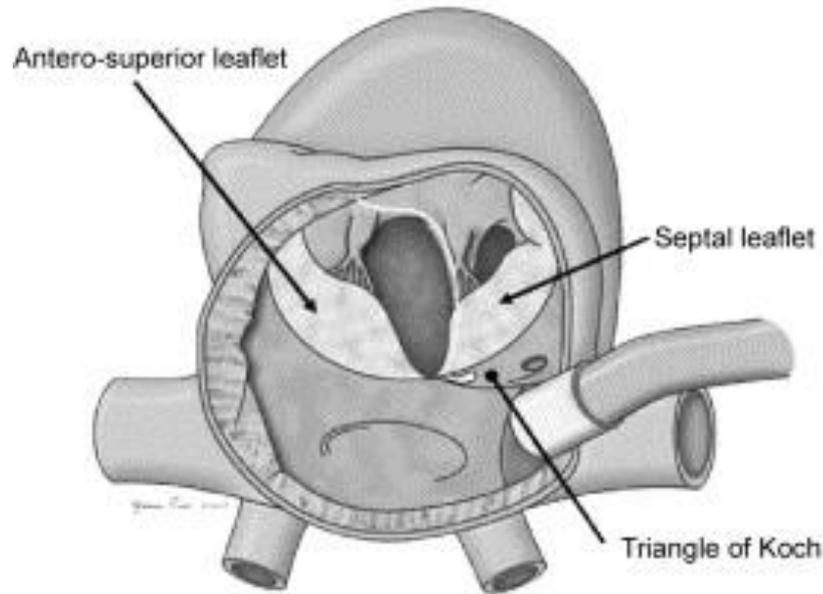


## anatomie modifiée par malformation : CIV

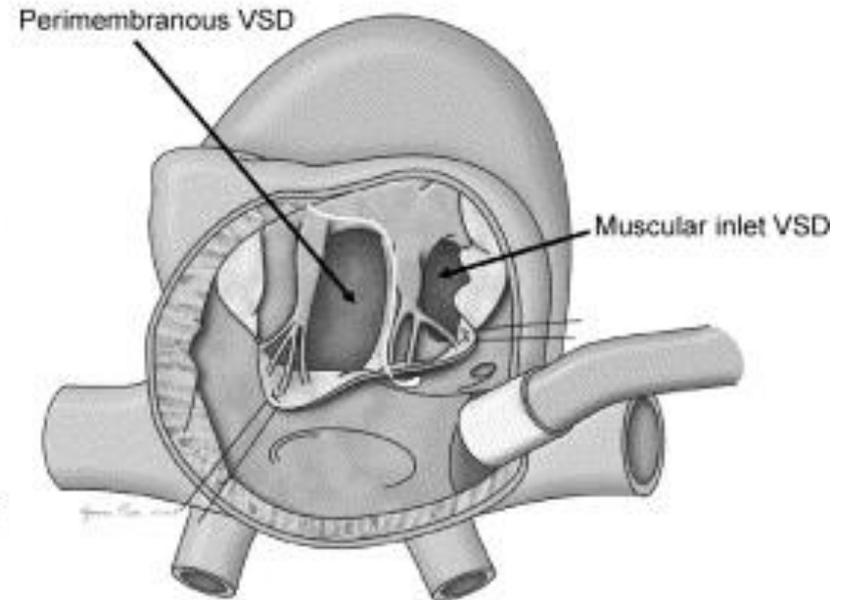


# anatomie modifiée par malformation : CIV

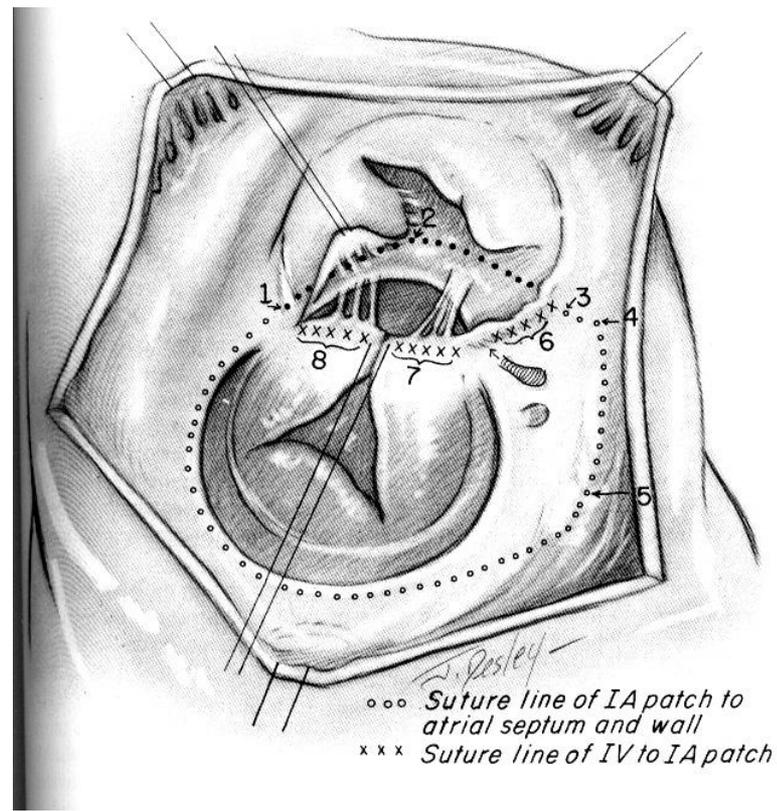
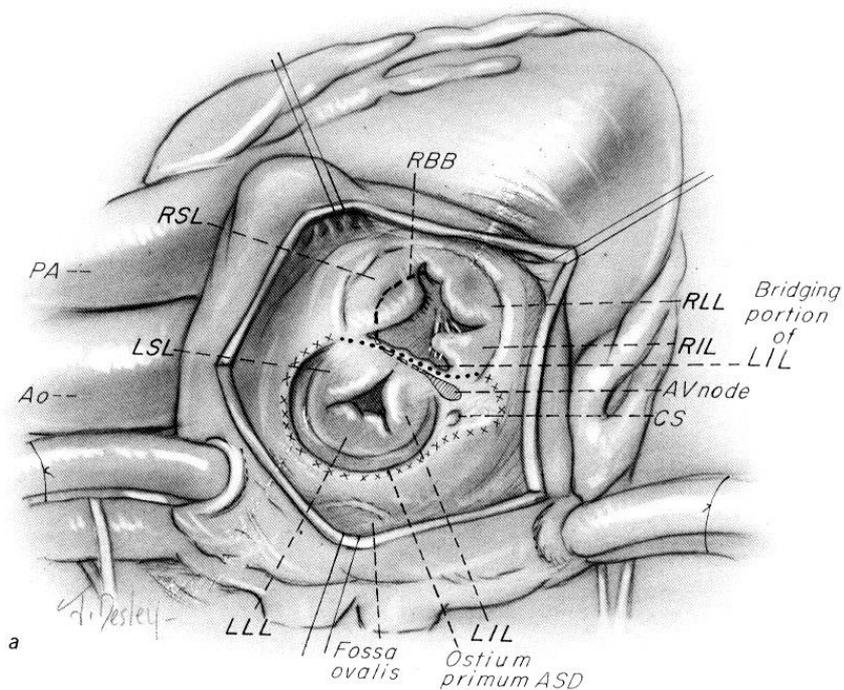
a)



b)



# anatomie modifiée par malformation : CAV



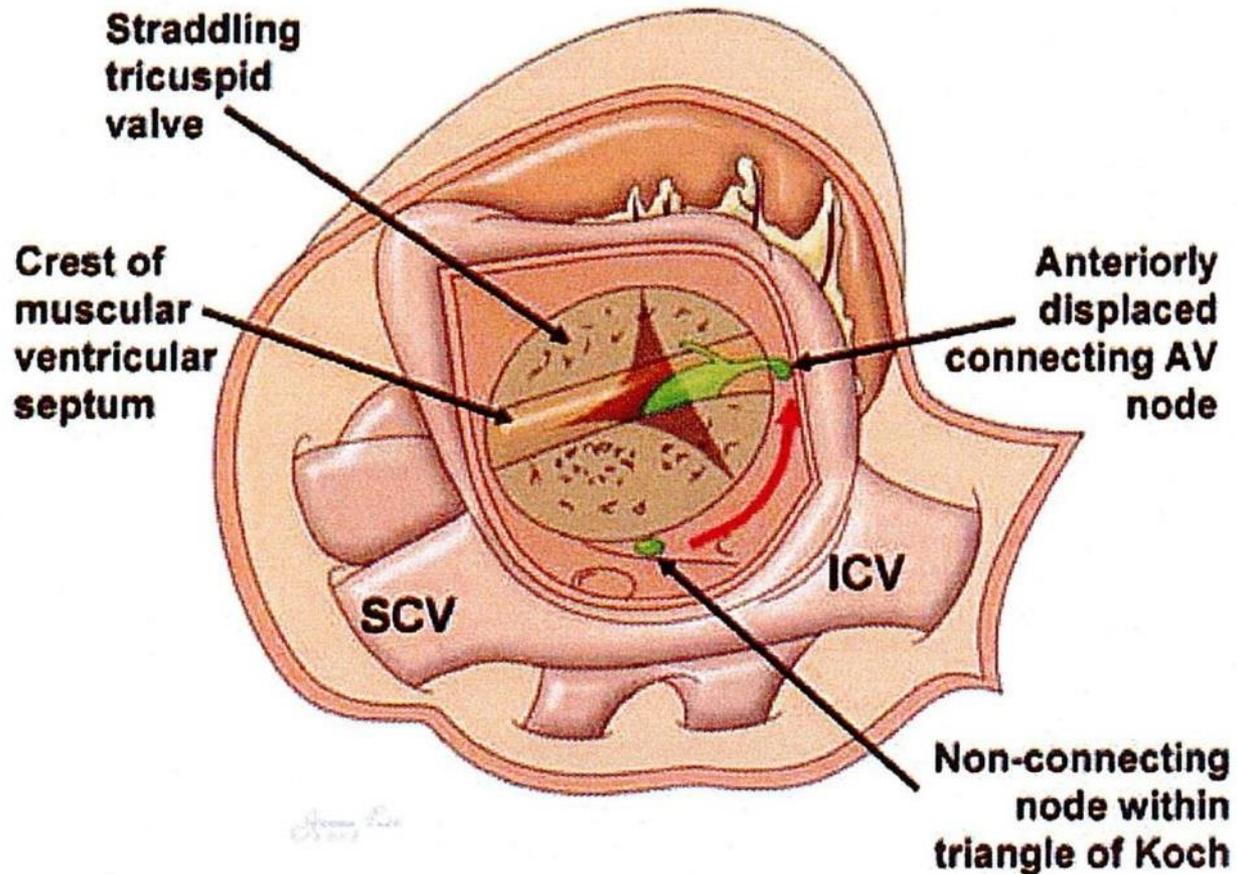
## anatomie du tissu de conduction

- . anatomie normale
- . anatomie modifiée par malformation
- . anatomie anormale

## noeud AV anormal

- . 2 facteurs
  - . alignement septa atrial et ventriculaire
  - . architecture ventriculaire (loop d ou l)
- . straddling tricuspide
- . discordance atrio-ventriculaire
- . connection atrio-ventriculaire univentriculaire
- . isomérismes

## anatomie anormale : straddling tricuspid

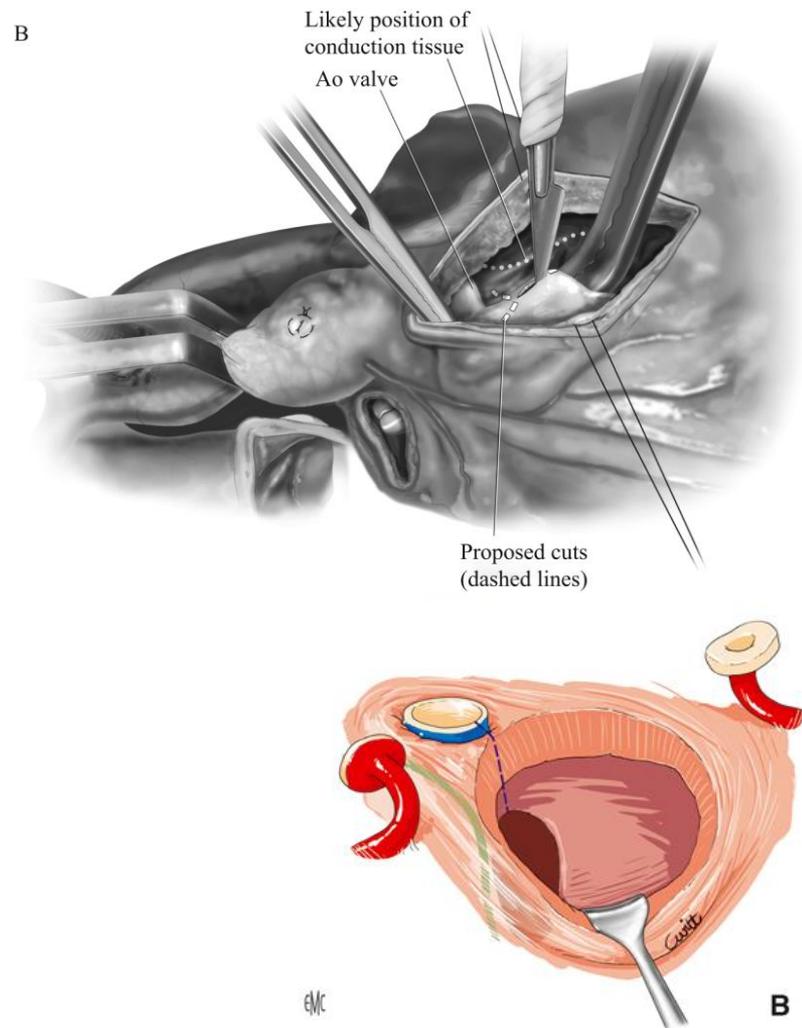
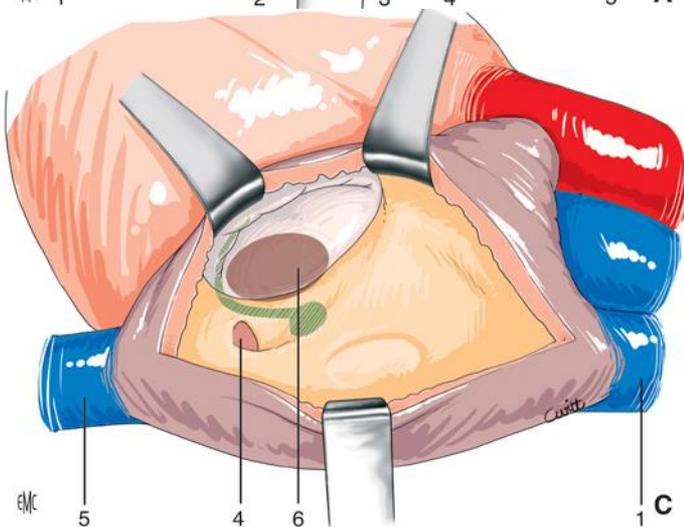
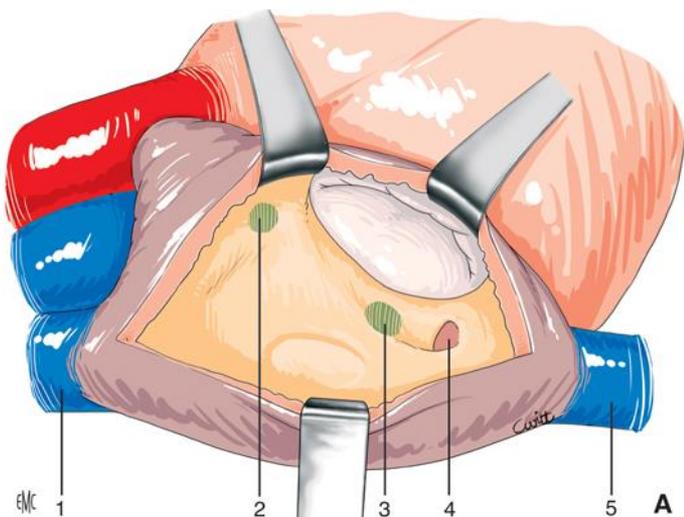


anatomie anormale : discordance atrio-ventriculaire

en théorie (Anderson) : règles simples

- situs inversus : noeud AV normal
  - . techniques habituelles
  - . rare
  
- situs solitus : noeud AV antérieur anormal
  - . rester du côté droit du septum
  - . excision septum conal : très limitée
  - . division septum conal : très dangereux

# anatomie anormale : discordance atrio-ventriculaire

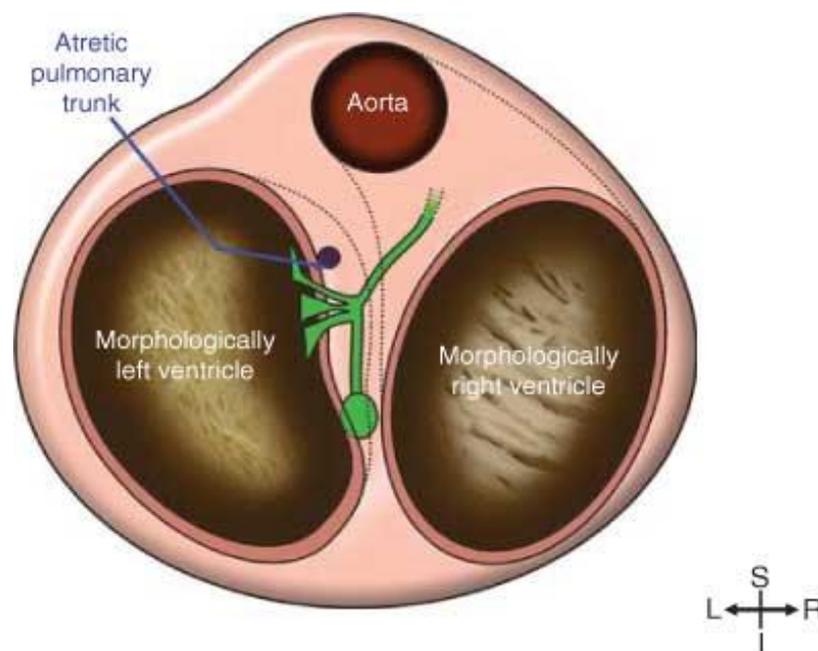
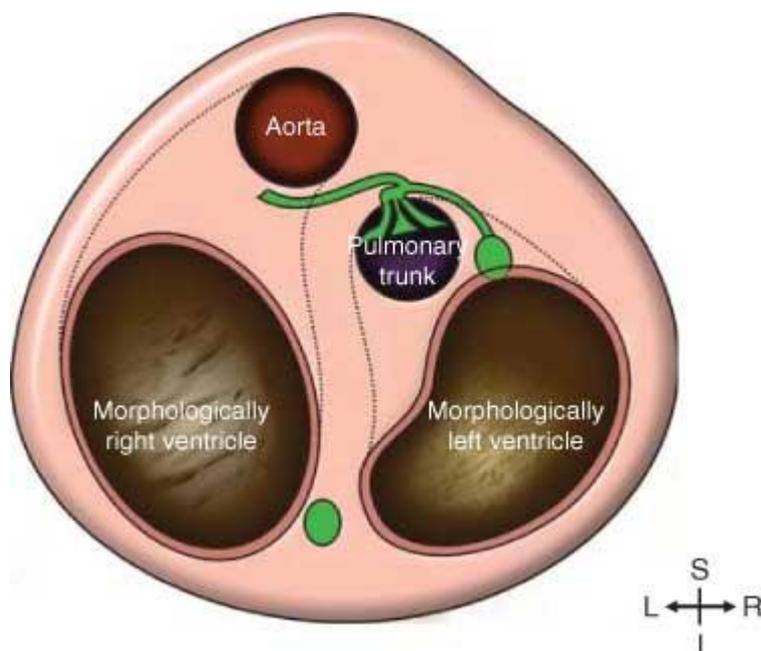


## anatomie anormale : discordance atrio-ventriculaire

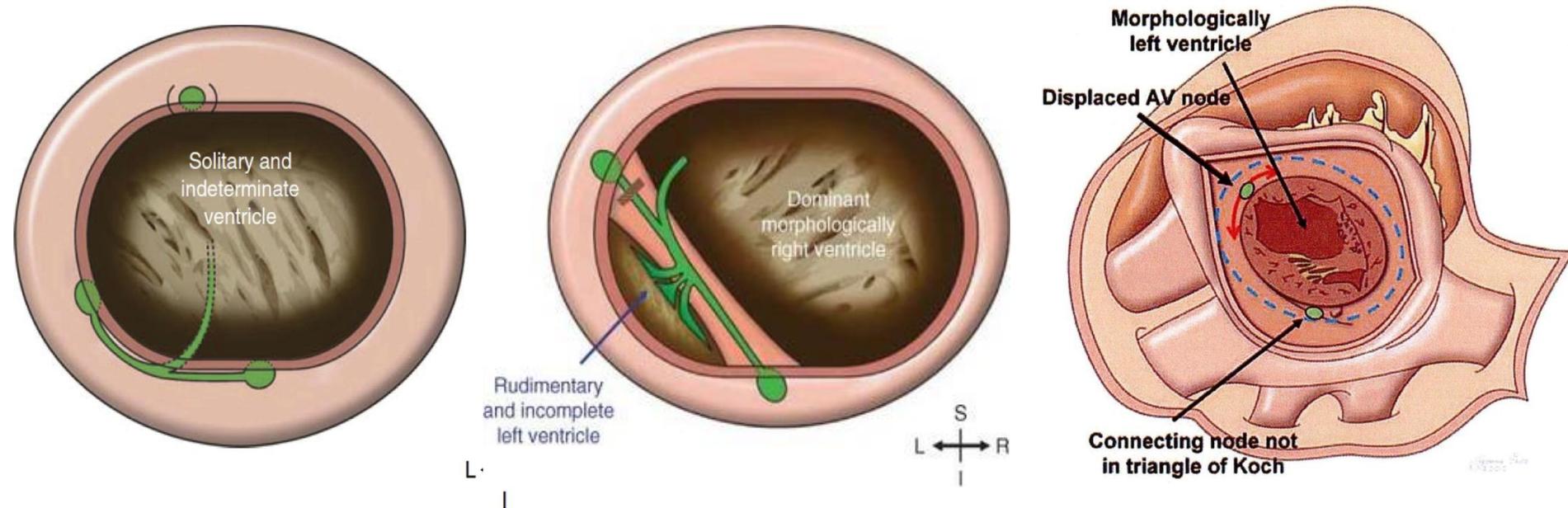
- . en pratique : beaucoup d'exceptions
  - . 1 or 2 noeuds AV
  - . + ou – reliés : anneau de Mönckeberg
- . malalignement des septa atrial et ventriculaire
  - . taille de la racine pulmonaire
  - . concordance situs / apex
- . risque élevé de BAV dans tous les cas

## anatomie anormale : discordance atrio-ventriculaire

### . taille de la racine pulmonaire

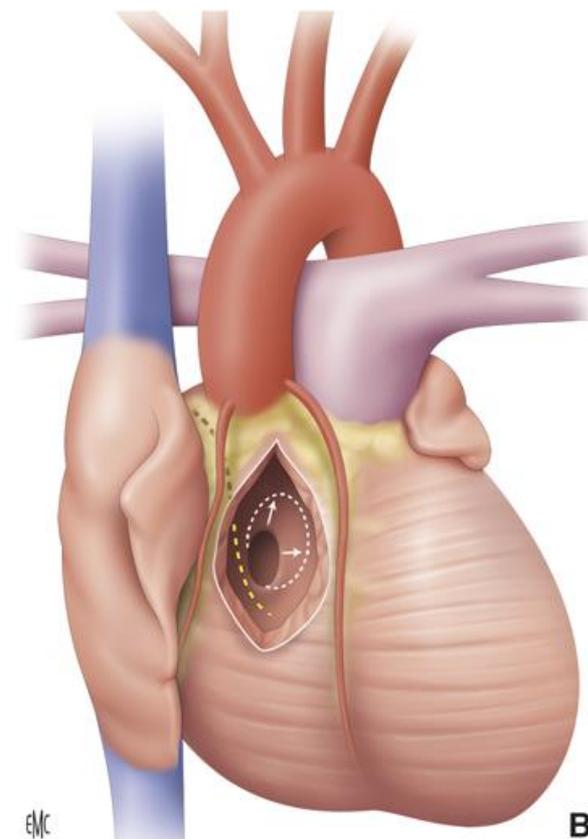
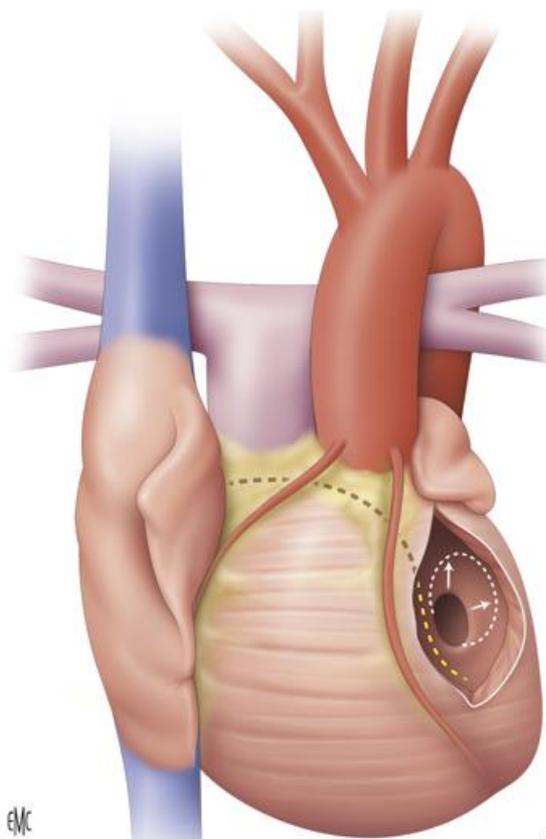
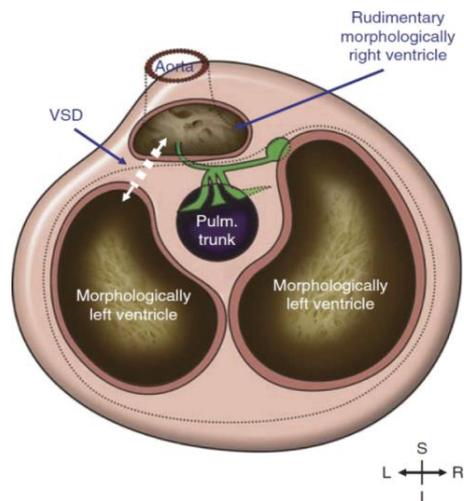


## anatomie anormale : connection AV univentriculaire



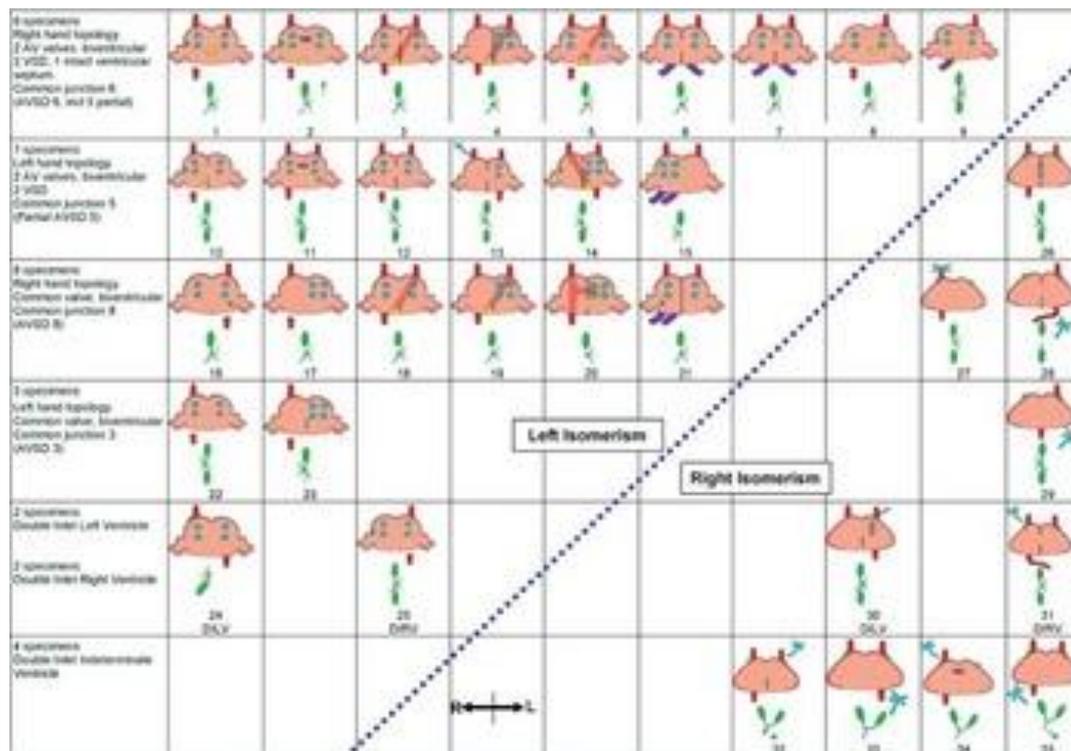
- . fermeture valve AV
- . remplacement valvulaire

## anatomie anormale : connection AV univentriculaire



. élargissement CIV

# anatomie anormale : isomérismes

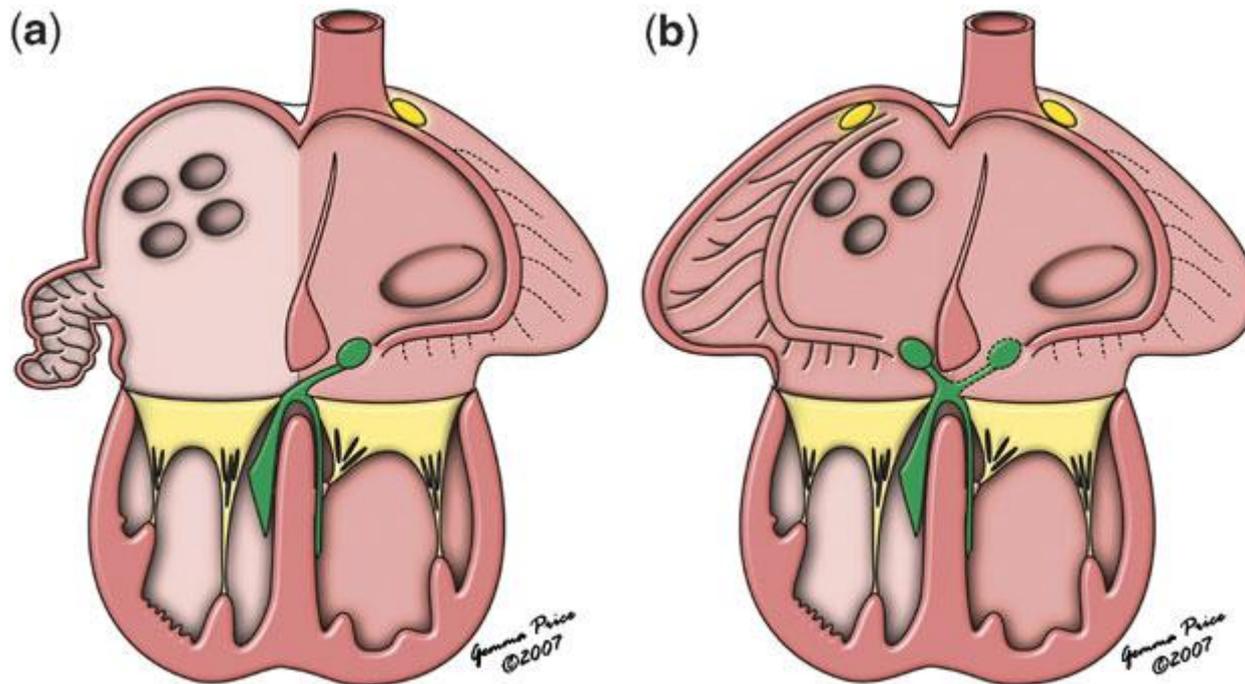


Smith A. et al. *The diverse cardiac morphology seen in hearts with isomerism of the atrial appendages with reference to the disposition of the specialized conduction tissue.* *Cardiol Young* 2006;16:437-454

## anatomie anormale : isomérismes

### . isomérisme droit

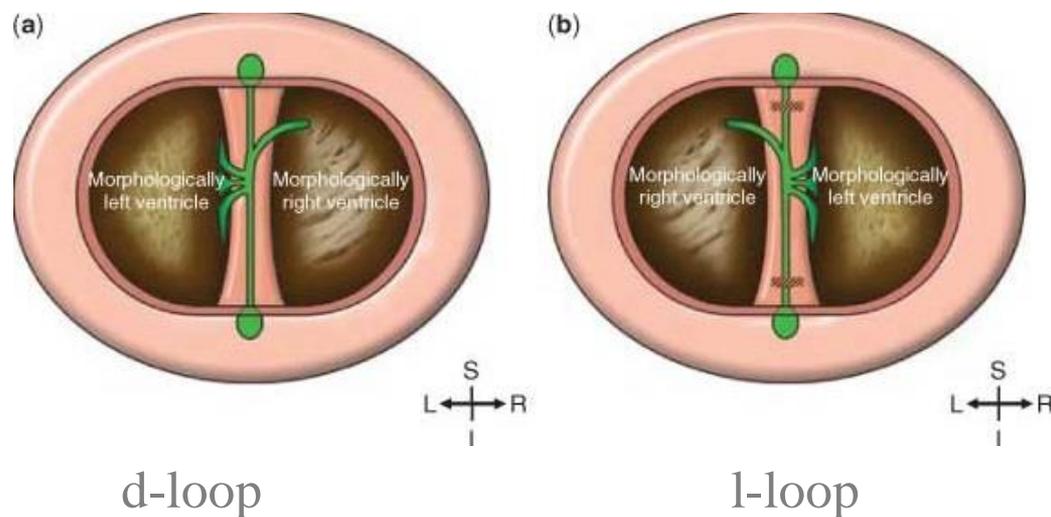
- . 2 noeuds AV  $\pm$  connectés
- . risque limité (réparation univentriculaire)



## anatomie anormale : isomérismes

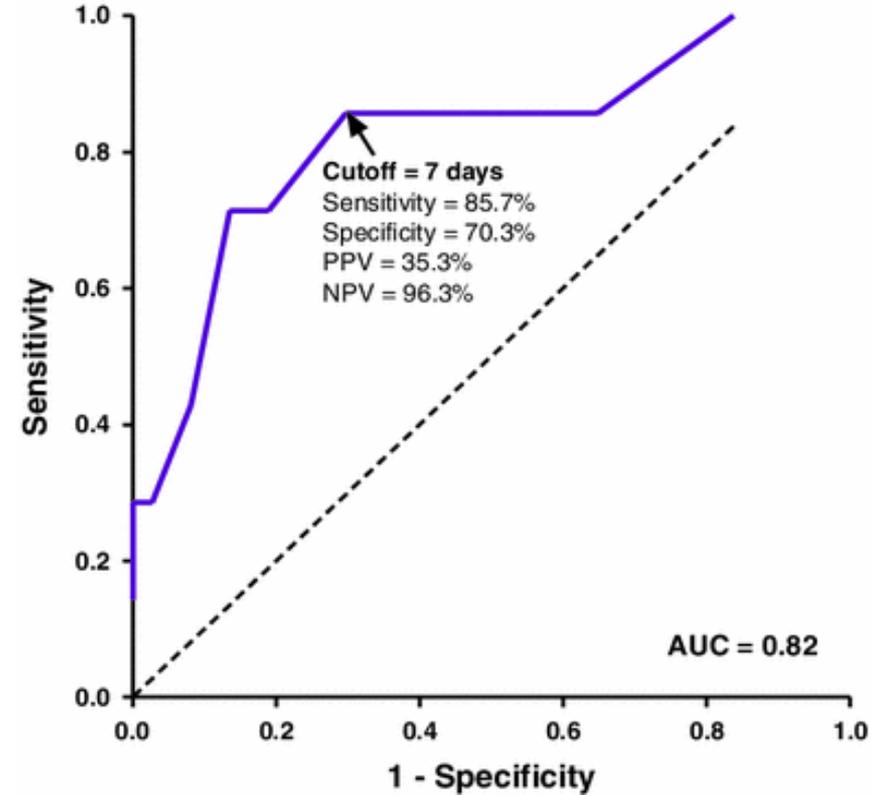
### .isomérisme gauche

- . d-loop : 2 « nœuds » connectés
- . l-loop : anarchie
  - . interruption fréquente (BAV spontané)
  - . risque très élevé (réparation biventriculaire)



# potentiel de récupération

Characteristics	OR	95 % CI of OR (lower, upper)
Duration of postop TCHB (days)		
≥7	13.30	1.71, 339.4
<7	Ref	



Aziz PF. et al. Pattern of recovery for transient complete heart block after open heart surgery for congenital heart disease: duration alone predicts risk of late complete heart block *Pediatr Cardiol* 2013;34:999-1005

## Conclusions

- . risque global faible (1%)
- . risque individuel parfois élevé
- . information préopératoire +++