Δυσκολίες στην εμφύτευση αμφικοιλιακού συστήματος

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Β’ Καρδιολογικό Τμήμα, Γ.Ν.Α. «Ο Ευαγγελισμός»
Conflict of Interest

Bayer, Boehringer-Ingelheim, Boston Scientific, Elpen, Medtronic, Merck, Novartis, Pfizer, Servier
Dyssynchrony
CRT eligible patients

167 Practice Sites
N = 15,381

Missing both NYHA class and QRS duration
N = 1929

Missing NYHA class
N = 3230

Missing QRS duration
N = 3119

NYHA class III and QRS<120 ms
N = 2366

NYHA class III
N = 2515

QRS ≤ 120 ms
N = 817

Eligible for CRT
(NYHA class III-IV, QRS≥120 ms
EF ≤ 35%)
N = 1393 (9.1%)

Contraindicated, medical, or patient
reason for not implanting CRT
N = 26

Eligible, No CRT
N = 840 (61.2%)

Received CRT
N = 533 (38.8%)

CRT-D
N = 448 (84.1%)

CRT-P
N = 85 (15.9%)
Continued Search for Physiological Pacing

- Operator’s experience
- CS cannulation failure: 5 %
- CS dissection: 1-2 %
- CS branch not appropriate: 2-5 %
Continued Search for Physiological Pacing

- Left subclavian vein occlusion
- Left SVC
- TV valve
- High / Low CS take off
- CS diverticulum
- Prominent / Cribriform Thebesian Valve
- CS dissection
- Vein of Marshall
- Vieussens valve
- Tufty CS
- CS stenosis
- Acute angle branch
- Phrenic nerve stimulation
- Diaphragmatic stimulation
Occluded subclavian vein
Mechanical TV
Mechanical TV
CS ostium take off

High CS os

Low CS os
Diverticulum
Thebesian valve
Tufty CS
CS stenosis
CS dissection
Vein of Marshall
Vein of Marshall
Vein of Marshall

NORMAL HEART

PERSISTENT LSVC

Ligament of Marshall
Vein of Marshall
Great cardiac vein
LV
LAA
CS
RSVC

LSVC
RSVC
LA
LV
CS

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Vieussens valve
Vieussens valve
Vieussens valve
Initial Venography
Frame by frame
Middle Vein
Middle Vein

Acute angulation surpassed by Amplatz catheter
CS cannulation failure

45min of fluoroscopy

Plan B  ???

Surgery  ???
CS cannulation failure

HIS-bundle pacing

Plan C  ???
CS cannulation failure
HIS-bundle pacing
CS cannulation failure
HIS-bundle pacing
Initial and post-implantation ECG
Unstable LV lead in CS branch
Anterior position
Unstable LV lead in CS branch

Anterior position

Active fixation LV lead
Active fixation LV lead
CRT implantation

- Straightforward procedure
- **Haute cuisine recipe** with well defined stages
- Anticipate and potential **reefs and pitfalls**
- Fully equipped EP lab
- Patient’s **safety** is predominant *(total surgical time, fluoroscopy time)*
- CS cannulation failure: 5 %
- CS dissection: 1-2 %
- CS branch not appropriate: 2-5 %
- Always have a Plan B and C
- Operator’s experience