Ablação Epicárdica: Quais são as novidades?

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Sem conflito de interesse
Transthoracic Epicardial Mapping of Chagas Ventricular Tachycardia

Sosa E, Scanavacca M, d’Ávila A, Pileggi F. JCE 1996
Prevalence of Mappable Epicardial VTs in Structural Heart Disease

n: 257

Two major complications:
• Intra peritoneal bleeding (controlled after surgery)
• Coronary artery occlusion (no clinical repercussion)

N= 158
Epicardial Access Publications by Country

N = 168
# Ventricular Tachycardia in Structural Heart Disease - Prevalence of Epicardial Substrate after Endocardial Failure -

<table>
<thead>
<tr>
<th>Author</th>
<th>year</th>
<th>N (%)</th>
<th>Cardiopathy Isch / non-isch</th>
<th>EPI (%)</th>
<th>Non-Inducibility / Rec Free</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sacher¹</td>
<td>2009</td>
<td>156/917 (17%)</td>
<td>Isch (38%)/non-isch (62%)</td>
<td>78%</td>
<td>NI: - Rec Free: 70% 23±21m</td>
</tr>
<tr>
<td>Schmidt²</td>
<td>2010</td>
<td>59 (?)</td>
<td>Isch (18%)/non-isch (72%)</td>
<td>73%</td>
<td>NI: 82% Rec free: 53% 1 year</td>
</tr>
<tr>
<td>Della Bella³</td>
<td>2011</td>
<td>222/1836 (12%)</td>
<td>Isch (39%)/non-isch (61%)</td>
<td>70%-100%</td>
<td>NI: 71% Rec free: 69% 17±2m</td>
</tr>
<tr>
<td>Sarkozy⁴</td>
<td>2013</td>
<td>56/444 (13%)</td>
<td>Ischemic 100%</td>
<td>68%</td>
<td>NI: 74% Rec free: 54% 26.5m</td>
</tr>
</tbody>
</table>

- Prevalence of Epicardial Substrate in a First Approach - Depends on the Disease -

<table>
<thead>
<tr>
<th>Author</th>
<th>year</th>
<th>N</th>
<th>Cardiopathy</th>
<th>EPI (%)</th>
<th>Freedom Of Rec</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soejima</td>
<td>2004</td>
<td>22</td>
<td>Dilated cardiomyo</td>
<td>32%</td>
<td>54% 334 ±280 d</td>
</tr>
<tr>
<td>Henz BH</td>
<td>2009</td>
<td>17</td>
<td>Chagas</td>
<td>100%</td>
<td>64.5% 318± 90m</td>
</tr>
<tr>
<td>Santangeli</td>
<td>2010</td>
<td>22</td>
<td>Hypertrophic</td>
<td>60%</td>
<td>73% 20±9 m</td>
</tr>
<tr>
<td>Yoshiga</td>
<td>2012</td>
<td>70</td>
<td>Post MI</td>
<td>6%</td>
<td>67%</td>
</tr>
<tr>
<td>Santangeli</td>
<td>2015</td>
<td>62</td>
<td>ARVD</td>
<td>63%</td>
<td>71% 56±44 m</td>
</tr>
<tr>
<td>Dell Russo</td>
<td>2016</td>
<td>27</td>
<td>Ischemic (VT Storm)</td>
<td>11,5%</td>
<td>68.5% 16±8 m</td>
</tr>
</tbody>
</table>
Epicardial Ablation in Structural Heart Diseases
- InCor: 2013 – 2014: 86 patients

Epicardium
- Yes: 60%
- No: 40%

Pearson: P<0.001
Ventricular Tachycardia Ablation
Optimizing indications for Epicardial Mapping and Ablation

Previous endocardial unsuccessful ablation?
- Yes: Consider Obtaining Epicardial Access for Mapping and Ablation
- No: Underlying structural epicardial substrates?
  - Yes: ECG suggesting epicardial VT site exit?
    - Yes: Consider Obtaining Epicardial Access for Mapping and Ablation
    - No: Perform Endocardial Ablation
  - No: Perform Endocardial Ablation

Modified from Boyle and Shivkumar. Circulation 2012
Pericardial Access: Risks

- Puncture
- Hemopericardium
- Coronary vein dysrupture
- Liver perforation

Guide wire Position

- AP view
- CS
- RV
- Guidewire

Hemopericardium – coronary vein dysrupture

Yamada & Kay – CE Clinics 2010
Garikipati et al. CE Clinics 2010

Epicardial Access Needle Embedded with a Real Time Pressure/Frequency Monitoring to Facilitate Epicardial Access
“Needle-in-needle” epicardial access

Kumar S, Stevenson W et al. HR 2015
Comparison of Complications Associated With Use Large Bore Needle and a Long Micropuncture Needle

<table>
<thead>
<tr>
<th>Complications</th>
<th>LB Needle (n=185)</th>
<th>MP Needle (n=219)</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Major</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large pericardial effusion</td>
<td>15 (8.1)</td>
<td>2 (0.9)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Requiring drainage</td>
<td>9 (4.5)</td>
<td>2 (0.9)</td>
<td>0.01</td>
</tr>
<tr>
<td>Open heart surgery and repair of the ventricle or coronary</td>
<td>6 (3.2)</td>
<td>0</td>
<td>0.007</td>
</tr>
<tr>
<td>Other major complications</td>
<td>2 (1.1)</td>
<td>1 (0.5%)</td>
<td>0.46</td>
</tr>
<tr>
<td>Liver hematoma and surgical drainage</td>
<td>1 (0.6)</td>
<td>0</td>
<td>...</td>
</tr>
<tr>
<td>Injury to coronaries</td>
<td>1 (0.6)</td>
<td>0</td>
<td>...</td>
</tr>
<tr>
<td>Superior epigastric artery puncture</td>
<td>0</td>
<td>1 (0.5)</td>
<td>...</td>
</tr>
<tr>
<td><strong>Minor</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inadvertent RV entry with no significant pericardial effusion or RV injury</td>
<td>14 (7.6)</td>
<td>15 (6.8)</td>
<td>0.769</td>
</tr>
</tbody>
</table>

LB indicates large bore; MP, micropuncture; and RV, right ventricular.

Gunda S et al. Circulation AE 2015
Multiple and Unstable VTs
Substrate Mapping and Ablation
Catheter ablation of scar-based ventricular tachycardia: Relationship of procedure duration to outcomes and hospital mortality

N = 148 patients underwent VT ablation with mean procedure duration of 5.7±1.8 h

Yu R, Boyle N, Shivkumar K et al. HR 2015
Anatomicall Substrate of Chagas Disease
Potential Electrophysiological Circuits Based on the 3D MRI Anatomical Channels
Electroanatomical Substrate Mapping
Endo – Epicardial Substrate Modification - Chagas VT -

Pre-Ablation

Post-Ablation

InCor - 2015
Epicardial Ablation of VT
- Summary -

• Epicardial circuits are frequently found in patients with sustained VT and non ischemic cardiomyopathies, particularly in Chagas disease.

• Combining endo and epicardial mapping and ablation can improve the results of VT ablation in such patients.

• However, epicardial access and epicardial ablation increase the risk of complications.

• Previous knowledge of anatomical and functional characteristics of the scar related VT might optimize the risk / benefit for its indication.