Interventional treatment of patients with accessory pathway

Hans Kottkamp, M.D.
Wolff-Parkinson-White Syndrome: The definition

- Shortened PR interval
- Widened QRS complex
- Paroxysmal tachycardia
Catheter ablation of accessory pathway

The normal ECG
The ECG with preexcitation

Catheter ablation of accessory pathway
Catheter ablation of accessory pathway

The ECG with preexcitation
The ECG in a variety of pts with accessory pathways
The atrio-ventricular reentrant tachycardia (AVRT)
Catheter ablation of accessory pathway

The induction of AVRT with an atrial extrasystole
Catheter ablation of accessory pathway

Catheter ablation in patients with WPW syndrome

LA
AP
MV
LV

II
V1
Abl.
RF on
Catheter ablation of accessory pathway

Mapping/ablation of accessory atrioventricular pathways

- The nomenclature
- The anatomy
- Electrocardiographic aspects
- Electrophysiologic aspects
- Catheter ablation strategies
Catheter ablation of accessory pathway

The „old“ nomenclature

Europ Heart Journal 1999; 20: 1068-1075
Catheter ablation of accessory pathway

The anatomy
Catheter ablation of accessory pathway

The anatomy
Catheter ablation of accessory pathway

The „new“ nomenclature
Catheter ablation of accessory pathway

Fluoroscopic anatomy
Catheter ablation of accessory pathway

Accessory pathway location in fluoroscopic anatomy
How to localize the accessory pathway: ECG criteria

1. Sufficient pre-excitation?

(ΔQRS 120 ms)
How to localize the accessory pathway: ECG criteria

2. Right-sided or left-sided?

V1: S>R

V1: R>S
Catheter ablation of accessory pathway

Right-sided accessory pathway
Catheter ablation of accessory pathway

Left-sided accessory pathway
How to localize the accessory pathway: ECG criteria

3. superior or inferior?

II, III, aVF positiv

II, III, aVF negativ

Abb. von JRLM Smeets
Catheter ablation of accessory pathway

Left-sided superior accessory pathway
Catheter ablation of accessory pathway

Right-sided inferior accessory pathway
How to localize the accessory pathway: ECG criteria

4. Right free wall or septal/paraseptal?

R/S ≥ V3

R/S ≤ V3

Abb. von JRLM Smeets
Catheter ablation of accessory pathway

Right-sided inferior septal accessory pathway
Catheter ablation of accessory pathway

Right-sided free wall accessory pathway
Catheter ablation of accessory pathway

Accessory pathway location distribution

- **Superior**
  - Anterior: 2.7% (n=63)
  - Posterior: 2.2% (n=52)
  - Superior: 1.9% (n=45)

- **Paraseptal**
  - Anteroseptal: 3.9% (n=91)
  - Inferoseptal: 3.7% (n=85)
  - Septal: 5.3% (n=122)

- **Right**
  - Anterobasal: 12.2% (n=530)
  - Inferobasal: 12.2% (n=282)

- **Left**
  - Anterobasal: 3.5% (n=31)
  - Inferobasal: 4.8% (n=111)

- **Inferior**
  - Anterobasal: 12.5% (n=290)
  - Inferobasal: 9.4% (n=218)

Catheter ablation of accessory pathway

Left-sided accessory pathway
Catheter ablation of accessory pathway

Mapping of a left-sided accessory pathway

[Diagram showing ECG tracings from different leads, labeled I, II, V1, Abl. uni, Abl. bi, HRA, HBE, RVA, with annotations P-RS and AV.]
Catheter ablation of accessory pathway

**Mapping of a left-sided accessory pathway**

<table>
<thead>
<tr>
<th>Channel</th>
<th>Trace</th>
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<tbody>
<tr>
<td>I</td>
<td></td>
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<tr>
<td>II</td>
<td></td>
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<tr>
<td>V1</td>
<td></td>
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<tr>
<td>Abl. uni</td>
<td>PQS</td>
</tr>
<tr>
<td>Abl. bi</td>
<td>AV</td>
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<td>HRA</td>
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<td>HBE</td>
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<td>RVA</td>
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</table>

200 ms
Catheter ablation of accessory pathway

Mapping of a retrogradely conducting left-sided AP

Graph showing electrocardiographic tracings from different leads, including II, V1, Abl, CS 7/8, CS 5/6, CS 3/4, CS 1/2, HBE, and RVA.
Catheter ablation of accessory pathway

Mapping of a retrogradely conducting left-sided AP

II
V1
Abl
CS 7/8
CS 5/6
CS 3/4
CS 1/2
HBE
RVA
Catheter ablation of accessory pathway

Mapping of a retrogradely conducting left-sided AP
Catheter ablation of accessory pathway

Which approach for the mapping/ablation catheter?

- Right-sided accessory pathways
  - Via V. femoralis
  - In cases with para-hisian AP
    via V. jugularis oder V.subclavia

- Left-sided accessory pathways
  - Via V. femoralis with transseptal approach
  - Via A. femoralis with retrograde approach
Catheter ablation of accessory pathway

Which mapping/ablation catheter?
Catheter ablation of accessory pathway

Long sheath technology (pre-shaped or deflectable)
Catheter ablation of accessory pathway

A case with WPW syndrome
Catheter ablation of accessory pathway

Fluoroscopy: The diagnostic catheters
Fluoroscopy: The diagnostic catheters + ablation catheter
Catheter ablation of accessory pathway

Mapping and ablation of the right paraseptal AP

I
II
V1
V2
V6
Abl.
His
CS 9/10
CS 7/8
CS 5/6
CS 3/4
CS 1/2
RVA
Catheter ablation of accessory pathway

Mapping and ablation of the right paraseptal AP

I
II
V1
V2
V6
Abl.
His
CS 9/10
CS 7/8
CS 5/6
CS 3/4
CS 1/2
RVA

RF on
Interventional treatment of patients with accessory pathway

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