Complications and arrhythmia after percutaneous transluminal septal myocardial ablation (PTSMA) Results from Scandinavian HOCM Database

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Background
Due to the risk of PTSMA-related complications, myectomy maintains the gold standard for treatment of severely symptomatic patients with hypertrophic obstructive cardiomyopathy (HOCM). We analyzed the peri-procedural complications, arrhythmia and survival after PTSMA in the Scandinavian HOCM Database.

Methods and results
A total of 279 HOCM patients (age 59±14 years) were treated with 313 PTSMA procedures from 1999 to 2010 in 4 Scandinavian tertiary heart centres (Table 1). Eight procedures were aborted without alcohol injection. In the performed 313 procedures, injection of 2.2±0.8 ml of alcohol per procedure lead to a peak level of creatine-kinase MB of 152±104 μg/L. Coronary perforation was reported in 3 procedures (1%) (Tables 2).

Accidental alcohol displacement occurred in 1.6% and coronary spasm in 1.3% of procedures. Arrhythmic events during completed procedures (n=313): Third degree atrio-ventricular block (AVB) 36%, new atrial fibrillation 1.3%, non-sustained ventricular tachycardia (VT) 0.3% and ventricular fibrillation (VF) 1.3%. Arrhythmic events during in-hospital observation included: episodes of 3rd degree AVB 23%, atrial fibrillation 7%, non-sustained VT 19% and VF 1.3%. Twenty percent of patients received a pacemaker within 30 days after first PTSMA. The 30-days mortality was 0.7%. Fourteen percent had a re-intervention within the first two years after PTSMA (Figure 1). The one-, five- and 10-years overall survival after PTSMA was 97%(CI 95-99%), 87%(CI 81-92%), and 67%(CI 53-80%), respectively, compared to 98%, 90% and 78% in the age- and gender-matched background population (Log Rank p=0.06) (Figure 2). Neither arrhythmia nor the coronary complications were related to long-term survival after PTSMA.

Table 1. Baseline characteristics of 279 patients treated with percutaneous transluminal septal myocardial ablation (PTSMA)

<table>
<thead>
<tr>
<th>Demographics</th>
<th>N</th>
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<tr>
<td>Age at first PTSMA (years)</td>
<td>59±14</td>
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<td>Gender (female)</td>
<td>46%</td>
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<td>Clinical follow up (years)</td>
<td>2.9±2.5</td>
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Table 2. Complications after 313 percutaneous transluminal septal myocardial ablation procedures in 279 patients

- **Complications (n=313), [n(%)]**
  - Coronary artery perforation: 31(1.0)
  - Coronary artery spasm: 4(1.3)
  - Wire/balloon failure: 3(0.9)
  - Alcohol displacement: 5(1.6)
  - Thrombosis: 2(0.6)
  - Hemopericardium tamponade: 0(0)
  - Pericardial effusion: 4(1.3)
  - Fibrinolysis: 0(0)
  - Femoral haematoma: 19(6)
  - Stroke: 0(0)
  - Death: 0(0)

- **Arrhythmia (n=313), [n(%)]**
  - Bradycardia: 5(1.6)
  - Asystole: 0(0)
  - Ventricular fibrillation: 4(1.3)
  - Ventricular tachycardia: 0(0)

- **Conduction disturbances (n=230), [n(%)]**
  - 1st degree AVB: 6(2.6)
  - 2nd degree AVB: 20(9.1)
  - 3rd degree AVB: 85(36)

Figure 1: Freedom of re-intervention (PTSMA or myectomy) after percutaneous transluminal septal myocardial ablation in 279 patients in four Scandinavian heart centres (1999-2010).

Figure 2: Overall survival after percutaneous transluminal septal myocardial ablation (PTSMA) in 279 patients in four Scandinavian heart centres (1999-2010). Solid line: PTSMA cohort. Dashed line: age- and gender-matched background population.

Scandinavian HOCM database
www.scand-hocm.org