One-year outcomes with the transcatheter LOTUS Edge Aortic Valve System

Matthias Götberg, MD, PhD
On behalf of the LOTUS Edge Investigators:
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Lars Søndergaard, MD; Nicolas Dumonteil, MD;
Dominic J. Allocco, MD; Ian T. Meredith AM, MBBS, PhD

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Information for use only in countries with applicable health authority registrations. Material not intended for use in France. The LOTUS Edge valve system is currently not available for use or sale in the European Economic Area. SH-576712-AA
Potential conflicts of interest

Speaker's name: Matthias Götberg, MD, PhD

☑ I have the following potential conflicts of interest to report:
Receipt of honoraria or consultation fees: Boston Scientific
Grants/research support: Boston Scientific
Salary support: full-time proctor for Boston Scientific as of 01 Sept 2018
The Next Generation LOTUS Edge™ Valve System

Design Goals

Unique features of the first-generation Lotus Valve conserved

- Adaptive seal to provide surgical-like PVL
- Mechanical expansion
  - Consistent, stable delivery
  - 100% repositionable and retrievable
- Early valve function provides haemodynamic stability

New features with LOTUS Edge Valve System

**LOTUS Edge Catheter**

- Increased flexibility
- Improved coaxial alignment with optimized pre-shape curve
- Proximal catheter profile reduction (3F – 4F)

**LOTUS Edge Valve**

- One-view locking with radio-opaque markers
- Limited depth of implant with Depth Guard™ technology
## Study Design

**Lotus EDGE Feasibility Study**
- 21 high-surgical-risk patients with symptomatic calcific aortic stenosis enrolled at 2 centres in Australia

**REPRISE EDGE**
- 15 high-surgical-risk patients with symptomatic calcific aortic stenosis enrolled at 3 centres in Europe

<table>
<thead>
<tr>
<th>Primary Endpoint:</th>
<th>Technical success*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Key 2° Endpoints:</td>
<td>Mean gradient and AVA at discharge/7d†, paravalvular leak†, VARC-2 endpoints</td>
</tr>
<tr>
<td>Follow-up:</td>
<td>Baseline, peri/post-procedure, discharge/7d, 30d, 6 months, and 1 year</td>
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</table>

**LOTUS Edge Combined Cohort (N=36)**

- 1-year clinical follow-up available: 97.2% (35/36)
  (1 patient missed the 1-year visit in REPRISE EDGE)
- 1-year TTE Assessment Performed: 34

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*Defined as successful vascular access, delivery, & deployment of 1 Lotus valve in the proper anatomic position with successful retrieval of the delivery system.
†As assessed by an independent core laboratory. AVA=aortic valve area; TTE=transthoracic echocardiography
# Baseline Characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Feasibility Study N=21</th>
<th>REPRISE EDGE N=15</th>
<th>Overall N=36</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>61.9%</td>
<td>66.7%</td>
<td>63.9%</td>
</tr>
<tr>
<td>Age, years</td>
<td>84.0 ± 5.1</td>
<td>83.2 ± 6.1</td>
<td>83.7 ± 5.4</td>
</tr>
<tr>
<td>STS Score, %</td>
<td>4.3 ± 1.5</td>
<td>4.5 ± 2.5</td>
<td>4.4 ± 1.9</td>
</tr>
<tr>
<td>EuroSCORE 2011, %</td>
<td>4.1 ± 3.3</td>
<td>5.4 ± 3.8</td>
<td>4.7 ± 3.6</td>
</tr>
<tr>
<td>History of stroke, %</td>
<td>4.8%</td>
<td>13.3%</td>
<td>8.3%</td>
</tr>
<tr>
<td>NYHA Functional Class III or IV</td>
<td>57.1%</td>
<td>66.7%</td>
<td>61.1%</td>
</tr>
<tr>
<td>Mean aortic valve area, cm²</td>
<td>0.63 ± 0.19</td>
<td>0.64 ± 0.19</td>
<td>0.63 ± 0.19</td>
</tr>
<tr>
<td>Mean aortic valve gradient, mmHg</td>
<td>51.3 ± 9.5</td>
<td>49.5 ± 16.0</td>
<td>50.6 ± 12.2</td>
</tr>
<tr>
<td>Calcification, moderate/severe, %</td>
<td>85.7%</td>
<td>100%</td>
<td>91.2%</td>
</tr>
<tr>
<td>Left ventricular ejection fraction, %</td>
<td>57.5 ± 7.6 (21)</td>
<td>59.1 ± 4.5 (10)</td>
<td>58.0 ± 6.7 (31)</td>
</tr>
<tr>
<td>Permanent pacemaker at baseline</td>
<td>14.3% (3/21)</td>
<td>0% (0/15)</td>
<td>8.3% (3/36)</td>
</tr>
</tbody>
</table>

All patients had agreement by the Heart Team that they were at high risk for surgery based on STS Score and/or comorbidities.

†As assessed by an independent core laboratory
## Periprocedural Outcomes

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Overall N=36</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical success, %*</td>
<td>100%</td>
</tr>
<tr>
<td>Mean depth of implantation, mm (n)</td>
<td>4.6 ± 2.2 (35)</td>
</tr>
<tr>
<td>Valve repositioned</td>
<td>67%</td>
</tr>
<tr>
<td>Valve fully retrieved</td>
<td>6%</td>
</tr>
<tr>
<td>Major vascular complications, %</td>
<td>13.9%</td>
</tr>
<tr>
<td>Coronary obstruction, %</td>
<td>0%</td>
</tr>
<tr>
<td>Cardiac tamponade, %</td>
<td>0%</td>
</tr>
<tr>
<td>Ventricular septal perforation, %</td>
<td>0%</td>
</tr>
<tr>
<td>Valve migration, %</td>
<td>0%</td>
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<tr>
<td>Valve embolization, %</td>
<td>0%</td>
</tr>
<tr>
<td>TAV-in-TAV performed, %</td>
<td>0%</td>
</tr>
</tbody>
</table>

*Defined as successful vascular access, delivery, & deployment of 1 Lotus valve in the proper anatomic position with successful retrieval of the delivery system.

### Valve Size Implanted

- 23mm: 30.6%
- 25mm: 38.9%
- 27mm: 30.6%
Clinical Outcomes Through 1 Year

**Patients, %**

- All-cause death: 0
- CV death: 0
- All stroke: 5.6 (n=2)
- Disabling stroke: 5.6 (n=2)
- LT/disabling bleeding: 5.6 (n=2)
- AKI Stage II/III: 0
- Repeat procedure: 0
- Valve or CHF related rehospitalization: 5.6 (n=2)
- Thrombosis: 5.6 (n=2)
- Endocarditis: 2.8 (n=1)
- New PPI*: 15.2 (n=5)

*N=36

*Rate excludes patients with permanent pacemaker at baseline (n=3). CV=cardiovascular. LT=life-threatening. AKI=acute kidney injury. PPI=permanent pacemaker implantation.
Haemodynamic Outcomes Through 1 Year

Mean Aortic Gradient (mmHg)

- Baseline: 50.6 ± 12.2 (n=34)
- Discharge: 14.2 ± 4.2 (n=36)
- 1 Year: 13.7 ± 4.8 (n=34)

Mean Effective Orifice Area (cm²)

- Baseline: 0.6 ± 0.2 (n=31)
- Discharge: 1.5 ± 3.6 (n=36)
- 1 Year: 1.4 ± 0.4 (n=31)
NYHA Class Through 1 Year

Patients, %

<table>
<thead>
<tr>
<th>Improvement From Baseline to 1 year</th>
<th>Patients N=34</th>
</tr>
</thead>
<tbody>
<tr>
<td>At least 1 NYHA class</td>
<td>76.5%</td>
</tr>
<tr>
<td>At least 2 NYHA classes</td>
<td>29.4%</td>
</tr>
</tbody>
</table>

Baseline (n=34) Discharge/7d (n=29) 30 Days (n=36) 1 Year (n=34)

- Baseline: 61.1%
- Discharge/7d: 62.1%
- 30 Days: 83.0%
- 1 Year: 50.0%
Aortic Regurgitation Through 1 Year

Among patients with evaluable echocardiograms. As assessed by an independent core laboratory.
Summary & Conclusions

• One-year results with the next-generation LOTUS Edge transcatheter aortic valve demonstrate
  • Low rates of death and stroke
  • Sustained haemodynamics and functional improvement
  • 97.1% none/trace paravalvular leak
  • 15.2% rate of new permanent pacemaker vs ~30% with first-generation Lotus

• Limitation: small feasibility study; results need to be confirmed in a larger trial

• The REPRISE IV trial will evaluate outcomes with LOTUS Edge in intermediate risk and bicuspid patients. Enrollment is anticipated to begin Q4 2018.
<table>
<thead>
<tr>
<th>Study</th>
<th>Enrolling Centre</th>
<th>Enrolled, n</th>
</tr>
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<tbody>
<tr>
<td>Feasibility Study</td>
<td>Monash Medical Centre, Clayton, VICTORIA, Australia</td>
<td>14</td>
</tr>
<tr>
<td></td>
<td><em>PI: Robert Gooley, MBBS, PhD</em></td>
<td></td>
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<tr>
<td>Feasibility Study</td>
<td>The Prince Charles Hospital, Brisbane, Queensland, Australia</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td><em>PI: O. Christopher Raffel MB, ChB</em></td>
<td></td>
</tr>
<tr>
<td>REPRISE EDGE</td>
<td>University Hospital of Lund, Lund, Sweden</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td><em>PI: Matthias Göteborg, MD, PhD</em></td>
<td></td>
</tr>
<tr>
<td>REPRISE EDGE</td>
<td>Rigshospitalet Copenhagen, Copenhagen, Denmark</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td><em>PI: Lars Søndergaard, MD</em></td>
<td></td>
</tr>
<tr>
<td>REPRISE Edge</td>
<td>Clinique Pasteur, Toulouse, France</td>
<td>4</td>
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<tr>
<td></td>
<td><em>PI: Nicolas Dumonteil, MD</em></td>
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**Echocardiography Core Lab**
- Neil Weissman, MD - MedStar

**Angiography Core Lab**
- Jeffrey Popma, MD - BIDMC

**Case Review Committee**
- Thank you to all CRC participants!
- Core members:
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  - Michael Reardon, MD
  - Matthias Göteborg, MD, PhD
  - Henrik Bjursten, MD
  - Mike Salinger, MD

**Clinical Events Committee**
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- Carey Kimmelstiel, MD
- Roberto Rodriguez, MD
- Gregory Smaroff, MD