CAS: Results and Current Limitation to Widespread Application

K. Mathias
Radiologische Klinik
General Radiology - Interventional Radiology
Neuroradiology - Pediatric Radiology
Molecular Imaging - Nuclear Medicine
Klinikum Dortmund / Germany
I have nothing to disclose
Why CAS?

because...

all of us - patient and physician - want a less traumatic tx
What are limitations for CAS?

- evidence of benefit
- patient’s age and anatomy
- dedicated devices
- experience of interventionalists
Do results limit CAS?

Yes, as long as we have not proven equivalence of outcome:

- stroke
- MI
- death
- recurrent stenosis
The benchmark for CAS:
- CEA
- best medical tx
CEA
What are the procedural stroke rates?

<table>
<thead>
<tr>
<th>Study</th>
<th>Rate</th>
<th>Year</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECST</td>
<td>7.5%</td>
<td>1991</td>
<td>symptomatic</td>
</tr>
<tr>
<td>NASCET</td>
<td>5.8%</td>
<td>1991</td>
<td>stenosis</td>
</tr>
<tr>
<td>ACAS</td>
<td>2.3%</td>
<td>1995</td>
<td>asymptomatic</td>
</tr>
<tr>
<td>ACST</td>
<td>3.1%</td>
<td>2004</td>
<td>stenosis</td>
</tr>
</tbody>
</table>
CEA - What are the risks?
Risk Factors for Death/Stroke after CEA
Ontario CEA Registry

6,038 patients, 1994-1997; 30-day death/stroke rate 6.0%
5 independent predictors (RF) of 30-day death/stroke

- symptomatic carotid stenosis
- contralateral carotid occlusion
- history of atrial fibrillation
- history of congestive heart failure
- diabetes

Tu JV et al. Stroke 2003;34:2568-75
Impact of Cardiovascular Risk Factors on Outcomes Following CEA

1002 CEA in 852 patients, prospective data collection
Prospective assessment, University of Brussels
Clinical evaluation by the surgeon

<table>
<thead>
<tr>
<th></th>
<th>30-Day death/stroke</th>
<th>OR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall</td>
<td>2.7%</td>
<td></td>
</tr>
<tr>
<td>Diabetes</td>
<td>5.7%</td>
<td>3.3</td>
</tr>
<tr>
<td>DM + HTN + Hyperlip</td>
<td>9.4%</td>
<td>4.2</td>
</tr>
</tbody>
</table>

Are these also the Risk Factors of CAS?

**NO!**

We have different RFs for CAS

- age >80 10% stroke rate
- aortic arch atherosclerosis
- arterial tortuosity
- severe CCA/ICA calcifications
- freely floating thrombus
Why Does Vascular Surgery Have Such a High Cardiac Complication Rate?

Asymptomatic Coronary Disease in Patients with Carotid Stenosis

Systematic coronary angiography in 200 patients with carotid disease and no symptoms of CAD

- 40% severe CAD (>70% stenosis of ≥1 vessel)
- 46% mild-moderate CAD
- 14% normal coronary arteries

Overall, evidence suggests that 25% to 60% of patients with carotid stenosis and no symptoms of CAD have abnormal provocative tests results for myocardial ischemia or angiographic evidence of severe CAD.
Cardiovascular Impact of CEA

Prospective single center randomized study on CEA in general anesthesia (GA) versus loco-regional anesthesia (LA)

n=107, continuous 12-lead ECG during surgery and for 24 hours postoperatively

Myocardial ischemia in 22 patients (20.5%)
No difference between general or local anesthesia

CAS - What we have to-day

• registries
  - self-reporting
  - independent control
• one-arm prospective trials
  *market- or post-market trials*
• prospective randomized trials
  *CAS vs CEA*
### Clinical Trials

<table>
<thead>
<tr>
<th>Study</th>
<th>Study Design</th>
<th>Sample Size</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCHER 1-3</td>
<td>high-risk registry</td>
<td>581</td>
<td>completed</td>
</tr>
<tr>
<td>BEACH</td>
<td>high-risk registry</td>
<td>480</td>
<td>completed</td>
</tr>
<tr>
<td>CABERNET</td>
<td>high-risk registry</td>
<td>488</td>
<td>completed</td>
</tr>
<tr>
<td>CASES</td>
<td>high-risk registry</td>
<td></td>
<td>enrolling</td>
</tr>
<tr>
<td>CREATE I+II</td>
<td>Acculink registry</td>
<td>1,500</td>
<td>completed</td>
</tr>
<tr>
<td>MAVERIC</td>
<td>EU registry</td>
<td>157</td>
<td>completed</td>
</tr>
<tr>
<td>MOMA</td>
<td>high-risk registry</td>
<td>113</td>
<td>completed</td>
</tr>
<tr>
<td>PASCAL</td>
<td>Italian MoMa registry</td>
<td>416</td>
<td>completed</td>
</tr>
<tr>
<td>PRIAMUS</td>
<td>German all-CAS registry</td>
<td>&gt;8,000</td>
<td>enrolling</td>
</tr>
<tr>
<td>ProCAS</td>
<td>EU registry</td>
<td>60</td>
<td>completed</td>
</tr>
<tr>
<td>RULE</td>
<td>high-risk registry</td>
<td>398</td>
<td>completed</td>
</tr>
<tr>
<td>SECURITY</td>
<td>high-risk registry</td>
<td>400</td>
<td>starting</td>
</tr>
<tr>
<td>VIVA</td>
<td>high-risk registry</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total patients enrolled: >20,000 tx
What is the purpose of these trials?

- establishing evidence
- approval of CAS by health systems and governments
- getting reimbursement
- getting approval of devices
- offering patients a less invasive tx
Why High Risk Patients?

CEA for higher-risk patients does not produce the standard 6% (symptomatic) and 3% (asymptomatic) complication rates that the medical community expects.
The High Risk Dilemma

Patients excluded from NASCET and ECST
= medical high risk

Patients after surgery and/or radiotherapy of the neck
= surgical high risk

High proportion of asymptomatic patients (72-86%)
= interventional high risk (5-8%) - no benefit for the patient
High Risk Patients

- ACT I
- ARCHER I-III
- CASES
- CABERNET
- CREATE
- CHRS
- EXACT
- MAVERIC
- PASCAL
- SECURITY
- SAPPHIRE

registries

randomized trial
### US Carotid Stent Registries

30-day composite endpoint (stroke, MI, death)

<table>
<thead>
<tr>
<th>Registry</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>CABERNET</td>
<td>3.8%</td>
</tr>
<tr>
<td>BEACH</td>
<td>5.4%</td>
</tr>
<tr>
<td>SECURITY</td>
<td>7.2%</td>
</tr>
<tr>
<td>ARCHER 2</td>
<td>7.8%</td>
</tr>
<tr>
<td>SAPPHIRE</td>
<td>7.8%</td>
</tr>
</tbody>
</table>

**Note:** no benefit with such a complication rate!!!
Current CAS Approvals

**FDA:**

High-risk for CEA with stenosis
- symptomatic >50%
- asymptomatic >80%
Prospective Randomized Trials

- CAVATAS
- SPACE
- EVA-3S
- ICSS
- CREST
- SAPPHIRE

symptomatic patients

sympt. + asympt. patients

sympt. + asympt. high risk patients
CAVATAS ...

<table>
<thead>
<tr>
<th>Type of Procedure</th>
<th>Technical Success</th>
<th>Neurological Deficits</th>
<th>Stroke &amp; Death</th>
<th>3-Year Patency</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS</td>
<td>&gt;95%</td>
<td>8%</td>
<td>10.0%</td>
<td>no significant difference</td>
</tr>
<tr>
<td>CEA</td>
<td>&gt;95%</td>
<td>8%</td>
<td>10.0%</td>
<td></td>
</tr>
</tbody>
</table>
Stent-protected Percutaneous Angioplasty of the Carotid Artery vs. Endarterectomy
Primary Endpoints

- **ipsilateral stroke**
  ischemic stroke and/or intracerebral bleeding with symptoms lasting more than 24 hours  or
- **death**
  of every cause between randomisation and day 30
- **MI not included**
Secondary Endpoints

- ipsilateral stroke or vascular death within 24 months after treatment
- ipsilateral stroke with an impairment $\geq 3$ on the modified Rankin scale or death of every cause between randomization and day $30 \pm 3$ after tx
- strokes of every localisation and severity within 24 months after the intervention
- re-stenosis more than 70% measured with US
- procedural failure
### Study Population

randomised 1200

<table>
<thead>
<tr>
<th></th>
<th>CAS</th>
<th>CEA</th>
</tr>
</thead>
<tbody>
<tr>
<td>consent withdrawn</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>ITT-pop</td>
<td>599</td>
<td>584</td>
</tr>
<tr>
<td>not treated</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>switched tx</td>
<td>13</td>
<td>6</td>
</tr>
<tr>
<td>PP-pop</td>
<td>585</td>
<td>577</td>
</tr>
<tr>
<td>EPD</td>
<td>172</td>
<td>413</td>
</tr>
<tr>
<td>yes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>no</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

TCT - Washington 2008
Primary Endpoint Results

any ipsilateral stroke and death between randomization and day 30

<table>
<thead>
<tr>
<th>primary endpoints</th>
<th>CAS (n=599)</th>
<th>CEA (n=584)</th>
</tr>
</thead>
<tbody>
<tr>
<td>primary endpoints</td>
<td>41</td>
<td>37</td>
</tr>
<tr>
<td>6.84%</td>
<td>6.34%</td>
<td></td>
</tr>
<tr>
<td>absolute difference (95% CI)</td>
<td>0.51% (-2.37 to 3.39%)</td>
<td>p = 0.09</td>
</tr>
<tr>
<td>odd ratio (95% CI)</td>
<td>1.09 (0.69 to 1.72)</td>
<td></td>
</tr>
</tbody>
</table>
Primary Endpoint Results

![Graph showing freedom from POE over days from randomisation. The graph compares CAS and CEA groups, with data points for each group listed in the table below.

<table>
<thead>
<tr>
<th>Days from Randomisation</th>
<th>Freedom from POE</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1.00</td>
</tr>
<tr>
<td>10</td>
<td>0.98</td>
</tr>
<tr>
<td>20</td>
<td>0.96</td>
</tr>
<tr>
<td>30</td>
<td>0.94</td>
</tr>
<tr>
<td>40</td>
<td>0.92</td>
</tr>
<tr>
<td>50</td>
<td>0.90</td>
</tr>
<tr>
<td>60</td>
<td>0.88</td>
</tr>
<tr>
<td>70</td>
<td>0.86</td>
</tr>
</tbody>
</table>

CAS: 589 582 580 558 558 558 558 558 558
CEA: 584 568 552 549 548 547 547 547
Primary Endpoint Results

Primary endpoint cluster

<table>
<thead>
<tr>
<th>Event rate (%)</th>
<th>CAS</th>
<th>CEA</th>
<th>odds ratio (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary endpoint cluster</td>
<td></td>
<td></td>
<td>1.09 (0.69 - 1.72)</td>
</tr>
<tr>
<td>Ipsilateral Stroke</td>
<td>6.68</td>
<td>5.99</td>
<td>1.12 (0.70 - 1.79)</td>
</tr>
<tr>
<td>Death</td>
<td>0.67</td>
<td>0.86</td>
<td>0.78 (0.15 – 3.64)</td>
</tr>
</tbody>
</table>

Secondary endpoints

<table>
<thead>
<tr>
<th>Event rate (%)</th>
<th>CAS</th>
<th>CEA</th>
<th>odds ratio (95%CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disabling^1 ipsilat. stroke or death</td>
<td>4.67</td>
<td>3.77</td>
<td>1.25 (0.71 - 2.22)</td>
</tr>
<tr>
<td>Disabling^1 ipsilateral stroke</td>
<td>4.01</td>
<td>2.91</td>
<td>1.39 (0.74 - 2.62)</td>
</tr>
<tr>
<td>Any stroke</td>
<td>7.51</td>
<td>6.16</td>
<td>1.24 (0.79 – 1.95)</td>
</tr>
<tr>
<td>Procedural failure^2</td>
<td>3.17</td>
<td>2.05</td>
<td>1.56 (0.71 – 3.56)</td>
</tr>
</tbody>
</table>
• Periprocedural stroke or death, plus ipsilateral ischemic stroke
  – CEA 8.8% +1.9%
  – CAS 9.5% +2.2%
\[\begin{align*}
1\% \text{ strokes/y}
\end{align*}\]

• the rate of recurrent ipsilateral ischemic strokes is similar for both treatment groups after 2 years

EVA-3S

French prospective randomized trial
EVA-3S

**Inclusion criteria**
- retinal or hemispheric TIA
- non-disabling stroke
- 60-99% stenosis
- plaque morphology irrelevant

**Exclusion criteria**
- m-Rankin scale ≥3
- non-atherosclerotic disease
- tandem stenosis
- bleeding disorder
- previous revascularization
- uncontrolled hypertension, DM, unstable angina
- contraindication to heparin, ticlopidine, clopidogrel
- life expectancy <2 years

JL Mas et al. Stroke, 2004; 35:e18-e21; NEJM 2006;355:1660-71
Trial enrolled patients from
Nov-2000 to Sep 2005
527 patients randomized
stopped due to
recommendation of
the safety committee

JL Mas et al. Stroke, 2004; 35:e18-e21; NEJM 2006;355:1660-71
527 Patients

262 assigned to CEA
- 1 declined
- 1 carotid occlusion
- 1 stroke before tx

257 CEA attempted
- 0/260 failure (0%)
- 260 CAS attempted
- 1 cross-over to CEA

265 assigned to CAS
- 1 declined
- 2 <60% stenosis
- 1 stroke before tx

260 CAS attempted
- 13/260 failure (5%)
- 2 cross-over to CAS

247 CAS completed

JL Mas et al. Stroke, 2004; 35:e18-e21; NEJM 2006;355:1660-71
<table>
<thead>
<tr>
<th>Outcome Event</th>
<th>CEA</th>
<th>CAS</th>
<th>unadjusted RR</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>nonfatal stroke</td>
<td>7 (2.7%)</td>
<td>23 (8.8%)</td>
<td>3.3 (1.4-7.5)</td>
<td>0.004</td>
</tr>
<tr>
<td>- sympt. &gt; 7d</td>
<td>6 (2.3%)</td>
<td>20 (7.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- nondisabling</td>
<td>6 (2.3%)</td>
<td>16 (6.1%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- disabling</td>
<td>1 (0.4%)</td>
<td>7 (2.7%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>death</td>
<td>3 (1.2%)</td>
<td>2 (0.8%)</td>
<td>0.7 (0.1-3.9)</td>
<td>0.68</td>
</tr>
<tr>
<td>- fatal stroke</td>
<td>2 (0.8%)</td>
<td>1 (0.4%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- other cause</td>
<td>1 (0.4%)</td>
<td>1 (0.4%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>any stroke or death</td>
<td>10 (3.9%)</td>
<td>25 (9.6%)</td>
<td>2.5 (1.2-5.1)</td>
<td>0.01</td>
</tr>
<tr>
<td>any disabling stroke or death</td>
<td>4 (1.5%)</td>
<td>9 (3.4%)</td>
<td>2.2 (0.7-7.2)</td>
<td>0.26</td>
</tr>
<tr>
<td>TIA</td>
<td>2 (0.8%)</td>
<td>6 (2.3%)</td>
<td>3.0 (0.6-14.6)</td>
<td>0.28</td>
</tr>
<tr>
<td>MI</td>
<td>2 (0.8%)</td>
<td>1 (0.4%)</td>
<td>0.5 (0.04-5.4)</td>
<td>0.62</td>
</tr>
</tbody>
</table>

JL Mas et al. Stroke, 2004; 35:e18-e21; NEJM 2006;355:1660-71
EVA-3S

Unbalanced Preconditions

12 CAS = 5 CAS + 35 other stentings or 0 CAS + proctoring

JL Mas et al. Stroke, 2004; 35:e18-e21; NEJM 2006;355:1660-71
EVA-3S

How to interpret this trial?

Recruitment of Operators

16% of pts. tx by interventionalist with >50 CAS
45% of pts. tx by interventionalists with < 50 CAS
39% of pts. tx by physicians in training

JL Mas et al. Stroke, 2004; 35:e18-e21; NEJM 2006;355:1660-71
EVA-3S

How to interpret this trial?

Severe Complications

- fatal stroke: CAS 50% lower than CEA
- MI: CAS 50% lower than CEA
- death: CAS 20% lower than CEA

Even CAS beginners have a better outcome with severe complications !!!

JL Mas et al. Stroke, 2004; 35:e18-e21; NEJM 2006;355:1660-71
EVA-3S 4-Y FU Data

Periprocedural and non-periprocedural ipsilateral stroke or death

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Periprocedural</th>
<th>Non-periprocedural</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEA</td>
<td>6.2%</td>
<td>3.9%</td>
<td>+2.3%</td>
</tr>
<tr>
<td>CAS</td>
<td>11.1%</td>
<td>9.6%</td>
<td>+1.5%</td>
</tr>
</tbody>
</table>

Mas: “Carotid stenting is as effective as carotid endarterectomy for middle-term prevention of ipsilateral stroke, but the safety of carotid stenting needs to be improved before it can be used as an alternative to carotid endarterectomy in patients with symptomatic carotid stenosis,”

CREST …
CREST

Total Population - 30 day Events

n = 1,479

Incidence %

DEATH/STROKE/MI
DEATH/STROKE
DEATH/MAJOR STROKE

Total popn
Asymptomatic
Symptomatic

3.9%
6.1%
CREST

Total Population Outcomes vs Age

n = 1479

- 1.5% (n=205) <60 yrs
- 2.2% (n=457) 60-69 yrs
- 5.4% (n=665) 70-79 yrs
- 11.3% (n=152) 80+ yrs

P < 0.05 for 80+ and 70-79 yrs compared to all other groups.
CREST

70-79 yrs Age Group 30 day Events

Asymptomatic (n = 665)

Incidence %

6.8%  5.6%  2.4%

Asymptomatic Guideline 3%

Total popn  Asymptomatic  Symptomatic
SAPPHIRE ...
SAPPHIRE

Medical and surgical high risk patients
symptomatic and asymptomatic

**Primary Endpoints**

- Death, any Stroke, and MI at 30-days post-procedure
- Death and Ipsilateral Stroke between 31-days and 12-months post-procedure

MI rate higher with CEA vs CAS
SAPPHIRE

723 pts with ICA stenosis

CAS
- 408 pts
  - Surgical refusal

167 pts
  - Randomized

CEA
- 167 pts
  - Randomized

7 pts
  - Interventional refusal

30-day morbidity & mortality

5.8%

12.6%

J. Yadav et al.; NEJM, 2004
## SAPPHIRE

**1 year data randomized patients**

<table>
<thead>
<tr>
<th>Events</th>
<th>Stent (159 pts)</th>
<th>CEA (151 pts)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Death:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 (6.9%)</td>
<td>19 (12.6%)</td>
<td>0.12</td>
<td></td>
</tr>
<tr>
<td><strong>Stroke:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 (5.7%)</td>
<td>11 (7.3%)</td>
<td>0.65</td>
<td></td>
</tr>
<tr>
<td><strong>Major Ipsilateral:</strong></td>
<td>0 (0.0%)</td>
<td>5 (3.3%)</td>
<td>0.03*</td>
</tr>
<tr>
<td>Major Non-Ipsilateral:</td>
<td>1 (0.6%)</td>
<td>1 (0.7%)</td>
<td>&gt;0.99</td>
</tr>
<tr>
<td>Minor Ipsilateral:</td>
<td>6 (3.8%)</td>
<td>3 (2.0%)</td>
<td>0.50</td>
</tr>
<tr>
<td>Minor Non-Ipsilateral:</td>
<td>3 (1.9%)</td>
<td>3 (2.0%)</td>
<td>&gt;0.99</td>
</tr>
<tr>
<td><strong>MI (Q or NQ)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 (2.5%)</td>
<td>12 (7.9%)</td>
<td>0.04*</td>
<td></td>
</tr>
<tr>
<td>Q-Wave MI</td>
<td>0 (0.0%)</td>
<td>2 (1.3%)</td>
<td>0.24</td>
</tr>
<tr>
<td>Non-Q-Wave MI</td>
<td>4 (2.5%)</td>
<td>10 (6.6%)</td>
<td>0.10</td>
</tr>
<tr>
<td><strong>MAE:</strong></td>
<td>19 (11.9%)</td>
<td>30 (19.9%)</td>
<td>0.06</td>
</tr>
</tbody>
</table>

* Significant Difference
### SAPPHIRE

1 year data randomized patients

<table>
<thead>
<tr>
<th>Events</th>
<th>Stent (159 pts)</th>
<th>CEA (151 pts)</th>
<th>p Value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MAE without non-neuro deaths &gt;30 days</strong></td>
<td>9 (5.7%)</td>
<td>19 (12.6%)</td>
<td>&lt;0.05*</td>
</tr>
<tr>
<td><strong>MAE without MI or non-neuro deaths &gt;30 days</strong></td>
<td>8 (5.0%)</td>
<td>11 (7.3%)</td>
<td>0.48</td>
</tr>
</tbody>
</table>

* Significant Difference
SAPPHIRE: Cumulative Percentage of Target Lesion Revascularization at 1080 Days

**Randomized Patients**

<table>
<thead>
<tr>
<th>Days</th>
<th>0</th>
<th>360</th>
<th>720</th>
<th>1080</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEA</td>
<td>167</td>
<td>150 (90%)</td>
<td>134 (80%)</td>
<td>112 (67%)</td>
</tr>
<tr>
<td>Stent</td>
<td>167</td>
<td>161 (96%)</td>
<td>154 (92%)</td>
<td>139 (83%)</td>
</tr>
</tbody>
</table>
SAPPHIRE: Cumulative Percentage of MAE at 1080 Days

Randomized Patients

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<tr>
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LR p = 0.231

Randomized Patients

TCT - Washington 2008
Strokes Prevented per 1000 CEA/CAS

SAPPHIRE asymp with 6% risk 22/1000 at 5 years

ASYMP

SYMPTOMATIC

source: ACAS, ACST, ECST & NASCET
„Contrary to what is generally assumed, no systematic evidence exists to support the preferential use of CEA over CAS or vice versa“

Problems:
Access: diffuse atherosclerosis, stenosis, occlusion, tortuosity
Lesion characteristic: calcification, fresh thrombus, string sign
Cerebral protection: placement, ischemic reactions, retrieval ...
TCT - Washington 2008

Age

CREST

Stroke

<60  61-69  70-79  >80
Experience

Learning Curve often underestimated!
US registries
EVA-3S
SPACE
Not within the AHA limits of
3% asymptomatic stenosis
6% symptomatic stenosis

Complication rate is decreasing with more than 100 to 150 CAS cases!
Conclusions
CAS Limitations - What we can improve

- evidence of benefit
- dedicated devices
- experience of interventionalists

CAS Limitations - What we must respect

- patient’s age and anatomy
Velocity of earth 108,000 km/h
Our journey during this talk 36,000 Km
Thank you for flying with me!