A new life for Carotid Stenting? – the ACST-2 trial

Patients at higher stroke risk, having better treatments and long term follow up

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Disclosure

Alison Halliday

I have no potential conflicts of interest
Interventions for Carotid Stenosis

- Long-term evidence is of most importance
1. Prior symptoms or brain infarcts may identify higher-risk patients with ‘asymptomatic’ carotid stenosis
ACST-1

3120 patients without *recent ipsilateral* symptoms from tight carotid artery stenosis

Medical treatment VS Medical Treatment alone + early operation (CEA)

But, many patients’ stenoses were only found because unrelated symptoms needed investigation...
‘Asymptomatic’ - a misnomer?
– many of the patients in ACST-1 had previous stroke-type symptoms or CT brain infarcts
Group 1 (n=1331) – definite symptoms/infarcts

Group 2 (n=1002) – definitely none

Excluded patients (n=787) had no imaging (this was not compulsory) or answered ‘uncertain’ to the question about symptoms
Risk of any stroke

% risk
[& 95% CI]

Years

P=0.001

Group 1
18.6%

Group 2
12.8%

7.0%
10.0%
Risk of any stroke or vascular death

% risk (& 95% CI)

Years

Group 1

Group 2

P=0.007
2. ICSS - long-term evidence
...changing the future for CAS
ICSS - why operate if stenting works as well or better?
ICSS 4 year follow up

post-procedure fatal/disabling stroke

ipsilateral stroke

A

HR 1.06 (95% CI 0.72–1.57), p=0.77

F

HR 1.29 (95% CI 0.74–2.24), p=0.36
ICSS - 4 year follow up in 1700 patients
(Lancet, Oct 2014)

Figure 3: Functional ability measured by the modified Rankin Scale at the end of follow-up*
ICSS 4 yr follow up, symptomatic patients: *Lancet (14th Oct 2014)*

CEA vs CAS...

- ‘equivalent long-term disability’
- ‘quality of life is similar (after CAS) compared with endarterectomy’
3. Better procedural outcomes for CEA and CAS
Procedural hazards of CEA and CAS are falling in recent trials and registries.
Open cell vs closed-cell stent design

Closed–cell safer?
Newer FLOW-reversal systems and direct puncture

Reduce emboli, early results now comparable to CEA
4. The ACST-2 Trial - Higher risk patients, but better medical and interventional treatments with long term follow up
the ACST-2 research question..

For asymptomatic patients with tight stenosis requiring intervention:

Which procedure is generally better (in addition to good medical treatment)?:

carotid surgery (CEA)
or
carotid stenting (CAS)?
**Consider for ACST-2:** when procedure clearly thought necessary by physician and patient

**Randomise if:**
arch imaging confirms suitable for both procedures
ACST-2: Overview

• First patient randomised: 2008

• Some patients are now in their 7th year of follow up

• 113 Centres in 28 countries
ACST-2 Recruitment - almost 1700 patients

Target 3600 by end of 2019

1695
ACST-2: Experienced collaborators

207 centre/operators’ experience to 2014:
(73 do both procedures)

<table>
<thead>
<tr>
<th></th>
<th>CEA</th>
<th>CAS</th>
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<tbody>
<tr>
<td>Total procedures</td>
<td>118,287</td>
<td>45,693</td>
</tr>
<tr>
<td>Median Experience [Years]</td>
<td>17</td>
<td>11</td>
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<tr>
<td>Median Procedures/operator</td>
<td>346</td>
<td>150</td>
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</table>
ACST-2

Sex, Age, Co-morbidities:

Men 70%
Mean age 72 years
Ischaemic heart disease 36%
Diabetic 30%
Renal impairment 6%

* ACST-1: mean age 68, diabetes 20%
ACST-2

Stroke risk factors:
Atrial Fibrillation 6%
Age >75 yrs 39%
Previous stroke symptoms or infarct 43%

ACST-1: 20% >75 yrs, 41% previous symptoms or infarct
# ACST-2 - Stents and CPDs (all CE-marked)

<table>
<thead>
<tr>
<th>Stent</th>
<th>CP Device</th>
<th>Type</th>
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<tbody>
<tr>
<td>Boston Wallstent</td>
<td>Emboshield</td>
<td>Filter</td>
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<tr>
<td>Cordis Precise</td>
<td>Filterwire</td>
<td>Filter</td>
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<tr>
<td>Ev3 Protégé® RX</td>
<td>Mo.Ma</td>
<td>Prox occ</td>
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<td>Cristallo Ideale</td>
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<tr>
<td>Abbott RX Acculink</td>
<td>AngioGuard</td>
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<tr>
<td>Abbott Xact</td>
<td>Accunet</td>
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<tr>
<td>Boston Adapt</td>
<td>Gore Flow Reversal</td>
<td>Prox occ</td>
</tr>
<tr>
<td>Optimed Sinus Carotid RX</td>
<td>Twin One</td>
<td>Dist balloon</td>
</tr>
</tbody>
</table>
ACST-2: Drug therapy at entry and at 2013 follow up

85% lipid-lowering, now 88%
88% anti-hypertensive, now 90%
99% anti-thrombotic, still 99%

Drug names/dose recorded each year directly from patient
Anti-thrombotic = Anti-platelet or anti-coagulant, includes patients on more than 1 Anti-platelet agent
ACST-2: Open vs Endovascular treatment

**Blinded procedural outcomes for >1000 patients**

Interventional fatal or disabling stroke  **1.0%**

Lower than for CEA in ACST-1:  **1.7%**
Summary:

• Prior symptoms or brain infarcts may identify higher-risk patients with ‘asymptomatic’ carotid stenosis
• ACST-1 had many patients with these ‘higher-risk’ characteristics
• ACST-2 may have an even higher risk population; older patients, 50% more have diabetes, and more than 40% had prior symptoms or brain infarcts
• To reduce their long-term stroke risk effectively, enter them in ACST-2
Future best evidence will come from ACST-2, SPACE 2, ACT1, CREST-2, ECST-2 - all the Large Trials collaborating....

We will then be able to determine the impact of:

- current medical treatment (mostly more statins)
- greater operator experience (especially with CAS)
- newer devices and techniques
- on older, but often fitter patients
ACST-2
A very European Trial
– Join us and create the future evidence!

www.acst.org.uk
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