



CONTROVERSIES & UPDATES IN VASCULAR SURGERY

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Which operator experience for a safe carotid stenting?

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Background

- A few studies assessed the relationship between operator experience and complication after CAS
- Several definitions of « experience »
 - Lifetime experience vs period volume
 - Carotid stenting vs. Stenting
- RCTs in patients with symptomatic carotid disease showed inferior results of stenting compared with surgery with regard to the 30-day risk of stroke or death of treatment
 - it is crucial to establish which factors are associated with a high risk of stroke after carotid stenting

Operator experience in CSTC

- The Carotid Stenosis Trialists' Collaboration (CSTC) is a pooled individual patient database from EVA 3-S, SPACE, ICSS (stenting, n=1546)
- Operator experience required to join the trials
 - EVAS 3S: ≥ 12 CAS (or 35 supraaortic trunks stenting procedures including 5 CAS) or supervised procedure
 - SPACE: ≥ 25 CAS (including siphon) or supervised procedure
 - ICSS: ≥ 50 stenting procedures including at least 10 CAS or proctored procedure

Methods and statistical analysis

- Operator experience
 - CAS experience
 - ❖ Operator lifetime experience
 - ❖ Operator lifetime experience before joining the trial
 - ❖ Annual in-trial operator volume
 - Stenting procedure experience excluding the carotid separately
- Outcome event
 - Any stroke or death occurring within 30 days after treatment
- Per-Protocol analysis including patients who received the randomly allocated treatment

Results

- Available data
 - Number of lifetime CAS procedures in 76% (EVA3S and ICSS)
 - Number of CAS procedures before the trials in 85% (all CSTC patients)
 - Number of stenting procedures excluding the carotid in 73% (EVA 3S and ICSS)
 - Annual in-trial volume in 92% (all CSTC patients)
- Risk of stroke or death within 30 days of CAS was 7.8%
- The risk did not differ according to trials periods-

■ First period	7.7%	RR=1
■ Second period	7.1%	RR=0.92 (0.61-1.40)
■ Third period	8.4%	RR=1.09 (0.73-1.62)

Any stroke or death within 30 days

	Events n(%) / Total	crude RR (95% CI)
Lifetime operator experience		
Number of CAS procedures at the time of procedure		
Tertile 3 (>37)	26 (9.1%) / 287	1
Tertile 2 (17 to 37)	20 (7.4%) / 270	0.82 (0.47-1.43)
Tertile 1 (0 to 16)	22 (7.9%) / 279	0.87 (0.51-1.50)
Number of CAS procedures before trials		
≥25	61 (7.3%) / 836	1
10 to 24	25 (8.5%) / 294	1.17 (0.75-1.82)
<10	26 (8.9%) / 292	1.22 (0.79-1.89)
Number of stenting procedure excluding the carotid		
Tertile 3 (>224)	25 (9.5%) / 264	1
Tertile 2 (51 to 224)	18 (8.5%) / 212	0.90 (0.50-1.60)
Tertile 1 (0 to 50)	24 (7.6%) / 317	0.80 (0.47-1.37)

Any stroke or death within 30 days

	Events n(%) / Total	Crude RR (95% CI)
Annual in-trial operator CAS volume		
Tertile 3 (>5.6)	28 (5.1%) / 552	1
Tertile 2 (3.2 to 5.6)	41 (8.4%) / 488	1.66 (1.04-2.64)
Tertile 1 (\leq 3.2)	51 (10.1%) / 506	1.99 (1.27-3.10)

Any stroke or death within 30 days

	Events n(%) / Total	Crude RR* (95% CI)
Annual in-trial operator CAS volume		
Tertile 3 (>5.6)	28 (5.1%) / 552	1
Tertile 2 (3.2 to 5.6)	41 (8.4%) / 488	1.93 (1.14-3.27)
Tertile 1 (\leq 3.2)	51 (10.1%) / 506	2.30 (1.36-3.87)

Adjusted for: age, sex, hypertension, history of coronary artery disease, contralateral severe carotid stenosis or occlusion, use of cerebral protection devices, stent design and source trial

- Results were not modified after exclusion of procedures performed under supervision

Operator experience in USA

- CREST lead-in phase
 - Years of experience and number of procedures before CREST were not associated with procedural complications
- CAPTURE registry
 - no association between procedural complication and operator lifetime experience (stenting plus carotid angiograms)
- US Medicare (24701 patients and 2339 operators)
 - patients treated by low-volume operators had a higher risk of 30-day mortality compared with those treated by high-volume operators independently of operator experience at the time of the procedure

Discussion and Conclusions

- In CSTC analysis
 - Operator lifetime experience was not associated with the 30-day risk of stroke or death after CAS
 - The 30-day risk of stroke or death was lower in patients treated by operators with the highest annual in-trial volume (5.1%)

- These results suggests that regular practice in carrying out the procedure matters more than individual total experience

- Our study suggest that CAS should only be performed by operators that can achieve at least 6 CAS procedures per year.





