

# Carotid stent failure as a predictor for periprocedural stroke after carotid artery stenting: a substudy of the International Carotid Stenting Study (ICSS)

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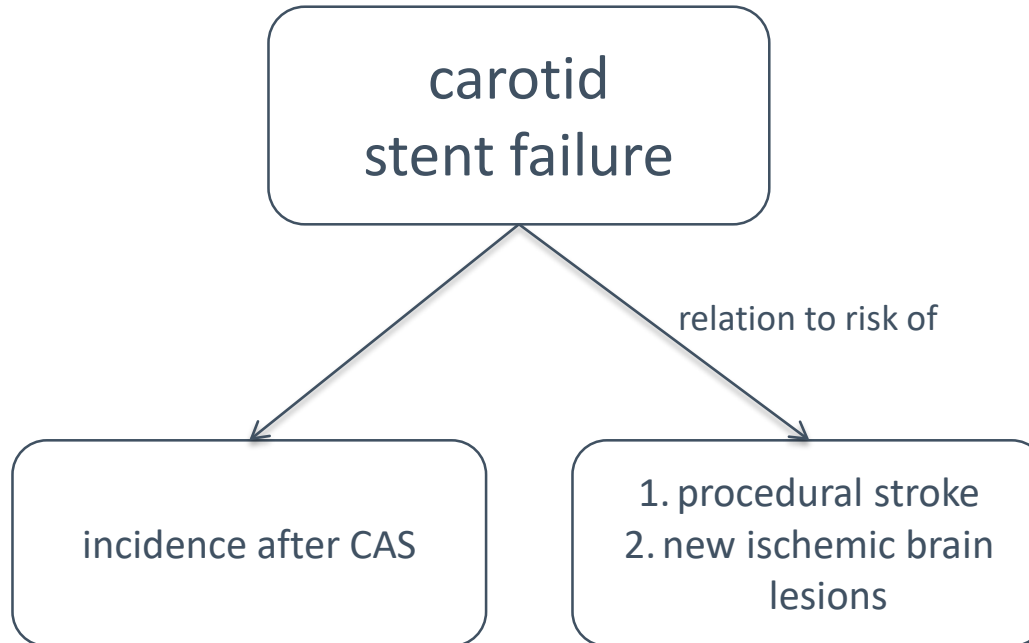
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I do not have any potential conflict of interest

# Background



<sup>1</sup> Huibers 2015, Eur J Vasc Endovasc Surg

# Methods

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## Image quality

- 3pt scale: good vs fair (minor artifacts) vs poor (severe artifacts)<sup>4</sup>

## Study design

- 2 observers blinded to clinical outcome

## Outcome measures

- any procedural (30-day) stroke
- new ischemic brain lesions<sup>5</sup>

## Statistics

- Interobserver reliability → ICC + 95% CI
- Associations stent failure and outcome measures → binomial logistic regression

<sup>4</sup> Lee 2015, Clin Neuroradiol

<sup>5</sup> Bonati 2010, Lancet Neurol

# Results

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## Quality of scans:

- good [11%]
- fair [85%]
- poor [4%]

## Interobserver reliability

- stent fracture: perfect                      ICC 1.00 (1.00-1.00)
- in-stent lesions: excellent                      ICC 0.90 (0.85-0.93)
- residual stenosis: excellent                      ICC 0.83 (0.75-0.88)

# Results

8/92 pts [9%] procedural stroke

## 3) Separate variables vs stroke

	PATIENTS WITH STROKE			
	N patients (total=92)	N strokes (%)	Unadjusted OR (95% CI)	P-value
<b>IN-STENT LESION</b>				
Not present	73	5 (7)	1.00	
Any in-stent lesion	19	3 (16)	2.72 (0.81-9.08)	0.11
<b>RESIDUAL STENOSIS</b>				
Not present	69*	5 (7)	1.00	
Any residual stenosis	21	2 (10)	1.92 (0.51-7.24)	0.34
<b>STENT FRACTURE</b>				
Not present	92	8 (9)	1.00	
Present	0	-	-	-

# Results (2): DWI lesions

## 4) Stent failure vs new MR-DWI lesions

48/92 pts [52%] included in ICSS-MRI substudy

11/48 pts [23%] new MR-DWI lesion

	PATIENTS WITH NEW MR-DWI LESIONS			
	N patients (total=48)	N DWI+ (%)	Unadjusted OR (95% CI)	P-value
<b>ANY STENT FAILURE (RS &gt;30%)</b>				
Not present	31	7 (23)	1.00	
Present	17	4 (24)	1.06 (0.26-4.29)	0.94
<b>IN-STENT LESION</b>				
Not present	40	9 (23)	1.00	
Any in-stent lesion	8	2 (25)	1.66 (0.42-6.65)	0.47
<b>RESIDUAL STENOSIS</b>				
Not present	38*	8 (21)	1.00	
Any residual stenosis	9	2 (22)	1.07 (0.19-6.19)	0.94
<b>STENT FRACTURE</b>				
Not present	48	11 (23)	1.00	
Present	0	-	-	-

# Discussion

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## Conclusions

### 1) Stent failure

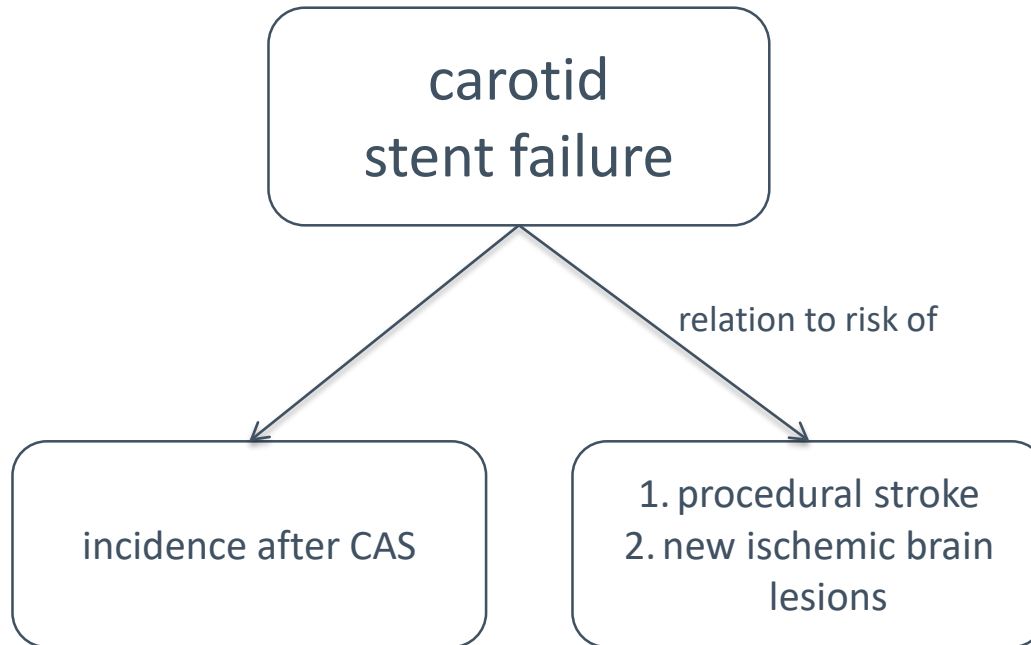
- in **40%** of ICSS CAS pts
- excellent interobserver reliability

2) Underpowered → no definite conclusions on predictive value of stent failure for procedural stroke, or new ischemic brain lesions

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hypo- or hyperattenuating lesions of any size present alongside the carotid stent wall<sup>2</sup>

significant ( $\geq 50\%$ ) or non-significant ( $< 50\%$ )

$\geq 30\%$  narrowing of the smallest part of the carotid stent<sup>3</sup>

significant ( $\geq 50\%$ ) or non-significant (30-50%)

any disruption of stent integrity

## Combined endpoint vs stroke

	PATIENTS WITH STROKE			
	N patients (total=92)	N strokes (%)	Unadjusted OR (95% CI)	P-value
<b>ANY STENT FAILURE (RS &gt;30%)</b>				
Not present	55	4 (7)	1.00	
Present	37	4 (11)	1.55 (0.36-6.61)	0.56
<b>ANY STENT FAILURE (RS &gt;50%)</b>				
Not present	72	5 (7)	1.00	
Present	20	3 (15)	2.37 (0.51-10.89)	0.27

## Separate variables vs stroke

	PATIENTS WITH STROKE			
	N patients (total=92)	N strokes (%)	Unadjusted OR (95% CI)	P-value
<b>IN-STENT LESION</b>				
Not present	73	5 (7)	1.00	
Any in-stent lesion	19	3 (16)	2.72 (0.81-9.08)	0.11
non-significant (30-50%)	17	2 (12)	1.81 (0.32-10.25)	0.50
significant (>50%)	2	1 (50)	13.6 (0.74-251.36)	0.08
<b>RESIDUAL STENOSIS</b>				
Not present	69*	5 (7)	1.00	
Any residual stenosis	21	2 (10)	1.92 (0.51-7.24)	0.34
non-significant (30-50%)	19	1 (5)	0.71 (0.08-6.48)	0.76
significant (>50%)	2	1 (50)	12.8 (0.69-236.71)	0.09
<b>STENT FRACTURE</b>				
Not present	92	8 (9)	1.00	
Present	0	-	-	-

## Stent failure vs DWI lesions

	PATIENTS WITH NEW MR-DWI LESIONS			
	N patients (total=48)	N DWI+ (%)	Unadjusted OR (95% CI)	P-value
<b>ANY STENT FAILURE (RS &gt;30%)</b>				
Not present	31	7 (23)	1.00	
Present	17	4 (24)	1.06 (0.26-4.29)	0.94
<b>ANY STENT FAILURE (RS &gt;50%)</b>				
Not present	41	10 (24)	1.00	
Present	7	1 (14)	0.52 (0.06-4.82)	0.56
<b>IN-STENT LESION</b>				
Not present	40	9 (23)	1.00	
Any in-stent lesion	8	2 (25)	1.66 (0.42-6.65)	0.47
non-significant (30-50%)	7	1 (14)	0.57 (0.06-5.41)	0.63
significant (>50%)	1	1 (100)	-	-
<b>RESIDUAL STENOSIS</b>				
Not present	38*	8 (21)	1.00	
Any residual stenosis	9	2 (22)	1.07 (0.19-6.19)	0.94
non-significant (30-50%)	9	2 (22)	1.07 (0.19-6.19)	0.94
significant (>50%)	0	-	-	-
<b>STENT FRACTURE</b>				
Not present	48	11 (23)	1.00	
Present	0	-	-	-