Carotids: when to treat, when to watch

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MEDICINE *of* THE HIGHEST ORDER

UR MEDICINE

2 Sources:

- 2011 Guideline on the management of patients with extracranial carotid and vertebral artery disease

- 2017 Clinical practice guidelines of the European Society for Vascular Surgery

Asymptomatic Carotid disease screening

DUS is recommended as the frontline test

- Low cost, low risk, accessible
- For asymptomatic patients with *suspected* disease
- Is of uncertain benefit for those without
  - Clinical manifestations, or
  - Risk factors

Asymptomatic Carotid Screening

Follow-up DUS *annually* is reasonable for

- Postprocedure followup
- Evaluate response to treatment in those with > 50% stenosis

Asymptomatic Carotid Screening
Don’t forget the basics!

Smoking cessation

Hypertension control

Hyperlipidemia management

ASA

Diabetes- “strict glycemic control”

Which Asymptomatic patients should be referred?

>70% stenosis by non-invasive study

The rate of stroke/MI/Death needs to be < 3%

- Healthy patient
- Experienced revascularization team
  - While the surgeon is a key part, intraop and postoperative management are very important

There is no role for revascularization in those with

- Chronic total occlusion
- < 50% stenosis
- Severe disability

Symptomatic Carotid Stenosis

Neurologic event (stroke or TIA) within 6 months

DUS + another modality (MRA, CTA, Angiography)

- Confirm the degree of stenosis
- Anatomic data to determine options

> =70% noninvasive

- 50-69% noninvasive may benefit but NNT much higher

Symptomatic Carotid Stenosis

Interventions should have complication < 6%

CEA remains the gold standard

- CAS alternative based on
  - Comorbidities eg significant CAD, CHF, COPD
  - Prior RTX to the neck
  - Anatomic factors e.g. high bifurcation

Symptomatic Carotid stenosis and CEA

Carotid endarterectomy is one of the best studied surgical treatments.

- NASCET:
  - 70-99% stenosis-26% 2 year stroke risk vs 9% after CEA.
    - NNT= 6 (3 for >75y/o)
  - 50-69% stenosis 22% 5 year stroke risk vs 15.7% after CEA (p=0.045), 1100 pts in each arm-
    - NNT=15
  - Durability (death/disabling stroke)
    - 2.6% at 90 days, 6.7% at 8 years

Asymptomatic Carotid Stenosis and CEA

- ACAS:
  - >60% stenosis-11% vs 5% 5 year stroke risk-NNT 83

- ACST: 10.9% vs 6.9% 5 year stroke risk (including perioperative events)

The estimated 1 year risk with current medical therapy (0.34-1.13%)

- This includes statins and antiplatelets

Carotid Stenting-CREST[1]

Randomized trial comparing CEA to CAS

No medical arm

- Estimated ipsilateral stroke rate for medical therapy 1.68% (CI 1.34-2.11) across 26 cohorts[2]

No significant difference between CEA and CAS in CVA+Death+MI outcome

- Higher MI in CEA
- Higher CVA in CAS

1. Brott T et al NEJM 2010;363:11-23.
2. Raman G et al Ann Int Med 2013;158:676-85

CREST

	30d		4y	
MI	CAS	CEA	CAS	CEA
Asymp	1.2	2.2		
Symp	1.0	2.3		
CVA				
Asymp	2.5	1.4	4.5	2.7
Symp	5.5	3.2	7.6	6.4
CVA+MI+Death				
Asymp	3.5	3.6	5.6	4.9
Symp	6.7	5.4	8.6	8.4

Brott T et al NEJM 2010;363:11-23.

CAS vs CEA

CAS	CEA
High bifurcation > C23	Most patients
Prior Radiation	Age >80
Prior Surgery/Restenosis	Asymptomatic
Contralateral Occlusion/Poor collateral	CRI
Known significant CAD	
Already on dual antiplatelet	

2011 Recommendations

Symptomatic

- 70% stenosis noninvasive or 50% angio
- Risk of CVA + death < 6%
- CAS is alternative to CEA
- Optimally w/in 2 weeks

Asymptomatic

- CEA if stenosis >70% and risk of CVA + MI + death is "low"
- CAS "might" be considered if >60% angio/>70% duplex but comparison with best medical therapy is not established

My Carotid Workup

Take a good history- symptomatic or not ?

A good physical (NIHSS)

Does the MRI (DWI) show evidence of stroke ?

CTA arch to vertex

- Arch/Origins
- Bifurcation
  - Degree of stenosis
  - Level
- Intracranial
  - Stenosis (Use WASID to determine)
  - Collateral (ACoA and contralateral A1, PCoA, Ophthalmic

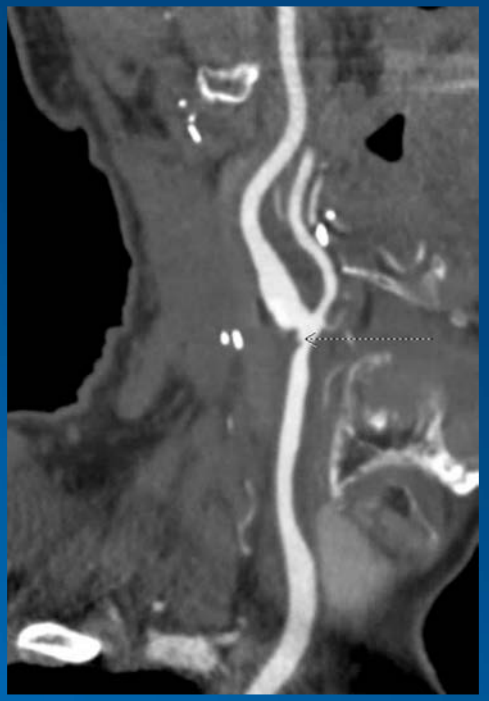
66y/o with R side sensory event

Presented 7/2017, was found to have 40-50% stenosis of L CCA-ICA

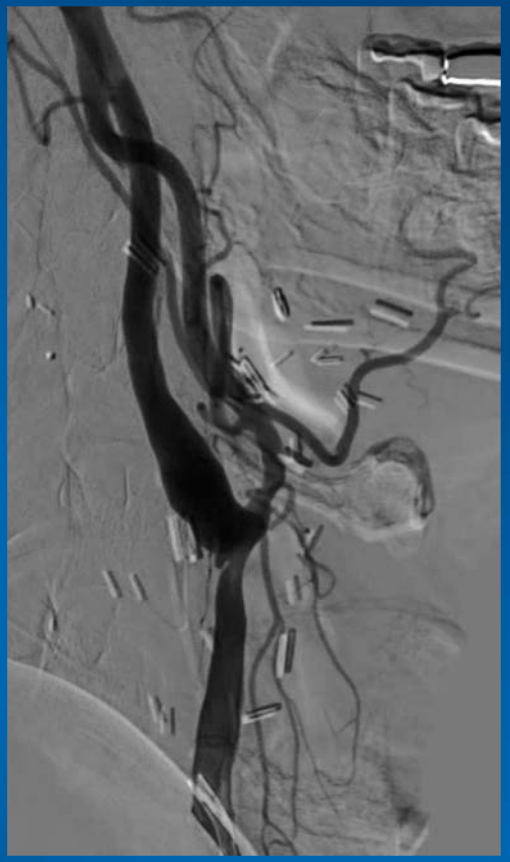
-MRI confirmed L DWI changes

-H/o LN bx and RTX for Tongue CA on L

Was maintained on DAPT x 3months, then stopped. He had another event in early 2018 and was put back on DAPT. He had a third event after stopping the DAPT briefly.



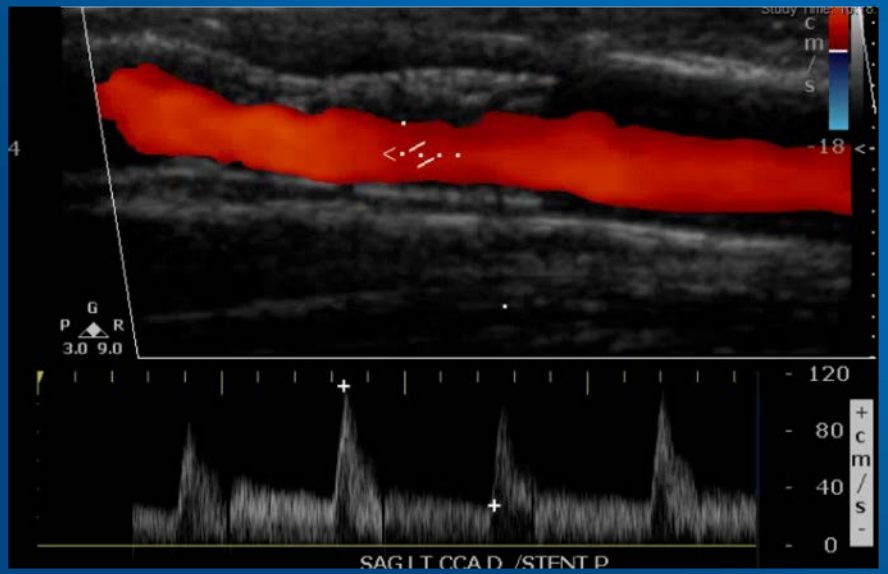
Pre CAS



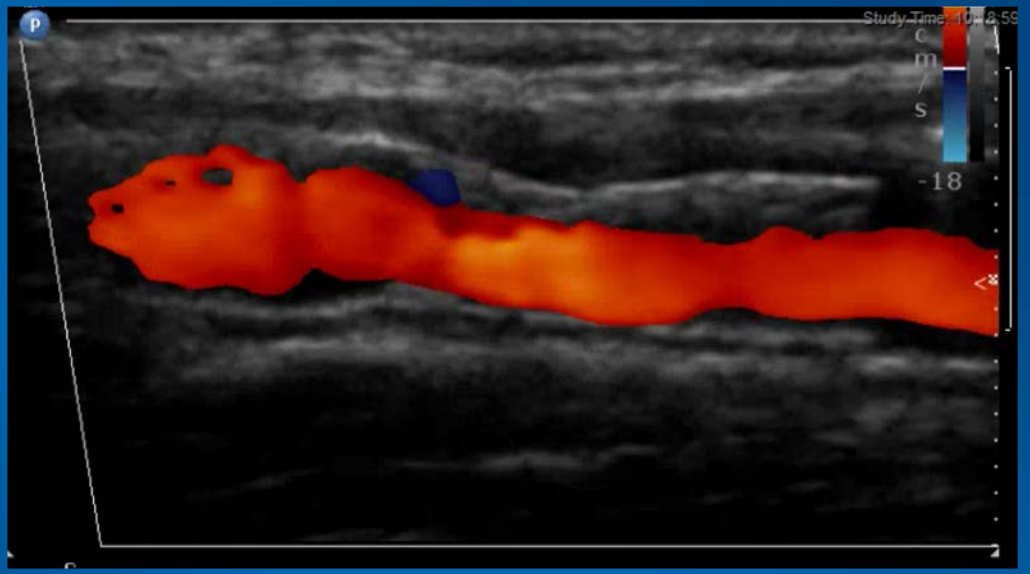
Post CAS

10 month DUS

PSV 118 ICA



PSV 141 CCA



62y/o with transient speech arrest/facial droop

Episode lasted 2 min

Very active (on worksite when this happened)

No meds

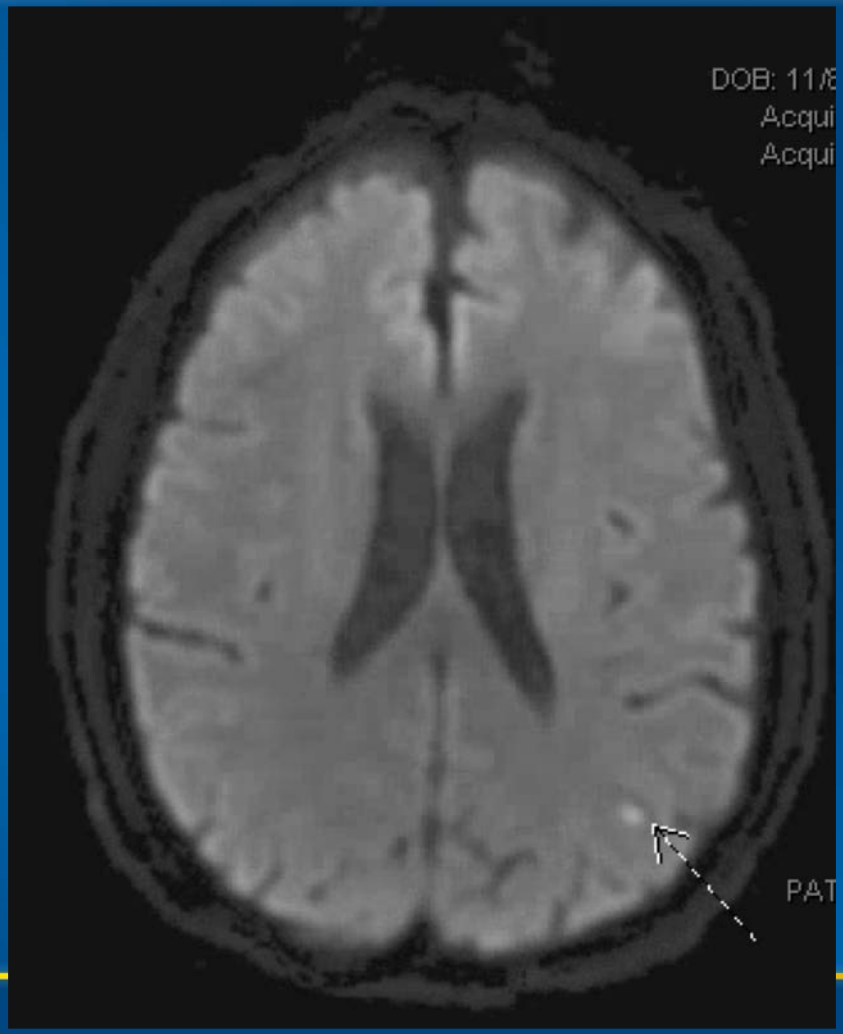
Smoker

NIHSS 0 on arrival

NCCT: negative

CTA: next slide (no LVO)

MRI: punctate DWI in L P lobe



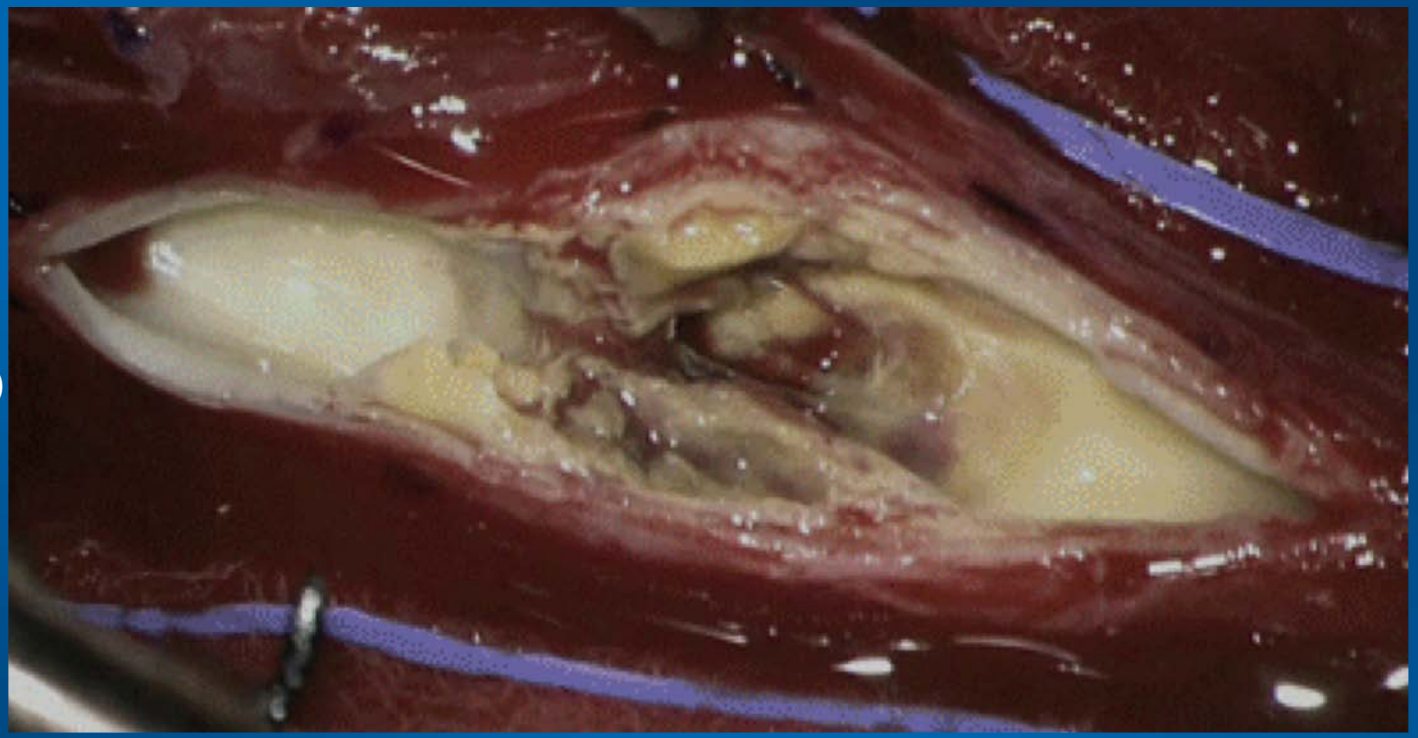

r Tilt: 0


FOR STROKE
1572
Tilt: 0

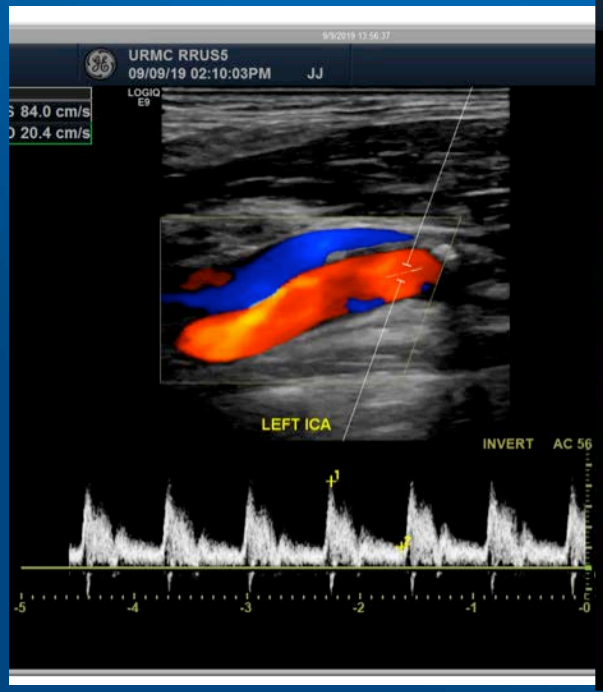
A great candidate for CEA

1. Low bifurcation
2. Focal stenosis
3. Excellent collateral

This patients stump pressure was 122 (>35-40)



Followup U/S 1 year



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URMC RRUS5
09/09/19 01:56:37PM JJ

	Right			Left		
	PS	ED	AC	PS	ED	AC
Prox CCA	82.1cm/s	13.9cm/s	57deg	81.1cm/s	10.6cm/s	45deg
Mid CCA	88.2cm/s	13.8cm/s	60deg	71.3cm/s	14.6cm/s	56deg
Dist CCA	69.9cm/s	16.0cm/s	60deg	89.8cm/s	15.7cm/s	56deg
Prox ICA	61.5cm/s	13.4cm/s	59deg	102.7cm/s	22.0cm/s	60deg
Mid ICA	63.9cm/s	17.2cm/s	58deg	65.8cm/s	12.1cm/s	45deg
Dist ICA	63.4cm/s	16.2cm/s	51deg	51.0cm/s	16.8cm/s	45deg
Prox ECA	82.4cm/s	10.3cm/s	53deg	82.8cm/s	10.2cm/s	48deg
VERT	34.9cm/s	8.3cm/s		49.3cm/s	6.1cm/s	
ICA/CCA	0.9			1.1		

Normal PSV for ICA < 125cm/s

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