Endovascular Mesenteric Arterial Reconstruction
Tips and Techniques

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June 15, 2018
Seattle, WA

PACIFIC NORTHWEST ENDOVASCULAR CONFERENCE

PNEC-SEATTLE.ORG

DISCLOSURE

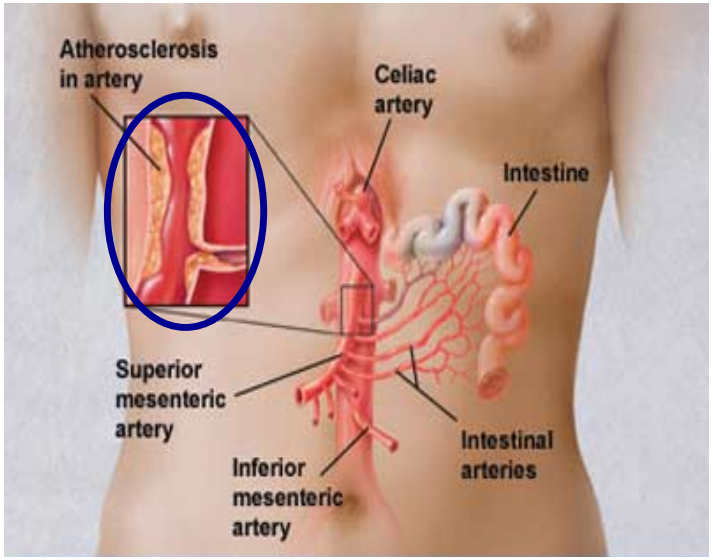
Wayne Zhang, MD

- **No relevant financial relationship reported**

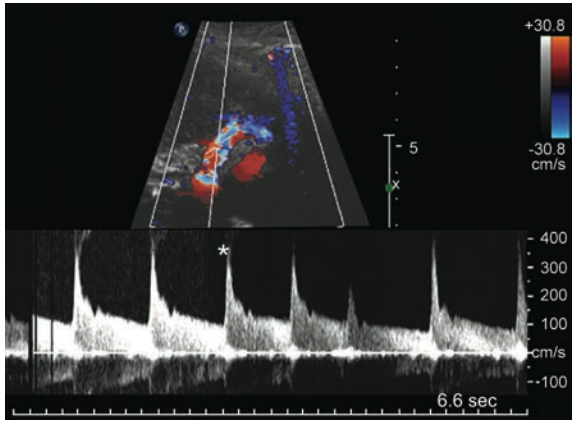
Etiologies

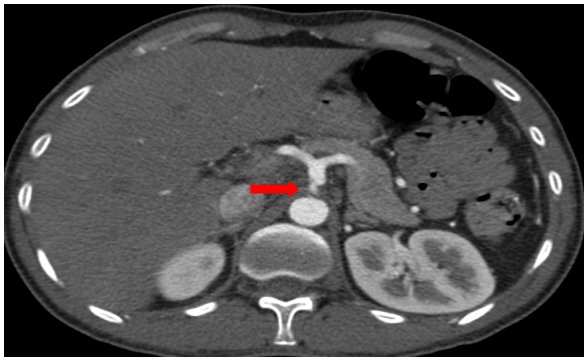
Chronic mesenteric artery occlusion

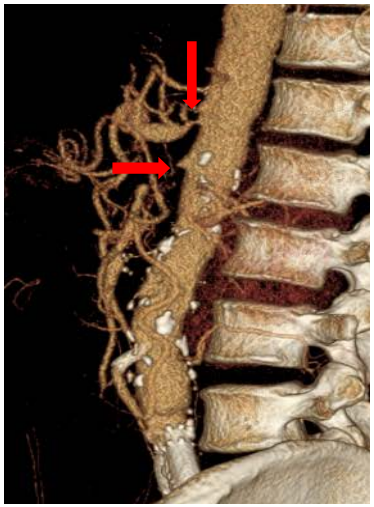
- Atherosclerosis
  - 95%
- Rarely
  - Takayasu's
  - Buerger's
  - Radiation
  - FMD

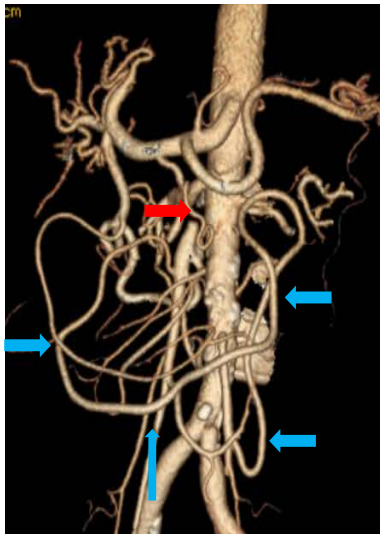


Diagnosis









Diagnosis

- Angiography
  - Diagnostic and therapeutic
  - Invasive
  - Procedure related complications
  - Contrast related complications

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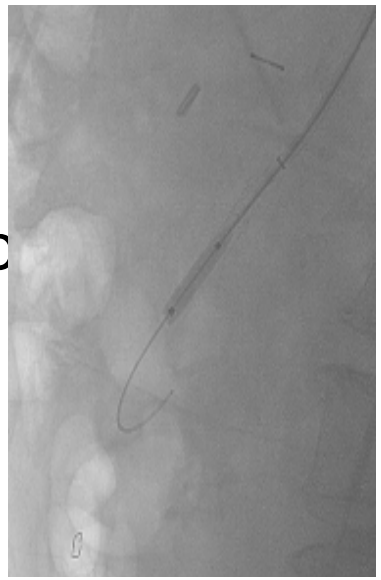


Table I. Baseline characteristics of patients undergoing angioplasty, with or without stenting, compared with surgical repair for chronic and acute mesenteric ischemia from 2000 to 2006

	Chronic mesenteric ischemia			*Acute mesenteric ischemia*		
Variable	*PTSA/S*	*Surgery*[a]	P[b]	*PTSA/S*	*Surgery*[a]	P[b]
Patients, No. (%)	3455 (61.9)	2128 (38.1)	. . .	1857 (35.5)	3380 (64.5)	. . .
Age, median (range), y	74 (24-97)	68 (29-99)	<.001	72 (26-96)	72 (21-99)	.53
<60, %	15	32	<.001	24	26	.34
60-69, %	23	28	<.05	25	22	.36
70-79, %	37	30	<.01	31	33	.62
≥80, %	25	11	<.001	21	19	.52
Female, %	74	79	<.05	70	66	.14
Comorbidities, %						
Hypertension	66	51	<.001	56	46	<.01
PVD	40	32	<.01	33	13	<.001
CAD	39	26	<.001	34	19	<.001
AFib/flutter	16.5	14.9	.49	23.6	38.7	<.001
Prior MI	8.3	6.0	.17	6.4	4.7	.23
CHF	17.5	10.5	<.01	22.1	22.6	.85
Diabetes mellitus	19	12	<.01	18	17	.73
COPD	25	27	.40	29	23	.06
Chronic renal disease	6.3	1.2	<.001	9.8	3.5	<.001
CVD	6.9	7.7	.61	4.7	5.9	.41
Charlson, mean ± SD	1.3 ± 1.1	1.0 ± 1.0	<.001	1.4 ± 1.3	0.9 ± 1.1	<.001
Bowel resection, %	. . .	. . .	. . .	28.1	47.8	<.001

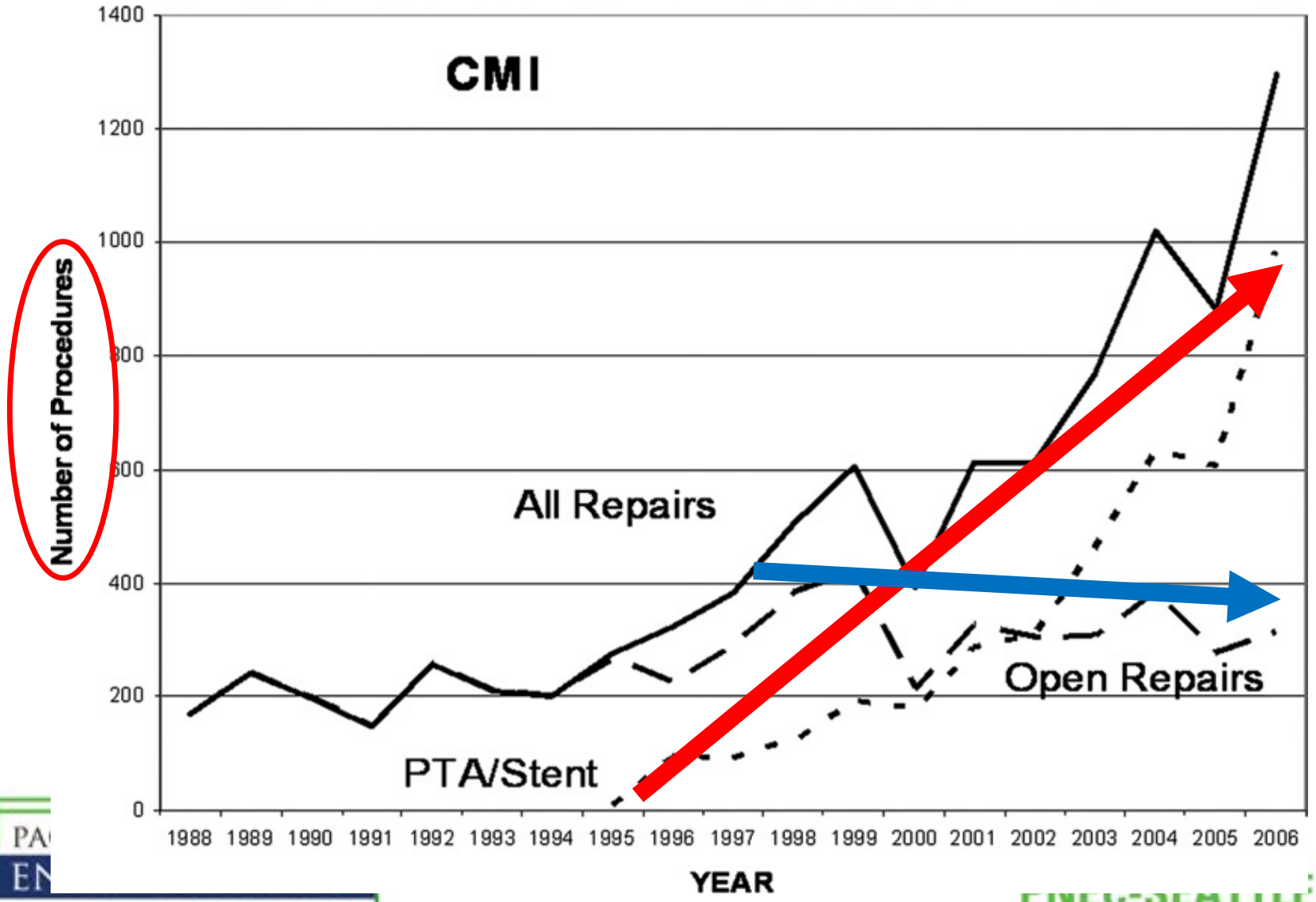
AFib, Atrial fibrillation; *CAD*, coronary artery disease; *CHF*, congestive heart failure; *COPD*, chronic obstructive pulmonary disease; *CVD*, cerebrovascular disease; *MI*, myocardial infarction; *PTA/S*, percutaneous transluminal angioplasty, with or without stenting; *PVD*, peripheral vascular disease; *SD*, standard deviation.

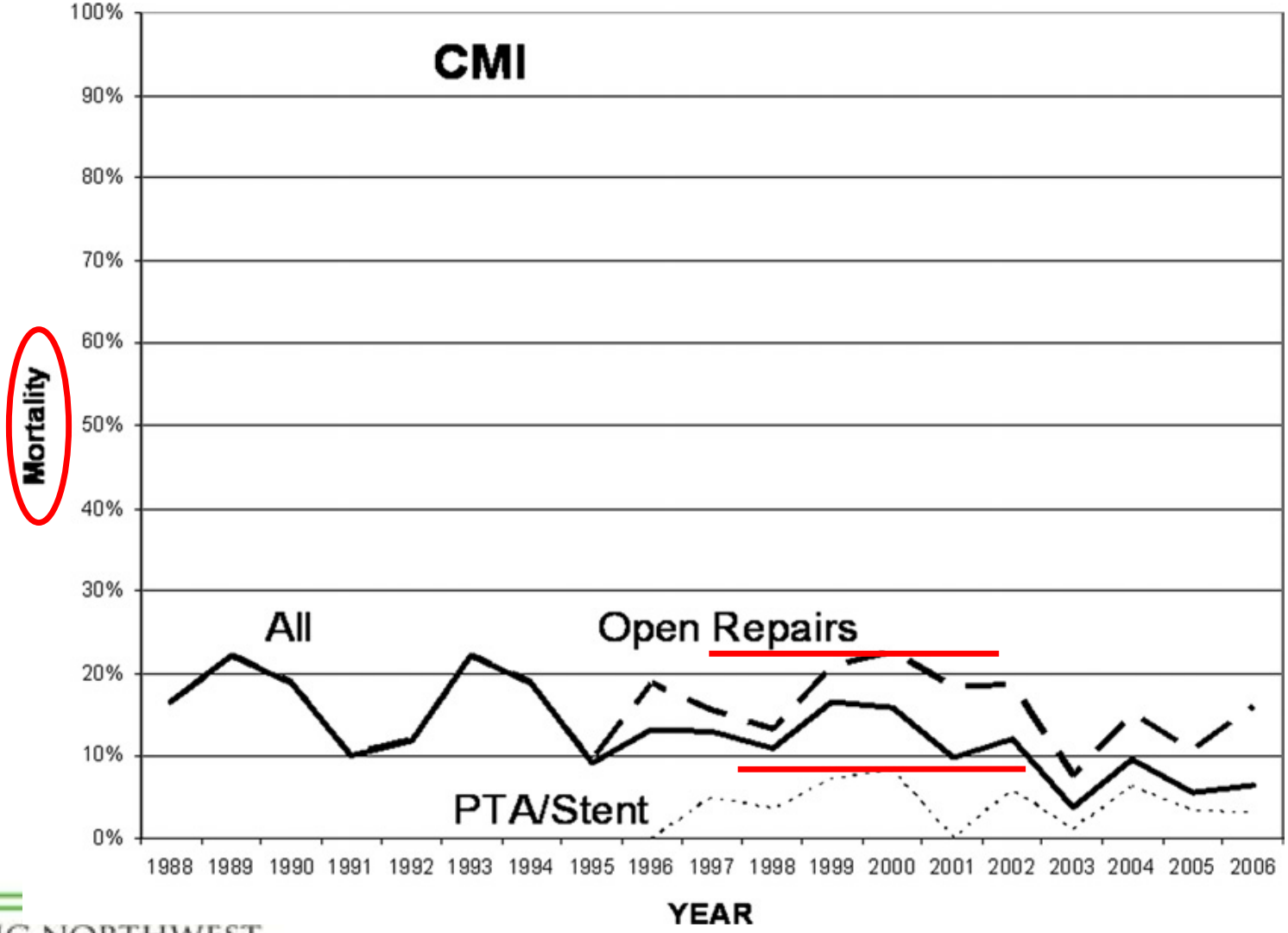
[a]Surgery includes bypass, endarterectomy, or embolectomy.

[b]Statistical significance set at $P < .01$.

Nationwide Inpatient Sample

Schermerhorn et al. J Vasc Surg 2009;49:1472-9.


CMI
Number of Procedures
1400
1200
1000
800
600
400
200
0
All Repairs
Open Repairs
PTA/Stent
1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006
YEAR



Schermerhorn et al. J Vasc Surg 2009;49:1472-9.

Endovascular Reconstruction

- When to intervene
- How many vessels need to be treated
- Access and Crossing lesions
- PTA vs. Stenting
- Post-stenting medical management

Endovascular Reconstruction

- **When to intervene**
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Endovascular Reconstruction

Indications

- High grade mesenteric artery stenosis or total occlusion
  - –Symptomatic
  - –Asymptomatic
    - >2-vessel significant disease

> 30% of the patients will develop bowel infarct within 2-3 years

Endovascular Reconstruction

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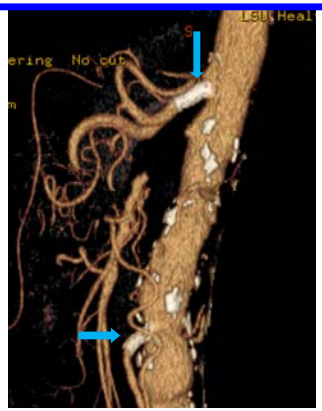
Endovascular Reconstruction

- Revascularization
  - Reportedly 1.4-1.8 vessels



- Single-Vessel revascularization
  - Adequate to relieve symptoms in most of patients
- Two-vessel revascularization
  - Lower risk of symptom recurrence and secondary re-intervention

Endovascular Reconstruction

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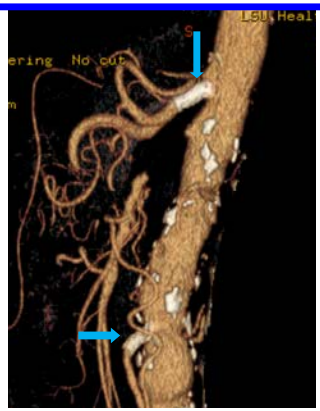

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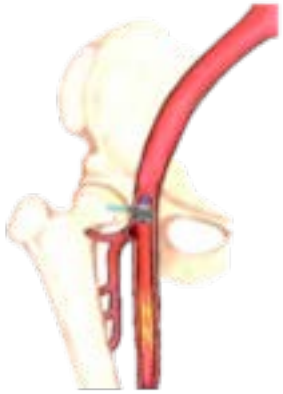
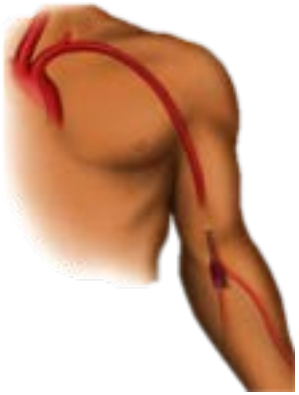
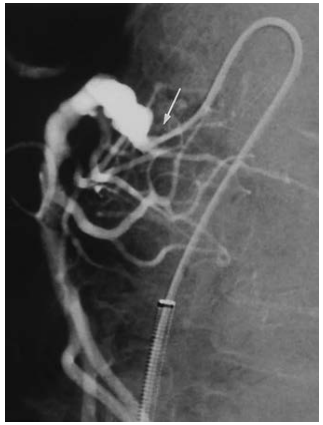
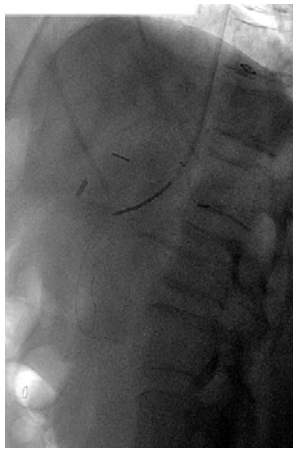
Endovascular Reconstruction

- Access
  - Brachial
  - Femoral



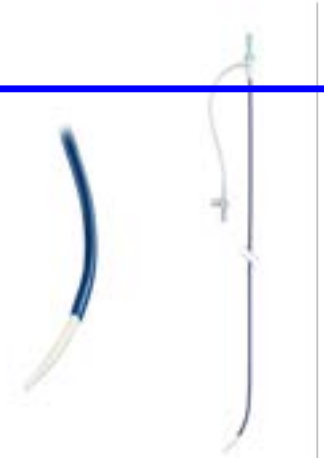


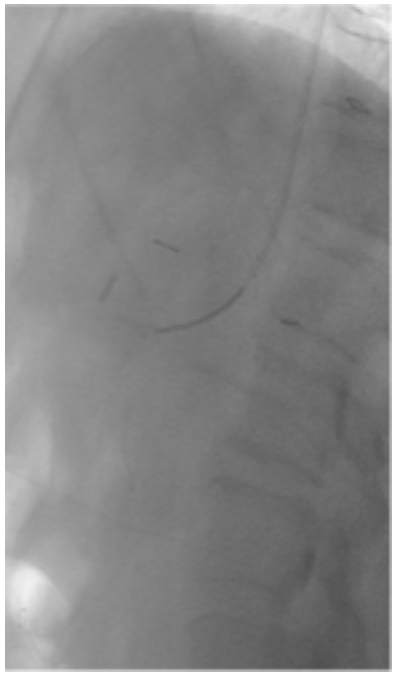




Endovascular Reconstruction

- Brachial access if sharp angulation
- Angle sheath and catheter
- Crossing catheter





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- When to intervene
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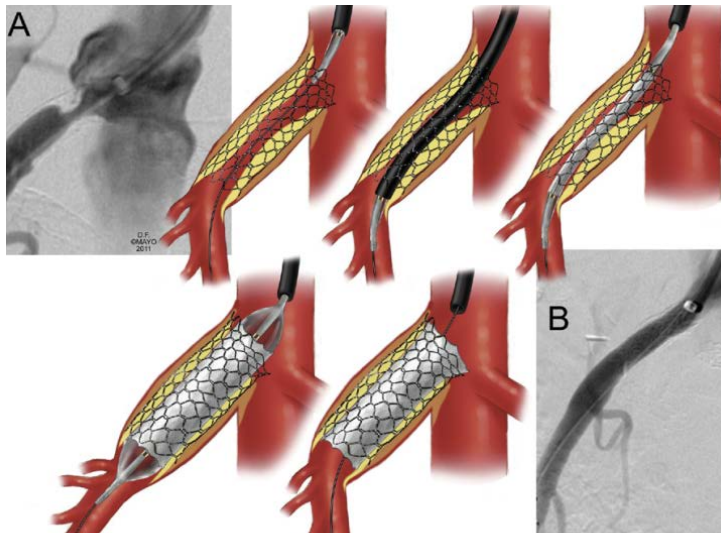
- **PTA vs. Stenting**
- Post-stenting medical management

Endovascular Reconstruction

- Balloon angioplasty (PTA) alone
  - 15%
- Primary stenting
  - **85%**
  - Less reintervention
  - Balloon expendable stent
    - Accurate
    - May post-dilate to a larger size if needed
  - May need covered stent if instent re-stenosis



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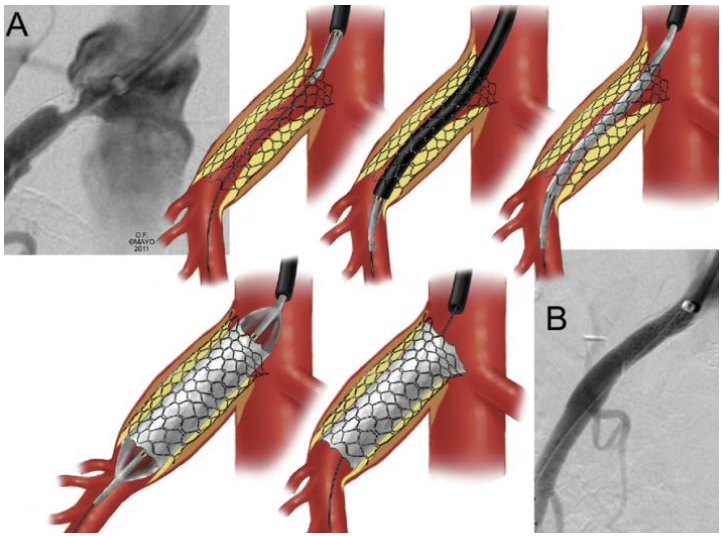

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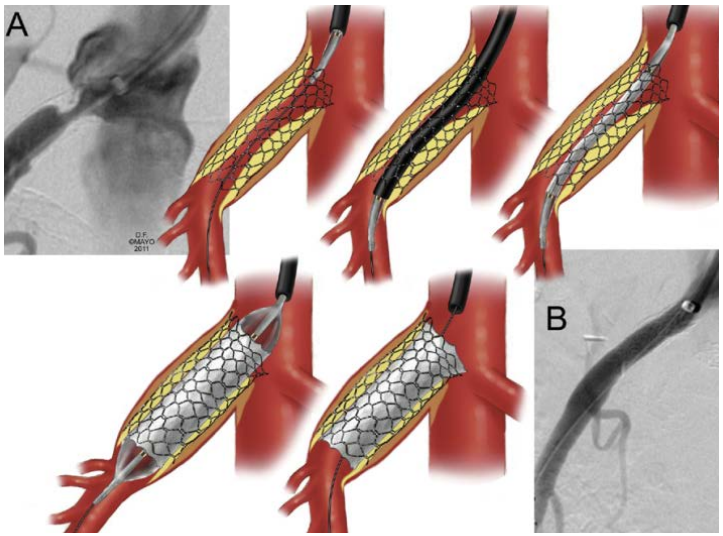

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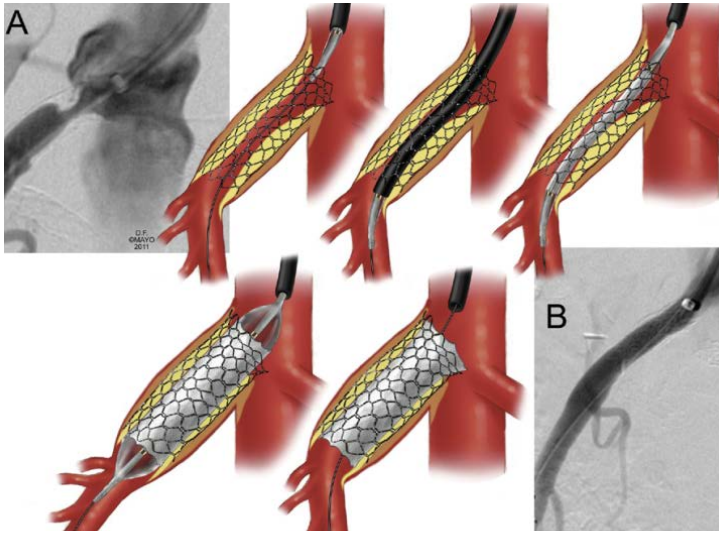

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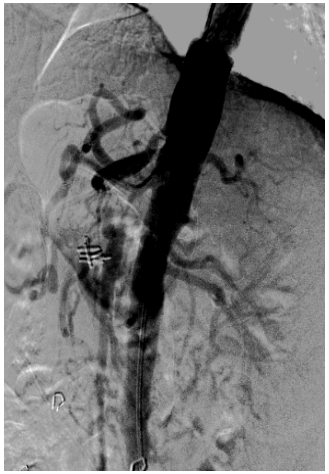
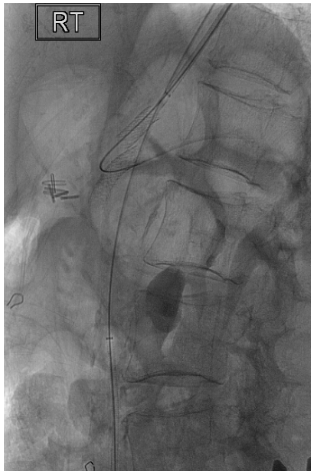
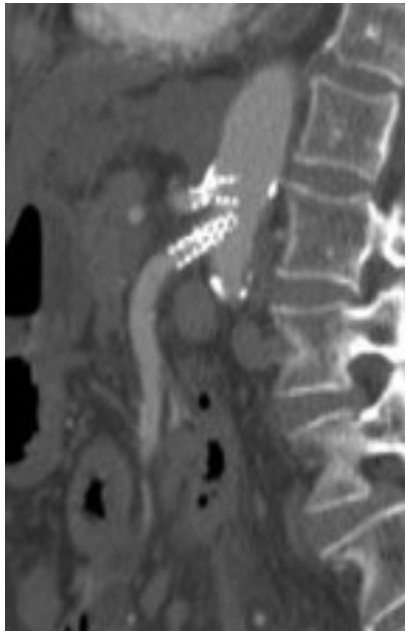
Endovascular Reconstruction

- Post-procedure medications
  - Clopidogrel: 6 weeks
  - ASA: life time







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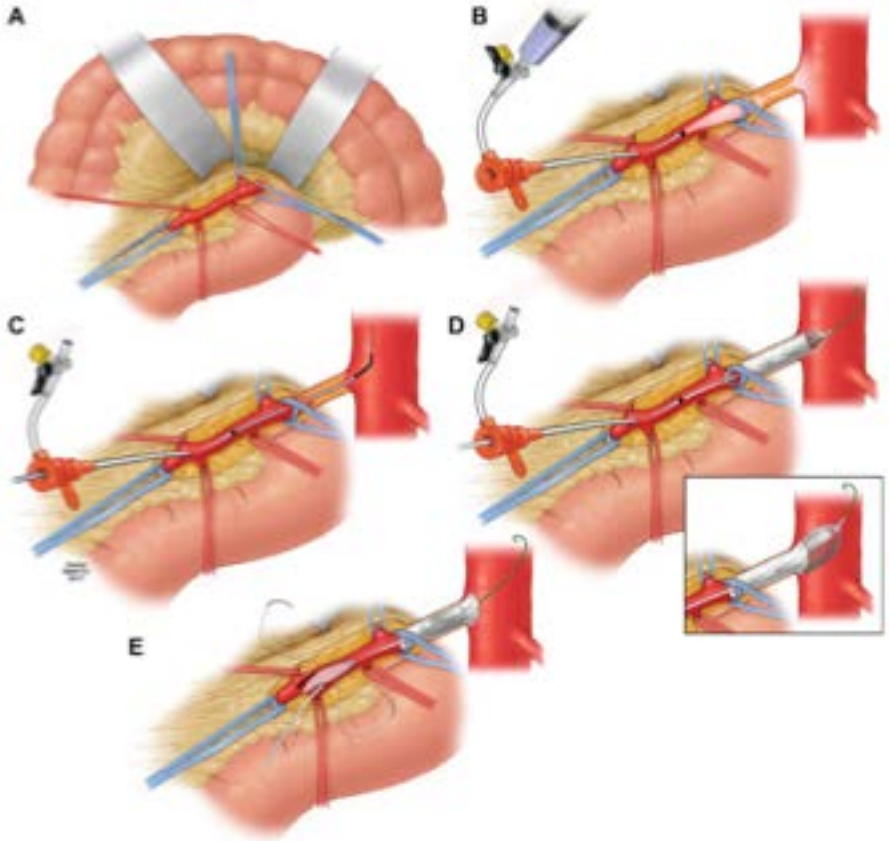

Oderich GS et al. J Vasc Surg. 2018 Mar 13. pii: S0741-5214(18)30047-8.

Summary

- Indications for endovascular treatment of CMI
  - Symptomatic
  - Asymptomatic with 2- or 3-vessel significant disease
- One vessel PTA/Stenting is adequate
  - Two-vessel treatment has better long-term outcomes
- Primary stenting is recommended
- Balloon expendable stent is preferred
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  - Clopidogrel 6 weeks
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- Clair D. Mesenteric Syndromes. In: Moore and Ahn, editors. Endovascular surgery. 4th ed. Philadelphia: Elsevier Saunders; 2011. p. 367-83.
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Thank you