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# Occlusive disease of the CT and SMA

What do the ESVS Guidelines recommend?

Martin Björck, Uppsala, Sweden



Disclosure				
Speaker name:				
Martin Björck				
I have the following potential conflicts of interest to report:				
□ Consulting				
□ Employment in industry				
Shareholder in a healthcare company				
<ul> <li>Owner of a healthcare company</li> </ul>				
□ Other(s)				
X I do not have any potential conflict of interest				

## Editor's Choice — Management of the Diseases of Mesenteric Arteries and Veins

Clinical Practice Guidelines of the European Society of Vascular Surgery (ESVS)

Writing Committee <sup>a</sup>, M. Björck, M. Koelemay, S. Acosta, F. Bastos Goncalves, T. Kölbel, J.J. Kolkman, T. Lees, J.H. Lefevre, G. Menyhei, G. Oderich,

ESVS Guidelines Committee <sup>b</sup>, P. Kolh, G.J. de Borst, N. Chakfe, S. Debus, R. Hinchliffe, S. Kakkos, I. Koncar, J. Sanddal Lindholt, M. Vega de Ceniga, F. Vermassen, F. Verzini,

Document Reviewers <sup>c</sup>, B. Geelkerken, P. Gloviczki, T. Huber, R. Naylor

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- We started by identifying the clinically relevant issues and controversies, then scrutinized the literature
- A multidisciplinary team, including a gastroenterologist and a colo-rectal surgeon

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- 51 pages
- 64 Recommendations
- 312 references
- European Society of Cardiology (ESC) grading system

#### Table 1. Levels of evidence.

Level of evidence A	Data derived from multiple randomised clinical trials or meta-analyses
Level of evidence B	Data derived from a single randomised clinical trial or large non-randomised studies
Level of evidence C	Consensus of opinion of the experts and/or small studies, retrospective studies

Table 2. Classes of recommendations.

Classes of recommendations	Definitions
Class I	Evidence and/or general agreement
Class I	that a given treatment or procedure
	is beneficial, useful, effective
	The state of the s
Class II	Conflicting evidence and/or a
	divergence of opinion about the
	usefulness/efficacy of the given
	treatment or procedure
Class IIa	Weight of evidence/opinion is in favour
	of usefulness/efficacy
Class IIb	Usefulness/efficacy is less well
	established by evidence/opinion
Class III	Evidence and/or general agreement
	that the given treatment or procedure
	is not useful/effective, and in some
	cases may be harmful

 When systematic reviews and meta-analyses were lacking we performed some of them ourselves (this one comparing open and endo for AMI)

Study or subgroup         Events         Total         Events         Total         Weight         Odds ratio M-H, random, 95% CI         Year         M-H, random, 95% CI           Schermerhorn         290         1857         1305         3380         32.2%         0.29 [0.26, 0.34]         2009         0.20 [0.26, 0.34]         2009         0.20 [0.26, 0.34]         2009         0.20 [0.26, 0.34]         2009         0.20 [0.26, 0.34]         2009         0.20 [0.26, 0.34]         2009         0.20 [0.26, 0.34]         2009         0.20 [0.26, 0.34]         2009         0.20 [0.26, 0.34]         2009         0.20 [0.26, 0.34]         2010         0.20 [0.26, 0.34]         2010         0.20 [0.26, 0.34]         2010         0.20 [0.26, 0.34]         2010         0.20 [0.26, 0.34]         2010         0.20 [0.26, 0.34]         2010         0.20 [0.26, 0.34]         2010         0.20 [0.26, 0.34]         2011         0.20 [0.26, 0.34]         2011         0.20 [0.26, 0.34]         2011         0.20 [0.26, 0.34]         2011         0.20 [0.26, 0.34]         2011         0.20 [0.26, 0.34]         2011         0.20 [0.26, 0.34]         2012         0.20 [0.26, 0.34]         2012         0.20 [0.26, 0.34]         2012         0.20 [0.26, 0.34]         2012         0.20 [0.26, 0.34]         2012         0.20 [0.26, 0.26]         0.20 [0.26, 0.26]		Endova or hy		Open s	surgery						
Block 10 42 51 121 18.3% 0.43 [0.19, 0.95] 2010  Arthurs 22 56 7 14 12.0% 0.65 [0.20, 2.10] 2011  Ryer 4 11 16 82 10.0% 2.36 [0.61, 9.04] 2012  Beaulieu 41 165 203 514 27.6% 0.51 [0.34, 0.75] 2014  Total 2131 4111 100.0% 0.50 [0.30, 0.83]  Total events 367 1582  Heterogeneity: Tau²=0.21; Chi²=16.83, df=4 (P=0.002; I²=76%  Test for overall effect: Z=2.70 (P=0.007)	Study or subgroup	Events	Total	Events	Total	Weight	M-H, random,	Year			
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Heterogeneity: Tau <sup>2</sup> =0.21; Chi <sup>2</sup> =16.83, df=4 (P=0.002; I <sup>2</sup> =76%  Test for overall effect: Z=2.70 (P=0.007)	Total		2131		4111	100.0%	0.50 [0.30, 0.83]		<b>(</b>		
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								0.01	0.1	1 10	100

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Figure 4. Meta-analysis of 30-day mortality rates after open and endovascular therapy of AMI.



- Why all conditions in one document?
- It is not always obvious if it is:
- Acute, chronic, acute-on-chronic ischaemia?
- Arterial or venous?
- An underlying aneurysm or dissection?
- A greater benefit for the clinician to have it all in one single document



Introduction with general aspects

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- 2. Acute arterial mesenteric ischaemia
- 3. Chronic arterial mesenteric ischaemia
- 4. Non-occlusive mesenteric ischaemia (NOMI)
- 5. Venous mesenteric ischaemia
- 6. Mesenteric arterial aneurysms
- 7. Isolated dissections of the mesenteric arteries
- 8. Future research

#### Recommendations 1-4 regarding diagnosis

Recommendation 1	Class	Level of evidence
In patients with acute abdominal pain, p-dimer measurement is	T	В
recommended to exclude acute mesenteric ischaemia		
Recommendation 2		
Use of L-lactate measurement is not recommended to diagnose	III	В
or rule out acute occlusive mesenteric ischaemia		

Recommendation 3	Class	Level of evidence
In patients with suspected AMI, triphasic CTA with 1 mm slices	T	В
(or thinner) should be used to detect mesenteric arterial occlusion		
Recommendation 4		
In patients with suspected AMI and elevated creatinine values,	IIb	С
CTA might be considered, accepting the risk of contrast induced		
renal failure, to save life		

AMI = acute mesenteric ischaemia; CTA = computed tomography angiography.

#### Recommendations 5-9 regarding treatment

Recommendation 5		Class	Level of evidence
In patients with acute mesenteric arterial ischaemia, open or		lla	В
endovascular revascularisation should be considered before			
bowel surgery			
Recommendation 6			
In patients undergoing mesenteric revascularisation, completion		lla	С
imaging with angiography or transit time flow measurements			
should be considered			
Recommendation 7		Class	Level of evidence
In patients undergoing laparotomy for AMI, clinical judgement should		lla	С
be considered as the preferred method for assessing bowel viability	ty		
Recommendation 8		Class	Level of evidence
Patients requiring bowel resection because of intestinal infarction		I .	А
should be treated with antibiotics			
Recommendation 9	Cl	ass	Level of evidence
In patients undergoing acute intestinal revascularisation, second	lla	1	С
look laparotomy and damage control surgery should be			
considered			

- Endovascular treatment is first line therapy if a thrombotic occlusion is suspected
- No difference if the occlusion is embolic

Recommendation 10	Class	Level of evidence
In patients with acute thrombotic SMA occlusion, endovascular	lla	В
therapy should be considered as first line therapy because of		
lower mortality and bowel resection rates compared		
with open revascularisation		

SMA = superior mesenteric artery.

Recommendations regarding follow-up...

Recommendation 11	Class	Level of evidence
In patients with AMI and stented mesenteric arteries, imaging	lla	С
follow-up should be considered		

AMI = acute mesenteric ischaemia.

#### ...and secondary prevention:

Recommendation 12	Class	Level of evidence
In patients surviving AMI, secondary medical prevention, including	_	С
smoking cessation, statin therapy, and antiplatelet or		
anticoagulation treatment, is recommended		

AMI = acute (arterial, occlusive) mesenteric ischaemia.

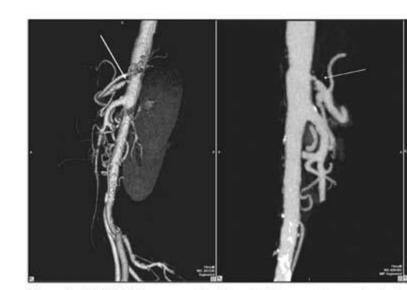


## Chronic Mesenteric Ischaemia Symptoms and diagnosis

Recommendation 13	Class	Level of evi
The diagnosis of CMI should be considered less likely in the	lla	С
absence of multi-vessel stenosis or occlusion, and warrants careful		
investigation for alternative causes		

## **CMI:** Recommendations regarding diagnosis DUS first, followed by CTA if suspicion

Recommendation 15	Class	Level of evidence
In patients with suspected CMI, DUS of the mesenteric arteries is	1	В
recommended as the first line examination		
Recommendation 16	Class	Level of evidence
In patients with a moderate to high suspicion of CMI, CTA	1	С
is recommended to map the occlusive disease, and to detect		
or exclude other intra-abdominal pathology		



## Chronic Mesenteric Ischaemia Indications: Single or multi vessel disease?

Recommendation 18	Class	Level of evidence
In patients with symptomatic CMI caused by multi-vessel occlusive	1	В
disease, revascularisation is recommended		
Recommendation 19		
In patients with symptomatic single vessel disease, revascularisation	Hb	В
may be considered		

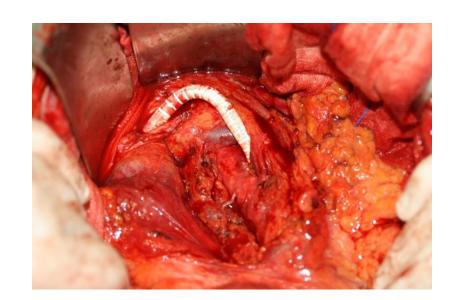
## Chronic arterial mesenteric ischaemia Treatment: open or endo? SMA or CT?

Recommendation 21	Class	Level of evidence
In patients with CMI, needing revascularisation, the superior long	1	В
term results of open surgery must be offset against a possible early		
benefit of endovascular intervention with regard to peri-procedural		
mortality and morbidity.		

Recommendation 22	Class	Level of evidence
In patients requiring revascularisation for CMI, the SMA is the	1	В
main target vessel using either open or endovascular techniques		

#### Open surgery

- better long term patency
- lower rate of re-interventions
- improved freedom from recurrent symptoms



## Chronic Mesenteric Ischaemia Treatment: When open? When ROMS?

Recommendation 25	Class	Level of evidence
In patients with CMI, open revascularisation should be considered	lla	В
in the following situations:		
i) In a patient who has failed endovascular therapy or		
ii) In patients who are not candidates for endovascular		
intervention because of extensive occlusion and calcification		
precluding safe angioplasty and stenting or		
iii) In young patients with complex non-atherosclerotic lesions		
caused by vasculitis or mid-aortic syndrome		
Recommendation 26	Class	Level of evidence
		C C
In patients needing mesenteric revascularisation, ROMS should	lla	C
be considered when trans-aortic stenting and open		
reconstruction are impossible		

ROMS = retrograde open mesenteric stenting.

## Finally: CMI Five recommendations on follow-up

Recommendation 27	Class	Level of evidence
In patients after revascularisation for CMI, repeated follow-up by	IIb	С
clinical assessment to detect symptomatic restenosis might be considered		
Recommendation 28		
In patients after revascularisation for CMI, repeated long-term follow-up	IIb	С
by imaging to detect asymptomatic restenosis might be considered		
Recommendation 29		
In patients after revascularisation for CMI, antiplatelet therapy is		Α
recommended		
Recommendation 30		
In patients after endovascular revascularisation for CMI, dual antiplatelet	IIb	С
therapy might be considered for 3-12 months		
Recommendation 31	Class	Level of evidence
Patients with CMI should preferably be investigated and treated at		С
specialised centres that can offer a multidisciplinary assessment, as well		
as both open and endovascular treatment		



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- Main Scientific Sessions with invited speakers, state of the art short talks, the top abstract and quick-fire presenters
- Volodos (innovation) and Janet Powell (evidence) Lectures









