American College of Radiology
ACR Appropriateness Criteria®

Radiologic Management of Mesenteric Ischemia

Variant 1: Recent onset abdominal pain, no peritoneal signs, and known atrial fibrillation. CTA shows filling defect in proximal SMA consistent with embolus. No intramural or extra-luminal air. Initial therapy.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Systemic anticoagulation	Usually appropriate	Limited	N/A	N/A	8	8	0	1	0	0	0	1	0	7	5
References	Study Quality														
1 (30360689)	4														
4 (28359440)	4														
3 (29757725)	4														
Transcatheter thrombolysis	Usually appropriate	Strong	N/A	N/A	7	7	0	0	1	0	1	1	10	1	0
References	Study Quality														
7 (29455017)	3														
8 (30809084)	2														
4 (28359440)	4														
11 (21889287)	2														
12 (23394456)	3														
Angiography and aspiration embolectomy	Usually appropriate	Strong	N/A	N/A	7	7	0	0	1	1	2	0	6	4	1
References	Study Quality														
9 (22503176)	2														
7 (29455017)	3														
6 (25737456)	3														

1 (30360689)	4
8 (30809084)	2
5 (28121281)	Inadequate
4 (28359440)	4

Surgical embolectomy	May be appropriate	Strong	N/A	N/A	5	5	0	0	0	2	9	2	0	0	1

References	Study Quality
9 (22503176)	2
6 (25737456)	3
8 (30809084)	2
5 (28121281)	Inadequate
4 (28359440)	4
10 (31382003)	3

Variant 2: Recent onset abdominal pain, no peritoneal signs, and known atrial fibrillation. CTA shows calcified atherosclerotic plaque involving the aorta and its major branches, as well as proximal short-segment occlusion of the proximal SMA. No intramural or extra-luminal air. Initial therapy.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Systemic anticoagulation	Usually appropriate	Limited	N/A	N/A	8	8	1	0	1	0	0	1	2	4	6

References	Study Quality
1 (30360689)	4
4 (28359440)	4

Angiography and endovascular intervention including possible thrombolysis, angioplasty, or stent placement	Usually appropriate	Strong	N/A	N/A	8	8	0	0	0	0	0	0	2	11	1

References	Study Quality
7 (29455017)	3
14 (27178034)	2
6 (25737456)	3

		1 (30360689)		4												
		5 (28121281)		Inadequate												
		13 (33589326)		3												
Surgical endarterectomy or bypass	May be appropriate	Limited	N/A	N/A	5	5	0	0	0	2	9	2	0	1	0
		References		Study Quality												
		15 (24199769)		3												
		13 (33589326)		3												

Variant 3: Patient with cardiac disease causing low cardiac output who developed abdominal pain but without peritoneal signs. CTA shows patent origins and proximal portions of celiac artery, SMA, and IMA, with diffuse irregular narrowing of SMA branches. Initial therapy.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Angiography with infusion of vasodilator	Usually appropriate	Limited	N/A	N/A	7	7	0	0	0	0	0	1	8	5	0
		References		Study Quality											
		4 (28359440)		4											
		17 (32444922)		3											
		19 (28794797)		4											
		18 (31832858)		3											
Systemic anticoagulation	Usually appropriate	Expert Consensus	N/A	N/A	7	7	0	0	0	1	3	0	9	1	0
Systemic infusion of prostaglandin E1	May be appropriate	Limited	N/A	N/A	6	6	0	0	1	0	1	8	3	1	0
		References		Study Quality											
		20 (30909787)		3											
Angiography with percutaneous transluminal angioplasty	Usually not appropriate	Expert Consensus	N/A	N/A	3	3	3	2	9	0	0	0	0	0	0

Variant 4: Recent onset abdominal pain, peritoneal signs, and known atrial fibrillation. CTA shows filling defect in the proximal SMA consistent with embolus and evidence of bowel infarction. Initial therapy.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Surgical revascularization	Usually appropriate	Moderate	N/A	N/A	8	8	0	0	0	0	0	0	0	11	3
		References		Study Quality											
		21 (30777691)		2											
		4 (28359440)		4											
Systemic anticoagulation	Usually appropriate	Limited	N/A	N/A	8	8	0	1	0	0	0	0	6	4	3
		References		Study Quality											
		1 (30360689)		4											
		4 (28359440)		4											
Angiography and aspiration embolectomy	May be appropriate	Expert Consensus	N/A	N/A	5	5	0	0	1	1	9	3	0	0	0
Transcatheter thrombolysis	Usually not appropriate	Expert Consensus	N/A	N/A	3	3	1	3	7	2	1	0	0	0	0

Variant 5: Abdominal pain after meals and CTA showing widely patent origins of SMA and IMA, with compression of the celiac origin by the median arcuate ligament. Initial therapy.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Surgery with median arcuate ligament release	Usually appropriate	Strong	N/A	N/A	8	8	0	0	0	0	0	0	0	12	2
		References		Study Quality											
		31 (3965762)		4											

		22 (25814203)		4												
		30 (26365109)		3												
		28 (25758451)		2												
		32 (28851450)		2												
Mesenteric angiography in lateral projection during both inspiration and expiration	Usually appropriate	Limited	N/A	N/A	7	7	0	0	1	0	0	0	8	4	1
		References		Study Quality												
		23 (28259570)		2												
Supportive measures only	May be appropriate	Limited	N/A	N/A	6	6	0	1	0	0	1	11	0	1	0
		References		Study Quality												
		29 (28189355)		2												
Percutaneous transluminal angioplasty with stent placement	May be appropriate	Strong	N/A	N/A	4	4	2	3	2	5	1	2	0	0	0
		References		Study Quality												
		22 (25814203)		4												
		28 (25758451)		2												
		27 (18375098)		4												
		26 (11800352)		2												
		25 (19128929)		4												
		24 (17903658)		4												
Systemic anticoagulation	Usually not appropriate	Expert Consensus	N/A	N/A	2	2	4	8	0	1	1	0	0	0	1

Variant 6: History of abdominal pain after meals for the past few months and weight loss. CTA shows aortic atherosclerotic disease and suggests SMA-origin stenosis with occlusion of celiac origin and an occluded IMA. Initial therapy.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Angiography with possible	Usually	Strong	N/A	N/A	8	8	0	0	0	0	0	0	1	10	3

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
percutaneous transluminal angioplasty and stent placement	appropriate														

References	Study Quality
36 (27066948)	2
38 (29217008)	3
33 (29574024)	4
34 (27581131)	2
37 (33171195)	4
35 (31327617)	2
13 (33589326)	3
39 (29571626)	Good
40 (19497510)	2

Surgical bypass or endarterectomy	May be appropriate	Limited	N/A	N/A	6	6	0	0	0	0	1	9	2	2	0

References	Study Quality
38 (29217008)	3
37 (33171195)	4
13 (33589326)	3

Systemic anticoagulation	May be appropriate	Limited	N/A	N/A	5	5	1	1	3	2	6	0	1	0	0

References	Study Quality
37 (33171195)	4

Variant 7: Previously healthy with worsening diffuse abdominal pain for 2 weeks. CTA shows occlusion of the superior mesenteric vein and its major tributaries. Bowel appears normal. Serum lactate level is normal. Initial therapy.

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9

Procedure	Appropriateness Category	SOE	Adults RRL	Peds RRL	Rating	Median	Final Tabulations								
							1	2	3	4	5	6	7	8	9
Systemic anticoagulation	Usually appropriate	Moderate	N/A	N/A	9	9	0	0	0	0	0	0	0	0	14
References	Study Quality														
4 (28359440)	4														
44 (19821530)	2														
Transhepatic superior mesenteric vein catheterization and pharmacomechanical thrombolysis	Usually appropriate	Moderate	N/A	N/A	7	7	0	0	0	0	0	3	9	1	1
References	Study Quality														
47 (15872320)	4														
46 (24704749)	4														
4 (28359440)	4														
48 (26253926)	4														
45 (31489698)	2														
Transjugular superior mesenteric vein catheterization and pharmacomechanical thrombolysis and TIPS	May be appropriate	Moderate	N/A	N/A	6	6	0	0	0	0	3	8	1	2	0
References	Study Quality														
45 (31489698)	2														
SMA angiography followed by thrombolytic infusion	May be appropriate	Limited	N/A	N/A	4	4	0	1	0	10	2	1	0	0	0
References	Study Quality														
42 (19859995)	4														
41 (27263813)	3														
Surgical thrombectomy	Usually not appropriate	Limited	N/A	N/A	3	3	1	1	8	2	1	1	1	0	0
References	Study Quality														
4 (28359440)	4														
43 (30428441)	4														

Appendix Key

A more complete discussion of the items presented below can be found by accessing the supporting documents at the designated hyperlinks.

Appropriateness Category: The panel's recommendation for a procedure based on the assessment of the risks and benefits of performing the procedure for the specified clinical scenario.

SOE: Strength of Evidence. The assessment of the amount and quality of evidence found in the peer reviewed medical literature for an appropriateness recommendation.

- **References:** The citation number and PMID for the reference(s) associated with the recommendation.
- **Study Quality**: The assessment of the quality of an individual reference based on the number of study quality elements described in the reference.

RRL: Relative Radiation Level. A population based assessment of the amount of radiation a typical patient may be exposed to during the specified procedure.

Rating: The final rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

Median: The median rating (1-9 scale) for the procedure as determined by the panel during rating rounds.

Final tabulations: A histogram showing the number of panel members who rated the procedure as noted in the column heading (ie, 1, 2, 3, etc.).

Additional supporting documents about the AC methodology and processes can be found at **www.acr.org/ac.**