



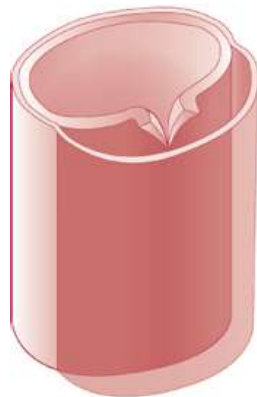
Sindrome aortica acuta. Un solo vaso per una moltitudine di scenari.

Ottavio Alfieri
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CARDIOCHIRURGIA
Università Vita e Salute, San Raffaele, Milano

Nessun conflitto di interesse

Sindromi Aortiche Acute



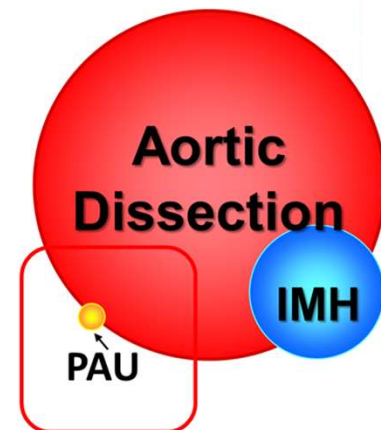
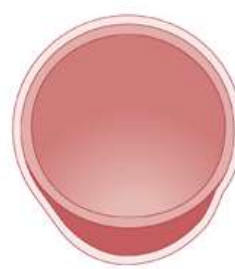
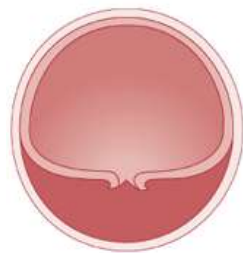
Dissection



Penetrating ulcer

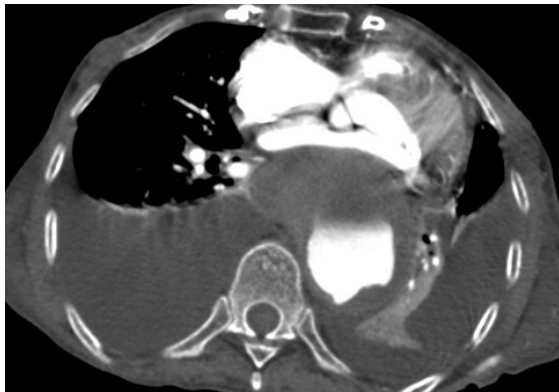


Intramural
hematoma

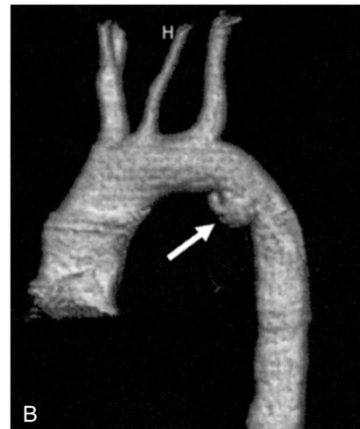
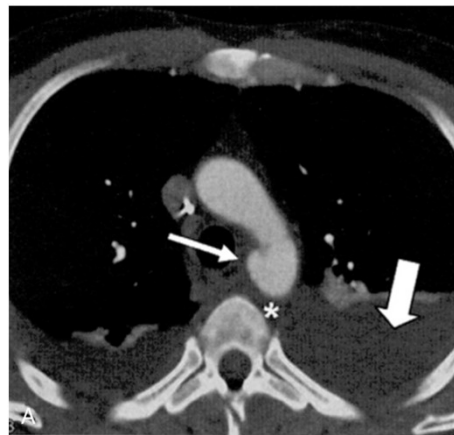


Sindrome aortica acuta - Diagnosi differenziale

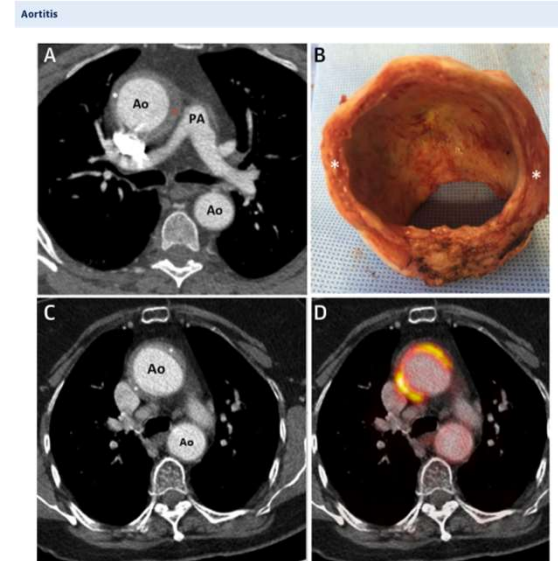
Rottura di Aneurisma Aortico



Rottura Traumatica dell'Aorta



Aortiti



Sindrome aortica acuta - Diagnosi differenziale

Rottura di Aneurisma Aortico

Rottura Traumatica dell'Aorta

Aortiti



Diversa storia anamnestica

Precedente diagnosi?

Storia di trauma recente

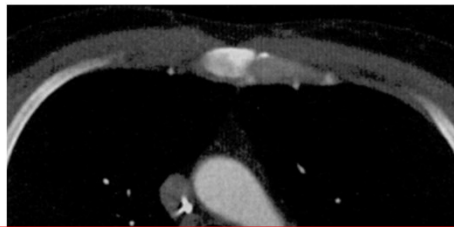


Sindrome aortica acuta - Diagnosi differenziale

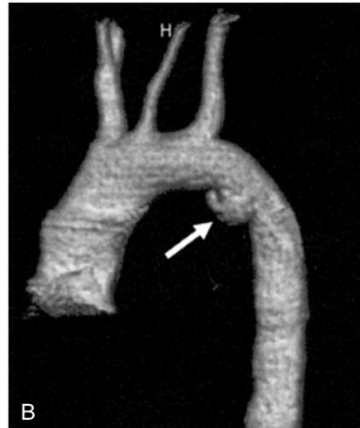
Rottura di Aneurisma Aortico

Rottura Traumatica dell'Aorta

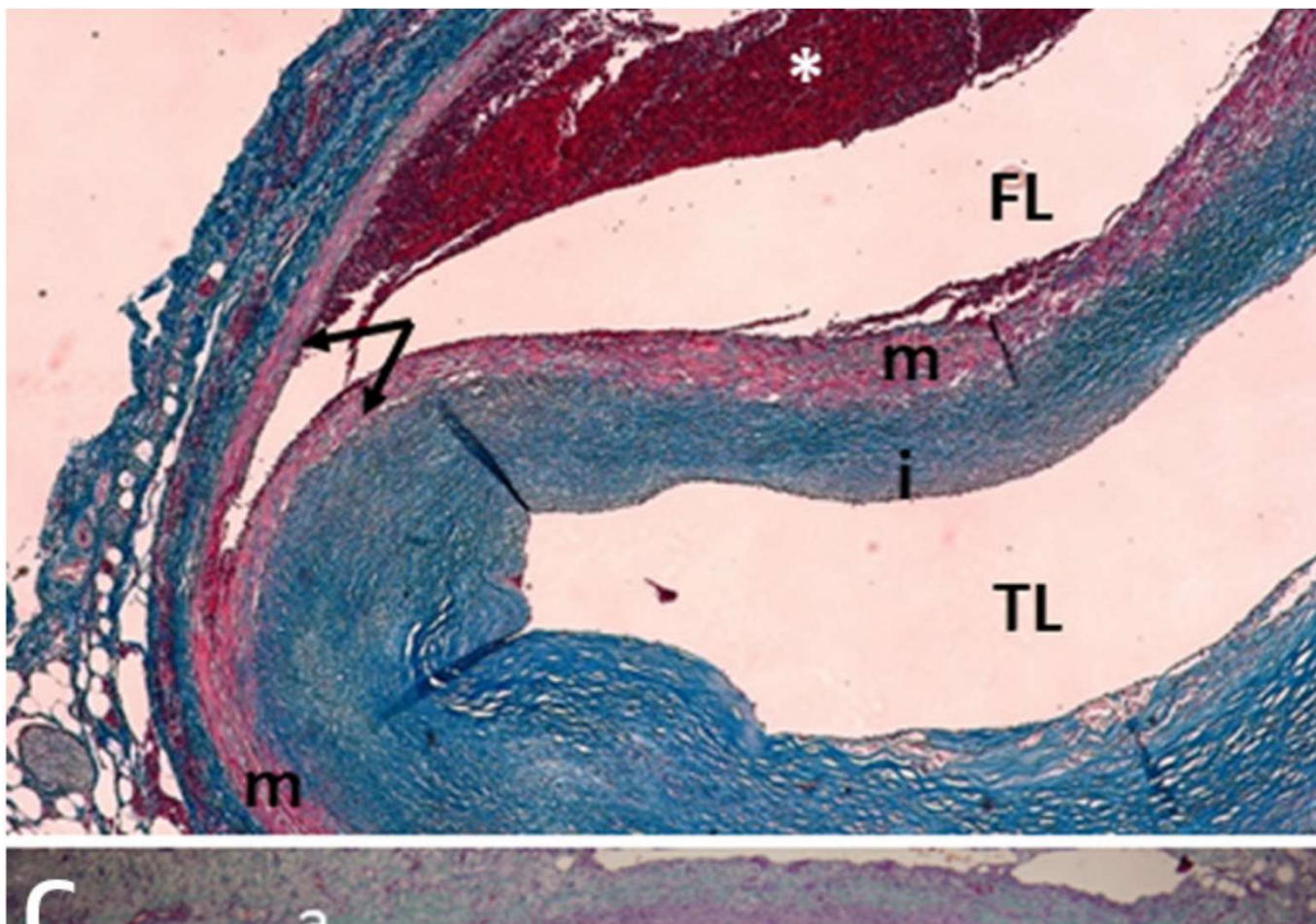
Aortiti



NON SONO CONSIDERATE SAA



SAA: base fisiopatologica

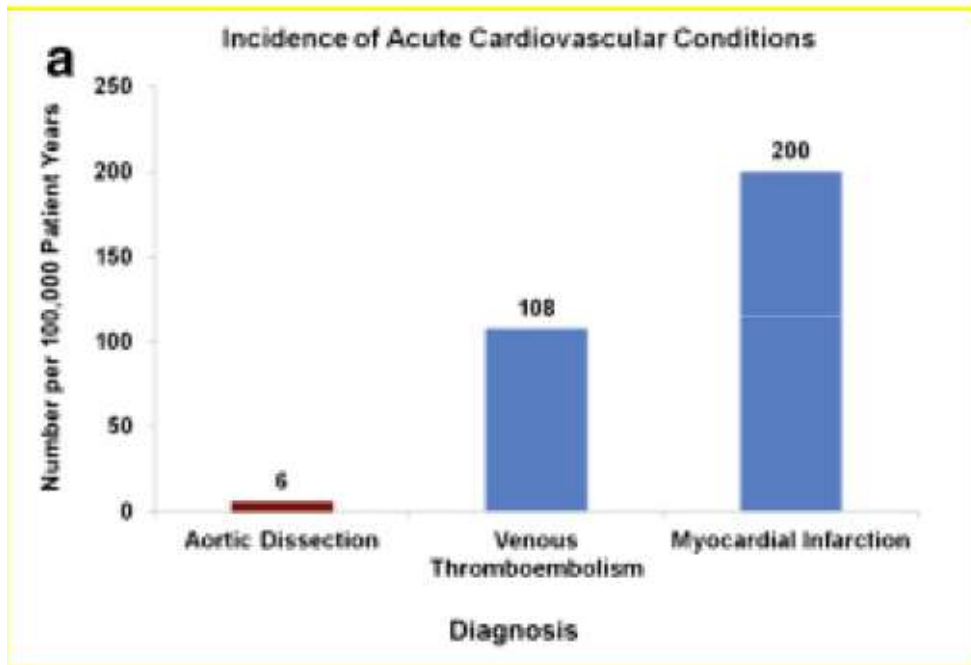


Dolore "aortico"



- **Dolore improvviso lancinante al torace o interscapolare (pugnolata)**
- Insorgenza di complicanze:
 - ✓ stroke
 - ✓ tamponamento cardiaco
 - ✓ insufficienza aortica acuta severa
 - ✓ Ischemia intestinale
 - ✓ Ischemia arti inferiori
 - ✓ Differenza pressoria tra gli arti

Epidemiologia



❖ *Heart disease and stroke statistics – 2013 update - Go AS et al. 2013;127*

- ✓ Incidenza di **3 a 16 cases** su **100.000 abitanti /anno**
- ✓ Eta piu' comune di presentazione: **40 – 70 anni**
- ✓ Sesso: **M/F 3:1**

Il primo caso documentato nella storia

1760

On the morning of 25 October, King George II of Great Britain rose as usual at 6:00 am, drank a cup of hot chocolate, and went to his close stool, alone.

After a few minutes, his valet heard a loud crash.

He entered the room to find the king on the floor.

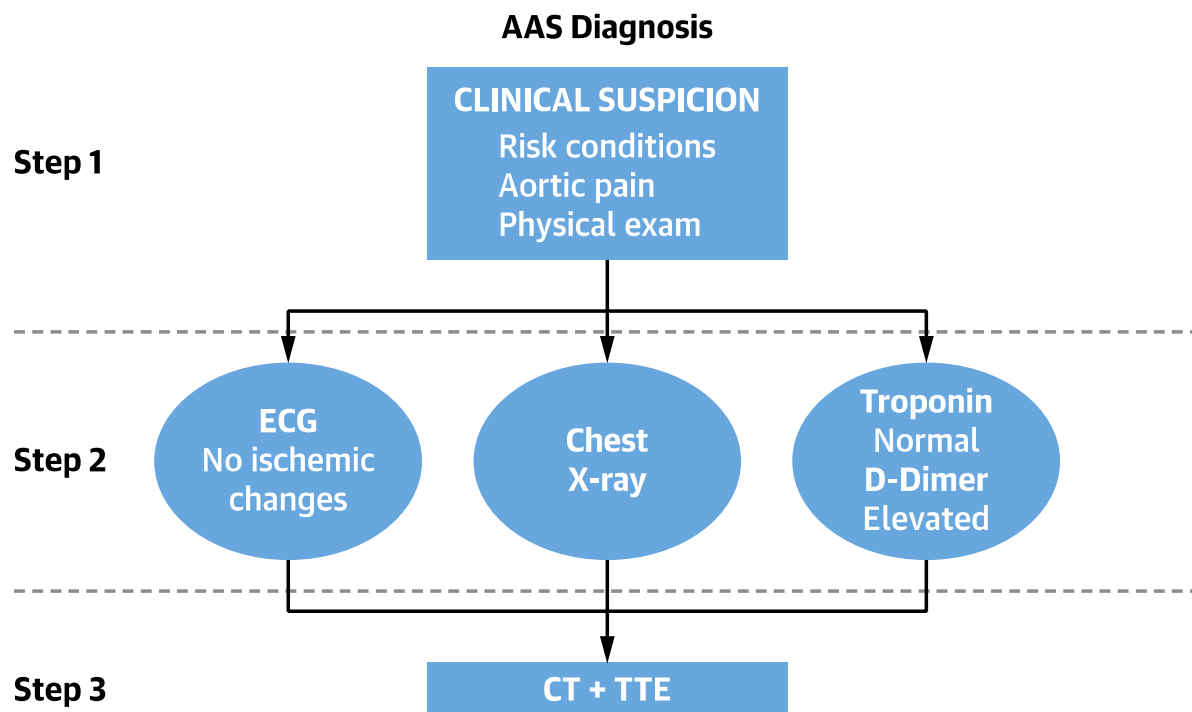
The king was lifted into his bed, and Princess Amelia was sent for, but before she reached him, he was dead.

A post-mortem revealed an aortic dissection.



Síndrome aortica aguda. Algoritmo diagnóstico

FIGURE 5 3-Step Diagnostic Algorithm for Patients With a Suspicion of AAS



JACC STATE-OF-THE-ART REVIEW

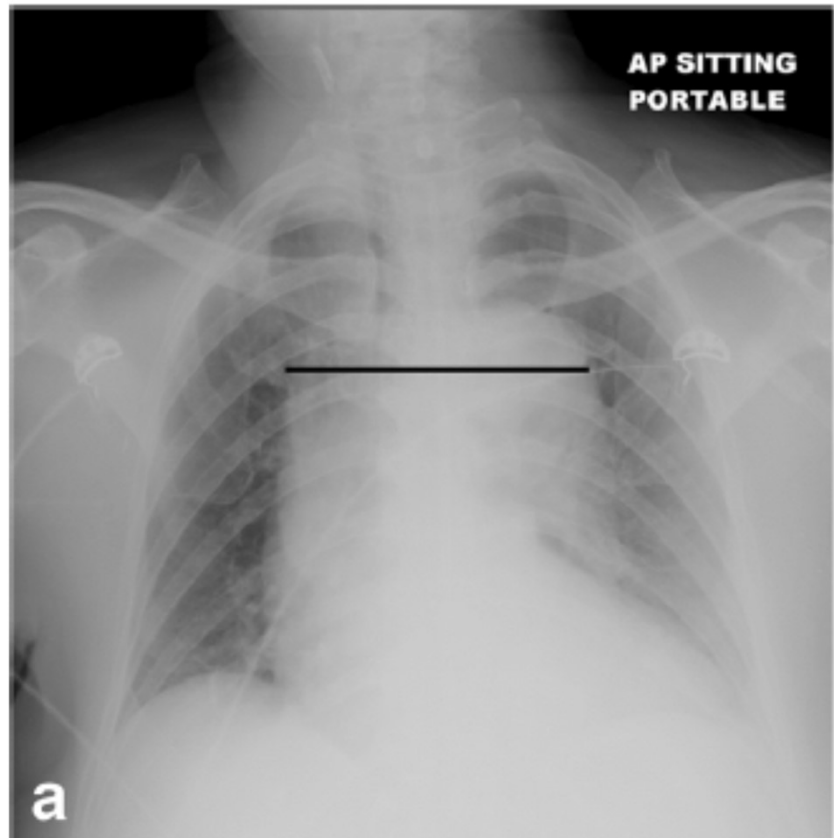
Acute Aortic Syndrome Revisited

JACC State-of-the-Art Review

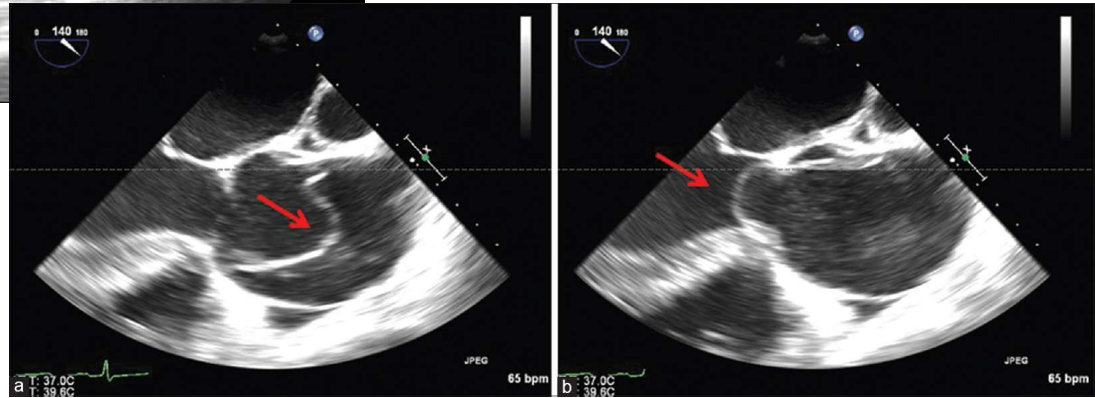
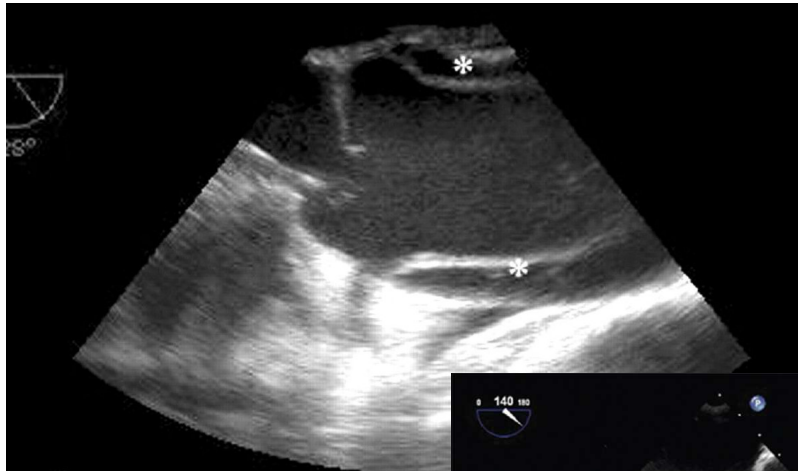
Isidre Vilacosta, MD, PhD,^a J. Alberto San Román, MD, PhD,^{b,c} Roberto di Bartolomeo, MD, PhD,^d
Kim Eagle, MD, PhD,^e Anthony L. Estrera, MD, PhD,^{f,g} Carlos Ferrera, MD, PhD,^h Shuichiro Kaji, MD, PhD,ⁱ
Christoph A. Nienaber, MD, PhD,^j Vicenç Riambau, MD, PhD,^k Hans-Joachim Schäfers, MD, PhD,^l
Francisco J. Serrano, MD, PhD,^m Jae-Kwan Song, MD, PhD,ⁿ Luis Maroto, MD, PhD^o

(J Am Coll Cardiol 2021;78:2106–2125)

Chest X ray: widened mediastinum



TTE



Angio TAC



Aortic dissection

Visualization of *intimal flap*

Extent of the disease according to the aortic anatomic segmentation

Identification of *the false and true lumens* (if present)

Localization of *entry and re-entry tears* (if present)

Identification of antegrade and/or retrograde aortic dissection

Identification grading, and mechanism of aortic valve regurgitation

Involvement of side branches

Detection of *malperfusion* (low flow or no flow)

Detection of *organ ischaemia* (brain, myocardium, bowels, kidneys, etc.)

Detection of *pericardial effusion* and its severity

Detection and extent of pleural effusion

Detection of *peri-aortic bleeding*

Signs of mediastinal bleeding

L'angio-TAC rappresenta l'indagine di scelta per diagnosticare la dissezione aortica e per pianificare l'intervento

Sindrome aortica acuta: Linee guida

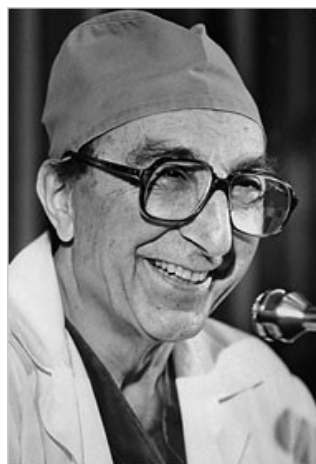
Recommendations for AAS: Diagnostic Evaluation (Imaging, Laboratory Testing)		
COR	LOE	Recommendations
1	C-LD	1. In patients with a suspected AAS, CT is recommended for initial diagnostic imaging, given its wide availability, accuracy, and speed, as well as the extent of anatomic detail it provides. ¹⁻⁵

ACC/AHA CLINICAL PRACTICE GUIDELINE

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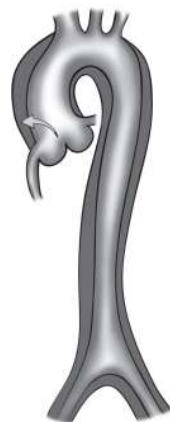
Dissezione aortica

Classificazione



Dr. Michael E. DeBakey

Type I



Type II



Type III



DeBakey ME et al . J Thorac Cardiovasc Surg 1965;19:13M9.

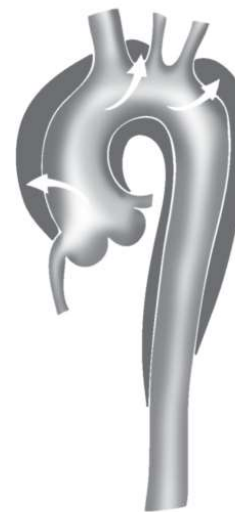
Dissezione aortica

Classificazione



Stanford
University

Type A



Type B



The Freiburg classification

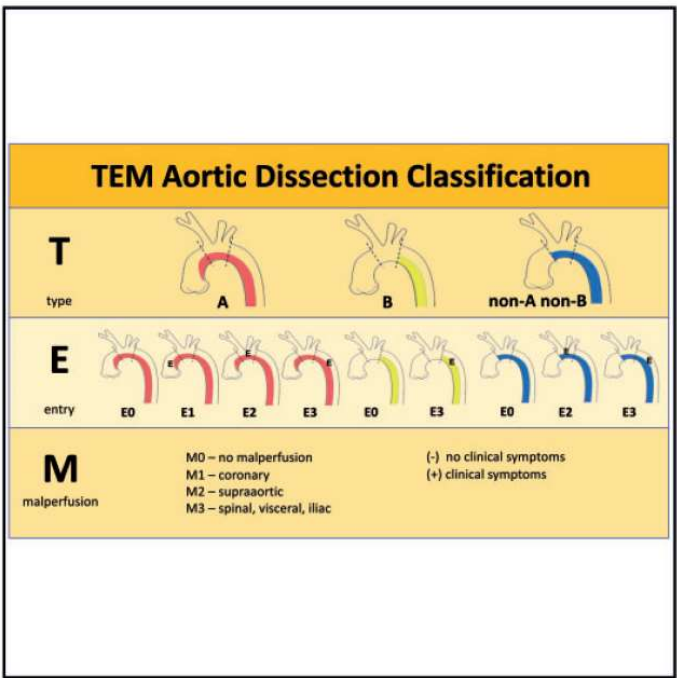
Aortic dissection reconsidered: type, entry site, malperfusion classification adding clarity and enabling outcome prediction

Hans-Hinrich Sievers^{a,†}, Bartosz Rylski^{b,c,*†}, Martin Czerny^{b,c}, Anna L.M. Baier^{b,c}, Maximilian Kreibich^{b,c}, Matthias Siepe^{b,c} and Friedhelm Beyersdorf^{b,c}

^a Department of Cardiac and Thoracic Vascular Surgery, University Medical Centre Schleswig-Holstein, Campus Lübeck, Lübeck, Germany
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^c Faculty of Medicine, University of Freiburg, Freiburg, Germany

* Corresponding author. Department of Cardiovascular Surgery, Heart Centre Freiburg University, Hugstetter Strasse 55, 79106 Freiburg, Germany. Tel: +49-761-27028180; fax: +49-761-27028670; e-mail: bartosz.rylski@universitaets-herzzentrum.de (B. Rylski).

Received 22 July 2019; received in revised form 4 October 2019; accepted 10 October 2019



The Penn classification

A	Hemodynamically stable without signs or symptoms of ischemia
B	Hemodynamically stable but with evidence of branch vessel malperfusion with signs or symptoms of ischemia (e.g. stroke, ST segment changes, abdominal pain, limb ischemia)
C	Global malperfusion from circulatory collapse (with or without cardiac involvement)
B-C	Global malperfusion from circulatory collapse plus evidence of local ischemia

FIGURE 1 Depiction of the Penn classification system for malperfusion in type A aortic dissection.

The Penn Classification System for Malperfusion in Acute Type A Dissection: A 25-Year Experience

William L. Patrick, MD,^{1,2,3} Siddharth Yarlagadda, BA,¹ Joseph E. Bavaria, MD,¹ John J. Kelly, MD,¹ Saiesh Kalva, BA,¹ Joshua C. Grimm, MD,¹ Jake L. Rosen, BA,¹ Sania Ahmed,¹ John G. Augoustides, MD,⁴ Wilson Y. Szeto, MD,¹ and Nimesh D. Desai, MD, PhD^{1,2,3}

(Ann Thorac Surg 2023;115:1109-17)

Dissezione aortica- Tipo A

Storia naturale



✓ Sopravvivenza dei pazienti non trattati:

- Più del 25% muore in 24 ore.
- Più del 50% muore in 48 ore
- Più del 80% muore in un mese.
- Più del 95% muore in un anno.

International Registry of Acute Aortic Dissection (IRAD)

Dissezione aortica - Tipo A

- Intervento Cardiochirurgico in emergenza: sostituzione dell'aorta ascendente +/- SVA

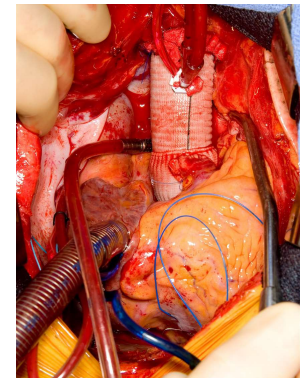
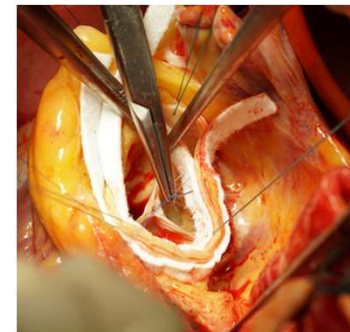
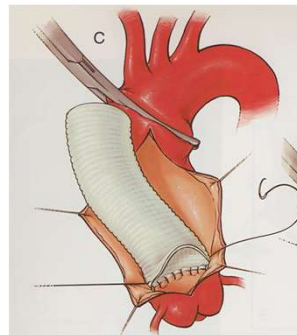
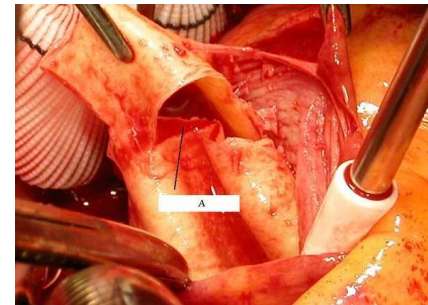
7.4.1.1. Initial Surgical Considerations in Acute Type A Aortic Dissection

Recommendations for Initial Surgical Considerations in Acute Type A Aortic Dissection
Referenced studies that support the recommendations are summarized in the [Online Data Supplement](#).

COR	LOE	Recommendations
1	B-NR	1. In patients presenting with suspected or confirmed acute type A aortic dissection, emergency surgical consultation and evaluation and immediate surgical intervention is recommended because of the high risk of associated life-threatening complications. ^{1,2}

ACC/AHA CLINICAL PRACTICE GUIDELINE

2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease: A Report of the American Heart Association/American College of Cardiology Joint Committee on Clinical Practice Guidelines *Circulation*. 2022;146:e334–e482.



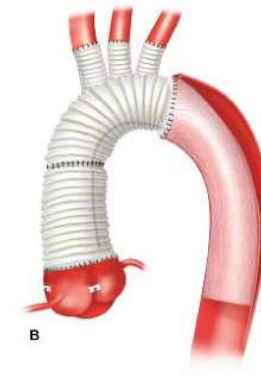
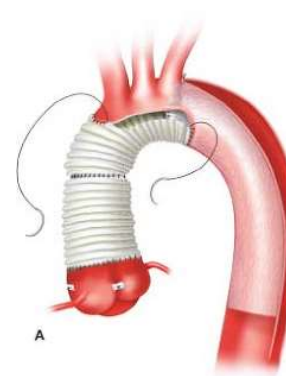
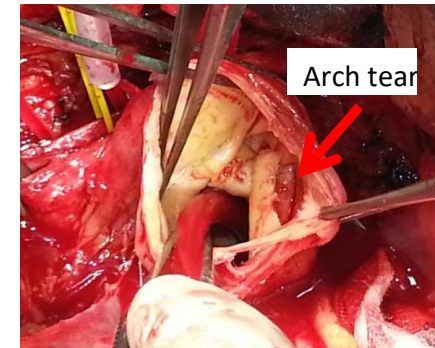
Dissezione aortica - Tipo A

- Interessamento dell'Arco: «Partial or Total Arch Replacement»

7.4.1.3. Surgical Repair Strategies in Acute Type A Aortic Dissection

Recommendations for Surgical Repair Strategies in Acute Type A Aortic Dissection
 Referenced studies that support the recommendations are summarized in the [Online Data Supplement](#).

COR	LOE	Recommendations
Aortic Repair Strategies		
1	B-NR	3. In patients with acute type A aortic dissection undergoing aortic repair, an open distal anastomosis is recommended to improve survival and increase false-lumen thrombosis rates. ¹²⁻¹⁵
1	B-NR	4. In patients with acute type A aortic dissection without an intimal tear in the arch or a significant arch aneurysm, hemiarch repair is recommended over more extensive arch replacement. ¹⁶⁻¹⁸



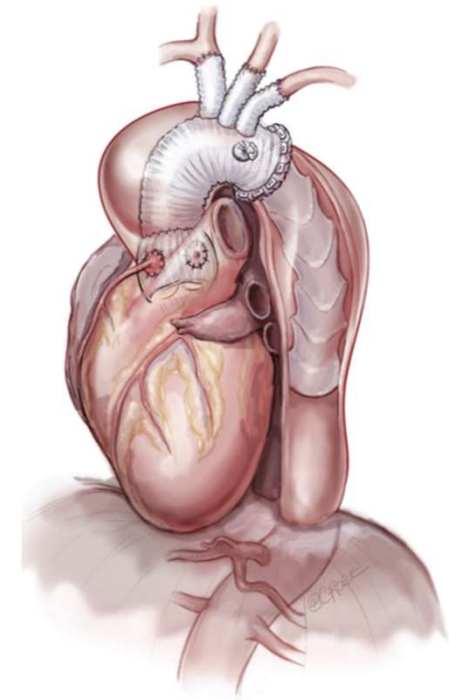
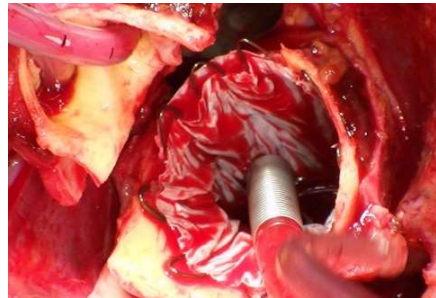
Dissezione aortica - Tipo A

- Interessamento dell'Arco: «Hybrid Arch Approach» FET

7.4.1.3. Surgical Repair Strategies in Acute Type A Aortic Dissection

Recommendations for Surgical Repair Strategies in Acute Type A Aortic Dissection
Referenced studies that support the recommendations are summarized in the [Online Data Supplement](#).

COR	LOE	Recommendations
Aortic Repair Strategies		
2b	C-LD	5. In patients with acute type A aortic dissection and a dissection flap extending through the arch into the descending thoracic aorta, an extended aortic repair with antegrade stenting of the proximal descending thoracic aorta may be considered to treat malperfusion and reduce late distal aortic complications. ^{19,20}



Dissezione aortica - Tipo A

Risultati del trattamento - Trasferimento in centro di eccellenza?

7.4.1.1. Initial Surgical Considerations in Acute Type A Aortic Dissection

Recommendations for Initial Surgical Considerations in Acute Type A Aortic Dissection

Referenced studies that support the recommendations are summarized in the [Online Data Supplement](#).

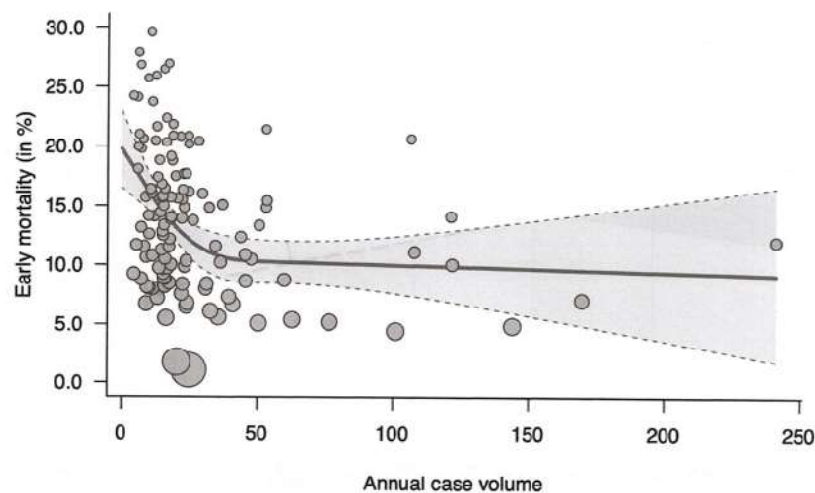
COR	LOE	Recommendations
2a	B-NR	2. In patients presenting with acute type A aortic dissection, who are stable enough for transfer, transfer from a low- to a high-volume aortic center is reasonable to improve survival. ^{3,4}

ACC/AHA CLINICAL PRACTICE GUIDELINE

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Figure 3A.

A Volume-outcome Relationship for Early Mortality



Predittori di mortalita' ospedaliera

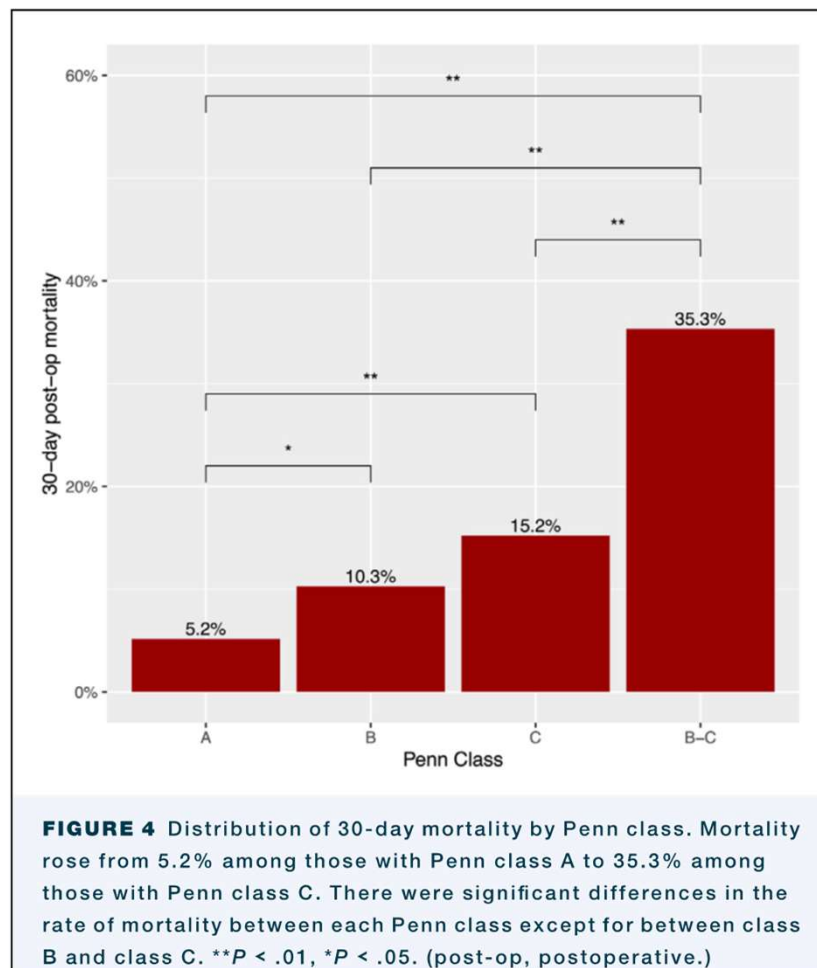
TABLE 3 Multivariate Predictors of In-Hospital Mortality in Type A AAD			
	OR	95% CI	p Value
SBP >150 mm Hg*	1.16	0.83-1.62	0.38
SBP 81-100 mm Hg*	1.21	0.81-1.80	0.36
SBP ≤80 mm Hg*	1.90	1.29-2.81	0.001
Age >65 yrs	2.39	1.82-3.13	<0.001
Any pulse deficit	1.73	1.31-2.28	<0.001
Mesenteric ischemia/infarction	8.05	4.96-13.05	<0.001
Cardiac tamponade (in-hospital)	2.24	1.62-3.09	<0.001
Myocardial infarction/ischemia	2.03	1.46-2.82	<0.001
Coma (in-hospital)	6.37	4.03-10.07	<0.001

AUC ROC curve: 0.78; Hosmer-Lemeshow test p = 0.47. *SBP 101 to 150 mm Hg used as reference value.

AUC = area under the curve; CI = confidence interval; OR = odds ratio; ROC = receiver operating characteristic. Other abbreviations as in [Table 1](#).

Dissezione aortica - Tipo A

Risultati del trattamento



Ann Thorac Surg 2023;115:1109-17

Dissezione aortica - Tipo A

Indicazioni al Trattamento - Malperfusione

7.4.1.2. Management of Malperfusion

Recommendations for Management of Malperfusion
Referenced studies that support the recommendations are summarized in the [Online Data Supplement](#).

COR	LOE	Recommendations
1	B-NR	1. In patients with acute type A aortic dissection presenting with renal, mesenteric, or lower extremity malperfusion, it is recommended to proceed to immediate operative repair of the ascending aorta. ^{1,2}
2a	C-LD	2. In patients with acute type A aortic dissection presenting with clinically significant mesenteric (celiac, SMA) malperfusion, either immediate operative repair of the ascending aorta or immediate mesenteric revascularization via endovascular or open surgical intervention by those with this expertise before ascending aortic repair is reasonable. ³⁻⁶

ACC/AHA CLINICAL PRACTICE GUIDELINE

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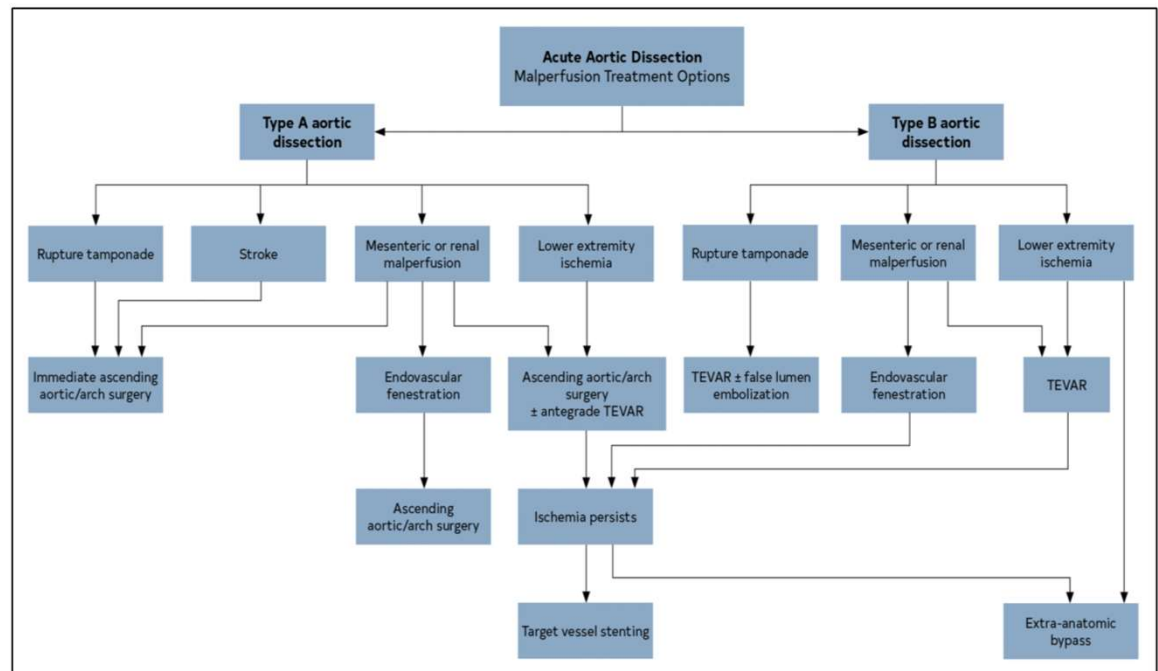


Figure 21. Acute Aortic Dissection: Malperfusion Treatment Options.

AoD indicates aortic dissection; and TEVAR, thoracic endovascular aortic repair.

Dissezione aortica - Tipo A

Indicazione al Trattamento - Stroke

7.4.1.1. Initial Surgical Considerations in Acute Type A Aortic Dissection

Recommendations for Initial Surgical Considerations in Acute Type A Aortic Dissection
Referenced studies that support the recommendations are summarized in the [Online Data Supplement](#).

COR	LOE	Recommendations
2a	B-NR	3. In patients presenting with nonhemorrhagic stroke complicating acute type A aortic dissection, surgical intervention is reasonable over medical therapy to reduce mortality and improve neurologic outcomes. ^{5,6}

ACC/AHA CLINICAL PRACTICE GUIDELINE

2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease: A Report of the American Heart Association/American College of Cardiology Joint Committee on Clinical Practice Guidelines *Circulation*. 2022;146:e334–e482.

Table 1. Patient Characteristics in TAAAD Patients With and Without Presenting Stroke

Variable	Overall n (%)	Stroke n (%)	No Stroke n (%)	P
n (%)	n=2202 (100)	n=132 (6.0)	n=2070 (94.0)	Value

Table 5. Outcomes in TAAAD Patients With and Without Stroke

Variable	Overall n (%)	Stroke n (%)	No Stroke n (%)	P Value
In-hospital complications				
Malperfusion	696 (33.1)	50 (41.0)	646 (32.6)	0.056
Coma	121 (5.5)	24 (18.2)	97 (4.7)	<0.001
Myocardial ischemia/infarction	294 (14.0)	23 (19.2)	271 (13.6)	0.09
Mesenteric ischemia/infarction	130 (6.2)	13 (11.0)	117 (5.9)	0.024
Acute kidney failure	521 (24.7)	36 (29.8)	485 (24.3)	0.18
Hypotension	641 (30.4)	52 (43.3)	589 (29.6)	0.002
Cardiac tamponade	388 (18.4)	28 (23.1)	360 (18.1)	0.17
Limb ischemia	273 (13.0)	20 (16.8)	253 (12.7)	0.20
In-hospital mortality				
Overall	555 (25.2)	56 (42.4)	499 (24.1)	<0.001
Surgically treated patients	371 (19.9)	30 (30.9)	341 (19.3)	0.005
Medically treated patients	160 (56.3)	24 (77.4)	136 (53.8)	0.012
5-year mortality estimate (Kaplan–Meier)				
Overall	17.6%	24.1%	17.2%	0.30
Surgery	14.1%	22.1%	14.1%	0.51
Medical therapy only	62.0%	100.0%	58.7%	0.56

TAAAD indicates type A acute aortic dissection.

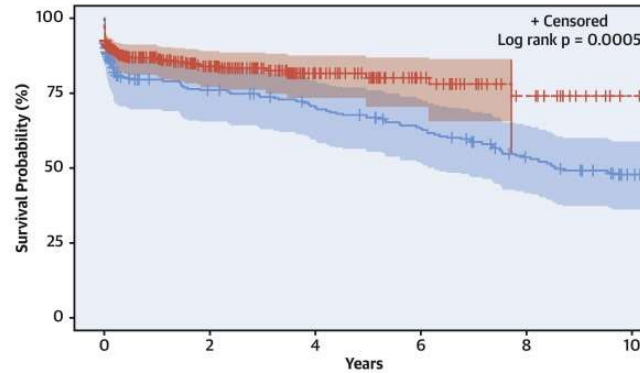
Type A Aortic Dissection— Experience Over 5 Decades

JACC Historical Breakthroughs in Perspective



Yuanjia Zhu, MD,^a Bharathi Lingala, PhD,^a Michael Baiocchi, PhD,^b Jacqueline J. Tao, BS,^c Veronica Toro Arana, BS,^c Jason W. Khoo, BA,^c Kiah M. Williams, BA,^c Abd Al-Rahman Traboulsi, BS,^c Hilary C. Hammond, MMS, PA-C,^a Anson M. Lee, MD,^a William Hiesinger, MD,^a Jack Boyd, MD,^a Philip E. Oyer, MD, PhD,^a Edward B. Stinson, MD,^a Bruce A. Reitz, MD,^a R. Scott Mitchell, MD,^a D. Craig Miller, MD,^a Michael P. Fischbein, MD, PhD,^a Y. Joseph Woo, MD^a

CENTRAL ILLUSTRATION: Kaplan-Meier Survival Analyses After the Application of Stabilized Inverse Probability Weighting Comparing Patients Who Underwent Surgery in 2000 to 2009 Versus 2010 to 2019



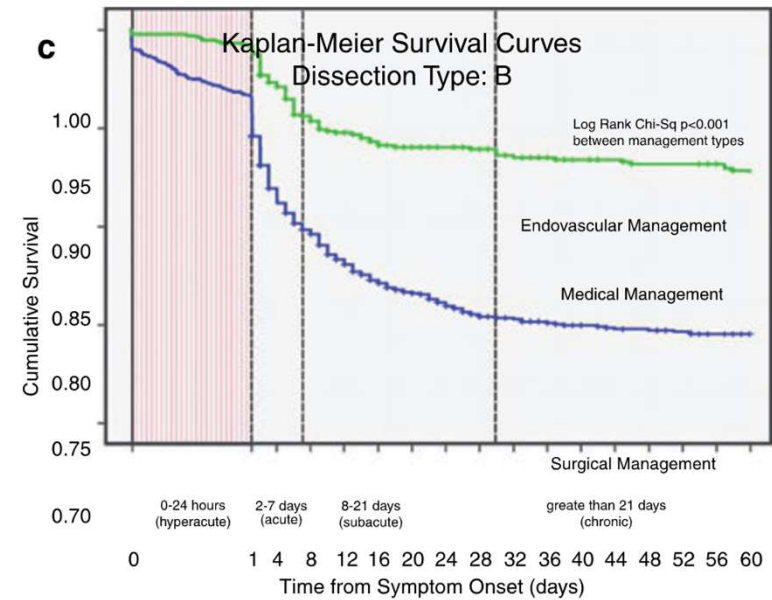
—	2000-2009	282.3	156.2	148.3	141.5	132.5	125.5	115.2	103.1	90.5	82.0	70.1
- - -	2010-2019	523.7	219.7	166.1	117.9	83.4	63.3	40.5	27.6	18.9	9.0	2.3

Zhu, Y. et al. J Am Coll Cardiol. 2020;76(14):1703-13.

Dissezione aortica - Tipo B

Storia naturale

Type B AD
NOT involving ascending aorta



The IRAD Classification System for Characterizing Survival after Aortic Dissection

Anna M. Booher, MD,^a Eric M. Issebacher, MD,^b Christoph A. Nienaber, MD,^c Santi Trimarchi, MD,^d Arturo Evangelista, MD,^e Daniel G. Montgomery, BS,^a James B. Froehlich, MD, MPH,^a Marek P. Ehrlich, MD,^f Jae K. Oh, MD,^g James L. Januzzi, MD,^b Patrick O'Gara, MD,^h Thoralf M. Sundt, MD,^b Kevin M. Harris, MD,ⁱ Eduardo Bossone, MD, PhD,^j Reed E. Pyeritz, MD, PhD,^k Kim A. Eagle, MD,^a IRAD Investigators

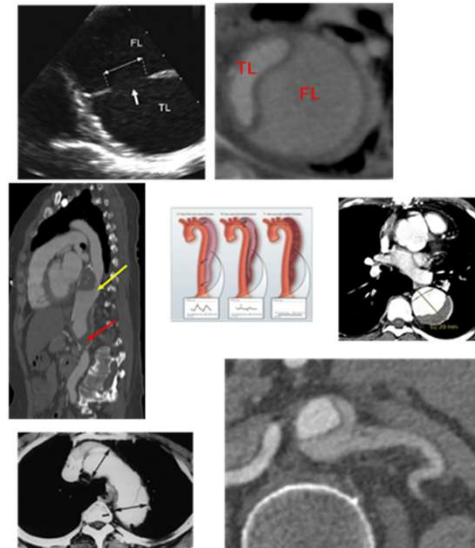
The American Journal of Medicine (2013) 126,

Dissezione aortica - Tipo B Non Complicata

Best medical therapy is mandatory

TEVAR may be considered in subacute phases, in selected cases

Predictors of Late Aortic Growth



Recommendation 18		
To prevent aortic complications in uncomplicated acute type B aortic dissection, <u>early thoracic endografting may be considered selectively</u>	IIb	B

Eur J Vasc Endovasc Surg (2017) 53, 4–52

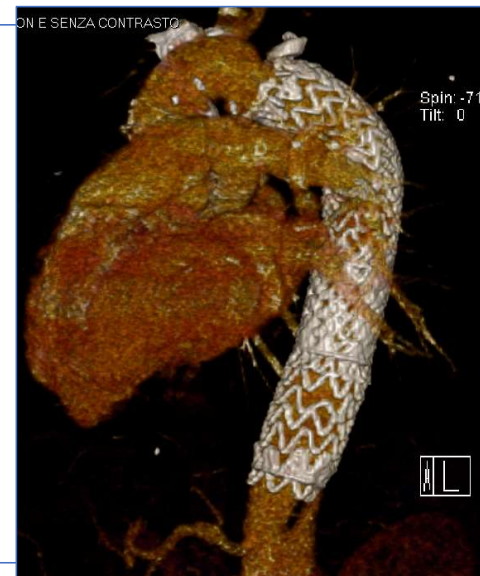
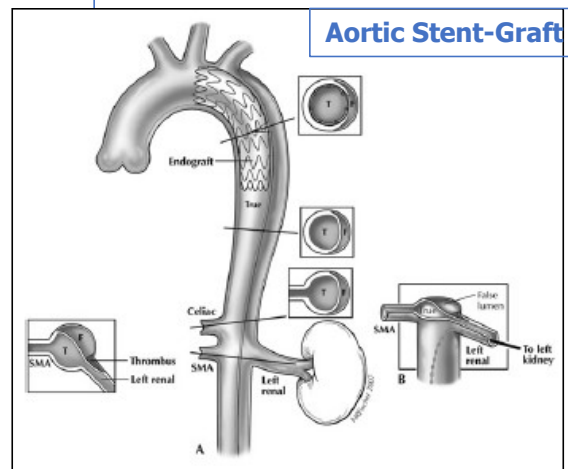
Editor's Choice — Management of Descending Thoracic Aorta Diseases

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

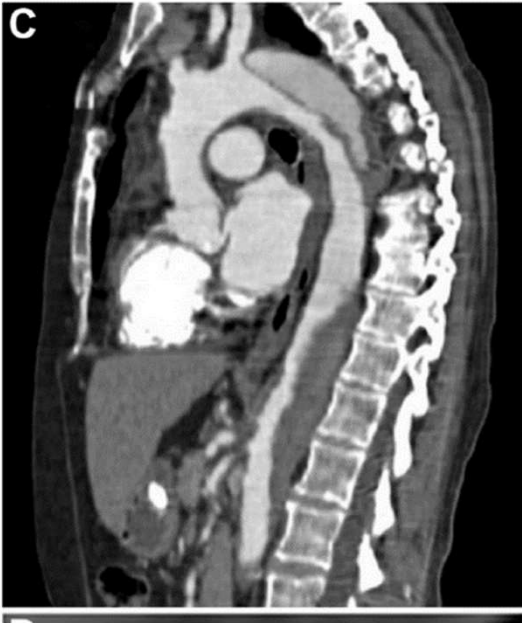
Writing Committee * V. Blomhau, D. Blocker, J. Brunelli, R. Cao, R. Chiesa, G. Coppi, M. Cerrito, G. Fradrich, S. Haulon, M.J. Jacobs, M.L. Lachat, F.J. Moll, C. Setacci, D.R. Taylor, M. Thompson, S. Trimarchi, J.J. Verhaegens, E.L. Verhoeven, ESVS Guidelines Committee * P. Kolh, G.J. de Borst, N. Chakfé, L.S. Debus, R.J. Hinchliffe, S. Kakko, I. Koncar, J.S. Lindholt, M. Vega de Ceniga, F. Vermeulen, F. Verzini, Document Reviewers * P. Kolh, J.J. Blomhau, R. Busund, M. Björck, M. Dake, F. Dick, H. Eggebrecht, A. Evangelista, M. Grabenwöger, R. Milner, A.R. Naylor, J.-B. Ricco, H. Rousseau, J. Schmidt

Dissezione aortica - Tipo B Complicata

- Urgent repair
- TEVAR recommended



Ematoma Intramurale - IMH



2652 pz con SAA

- **IMH 178 casi (6.7%)**

Type A IMH	64 (35% IMH)
Type B IMH	90 (50% IMH)
Arch IMH	24 (13.5% IMH)

- età media dei pazienti: **IMH (68.7 aa)**
vs AD (61.7 aa) $p < 0.001$



Surgery for Aortic Disease

Acute Aortic Intramural Hematoma

An Analysis From the International Registry of Acute Aortic Dissection

Kevin M. Harris, MD; Alan C. Braverman, MD; Kim A. Eagle, MD; Elise M. Woznicki, BS;
Reed E. Pyeritz, MD; Truls Myrnes, MD; Mark D. Peterson, MD; Matthias Voelker, MD;
Rossella Fattori, MD; James L. Jamuzi, MD; Dan Gilson, MD; Daniel G. Montgomery, BS;
Christoph A. Nienaber, MD; Santi Trimarchi, MD; Eric M. Isselbacher, MD; Arturo Evangelista, MD

(Circulation. 2012;126[suppl 1]:S91-S96.)

Ematoma Intramurale - IMH

- Evoluzione: Riassorbimento VS Complicanze

Table 29. Features of Complicated IMH

Feature
Malperfusion
Periaortic hematoma
Pericardial effusion with cardiac tamponade
Persistent, refractory, or recurrent pain
Rupture

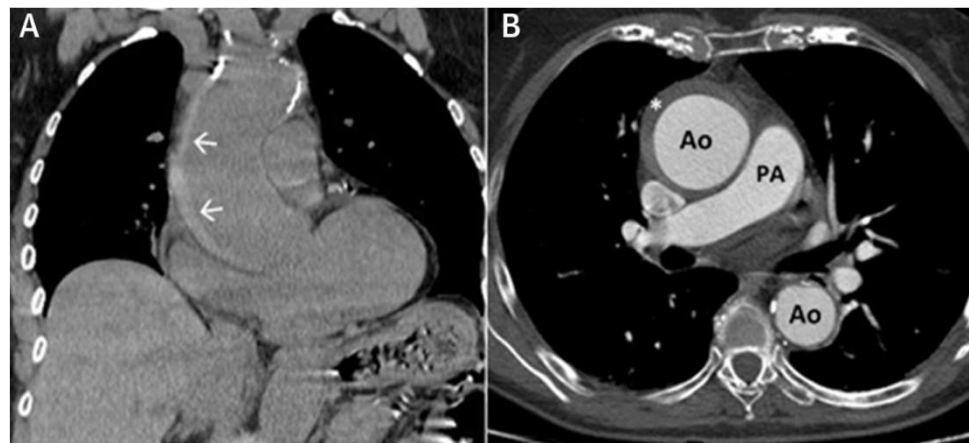
ACC/AHA CLINICAL PRACTICE GUIDELINE

2022 ACC/AHA Guideline for the Diagnosis and Management of Aortic Disease: A Report of the American Heart Association/American College of Cardiology Joint Committee on Clinical Practice Guidelines *Circulation.* 2022;146:e334–e482.

Ematoma Intramurale - IMH - complicate

Table 8 Predictors of intramural haematoma complications

Persistent and recurrent pain despite aggressive medical treatment ²⁴¹
Difficult blood pressure control ²²⁸
Ascending aortic involvement ^{228, 237, 242}
Maximum aortic diameter ≥ 50 mm ^{178, 242}
Progressive maximum aortic wall thickness (>11 mm) ²⁴³
Enlarging aortic diameter ²⁴³
Recurrent pleural effusion ²⁴¹
Penetrating ulcer or ulcer-like projection secondary to localized dissections in the involved segment ^{241, 244-246}
Detection of organ ischaemia (brain, myocardium, bowels, kidneys, etc)



2014 ESC Guidelines on the diagnosis and treatment of aortic diseases

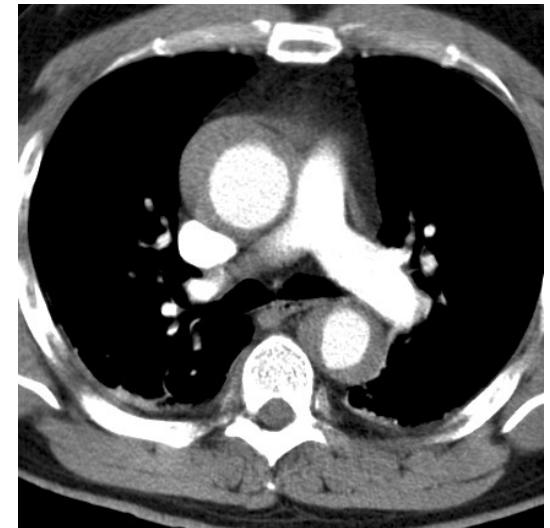
Document covering acute and chronic aortic diseases of the thoracic and abdominal aorta of the adult

The Task Force for the Diagnosis and Treatment of Aortic Diseases of the European Society of Cardiology (ESC)

Ematoma Intramurale – IMH

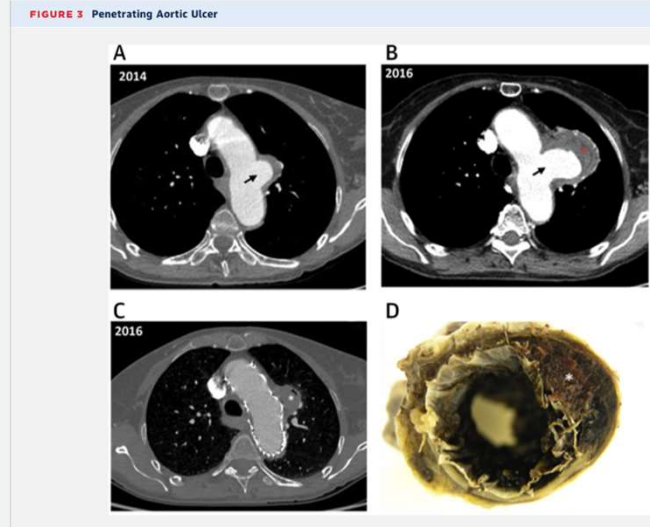
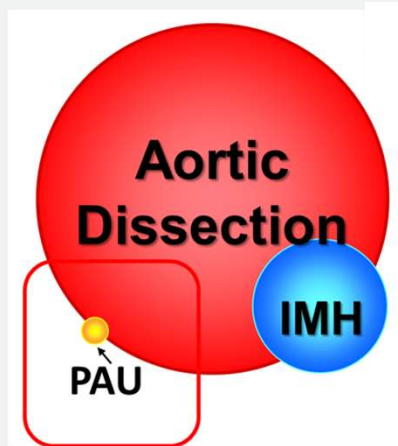
Recommendations for Management of IMH
Referenced studies that support the recommendations are summarized in the [Online Data Supplement](#).

COR	LOE	Recommendations
1	B-NR	1. In patients with complicated (Table 29) acute type A or type B aortic IMH, urgent repair is recommended. ¹⁻³
1	B-NR	2. In patients with uncomplicated acute type A IMH, prompt open surgical repair is recommended. ^{1,4-6}



Ulcera Penetrante - PAU -

PAU: 2-11% of AAS



Ulcera Penetrante - PAU - Prognosi

- Radiologic Follow-Up in 20 pts (non-ruptured PAU) initially treated medically

Radiologic evolution	%	Mean F-Up
Spontaneous resolution	15% (3 pts)	42.3 months
No changes	55% (11 pts)	41 months
Conversion to AD	10% (2 pts)	18 months
PAU expansion with IMH	20% (4 pts)	18 months

Radiological Worsening in 30% non-ruptured PAU pts

Presentation, complications, and natural history of penetrating atherosclerotic ulcer disease

Derek P. Nathan, MD,^a William Boonn, MD,^b Eric Lai, BS,^a Grace J. Wang, MD,^c Nimesh Desai, MD,^d Edward Y. Woo, MD,^e Ronald M. Fairman, MD,^e and Benjamin M. Jackson, MD,^e *Philadelphia, Pa*

(J Vasc Surg 2012;55:10-5.)

Ulcera Penetrante - PAU - Trattamento

In the case of Type A PAU, surgery should be considered.

IIa

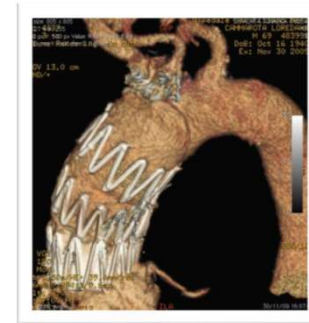
C

Asymptomatic Type A PAU:

- Open surgical repair
- TEVAR in high risk pts??
- Medical therapy and observation??

Symptomatic Type A PAU:

- Open surgical repair
- TEVAR in high risk pts?



Ulcera Penetrante - PAU - Trattamento

In the case of Type B PAU, initial medical therapy under careful surveillance is recommended.

I

C

In uncomplicated Type B PAU, repetitive imaging (MRI or CT) is indicated.

I

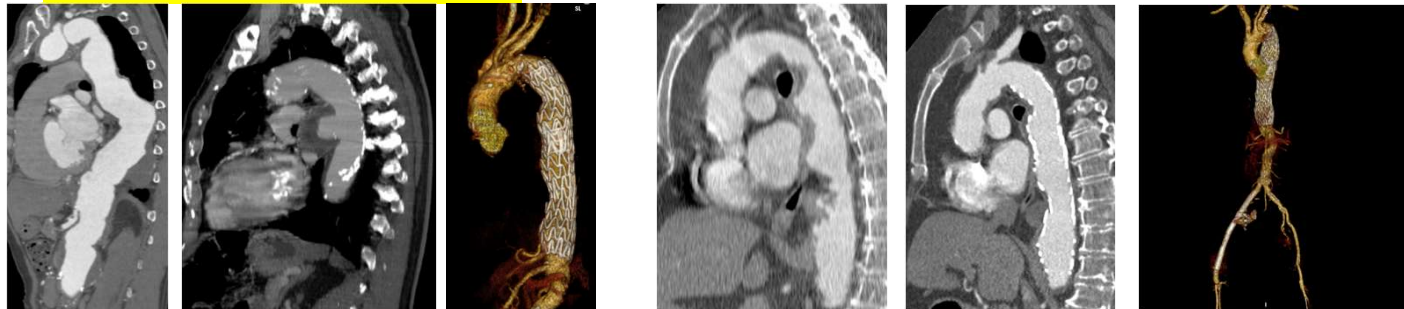
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Asymptomatic Type B PAU:

- BMT and observation
- TEVAR

Symptomatic Type B PAU:

- TEVAR preferred



Thank you

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