

DIU TUSAR

Bordeaux – Mardi 25 mars 2025

Syndrome aortique aigu

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Généralités

- ❖ Terrain **hypertendu**
- ❖ Douleur caractéristique : douleur de début **brutal**, **d'emblée maximale**, à type de déchirure, le plus souvent thoracique antérieure mais parfois dorsale ou abdominale
- ❖ Signification : **mise sous tension de la paroi aortique** par une pathologie aiguë / chronique en poussée
- ❖ Risque commun : **fissuration / rupture aortique mortelle**.

Vilacosta I. J Am Coll Cardiol 1998 ; 32 : 83-9
Vilacosta I. Heart 2001 ; 85 : 365-8



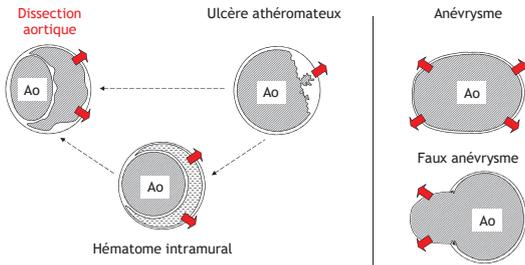
DOULEUR +
EXTRAVASATION =
SYNDROME FISSURAIRE



CHIRURGIE URGENTE

Généralités

Syndrome aortique aigu



Généralités

Extravasation

Research article
Dying from cardiac tamponade
Aravind Swaminathan¹, Karikalan Kandaswamy², Manish Powari¹ and Joseph Mathew^{1*}

Address: ¹Department of Histopathology, Royal Cornwall Hospital, Truro, UK TR1 1JJ and ²Department of Cardiology, Royal Cornwall Hospital, Truro, UK TR1 1JJ

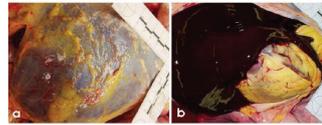
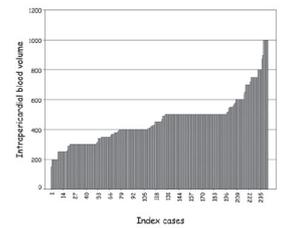


Figure 1
This image depicts a) the characteristic blackish black pericardial distension, observed at postmortem, most often b) containing an admixture of clotted and frank blood.

World J Emerg Surg 2007



Tamponnade



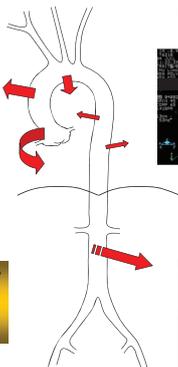
Hémomédiastin & hémothorax



Hémopéritoine



Risque de mort subite par tamponnade ou rupture aortique :
AORTE ASCENDANTE



Généralités

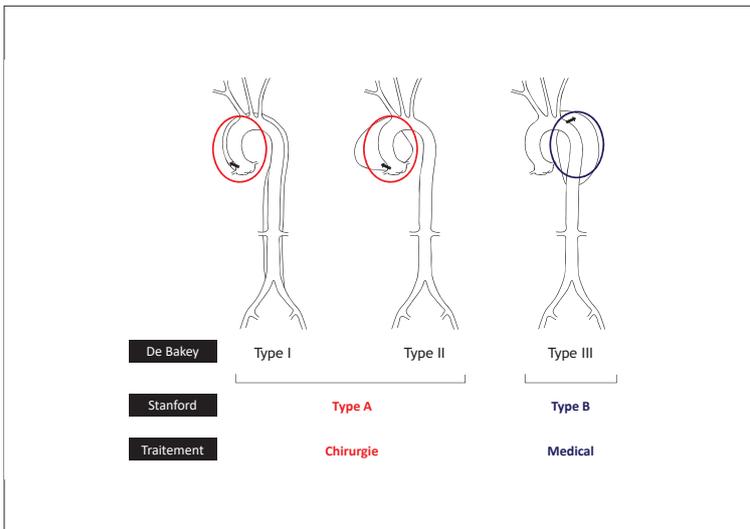
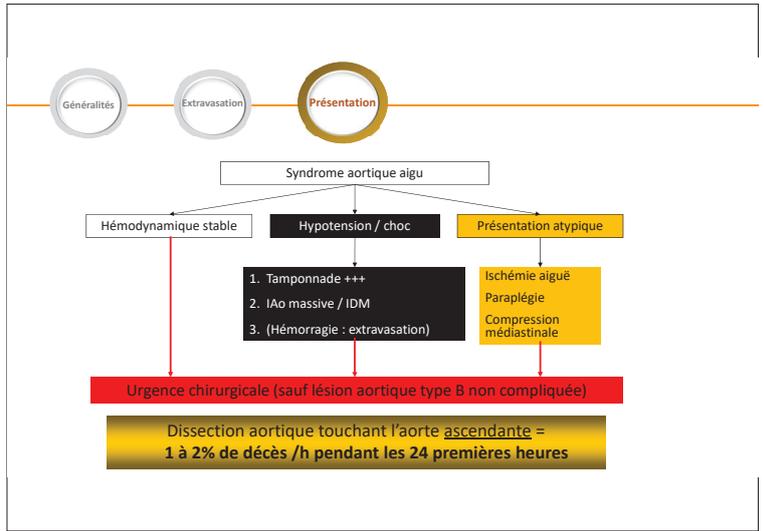
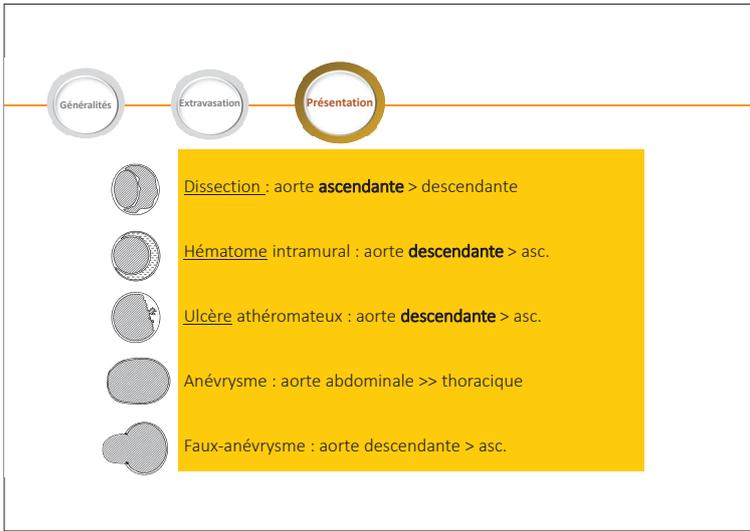
Extravasation

Syndrome d'extravasation

- ❖ Péricarde & plèvre (& abdomen) : écho. transthoracique
- ❖ Médiastinum: écho. transoesophagienne / TDM

Syndrome aortique aigu + signe d'extravasation = bloc !!





ESC ESC GUIDELINES

2024 ESC Guidelines for the management of peripheral arterial and aortic diseases

Developed by the task force on the management of peripheral arterial and aortic diseases of the European Society of Cardiology (ESC) Endorsed by the European Association for Cardio-Thoracic Surgery (EACTS), the European Reference Network on Rare Multisystemic Vascular Diseases (VASCERN), and the European Society of Vascular Medicine (ESVM)

Authors/Task Force Members: Lucia Mazzola ¹, (Chairperson) (Switzerland),

Classification of acute aortic syndromes

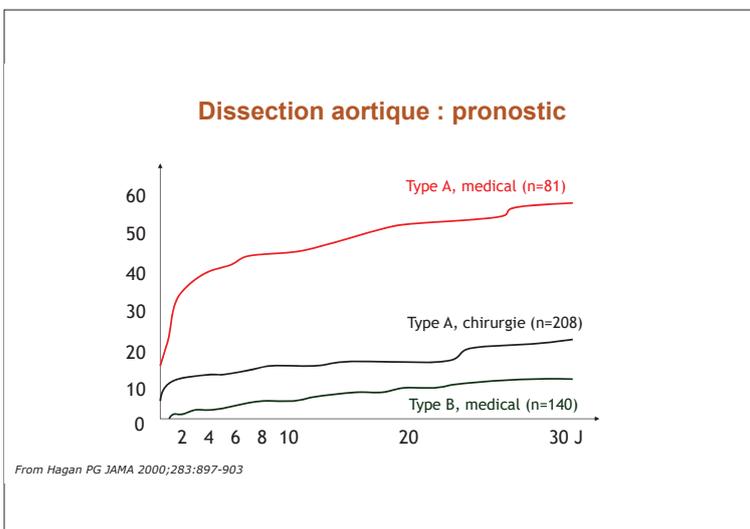
Stanford A: DeBakey I, DeBakey II, DeBakey IIIa, DeBakey IIIb

Frequency of acute aortic syndrome: 60% (Stanford A), 10-15% (Stanford B), 25-30% (Stanford B)

Classification of timing

Time: Aortic dissection onset, 24 hours post-AAS, 14 days post-AAS, 90 days post-AAS

Classification: Hypertensive AAS, Acute AAS, Subacute AAS, Chronic AAS



Simple Risk Models to Predict Surgical Mortality in Acute Type A Aortic Dissection: The International Registry of Acute Aortic Dissection Score

Vincenzo Rampoldi, MD, Santi Trimarchi, MD, Kim A. Eagle, MD, Christoph A. Nienaber, MD, Jae K. Oh, MD, Eduardo Bossone, MD, Truls Myrnes, MD, Giuseppe M. Sangiorgi, MD, Carlo De Vincentiis, MD, Jeanna V. Cooper, MS, Jianming Fang, MD, MS, Dean Smith, PhD, Thomas Tsai, MD, Arun Raghupathy, MD, Rossella Fattori, MD, Udo Sechtem, MD, Michael G. Dewh, MD, Thoralf M. Sundt III, MD, and Eric M. Isselbacher, MD, on behalf of the International Registry of Acute Aortic Dissection (IRAD) Investigators

Table 5. Preoperative Prediction Model

Variable	Overall Type A (%)	% Among Survivors	% Among Death	Coefficient	Score Assigned	p Value	Death OR (95% CI)
Age ≥ 70 y	27.3	24.1	37.4	0.68	0.7	<0.01	1.88 (1.18-3.29)
History aortic valve replacement	4.5	3.8	6.6	1.44	1.5	<0.01	4.21 (1.56-13.4)
Presenting hypotension, shock, or tamponade	28.8	22.4	49.0	1.17	1.2	<0.01	3.23 (1.95-5.37)
Migrating chest pain	13.8	12.1	19.3	0.88	0.9	<0.01	2.42 (1.32-4.45)
Preoperative cardiac tamponade	15.5	11.7	28.2	0.97	1.0	<0.01	2.65 (1.48-4.75)
Any pulse deficit	28.6	25.7	37.8	0.56	0.6	0.03	1.75 (1.06-2.88)
ECG infarct: new Q waves, ST elevation, or ischemia	21.1	18.7	29.3	0.57	0.6	0.04	1.76 (1.02-3.09)

CI = confidence interval; ECG = electrocardiogram; OR = odds ratio.

Généralités Extravasation Présentation **Diagnostic**

European Heart Journal (2019) 40, 3519–3526
doi:10.1093/eurheartj/ehz328

ESC GUIDELINES

2014 ESC Guidelines on the diagnosis and treatment of aortic diseases

ESC European Heart Journal (2019) 40, 3538–3700
European Society of Cardiology
ESC GUIDELINES

2024 ESC Guidelines for the management of peripheral arterial and aortic diseases

Developed by the task force on the management of peripheral arterial and aortic diseases of the European Society of Cardiology (ESC) Endorsed by the European Association for Cardio-Thoracic Surgery (EACTS), the European Reference Network on Rare Multisystemic Vascular Diseases (VASCERN), and the European Society of Vascular Medicine (ESVM)

Authors/Task Force Members: Lucia Mazzola ¹*, (Chairperson) (Switzerland),

Recommendations for diagnostic work-up of acute aortic syndrome

CCT from neck to pelvis is recommended as the first-line imaging technique in patients with suspected AAS since it is widely available, accurate, and provides information about the entry tear, extension, and possible complications (malperfusion, dilatation, or rupture). **I C**

In patients with suspected AAS, TOE is recommended to guide peri-operative management and detect complications. **I C**

Table 4 Revised recommendations

Recommendations in 2017 (PAD) and 2014 (Aortic)	Class	Level	Recommendations in 2024	Class	Level
Recommendations for diagnostic work-up of acute aortic syndrome					
TTE is recommended as an initial imaging investigation. In stable patients with a suspicion of AAS, the following imaging modalities are recommended (or should be considered according to local availability and expertise):	I	C	In patients with suspected AAS, focused TTE (with use of contrast, if feasible) is recommended during the initial evaluation.	I	C
MRI	I	C	In patients with suspected AAS, CMR should be considered as an alternative imaging technique if CCT is not available.	IIa	C
TOE	IIa	C	In patients with suspected AAS, TOE is recommended to guide peri-operative management and detect complications.	I	C

Clinical suspicion of AAS: determine ADD-RS^a

Aortic dissection detection-risk score (ADD-RS)^a

High-risk condition	High-risk pain feature	High-risk examination feature ^b
<ul style="list-style-type: none"> Marfan syndrome Family history of aortic disease Known aortic valve disease Recent aortic manipulation Known aortic aneurysm 	<ul style="list-style-type: none"> Chest, back, or abdominal pain described as abrupt onset, severe intensity, or ripping/tearing 	<ul style="list-style-type: none"> Haemodynamic instability (hypotension/shock) Perfusion deficit (pulse deficit, differential systolic blood pressure) Focal neurological deficit New AR murmur

If one present = 1 ADD-RS point

High risk: ADD-RS ≥ 2 → CCT neck-pelvis without delay and/or focused TTE + ECG

Low risk: ADD-RS < 2 → ECG to exclude STEM (2023 ESC ACS Guidelines)

Chest X-Ray and laboratory test and POCUS (if available)

POCUS → CCT → AAS confirmed / AAS excluded

Consider alternative diagnosis

Généralités Extravasation Présentation **Diagnostic**

Dissection aortique aiguë

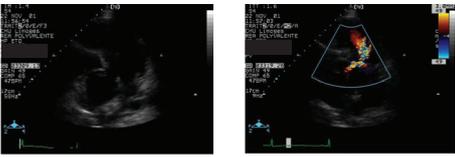
- Flap intimal (piège : artefact linéaire) :
 - flap : image linéaire traversant la lumière aortique
 - sépare vrai et faux chenal & extension variable (type A ou B)
 - valeur des calcifications (signent l'origine intimale)
 - porte(s) entrée / réentrée
- Signes indirects :
 - dilatation (régulière) de l'aorte
 - insuffisance aortique (aigüe / non connue)
 - épanchement péricardique (hémopéricarde)
 - anomalie contraction segmentaire (dissection coronaire)
 - hémomédiastin, hémothorax gauche.

TYPE A (± CHOC)

Roudaut R. In : Echocardiographie clinique de l'adulte. Ed Estem, 2003 ; PP : 953-73

Généralités Extravasation Présentation **Diagnostic**

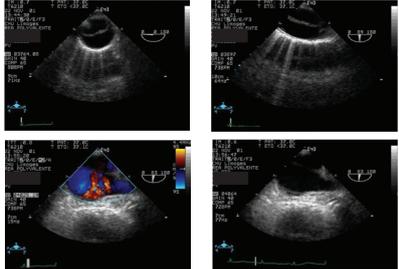
Etat de choc : ETT en première intention



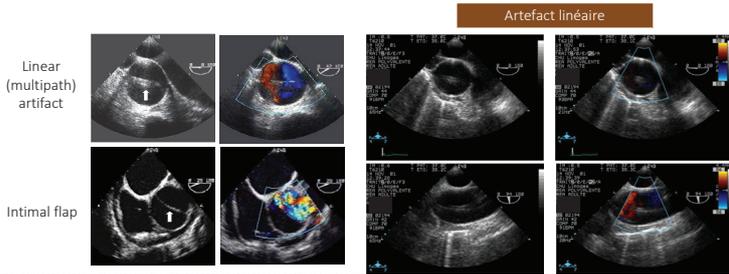
Syndrôme aortique aigu & insuffisance aortique : éliminer une dissection aortique proximale.

Généralités Extravasation Présentation **Diagnostic**

ETO en deuxième intention au bloc opératoire



Artefact linéaire vs. flap intimal Aorte ascendante



Critères diagnostiques d'artefact linéaire Aorte ascendante

Differential Transesophageal Echocardiographic Diagnosis Between Linear Artifacts and Intraluminal Flap of Aortic Dissection or Disruption*

Philippe Vigoux, MD, Kirk T. Spencer, MD, Geoffrey Reinhold, MD, Pierre-Marie Fross, MD, Daniel Komos, MD, Beth Bolanos, BS, and Roberto M. Lugo, MD
(CHEST 2001; 119:1778-1790)

Intra-aortic linear artifact only if aortic diameter > diameter of adjacent anatomical structure (RAP, LA)

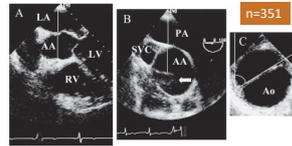
❖ Prevalence: 23%

❖ Diagnostic criteria:

- moves parallel to aortic walls
- angle with aortic wall > 85°
- thickness > 2.5 mm
- similar velocities on both sides

❖ At least 3 of these criteria fulfilled:

Specificity: 100%; positive predictive value: 100%.

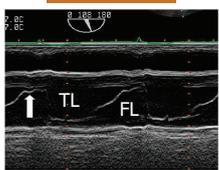


Diagnosis of Ascending Aortic Dissection by Transesophageal Echocardiography: Utility of M-Mode in Recognizing Artifacts

ARTURO EVANGELISTA, MD, HERMINIO GARCIA-del-CASTILLO, MD, TERESA GONZALEZ-ALUJAS, MD, ROSA DOMINGUEZ-ORRINOZ, MD, ARMANDO SALAS, MD, GAETIA PERMANTER-MIRALDA, MD, JORGE SOLER-SOLER, MD, FACC
Barcelona, Spain

JACC Vol. 27, No. 1
January 1996:102-7

Intimal flap



- ❖ Free motion of actual aortic flap (according to pressure gradient between true & false lumen)
- ❖ Variable angle with aortic wall (transverse view)
- ❖ Usually thin structure (intimal flap)
- ❖ Frequent difference of blood flow velocity (true vs. false lumen)

Linear artifact



Linear + mirror artifact



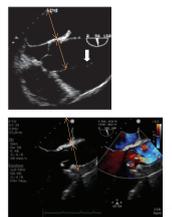
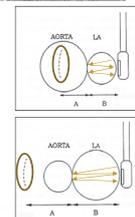
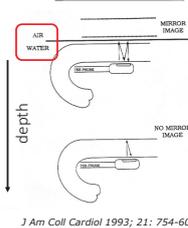
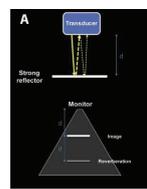
Origine des artefacts linéaires de réverbération Aorte ascendante

STATE-OF-THE-ART REVIEW ARTICLE Fact or Artifact in Two-Dimensional Echocardiography: Avoiding Misdiagnosis and Missed Diagnosis

Philippe Vigoux, MD, Kirk T. Spencer, MD, Kirk T. Spencer, MD, Beth Bolanos, BS, and Roberto M. Lugo, MD
J Am Coll Cardiol 1993; 21: 754-60

Clinical Significance and Origin of Artifacts in Transesophageal Echocardiography of the Thoracic Aorta

ALAN F. ORTEGA, MARIO FORTES G. VALLEJA, PhD, J. W. YOUNG, MD, ANTHONY MONTATHUIS, MD, ART F. YOGANATHAN, PhD, SAOUDOU P. MOUSTA, MD, FACC
Atlanta, Georgia



Hématome de paroi (intra-aortique) aigu

- ❖ Epaissement en croissant ou circonférentiel de la paroi aortique (> 7 mm) : « granité » ou hétérogène
- ❖ Extension variable (idem dissection)
- ❖ Intima refoulée (calcifications)
- ❖ Elargissement (régulier) de l'aorte (inconstant)
- ❖ Signes d'extrasvasation possibles :
 - ✓ Hémopéricarde
 - ✓ Hémomédiastin
 - ✓ Hémothorax
- ❖ Pas porte entrée, non circulant.

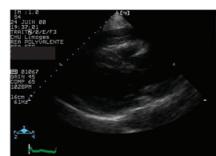


Mohr-Kahaly S et al. J Am Coll Cardiol 1994 ; 23 : 658-64



Hématome de paroi (intra-aortique) aigu

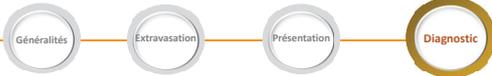
ETT immédiate aux urgences



Vue parasternale

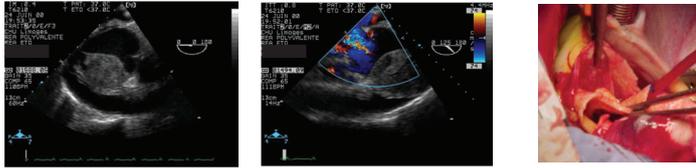


Vue sous-costale



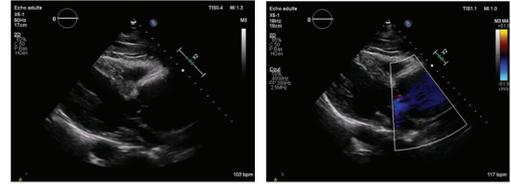
Hématome de paroi (intra-aortique) aigu

ETO au bloc opératoire chez un patient anesthésié



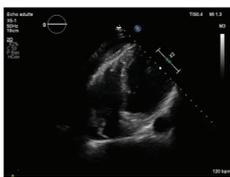
Fissuration d'anévrisme de l'aorte ascendante

ETT aux Urgences car douleur thoracique + hypotension



Fissuration d'anévrisme de l'aorte ascendante

ETT aux Urgences car douleur thoracique + hypotension

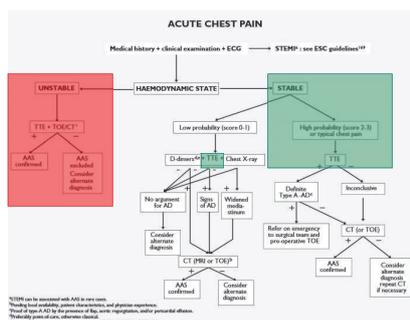


Syndrôme aortique aigu

Syndrôme aortique aigu + hypotension / choc = urgence vitale

- ❖ But # 1 : diagnostic précoce
- ❖ But # 2 : identifier les signes d'extravasation en ETT
- ❖ But # 3 : chirurgie immédiate si aorte ascendante (compléter les informations par une ETO au BO).

2014 ESC Guidelines on the diagnosis and treatment of aortic diseases



Sensitivity of the Aortic Dissection Detection Risk Score, a Novel Guideline-Based Tool for Identification of Acute Aortic Dissection at Initial Presentation

Results From the International Registry of Acute Aortic Dissection

Adam M. Rogers, MD; Luke K. Hermann, MD; Anna M. Booter, MD; Christoph A. Nienaber, MD; David M. Williams, MD; Ella A. Kazerooni, MD; James B. Froehlich, MD; Patrick T. O'Garra, MD; Daniel G. Montgomery, BS; Jeanne V. Cooper, MS; Kevin M. Harris, MD; Stuart Hanchison, MD; Arturo Evangelista, MD; Eric M. Isselbacher, MD; Kim A. Eagle, MD, on behalf of the IRAD Investigators

