

DIU TUSAR
Bordeaux – Mardi 24 mars 2026


Syndrome aortique aigu

Philippe Vignon
Réanimation Polyvalente
Inserm CIC 1435
CHU Limoges



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**.



DOULEUR + EXTRAVASATION = SYNDROME FISSURAIRE

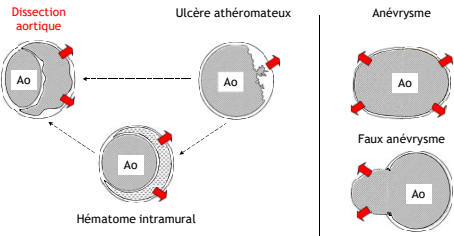
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CHIRURGIE URGENTE

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

Généralités

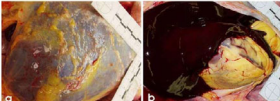
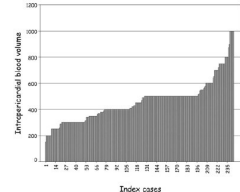
Syndrome aortique aigu



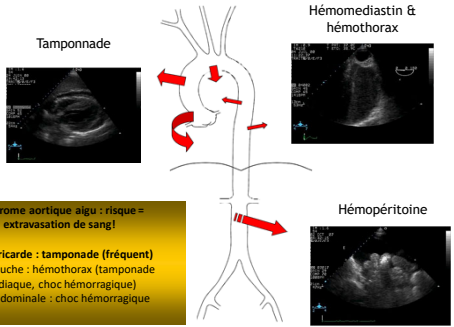
Généralités **Extravasation**

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

Address: ¹Department of Intensive Care, Bordeaux-Matignon Hospital, France; ²ICU and ³Department of Cardiology, Bordeaux-Matignon Hospital, France; *ORCID iD

World J Emerg Surg 2007



Syndrôme aortique aigu : risque = extravasation de sang!

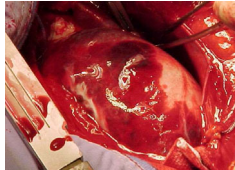
- ✓ Hémopéricarde : tamponade (fréquent)
- ✓ Plevre gauche : hémothorax (tamponade extra-cardiaque, choc hémorragique)
- ✓ Cavité abdominale : choc hémorragique (rare).

Généralités **Extravasation**

Syndrôme d'extravasation

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

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



Généralités **Extravasation** **Présentation**

Dissection : aorte **ascendante** > descendante

Hématome intramural : aorte **descendante** > asc.

Ulcère athéromateux : aorte **descendante** > asc.

Anévrisme : aorte abdominale >> thoracique

Faux-anévrisme : aorte descendante > asc.

Généralités **Extravasation** **Présentation**

Syndrôme aortique aigu

- Hémodynamique stable
- Hypotension / choc
 - 1. Tamponnade +++
 - 2. IAO massive / IDM
 - 3. (Hémorragie : extravasation)
- Présentation atypique
 - Ischémie aiguë
 - Paraplégie
 - Compression médiastinale

Urgence chirurgicale (sauf lésion aortique type B non compliquée)

Dissection aortique touchant l'aorte ascendante = 1 à 2% de décès/h pendant les 24 premières heures

DeBakey Type I Type II Type III

Stanford Type A Type B

Traitement Chirurgie Medical

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 (VASERN), and the European Society of Vascular Medicine (ESVM).

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

Classification of acute aortic syndromes

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

Frequency of acute aortic syndrome: 60%, 10-15%, 25-30%

Classification of timing

Timeline: Hypertensive AAS (AAS onset), Acute AAS (AAS onset to 14 days post-AAS), Subacute AAS (14 days post-AAS to 90 days post-AAS), Chronic AAS (90 days post-AAS)

Généralités **Extravasation** **Présentation**

Dissection aortique aiguë : ETT = 1^{ère} étape

ESC **CLINICAL RESEARCH** Vascular medicine

Integration of transthoracic focused cardiac ultrasound in the diagnostic algorithm for suspected acute aortic syndromes

Palmas Nazario^{1,2}, Christian Mueller³, Simone Vanni⁴, Alexandre de Melo Santos⁵, Bernd A. Lisdorf⁶, Gabriele Coraci⁷, Enrico Lupia⁸, Andrea Polzella⁹, Stefano Grillo¹⁰, and Fabio Moretti¹¹

Direct findings of AAS: intimal flap, intramural aortic hematoma

Indirect findings of AAS: thoracic aorta dilatation (diameter ≥4 cm), pericardial effusion or tamponade, aortic regurgitation (color Doppler).

A: Intimal flap B: Thoracic aorta dilatation

C: Pericardial effusion D: Aortic regurgitation

Généralités **Extravasation** **Présentation**

FoCUS results

Class topic	Sensitivity %	Sensitivity plot	Specificity %	Specificity plot
Class topic	83.2% (57.0-91.9)	→	92.4% (87.8-96.0)	→
Thoracic dilatation	59.6% (51.2-67.6)	→	93.4% (87.8-96.0)	→
Aortic valve regurg.	10.2% (5.0-15.4)	→	93.7% (87.8-96.3)	→
Peric. effusion/tamp.	39.7% (31.7-48.1)	→	92.2% (87.1-95.0)	→
Any sign	89% (82.8-93.8)	→	74.8% (71.7-77.7)	→

FoCUS results

Direct sign	AAS type	Sensitivity %	Sensitivity plot	Specificity %	Specificity plot
Direct sign	AAAD	92.9% (41.8-93.9)	→	94.8% (85-98.3)	→
	Other	34.4% (22.7-47.7)	→	91.9% (86.8-97.7)	→
Any sign	AAAD	90.5% (80.9-93.1)	→	73.2% (68.8-77.4)	→
Any sign	Other	78.7% (68.3-88.1)	→	68.7% (57.3-79.0)	→

AAS: Acute Aortic Syndrome
A-AAD: Type A Acute Aortic Dissection

Généralités Extravasation **Présentation**

Syndrome aortique aigu : ETT = 1^{ère} étape

Généralités Extravasation **Présentation**

Dissection aortique aiguë : ETT = 1^{ère} étape

Généralités Extravasation **Présentation**

Dissection aortique aiguë : ETT = 1^{ère} étape

Généralités Extravasation **Présentation**

Dissection aortique aiguë : ETO per-op. = 2^{ème} étape

Généralités Extravasation **Présentation**

Left subclavian artery & left carotid are not involved

Flap intussusception & AR

Left coronary artery is not involved

Small true lumen

Généralités Extravasation **Présentation**

Dissection aortique aiguë : imagerie

	TEE/TE	MDCT	MRI
Sensitivity	+++	+++	+++
Specificity	+++	+++	+++
Classification	+++	+++	+++
Flap localization	+++	++	++
Aortic regurgitation	+++	-	++
Pericardial effusion	++	+++	+++
Mediastinal hematoma	++	+++	+++
Side branch involvement	++	+++	++
Coronary artery involvement	++	+++	++
X-ray exposure	-	++	-
Patient comfort	+	+++	-
Follow-up studies	++	+++	+++
Intraoperative availability	+++	-	-

Am J Cardiol 2002;89:1235-8

CT 96%
TEE/TE 87%
Aortography 77%
MRI 22%
MR 4%
TEE 1%

ROLE OF THE ART PAPER
The Role of Imaging in Aortic Dissection and Related Syndromes
Haganovici R, Raju RK, D'Alagni A, Nordin ML, Patel RK, Bhatia S, et al. (2012) J Am Coll Cardiol 60:100-108
DOI: 10.1016/j.jacc.2011.11.011

- ✓ TEE must be performed by (highly) experienced hands in SB patients
- ✓ TEE should be discouraged if hypotension/shock is present as TTE provides immediate confirmation of tamponade physiology
- ✓ CT remains the reference imaging modality.

ESC GUIDELINES

2014 ESC Guidelines on the diagnosis and treatment of aortic diseases

ESC GUIDELINES

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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 (ERN-RCMD), and the European Society of Vascular Medicine (ESVM)

Authors/Task Force Members: Lucía Massaló ¹, (Chairperson) (Switzerland)

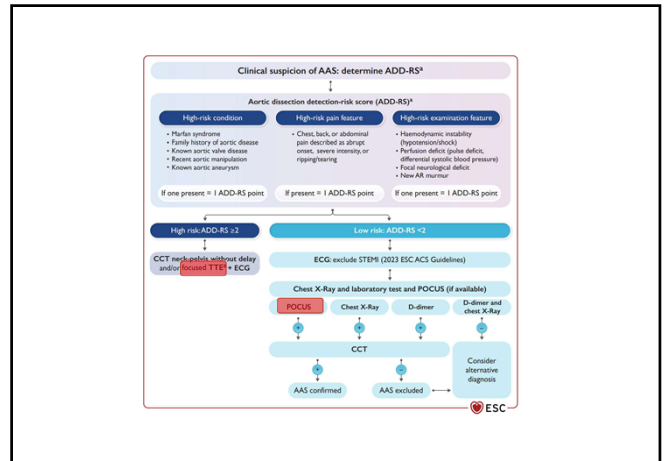
Recommendations for diagnostic work-up of acute aortic syndrome

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 entire tear, extension, and possible complications (major fusion, dilatation, or rupture)

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

Recommendations in 2017 (PAD) and 2014 (Aortic)	Class	Level	Recommendations in 2024	Class	Level
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: (II)	I	C	In patients with suspected AAS, focused TTE (with use of contrast, if feasible) is recommended during the initial evaluation.	I	C
TOE	I	C	In patients with suspected AAS, CPR should be considered as an alternative imaging technique if CCT is not available.	IIa	C
			In patients with suspected AAS, TOE is recommended to guide peri-operative management and detect complications.	I	C

TEE is best & safely performed in the OR under general anesthesia (opened pericardium)



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 (aiguë / non connue)
 - épanchement péricardique (hémopéricarde)
 - anomalie contraction segmentaire (dissection coronaire)
 - hémomédiastin, hémothorax gauche.

TYPE A (E CHOC)

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

Artefact linéaire vs. flap intimal

Aorte ascendante

Artefact linéaire

Linear (multipath) artifact

Intimal flap

Critères diagnostiques d'artefact linéaire

Aorte ascendante

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

Philippe Vilquin, MD, Erik T. Spenser, MD, Geoffrey Randall, MD, Pierre-Marie Pons, MD, David Aronow, MD, Beth Roberts, RN, and Roberto M. Lang, MD (CHEST 2001; 119:1378-1390)

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, HERIBERTO GARCIA-OLGA-CASTILLO, MD, TERESA GONZALEZ-ALUJAN, MD, ROSA RODRIGUEZ-ORONGO, MD, ARMANDO SALAS, MD, GABRIELA PERMANYER-MIRALDA, MD, JORGE SIEBER-SIEBER, MD, FACC

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

Linear artifact

Linear + mirror artifact

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)

Origine des artefacts linéaires de réverbération Aorte ascendante

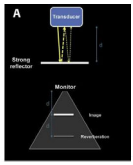
STATE-OF-THE-ART REVIEW ARTICLE
Fact or Artifact in Two-Dimensional Echocardiography:
Avoiding Misdiagnosis and Missed Diagnosis

Philip A. Bonow, MD, PhD, Robert A. Levine, MD, PhD, De S. Krishnan, MD, PhD,
William H. Gaasch, MD, PhD, and Charles E. Hayes, MD, PhD

(J Am Coll Cardiol 2012;59:101)

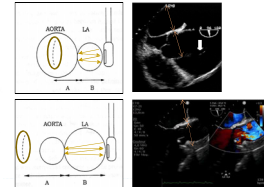
Clinical Significance and Origin of Artifacts in Transesophageal
Echocardiography of the Thoracic Aorta

ALAN F. ARTISER, MD, PhD, PETER S. WOLFE, PhD, S. B. TRENKLE, MD,
ANTHONY MONTI-ARIELI, MD, PhD, P. YOGANATHAN, PhD,
BANDOPPEE P. WASTEN, MD, PhD,
Alan, George



depth

NO REVERBERATION
NO REVERBERATION
J Am Coll Cardiol 1993; 21: 754-60



Généralités Extravasation Présentation **Diagnostic**

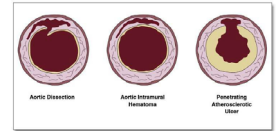
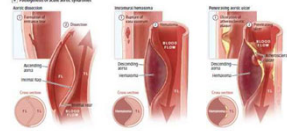
Syndrôme aortique aigu

Classification Education

JAMA | Review

Acute Aortic Dissection and Intramural Hematoma
A Systematic Review

Mark H. Mehta, MD, PhD, et al. J Am Coll Cardiol 2014; 53: 1001-1011



Généralités Extravasation Présentation **Diagnostic**

Hématome de paroi (intra-aortique) aigu

ETT immédiate aux urgences



Vue parasternale



Vue sous-costale

Généralités Extravasation Présentation **Diagnostic**

Hématome de paroi (intra-aortique) aigu

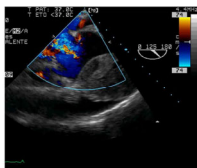
- ❖ Épaississement en croissant ou circonférentiel de la paroi aortique (> 7 mm) : « granité » ou hétérogène
- ❖ Extension variable (idem dissection)
- ❖ Intima refoulée (calcifications)
- ❖ Elargissement (régulier) de l'aorte (inconstant)
- ❖ Signes d'extravasation possibles :
 - ✓ Hémopéricarde
 -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



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

Généralités Extravasation Présentation **Diagnostic**

Hématome intrapariétal aortique (ETO per-op.)



Généralités Extravasation Présentation **Diagnostic**

Ulcère athéroscléreuse aortique pénétrant (ETO per-op.)

