

# Aktuelle Behandlungsstandards Europäische Leitlinien

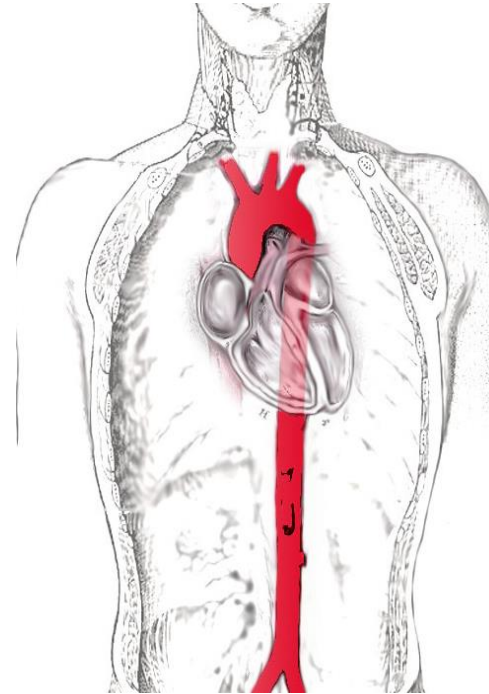
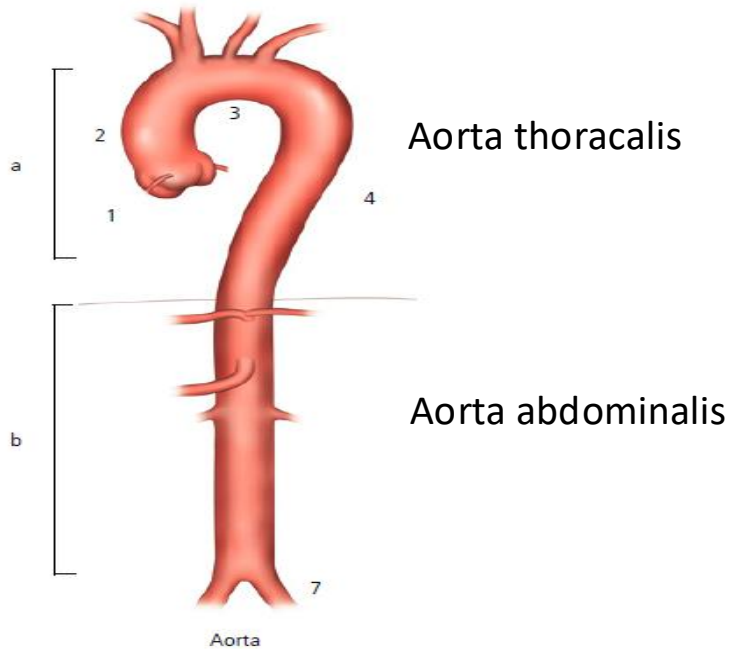


Medizinische Hochschule  
Hannover

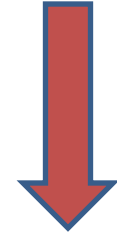
# Überblick

- Was ist die „Aorta“?
- Welche Erkrankungen gibt es?
- Was ist ein „Aorten-Aneurysma“?
- Was ist eine „Aorten-Dissektion“?
- Welche Behandlungsstrategien gibt es?
- Welche Behandlungsstandards gibt es?

# Was ist die „Aorta“?



Lebensader

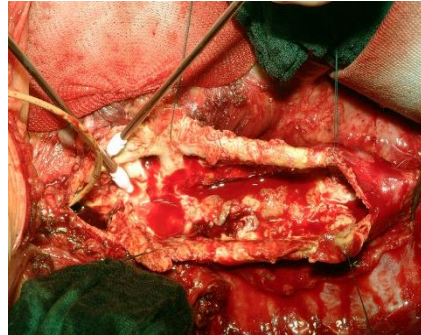


24. Organ des Menschen

1: Aortenwurzel, 2: Aorta ascendens, 3: Aortenbogen, 4: Aorta descendens

# Welche Erkrankungen gibt es?

- Aneurysma
- Dissektion
- IMH
- PAU
- Aortitis



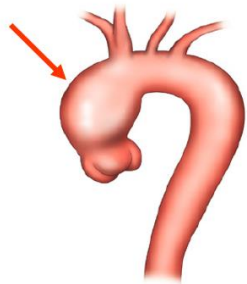
Normalwerte thorakale Aorta des Erwachsenen in der Computertomografie (CT) (in cm)

Lokalisation	Weiblich	Männlich
Aortenwurzel	3,5-3,7	3,6-3,9
Aorta ascendens	2,9	2,9
Aorta descendens	2,4-2,6	2,5-3,0
thorako-abdomineller Übergang	2,4	2,4-2,7

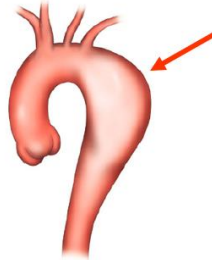
(nach Elefteriades et al.)

# Was ist ein „Aorten-Aneurysma“?

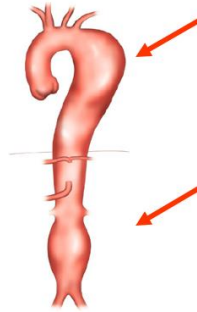
- Der normale Aorten Durchmesser beträgt <40mm.
- Bei Aneurysma ist der Aorta auf mehr als das 1,5- fache der Norm erweitert.
- Die häufigsten Ursachen sind Athereosklerose, Hypertonie, Bindegewebserkrankungen, Aortitis, Autoimmunerkrankungen
- Meistens chronisch und Zufallsbefund
- meist keine Symptome, Symptome wenn Dissektion
- Anatomische Varianten und entsprechende Symptome



Ascendens-Aneurysma



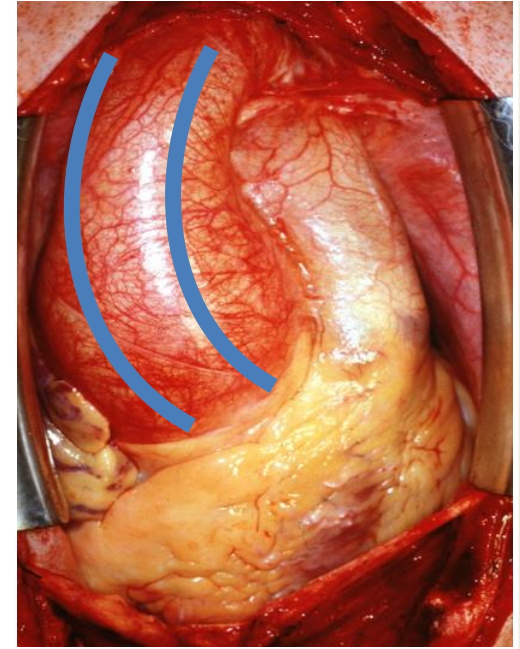
Descendens-Aneurysma



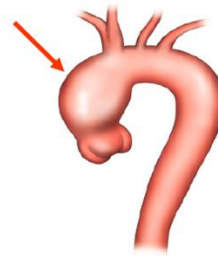
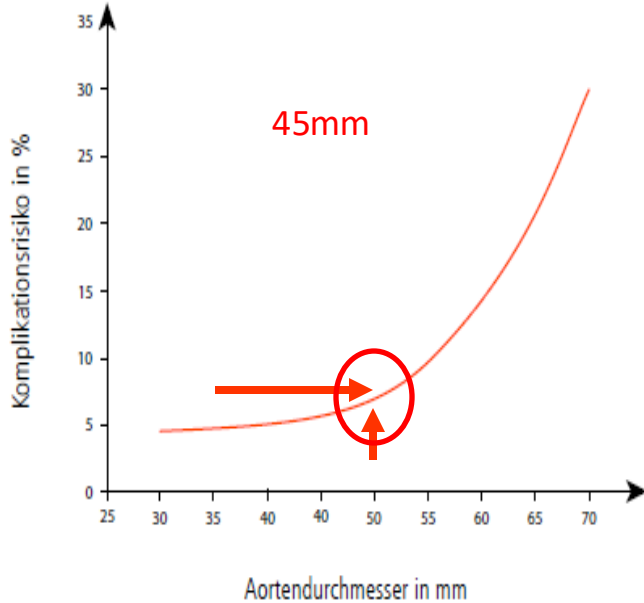
Thorakoabdominelles  
Aortenaneurysma (TAAA)



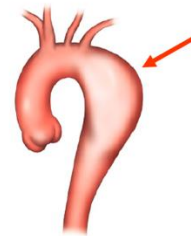
Megaaortensyndrom



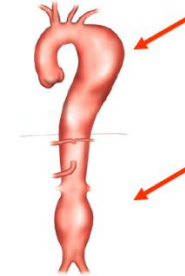
# Aortenaneurysmen



Ascendens-Aneurysma



Descendens-Aneurysma



Thorakoabdominelles  
Aortenaneurysma (TAAA)



Megaaortensyndrom

Komplikationswahrscheinlichkeit (Dissektion, Ruptur, Tod) in Abhängigkeit vom Aortendurchmesser → OP  
Indikation abhängig von vielen Faktoren wie z.B. Durchmesser

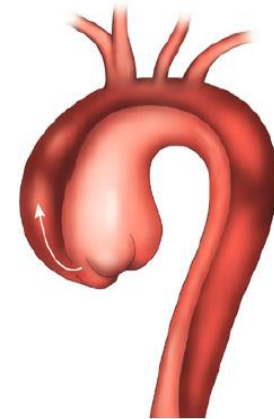
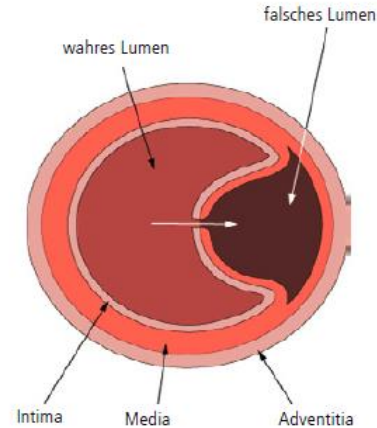
# Was ist eine „Aorten-Dissektion“?

## Symptome:

- Thorakaler Vernichtungsschmerz
- Periphere Durchblutungsstörungen
- Neurologische Symptome
- Schock

## Risiko-Faktoren:

- Arteriosklerose und Hypertonus
- Vaskulitis
- Angeboren (Bikuspide Aortenklappe, Aortenisthmusstenose)
- Angeborene Bindegewebsdefekte (Marfan, Ehlers-Danlos)
- Kokainabusus
- Iatrogen (Herzkatheter)



# Aortendissektion

Einteilung hat OP-Relevanz

OP-Indikation bei Aortendissektion

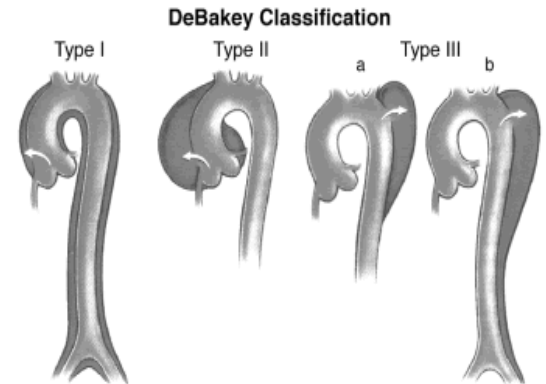
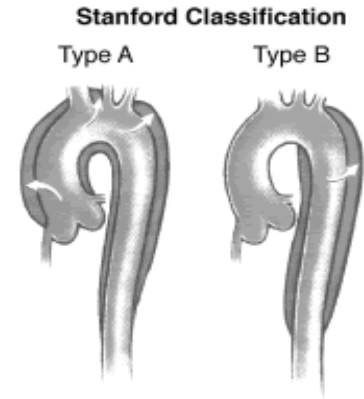
**Typ A**

**– sofort (nach Diagnosestellung)**

Typ B

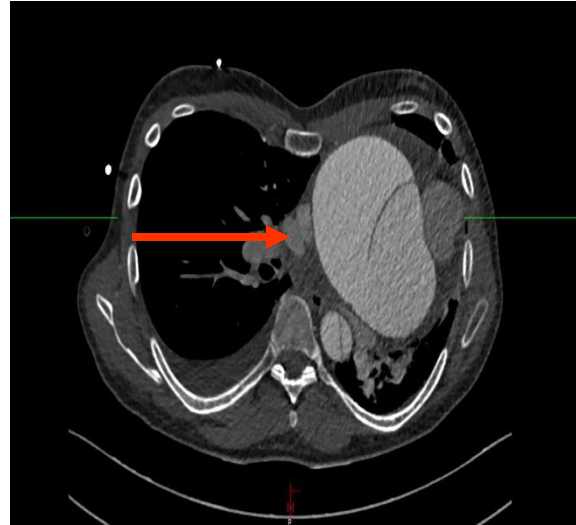
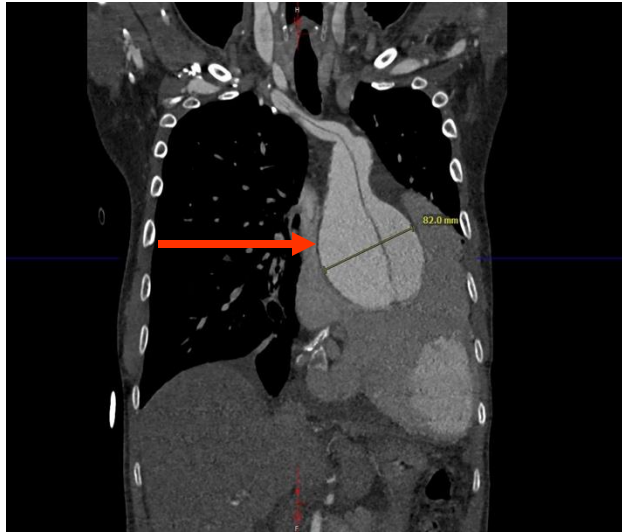
– bei Komplikationen

- Malperfusion
- Neurologische Symptome
- Hämatothorax
- Größenzunahme falsches Lumen >6cm



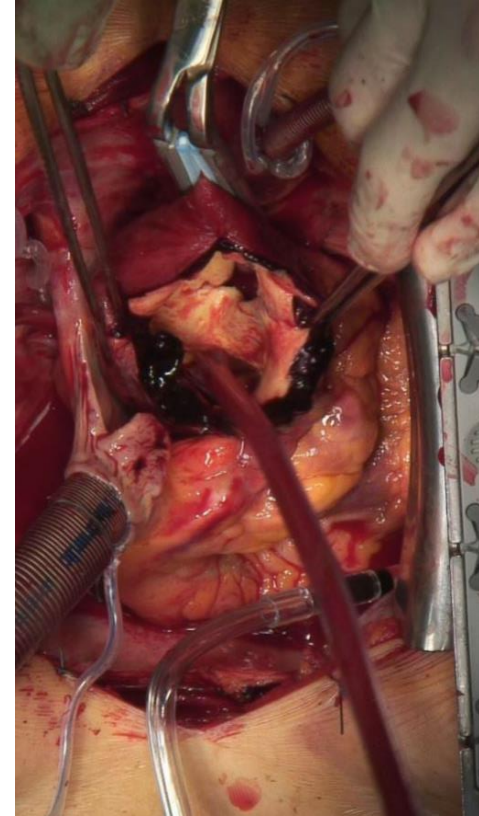
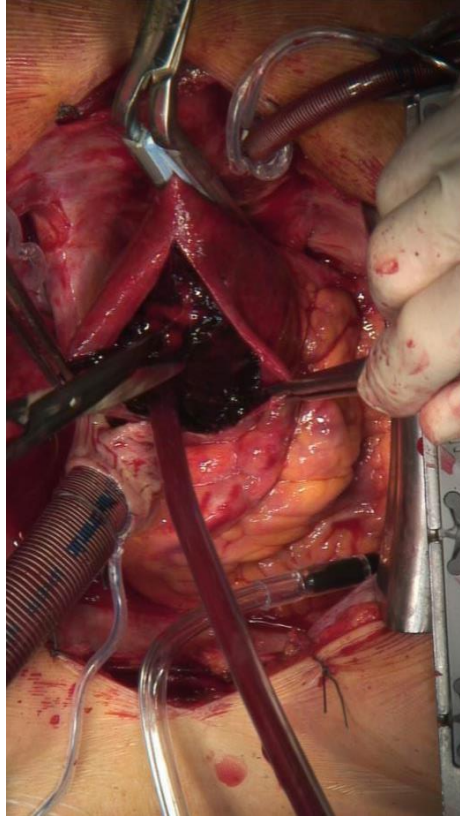
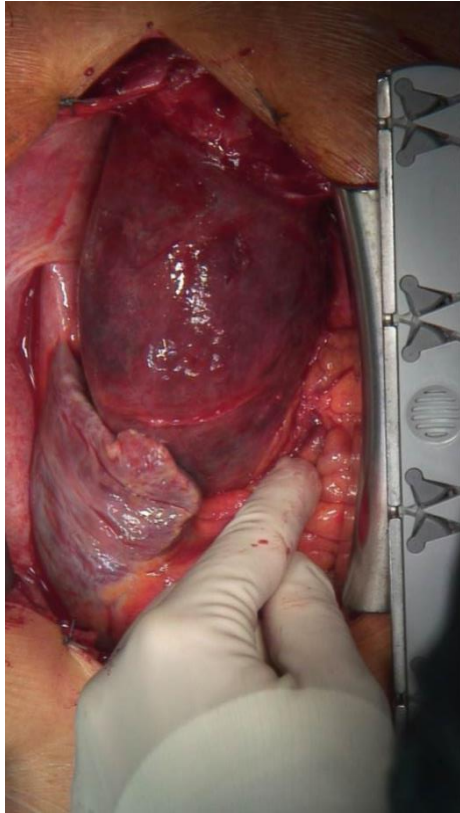


# Aortendissektion in der Bildgebung



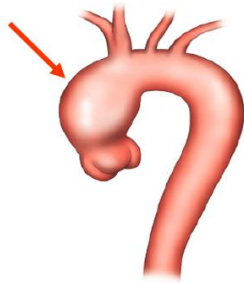
CT – Untersuchung mit Kontrastmittel bei thorakaler Schmerzsymptomatik seit einigen Monaten  
Aortenaneurysma 82mm mit akuter Typ A Dissektion

# Aortendissektion im OP

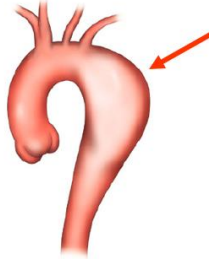


# Welche Behandlungsstrategien gibt es?

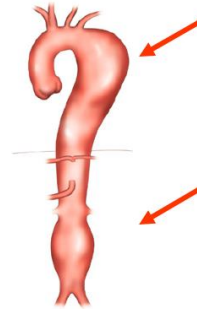
Chirurgische Strategie in Abhängigkeit der Lokalisation



Ascendens-Aneurysma



Descendens-Aneurysma



Thorakoabdominelles  
Aortenaneurysma (TAAA)



Megaaortensyndrom

# Welche Behandlungsstandards gibt es?

Behandlungsstandards abhängig von

- Leitlinien
- Studien
- Erfahrungen

# Chirurgische Therapie ESC Guidelines 2014-2023



European Heart Journal (2014) 35, 2873–2926  
doi:10.1093/eurheartj/ehu281

ESC GUIDELINES

## 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

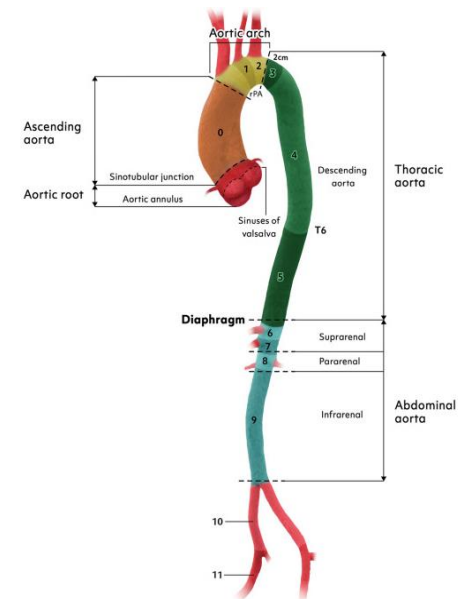
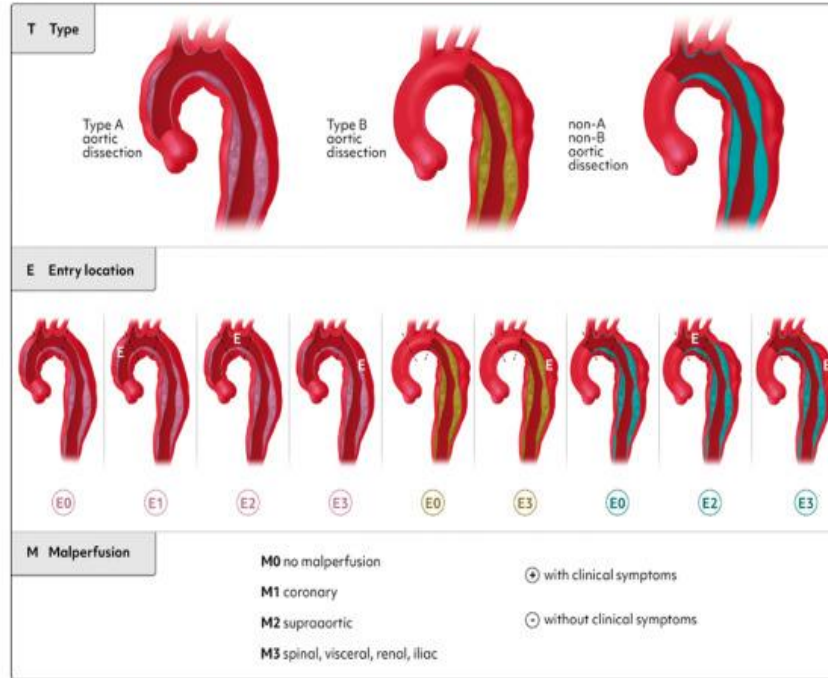
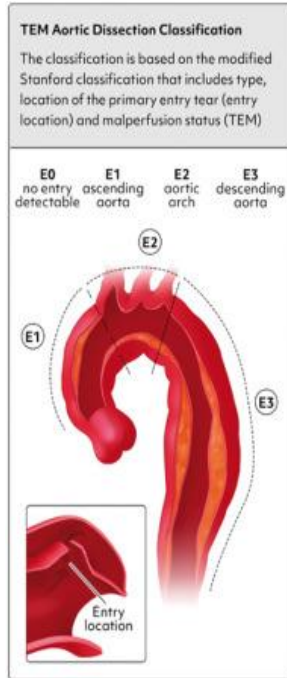
The Task Force for the Diagnosis and Treatment of Aortic Diseases of the European Society of Cardiology (ESC)

Authors/Task Force members: Raimund Erbel\* (Chairperson) (Germany), Victor Aboyans\* (Chairperson) (France), Catherine Boileau (France), Eduardo Bossone (Italy), Roberto Di Bartolomeo (Italy), Holger Eggebrecht (Germany), Arturo Evangelista (Spain), Volkmar Falk (Switzerland), Herbert Frank (Austria), Oliver Gaemperli (Switzerland), Martin Grabenwöger (Austria), Axel Haverich (Germany), Bernard Jung (France), Athanasios John Manolis (Greece), Folkert Meijboom (Netherlands), Christoph A. Nienaber (Germany), Marco Roffi (Switzerland), Hervé Rousseau (France), Udo Sechtem (Germany), Per Anton Sirnes (Norway), Regula S. von Allmen (Switzerland), Christiaan J.M. Vrints (Belgium).

- Aortenaneurysma: 55mm
- Bicuspide Aortenklappe: 55mm
- Aortenwurzel: 55mm
- Herz OP: AI und 50mm
  
- Dissektion – unklar
- Aortenelongation - unklar
- Risikofaktoren – unklar
- Wachstumsrate – unklar
- Körpergröße – unklar
- Genetische Ursachen - unklar

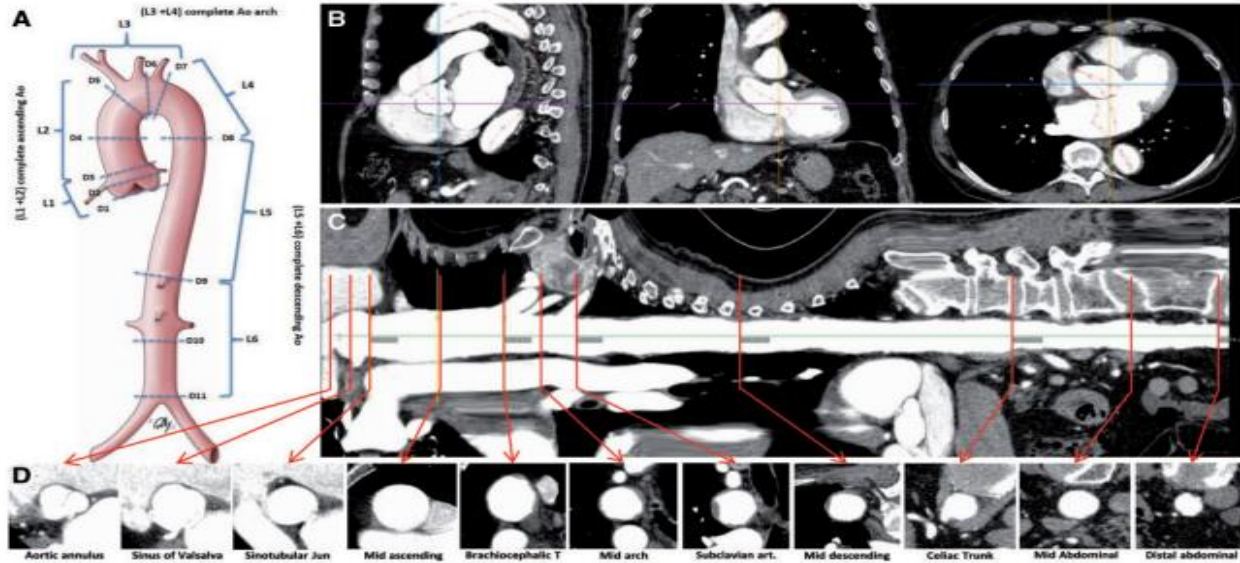
# Aortic Guideline EACTS/STS 2024

EACTS/STS Guidelines for diagnosing and treating acute and chronic syndromes of the aortic organ



# Aortenelongation

Aortic elongation in aortic aneurysm and dissection: the Tübingen Aortic Pathoanatomy (TAIPAN) project†

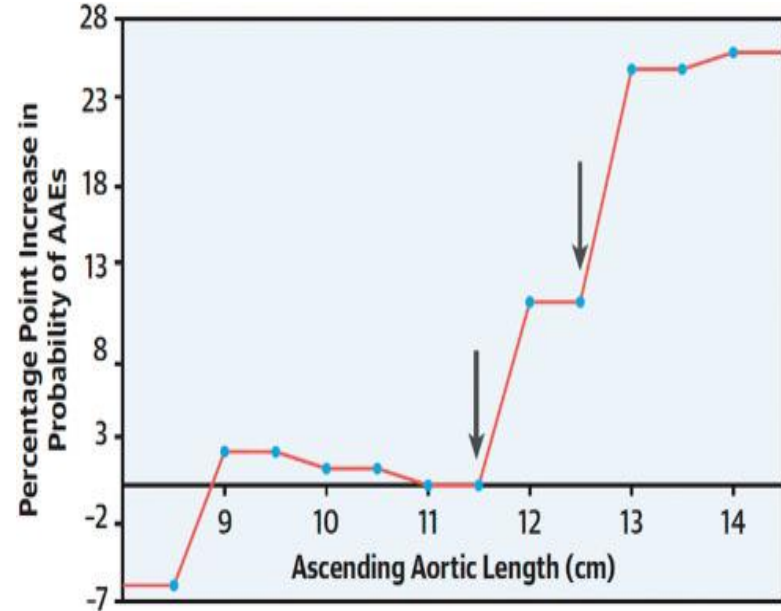


**Conclusions:** Patients with ectatic (45-54 mm diameter) and elongated ( $\geq 120$  mm) ascending aortas represent a high-risk subpopulation for TAD.

# Aortic Guideline EACTS/STS 2024

EACTS/STS Guidelines for diagnosing and treating acute and chronic syndromes of the aortic organ

## Aortic Lengths





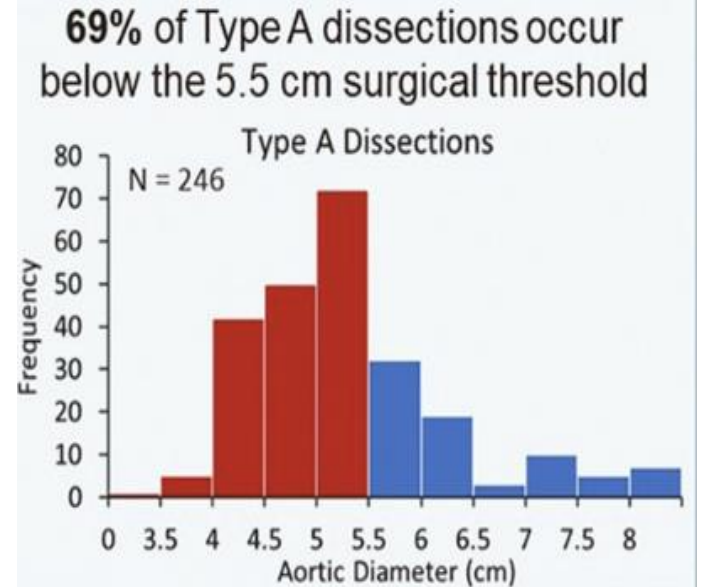
# Aneurysmagröße

> [Ann Thorac Surg](#). 2023 Aug;116(2):262-268. doi: 10.1016/j.athoracsur.2023.03.037.  
Epub 2023 Apr 14.

## Aortic Size at the Time of Type A and Type B Dissections

Zachary G Perez <sup>1</sup>, Mohammad A Zafar <sup>1</sup>, Juan J Velasco <sup>1</sup>, Alexandra Sonsino <sup>1</sup>,  
Hesham Ellauzi <sup>1</sup>, Clerin John <sup>1</sup>, Asanish Kalyanasundaram <sup>1</sup>, Bulat A Ziganshin <sup>1</sup>,  
John A Elefteriades <sup>2</sup>

**Conclusions:** Aortic diameter at the time of type A dissection is consistent with the new guidelines that recommend surgical intervention at 5.0 cm. Type B dissection occurs at small sizes and cannot be prevented with a size criterion.



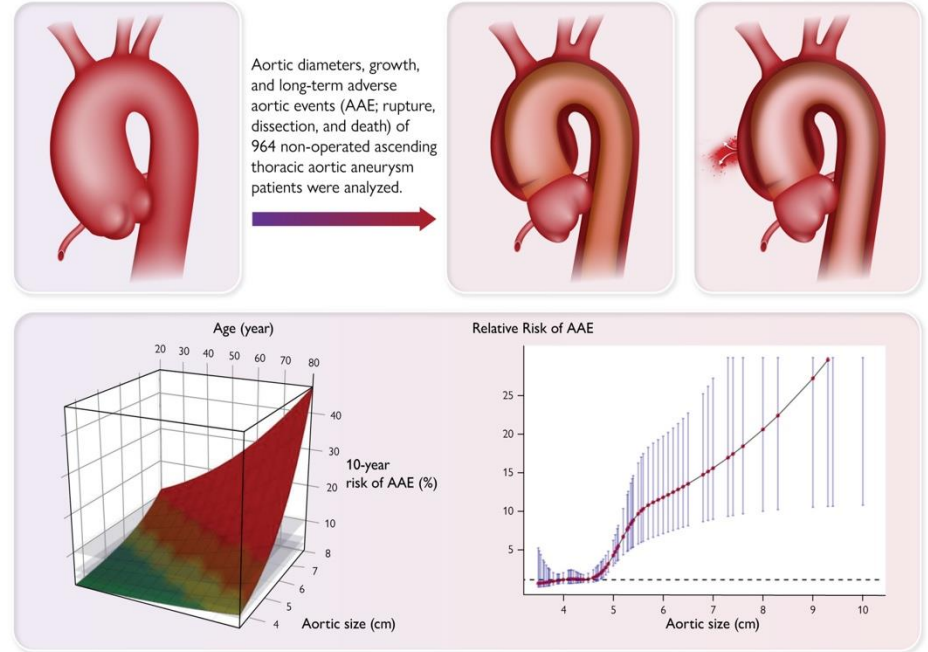
# Aneurysmagröße

> *Eur Heart J*. 2023 Mar 30;ehad148. doi: 10.1093/eurheartj/ehad148. Online ahead of print.

## Fate of the unoperated ascending thoracic aortic aneurysm: three-decade experience from the Aortic Institute at Yale University

Jinlin Wu<sup>1,2</sup>, Mohammad A Zafar<sup>1</sup>, Yiwei Liu<sup>3</sup>, Julia Fayanne Chen<sup>4</sup>, Yupeng Li<sup>5</sup>, Bulat A Ziganshin<sup>1</sup>, Hesham Ellauzi<sup>1</sup>, Sandip K Mukherjee<sup>1</sup>, John A Rizzo<sup>6</sup>, John A Elefteriades<sup>1</sup>

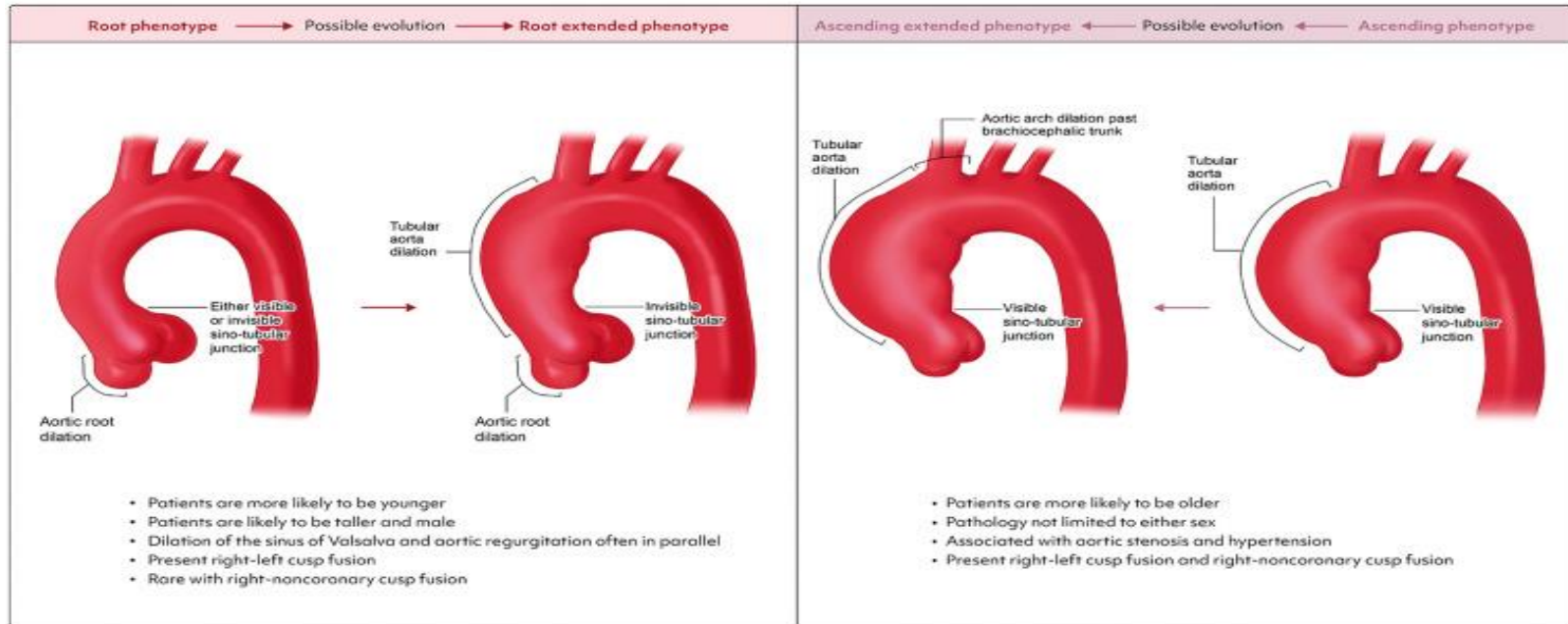
**Conclusion:** An aortic size of 5 cm, rather than 5.5 cm, may be a more appropriate intervention criterion for prophylactic ATAA repair. Aortic growth may not be an applicable indicator for intervention.



# Aortic Guideline EACTS/STS 2024

EACTS/STS Guidelines for diagnosing and treating acute and chronic syndromes of the aortic organ

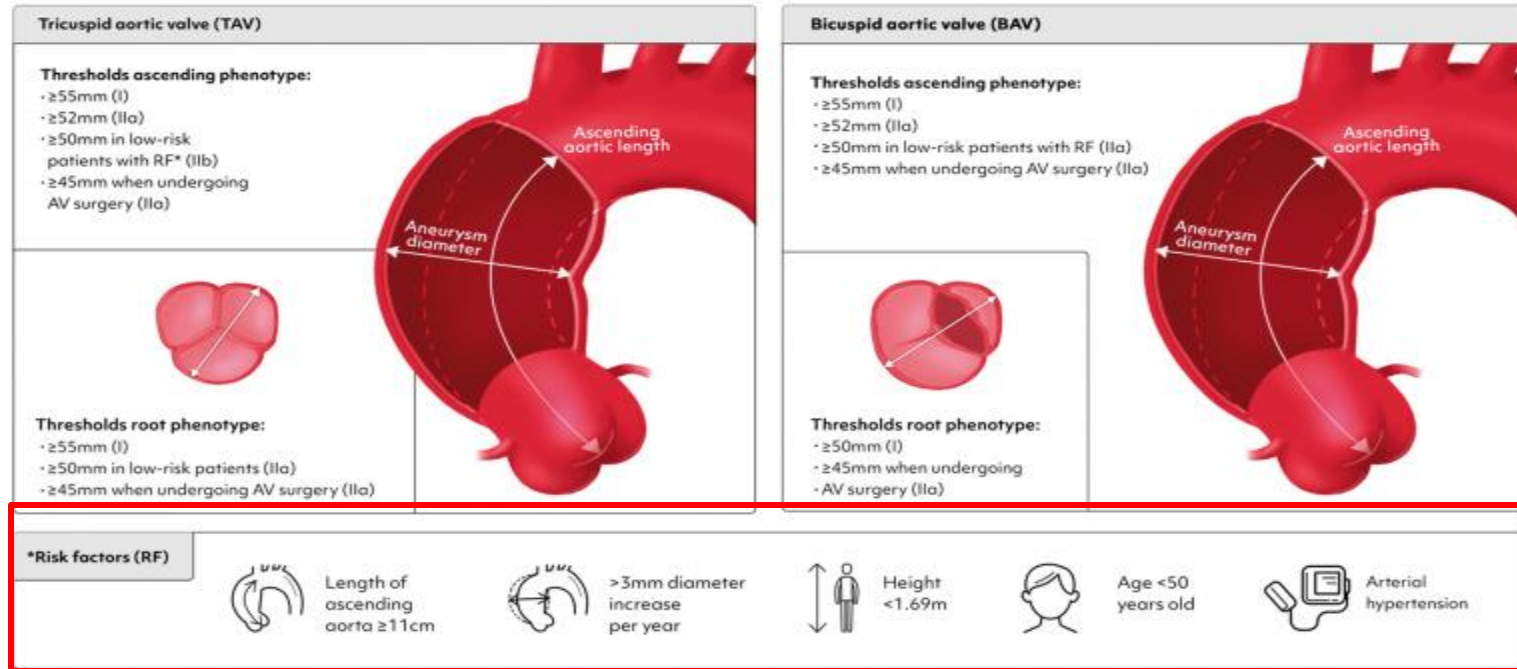
Bicuspid aortic valve aortopathy (BAVA) phenotypes



# Aortic Guideline EACTS/STS 2024

EACTS/STS Guidelines for diagnosing and treating acute and chronic syndromes of the aortic organ

Thresholds for intervention in aortic root and ascending aortic aneurysm



# Aortic Guideline EACTS/STS 2024

## EACTS/STS Guidelines for diagnosing and treating acute and chronic syndromes of the aortic organ

### Key Message:

- Aorta wurde als eigenständiges Organ deklariert
- Einheitliche Klassifikationen (TEM, GERAADA...)
- Konsensus über Operationsstrategien (Temperatur, Bogenanastomose..)
- Behandlung von komplexe Pathologien in spezialisierten Zentren
- Indikationsstellung hinsichtlich der Pathologie und Morphologie

### Op-Indikation:

- **Aortenwurzel: BAV und TAV ab 45mm bzw. 50mm**
- **Aorta Aszendenz: ab 50mm**
- **Bei Risikofaktoren: ab 50mm**
- **Anatomische Besonderheiten: ab 50mm**
- **Prophylaktische Indikation: ab 50 mm (Patientenwunsch)**
- **Im Rahmen einer Herzoperation: ab 45mm**

### OP-Technik:

- Maximal vs minimal Prinzip
- Offen chirurgisch vs minimalchirurgisch

# Team Approach – Network Aortic centre



# Team Approach – Network Aortic centre

Neurology

General Practitioner

Ambulance

Cardiac Surgery



Emergency

Vascular Surgery

Radiology

Cardiology

Industry

Anesthesiology

Intensive Care unit

**Aortic Patient**

Transport

# Vielen Dank für Ihre Aufmerksamkeit



## Aortic Team Hannover

### von links:

I. Rogalski  
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A.-F. Popov  
H. Krüger  
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