La dissecazione dell'aorta ascendente e dell'arco: quando fermarsi all'ascendente quando sostituire l'arco?

Carlo de Vincentiis

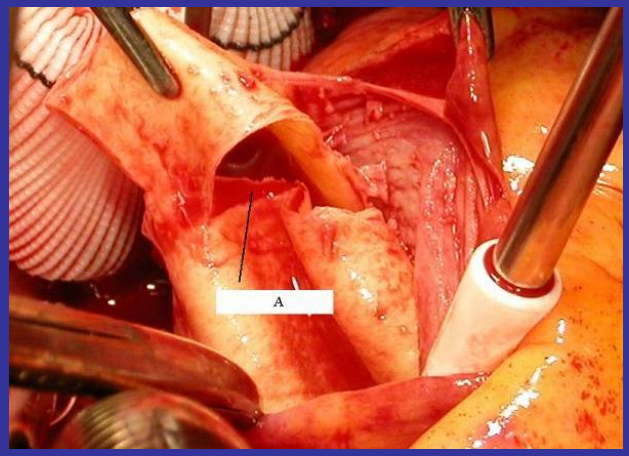
IRCCS Policlinico San Donato

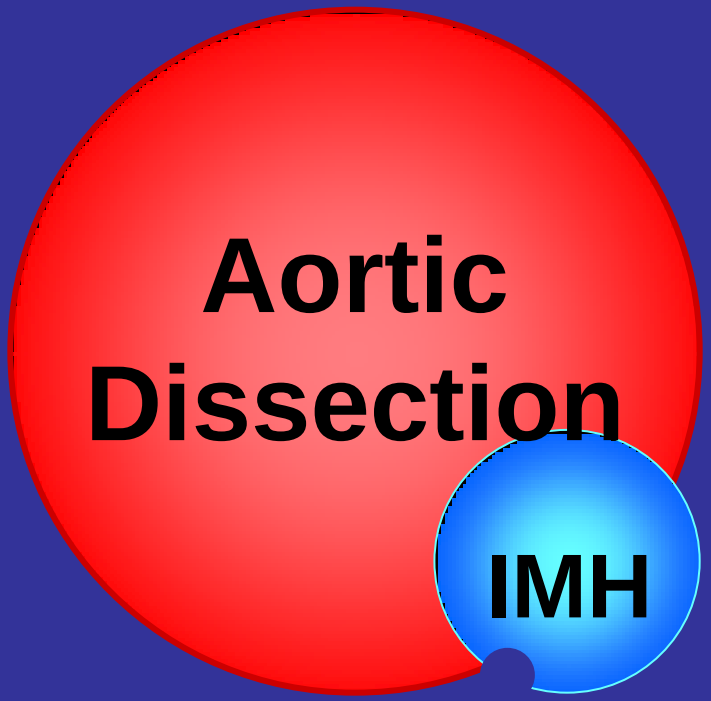
Dissezione Aortica

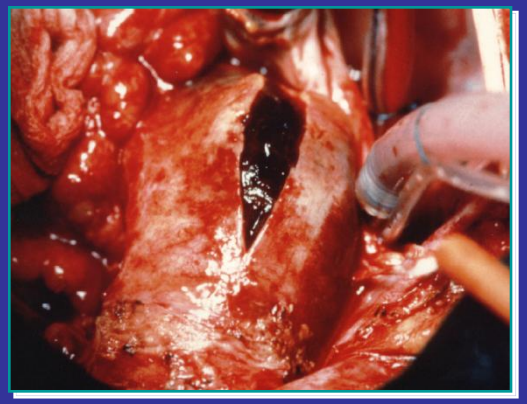
5 – 20 pts / mil. / yr

Causa di morte nella popolazione: 0.5%

Incidenza m/f 2/1 - 5/1





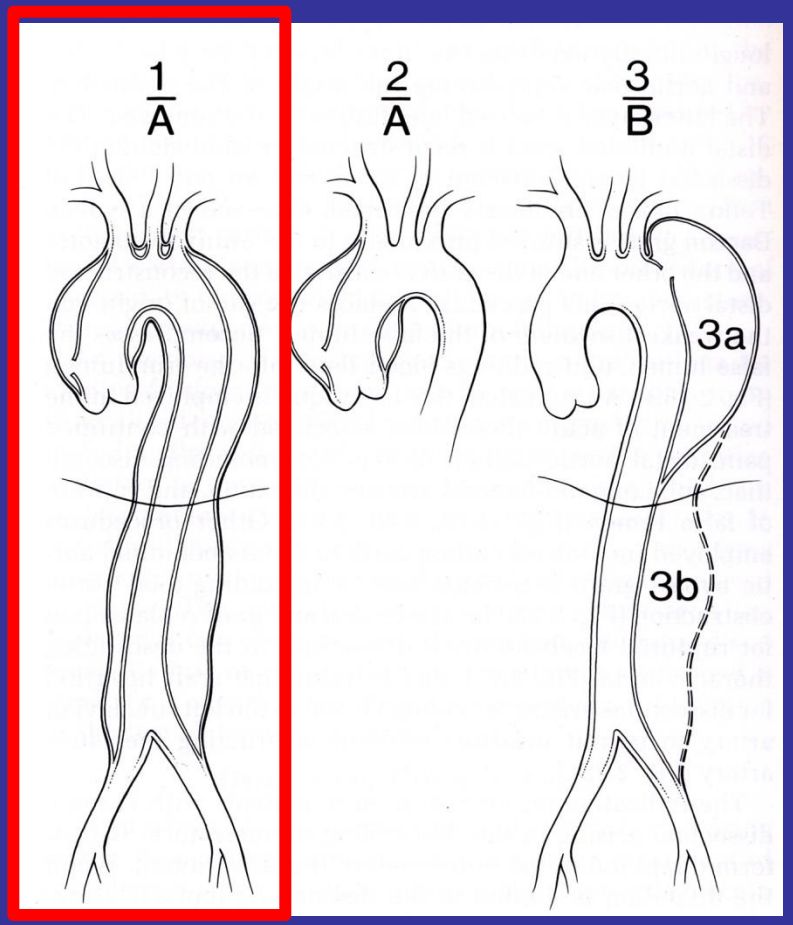


Dissezione Aortica

CLASSIFICAZIONE

Stanford: A, B

De Bakey: I°, II°, III°



PROGNOSI

Senza trattamento, la dissecazione aortica ha un'alta mortalità

- Il 35% dei pz non curati muore entro le prime 24 ore, il 50% entro 48 ore, il 70% dopo una settimana e l'80% entro 2 settimane.
- Il tipo B ha prognosi migliore

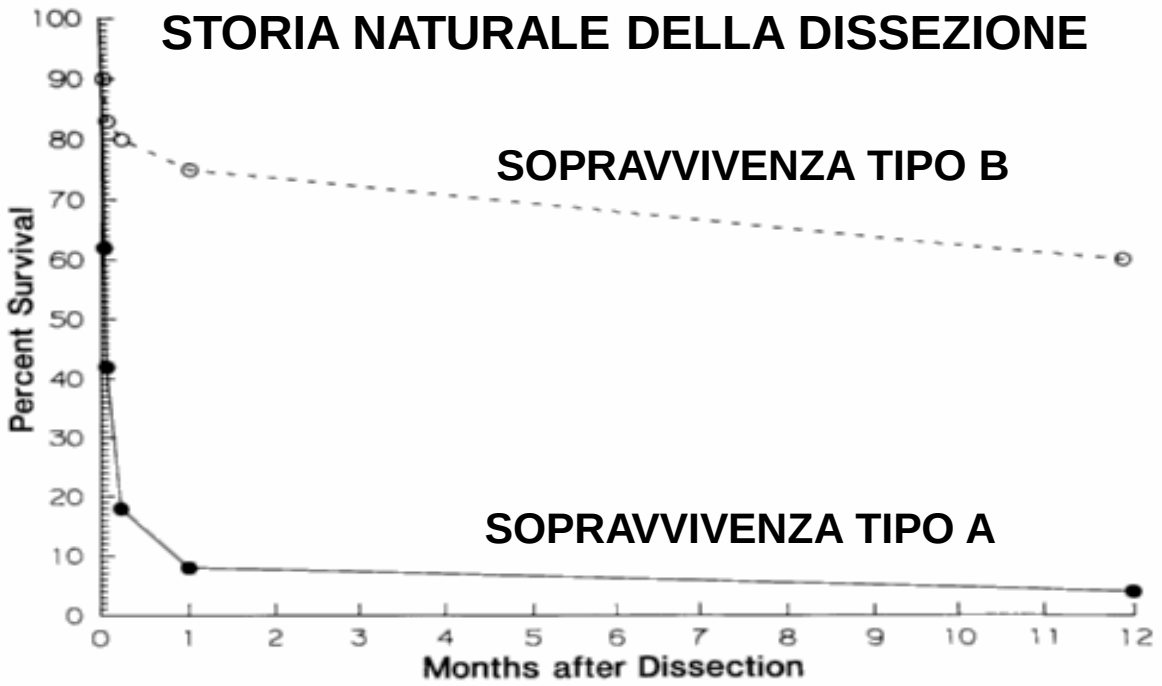


Figure 54-3 Freehand estimate of survival without surgical treatment after acute aortic dissection (solid circles, patients with ascending aortic involvement; open circles, patients with only descending aortic involvement with or without abdominal aortic extension). The estimate is based on data from the literature, primarily that of Lindsay and Hurst.[L1]

Dissezione Tipo A

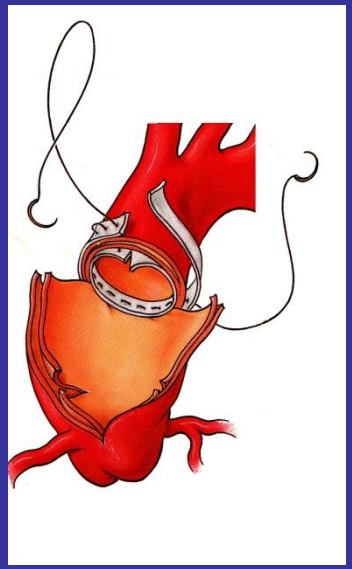
Trattamento: Chirurgico

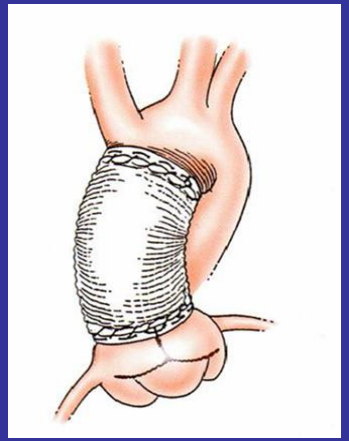
Timing: Emergenza

Trattamento chirurgico

Sostituzione dell'aorta ascendente

- Sostituzione con protesi in dacron (Spencer 1962)
- Incollaggio del falso lume (Guilmet 1975)
- Rinforzo con doppia banda di teflon (Cachera 1981)





Trattamento chirurgico

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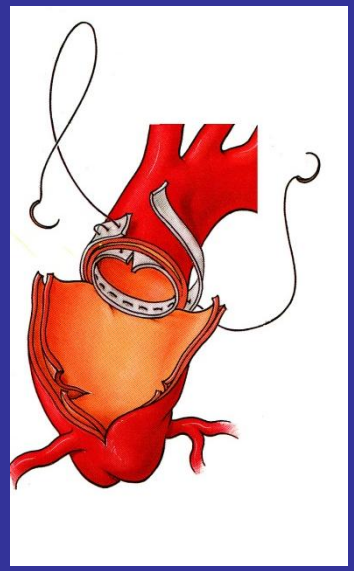
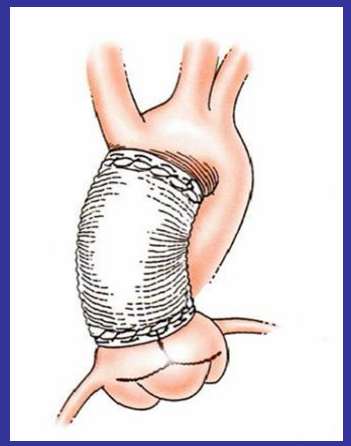
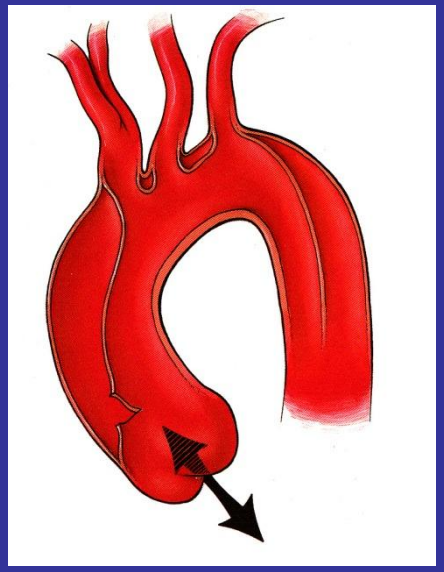


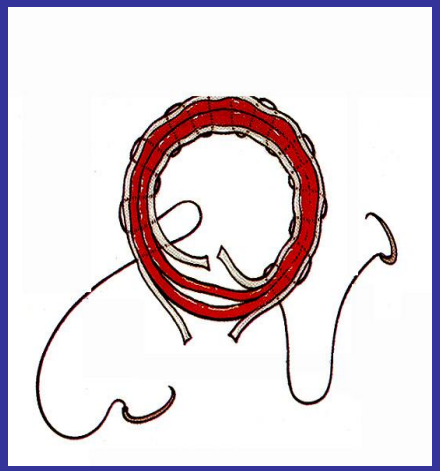
Radice e Arco?

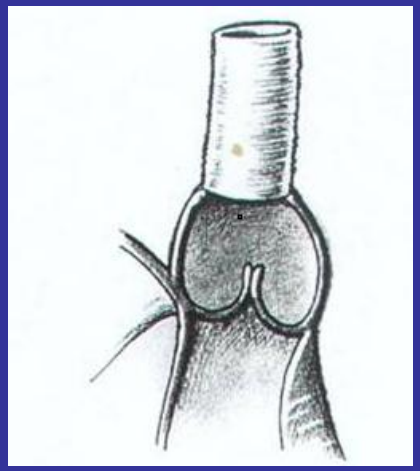


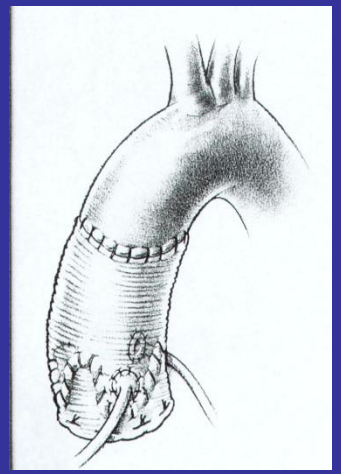
Trattamento chirurgico
Radice e valvola aortica

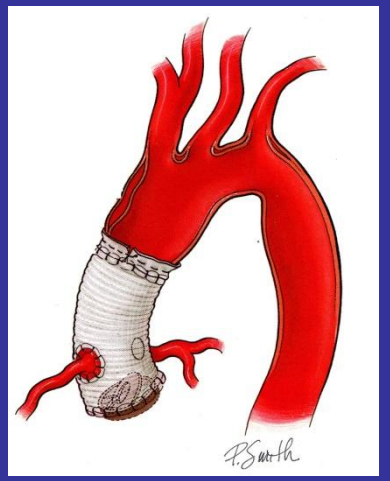
- L’ideale, se possibile, è conservare la valvola aortica che spesso presenta solo un’insufficienza funzionale.





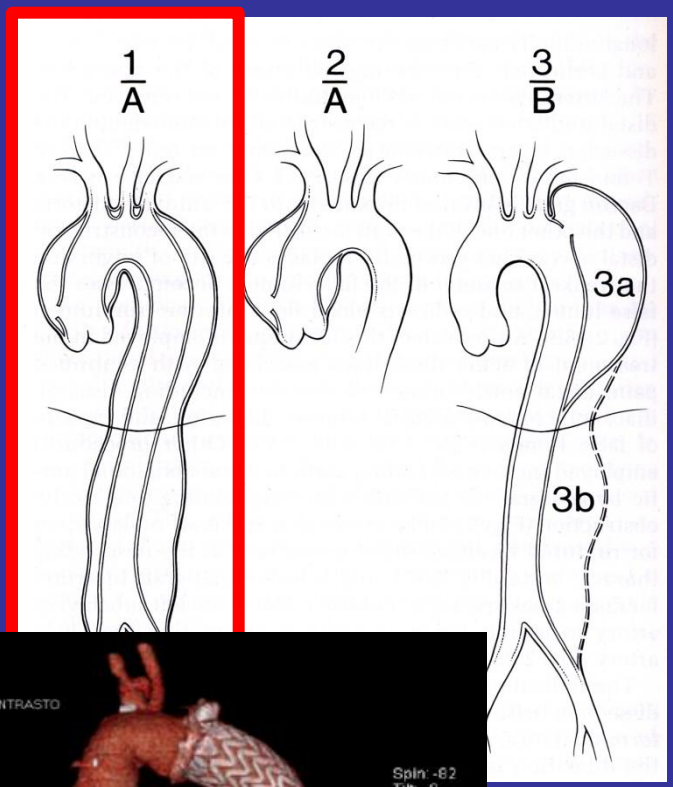


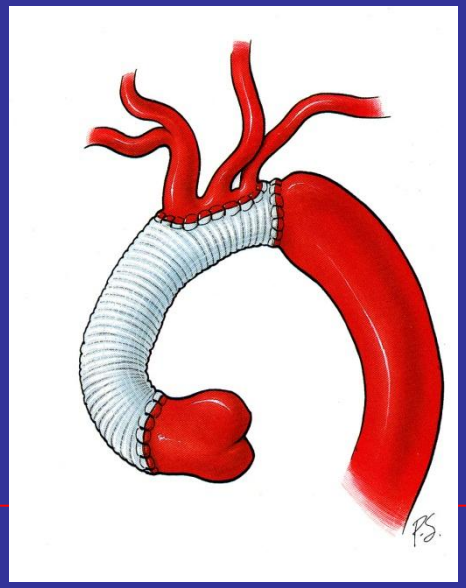


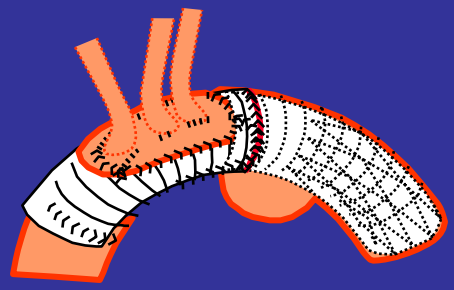


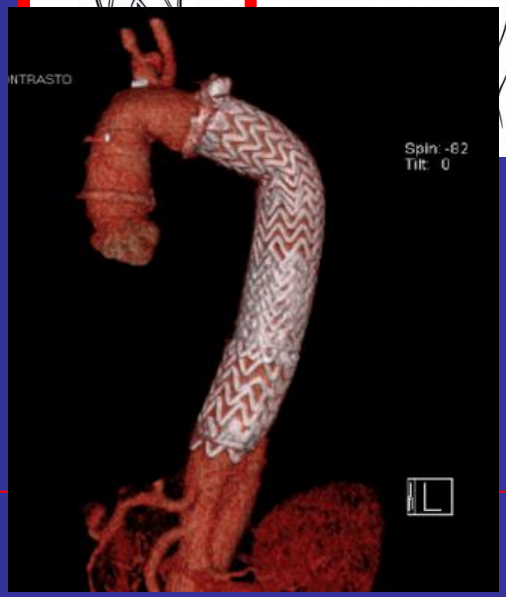
Dissezione Aortica Tipo I

- **Quanto e quando dobbiamo estendere distalmente la sostituzione dell'aorta ?**









DISSECAZIONI AORTICHE ACUTE A

Risultati della chirurgia della sostituzione dell'aorta ascendente

15 – 30%

Haverich A, Miller DC, et al.. Circulation. 1985
Safi HJ, Miller CC, Reardon MJ, et al. Ann Thorac Surg. 1998
Tan ME, Kelder JC, and Schepens MA. Ann Thorac Surg 2001
Kouchoukos NT, Dougenis D. N Engl J Med 1997
Bachet J. Ann Thorac Surg 2002

6.3%

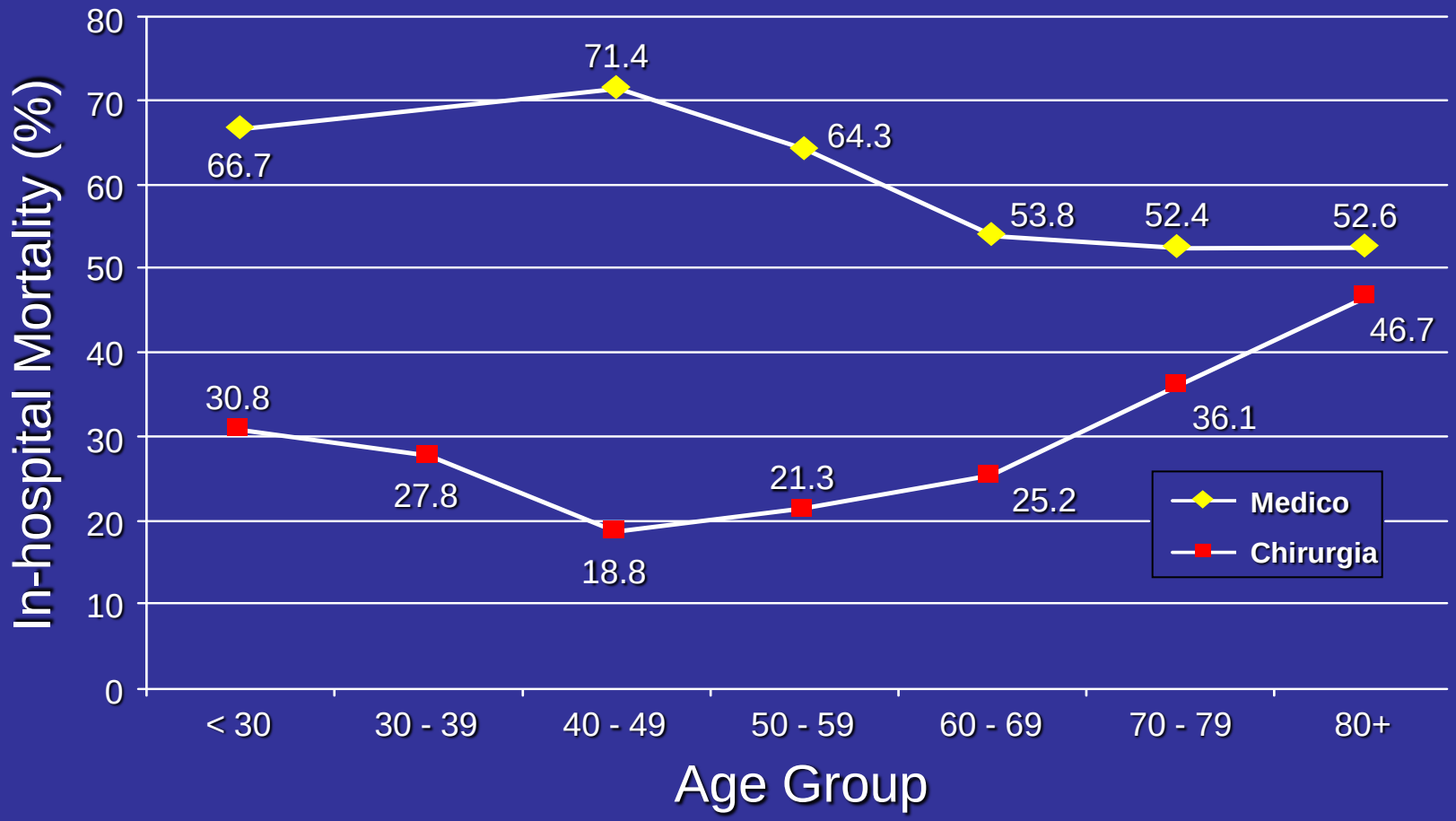
Westaby S. Ann Thorac Surg 2002;

25.1%

IRAD. J Thorac Cardiovasc Surg 2005;129(1):112-22.

Dissezione Tipo A

Mortalità Ospedaliera secondo il trattamento



Mehta RH, et al. *J Am Coll Cardiol* 2002;40:1685-692.

IRAD 1996-2001

According to risk-profile, patients were categorized:

-**unstable (group I)** in presence of cardiac tamponade, shock, CHF, CVA, stroke, coma, myocardial ischemia and/or infarction, acute renal failure, or mesenteric ischemia/infarction at surgery

- **stable (group II)** without such preoperative conditions

Overall in-hospital mortality		**25.1%**
Group I	Unstables (53.5%)	**31.4%**
Group II	Stables (46.5%)	**16.7%**

$p<0.001$

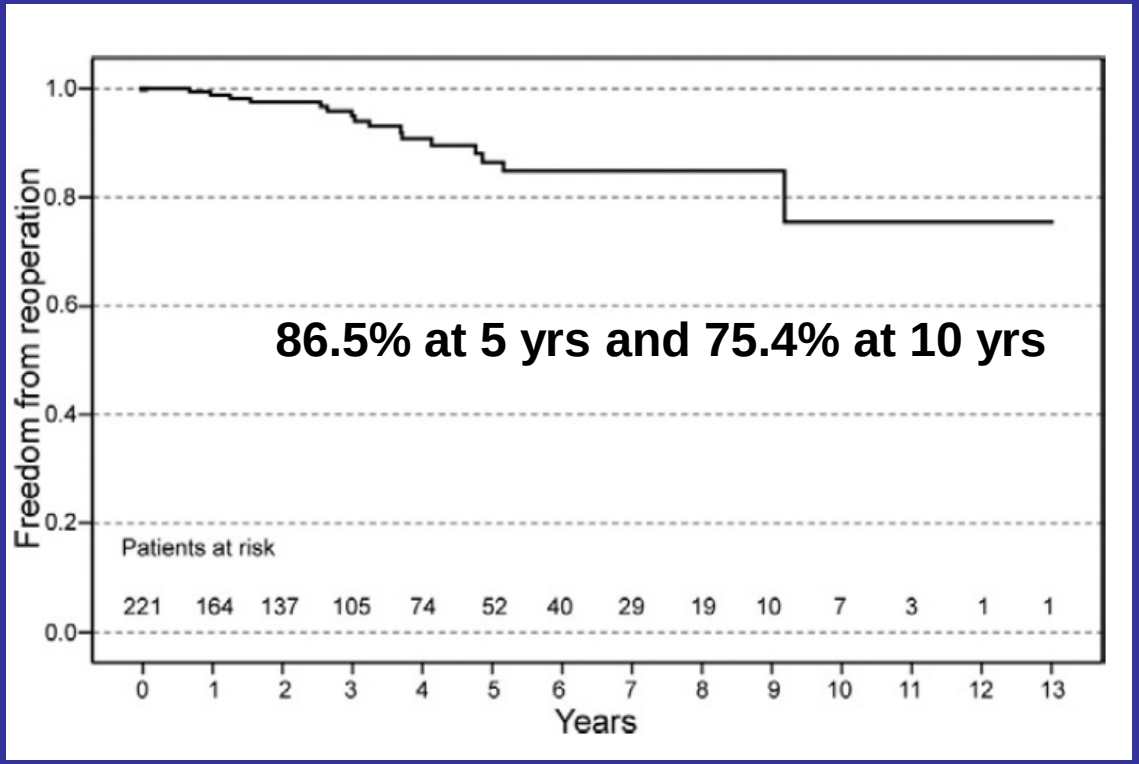
Trimarchi S, Nienaber CA, Rampoldi V, Myrmel T, Suzuki T, Mehta R, Bossone E, Cooper J, Smith D, Menicanti L, Frigiola A, Oh J, Deeb M, Isselbacher E, Eagle Kl: Contemporary results of surgery in acute type A aortic dissection: the IRAD (International Registry of Acute Aortic Dissection) experience. J Thorac Cardiovasc Surg 2005;129(1):112-22.

Fate of the Residual Distal and Proximal Aorta After Acute Type A Dissection Repair Using a Contemporary Surgical Reconstruction Algorithm

Arnar Geirsson, MD, Joseph E. Bavaria, MD, Daniel Swarr, BS, Martin G. Keane, MD, Y. Joseph Woo, MD, Wilson Y. Szeto, MD, and Alberto Pochettino, MD

(Ann Thorac Surg 2007;84:1955–64)

Hemiarch repair in 97.1% (216/221 pts)



Reoperation After Surgical Correction of Acute Type A Aortic Dissection: Risk Factor Analysis

Giovanni Concistrè, MD, Giovanni Casali, MD, Eugenio Santaniello, MD, Andrea Montalto, MD, Brenno Fiorani, MD, Angelo Dell'Aquila, MD, and Francesco Musumeci, MD

Department of Cardiac Surgery and Heart Transplantation, San Camillo Hospital, Rome, Italy

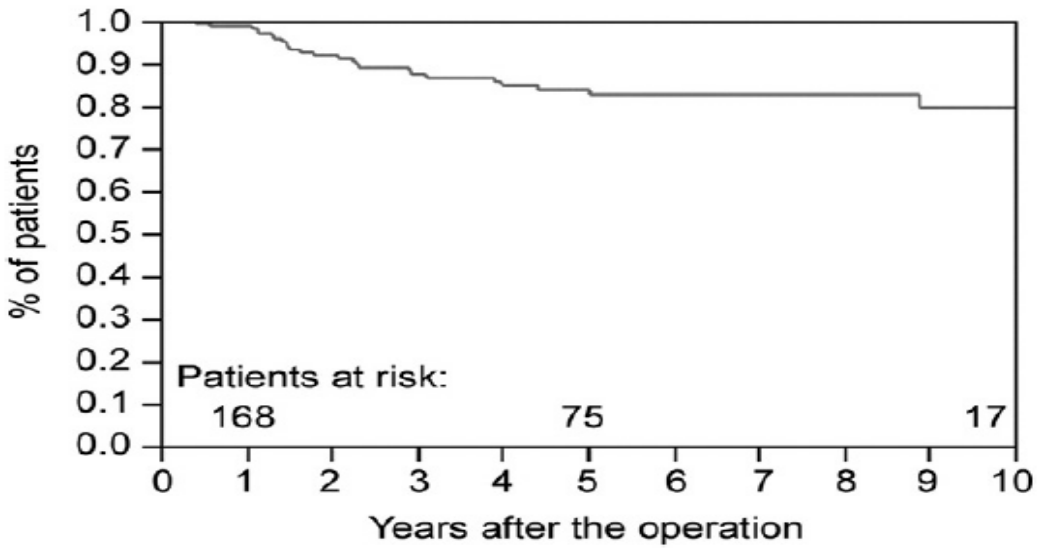


Fig 2. Actuarial freedom from reoperation after first operation.

Results. Freedom from reoperation was 99%, 82%, and 79% at 1, 5, and 10 years, respectively. Twenty-five

(Ann Thorac Surg 2012;93:450–6)

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Table 4. Multivariate Analysis of Risk Factors for Reoperation

	Reoperation		
Risk Factor	RR	95% CI	*p* Value
Dissection-related risk factor			
Patent false lumen	0.95	0.91–0.99	0.01
Procedure-related risk factors			
Use of gelatin-resorcinol-formaldehyde glue	3.86	1.23–3.65	0.02
Native aortic root preservation	2.14	1.06–1.56	0.0004

(Ann Thorac Surg 2012;93:450–6)

Dissezione Aortica Tipo A / I

Sufficiente Sostituzione Aorta Ascendente ?

Sostituzione Aorta Asc + Arco + FET ?

Surgical Results of Hemiarch Replacement for Acute Type A Dissection

Satoshi Ohtsubo, MD, Tsuyoshi Itoh, MD, Kyomi Takarabe, MD, Kazuhisa Rikitake, MD, Kojiro Furukawa, MD, Hisao Suda, MD, and Yukio Okazaki, MD

Department of Thoracic and Cardiovascular Surgery, Saga Medical School, Saga, Japan

"Expanding the repair to include the arch will inevitably prolong the surgery, increase the operative trauma, possibly augmenting mortality due to cerebral ischaemia, coagulopathy and multiple organ failure "

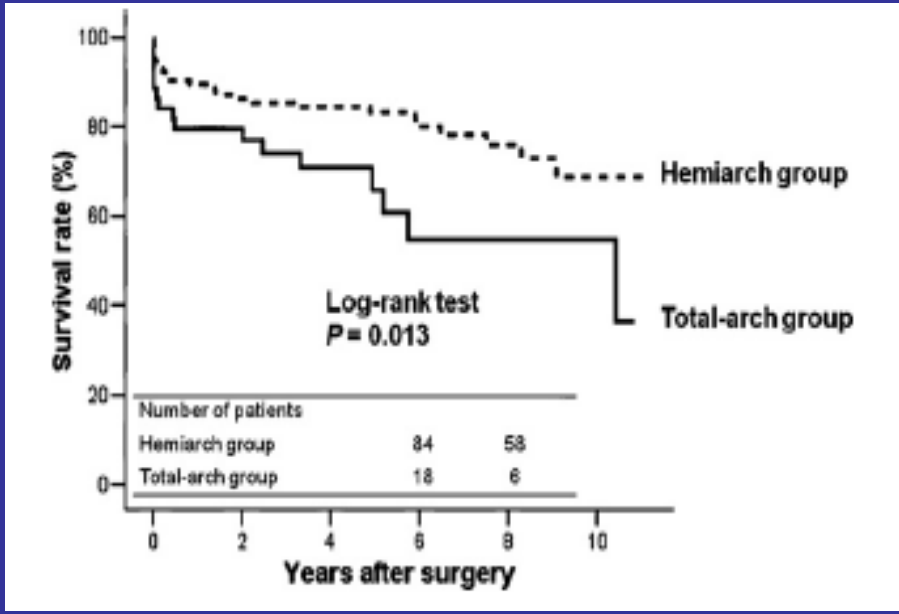
Conclusions. Hemiarch replacement for acute type A dissection demonstrated favorable early and late outcome. The extent of graft replacement influenced surgical mortality and morbidity.

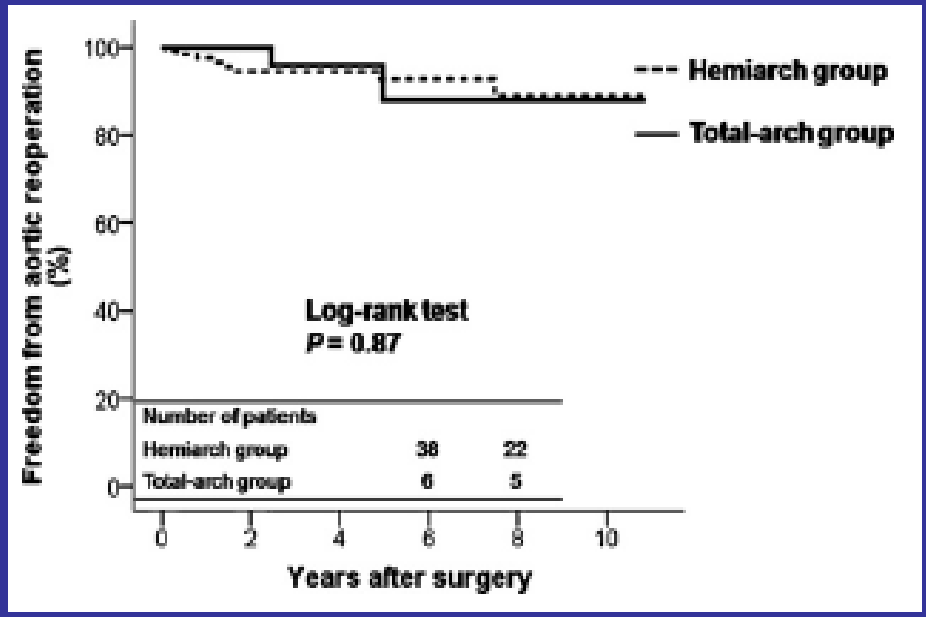
(Ann Thorac Surg 2002;74:S1853–6)

Total arch repair versus hemiarch repair in the management of acute DeBakey type I aortic dissection☆

Joon Bum Kim, Cheol Hyun Chung*, Duk Hwan Moon, Geong Jun Ha, Taek Yeon Lee, Sung Ho Jung, Suk Jung Choo, Jae Won Lee

Total arch repair was associated with greater risks of mortality and permanent neurologic injury compared with hemiarch repair in acute DeBakey type I or III-D aortic dissection. Rates of aortic re-operation or distal aortic dilatation were not significantly different between the two surgical strategies.





European Journal of Cardio-thoracic Surgery 40 (2011) 881–889

Operative Strategy for Acute Type A Aortic Dissection: Ascending Aortic or Hemiarch Versus Total Arch Replacement With Frozen Elephant Trunk

Naomichi Uchida, MD, Hidenori Shibamura, MD, Akira Katayama, MD, Norimitsu Shimada, MD, Miwa Sutoh, MD, and Hiroshi Ishihara, MD

FET :65pts AHR :55pts

	FET	AHR
Operative data		
Operative time (min)	354 ± 89	251 ± 46
Cardiopulmonary bypass time (min)	163 ± 43	108 ± 16
Selective cerebral perfusion time (min)	70 ± 18	21 ± 12
Early results		
Death in hospital	3	2
New cerebral complication	0	0
Visceral malperfusion	0	3
Renal failure (permanent/transient)	0/3	0/1
Spinal cord injury	0	0
Pneumonia	2	2
Sepsis	2	1

AHR = ascending aortic or hemiarch replacement; FET= frozen elephant trunk technique for the distal thoracic aorta combined with total arch replacement.

4.6 vs 3.6%

(Ann Thorac Surg 2009;87:773–7)

Total Arch Replacement Combined With Stented Elephant Trunk Implantation

A New "Standard" Therapy for Type A Dissection Involving Repair of the Aortic Arch?

LiZhong Sun, MD*; RuiDong Qi, MD*; JunMing Zhu, MD; YongMin Liu, MD; Jun Zheng, MD

	Acute Dissection		
Variable	SET (n=148)	CSR (n=66)	*P*
Injury to recurrent nerves, n (%)	0	0	
Stroke, n (%)	4 (2.7)	1 (1.5)	1.000
Paraplegia, n (%)	2 (1.4)	0	1.000
Paraparesis, n (%)	1 (0.7)	1 (1.5)	0.523
Acute renal failure, n (%)	1 (0.7)	2 (3.0)	0.226
Ventilator support of duration >5 d, n (%)	14 (9.5)	5 (7.6)	0.797
Return to operating room for bleeding, n (%)	5 (3.4)	2 (3.0)	1.000
Drainage of pericardial sac, n (%)	1 (0.7)	0	1.000
In-hospital death, n (%)	7 (4.7)	4 (6.1)	0.741

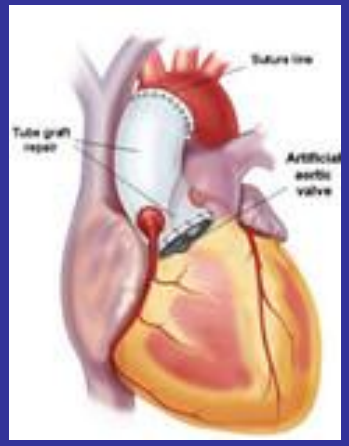
SET indicates stented elephant trunk; CSR, conventional surgical repair.

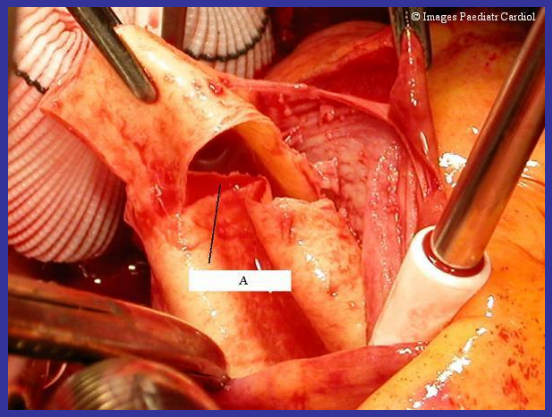
(*Circulation*. 2011;123:971-978.)

Influence of operative strategy for the aortic arch in DeBakey type I aortic dissection: Analysis of the German Registry for Acute Aortic Dissection Type A

Jerry Easo, MD,[a] Ernst Weigang, MD, PhD,[b] Philipp P. F. Hölzl, MD,[a] Michael Horst, MD,[a] Isabell Hoffmann, MS,[c] Maria Blettner, MS, PhD,[c] and Otto E. Dapunt, MD, PhD,[a] for the GERAADA study group

(J Thorac Cardiovasc Surg 2012;144:617-23)





Results: A total of 518 patients in group A and 140 patients in group B were treated. There was an overall 30-day mortality of 20.2% (n = 133). Group A had a slightly lower rate of mortality with 18.7% (n = 97) compared with 25.7% for group B (n = 36), but with no statistical significant difference ($P = .067$). The onset of new neurologic deficit (13.6% in group vs 12.5% in group B, $P = .78$) and new malperfusion deficit (8.4% in group A vs 10.7% in group B, $P = .53$) showed no statistical difference.

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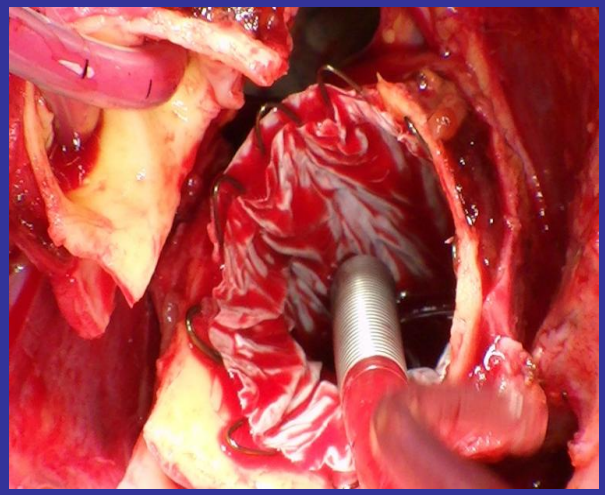
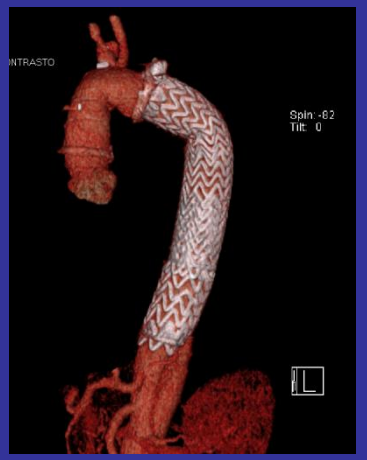


The presence of preoperative neurological deficit resulted in no difference concerning the postoperative mortality (32.8% *vs*. 29.5%, P=0.69). However, if patients underwent surgery without a pre-existing neurological deficit, Group A demonstrated a lower risk of mortality than Group B with the more extensive procedure (14.1% *vs*. 24%, P=0.02).

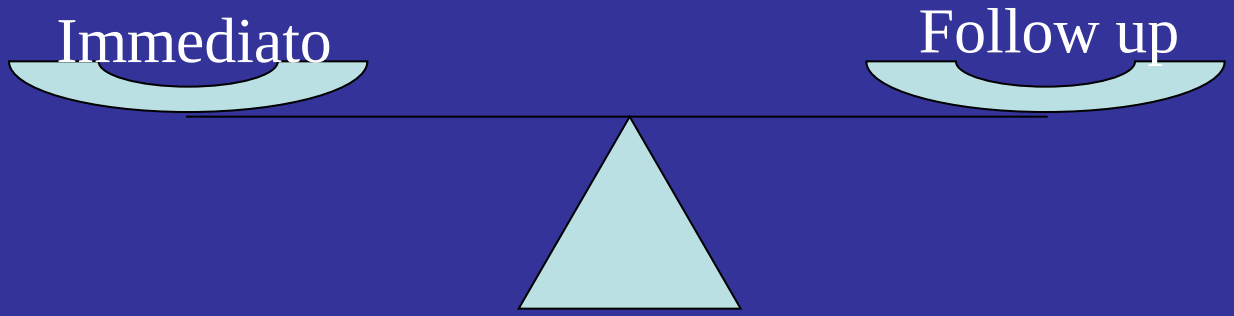


Conclusions: On analysis of the GERAADA data, it seems that a more aggressive approach of aortic arch treatment can be applied without higher perioperative risk even in the onset of acute aortic dissection type A.

Follow up?

Dissezione Aortica Tipo A / I

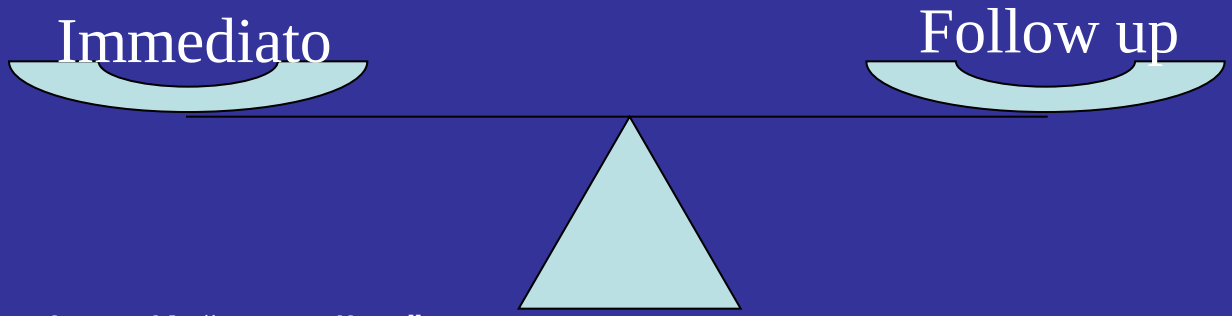
Sufficiente Sostituzione Aorta Ascendente ?



Sostituzione Aorta Asc + Arco + FET ?

Dissezione Aortica Tipo A / I

Sost. Aorta Ascendente vs Sost. Arco±FET



Tecnica più “semplice”
< mortalità
< morbidità
(CVA - Paraplegia)

20 % di reinterventi (?)

Aumentata difficoltà chirurgica
Risultati maggiormente influenzati dall’esperienza del chirurgo

Dissezione Aortica Tipo A / I

- Obiettivo Primario
  - Portare il paziente vivo fuori dalla SO (mortalità di ~ 20% !!)

- L'estensione del gesto chirurgico
  - Goal : ↓ reinterventi
  - probabilmente necessario se :
    # La lacerazione intimale parte o si estende nell'arco
    # In pazienti con sindrome di malperfusione distale

Extented arch replacement ?

Ascendig / Emiarch (Group A) Ascending + Arch (Group B)

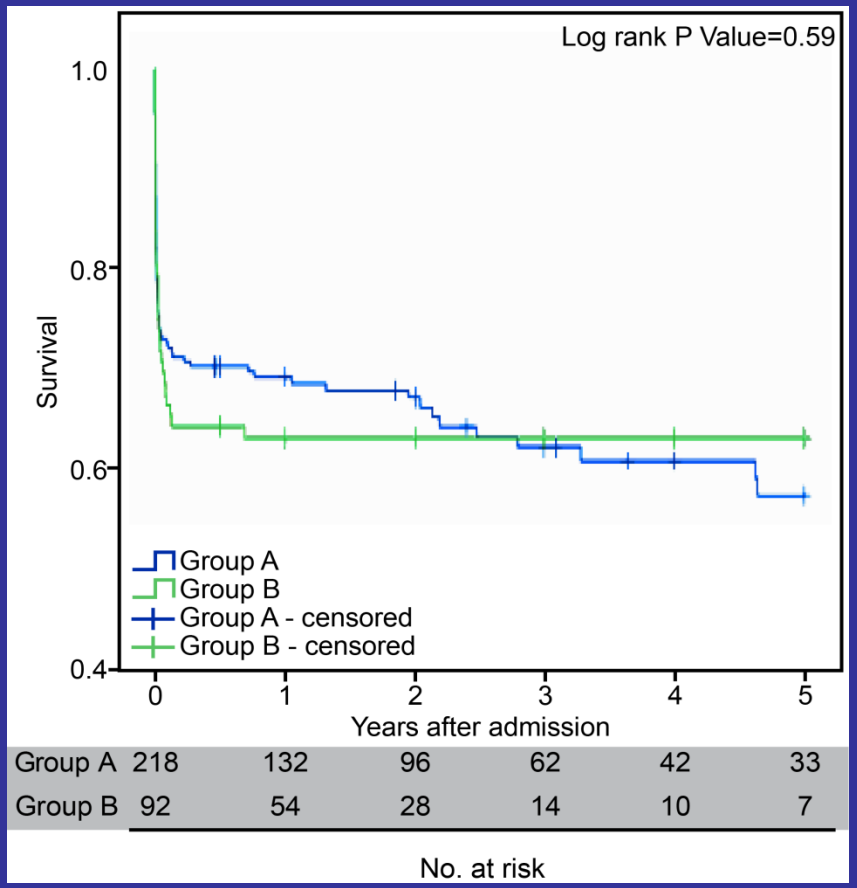
	All patients n=536	Group A n=395	Group B n=141	P value
Baseline patient characteristics				
Age (years)	61.5 ± 13.6	61.9 ± 13.6	60.4 ± 13.4	0.28
Female gender	175/536 (32.6)	139/395 (35.2)	36/141 (25.5)	0.036
Year of surgery				0.032
1996 – 2000	55/536 (10.3)	46/395 (11.6)	9/141 (6.4)	
2001 – 2006	152/536 (28.4)	119/395 (30.1)	33/141 (23.4)	
2007 – 2012	329/536 (61.4)	230/395 (58.2)	99/141 (70.2)	

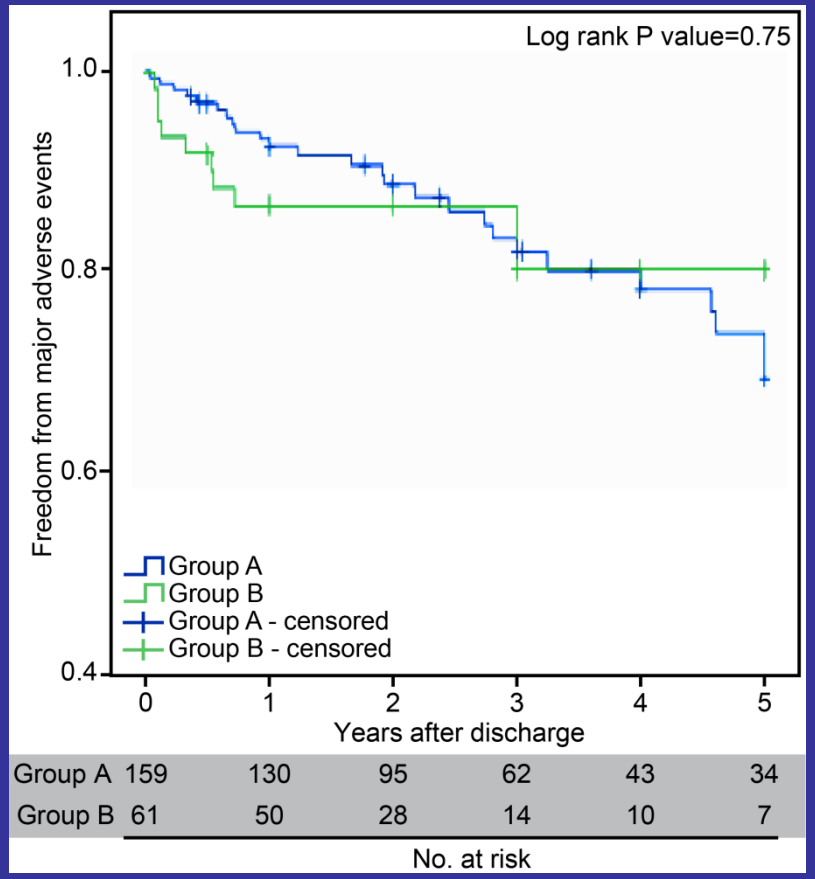
IRAD. submitted

Hospital mortality 18.1% : 16.5% (Group A) – 22.7 (Group B)

Extented arch replacement ?

Ascendig / Emiarch (Group A) Ascending + Arch (Group B)





IRAD. submitted

Extented arch replacement ?

- Rimane incerta la necessità di un intervento più complesso (TAR), in una già complessa procedura , per ridurre il rischio di complicanze future
- L’estensione del gesto chirurgico può essere giustificato solo in casi selezionati cercando di Identificare i criteri di rischio correlati ad una maggior probabilità di essere sottoposti a reintervento al follow up

IRAD. submitted

Dissezione Aortica Tipo A / I
Sostituzione dell'arco

Probabili criteri di selezione pre-op

- Dimensione (?) dell'aorta "residua"
- Presenza e dimensione del falso lume
- Localizzazione di multipli *tears*
- Dissezioni retrograde
- Malperfusioni
- Marfan…….
- Pazienti giovani (?)

Dissezione Aortica Tipo A / I
Sostituzione dell'arco ?

- Il trattamento della dissezione aortica è assolutamente chirurgico malgrado una alta mortalità ospedaliera

- La sostituzione dell'arco è sicuramente un gesto più complesso e rischioso

Dissezione Aortica Tipo A / I
Sostituzione dell'arco ?

- Non vi sono ad oggi evidenze che la sostituzione dell' arco debba essere un trattamento di *routine*
- L'estensione del "classico" gesto chirurgico, per ridurre il rischio di complicanze e reinterventi al follow-up, è ad oggi giustificato solo in casi selezionati

Dissezione Aortica Tipo A / I
Sostituzione dell'arco ?

- La giusta analisi dei dati clinici e anatomici preoperatori in correlazione ai risultati a medio e lungo termine deve tendere ad affinare la selezione dei pazienti in cui sia realmente giustificato un incremento del rischio operatorio