Endovascular reconstruction of post CoA repair aortic aneurysms

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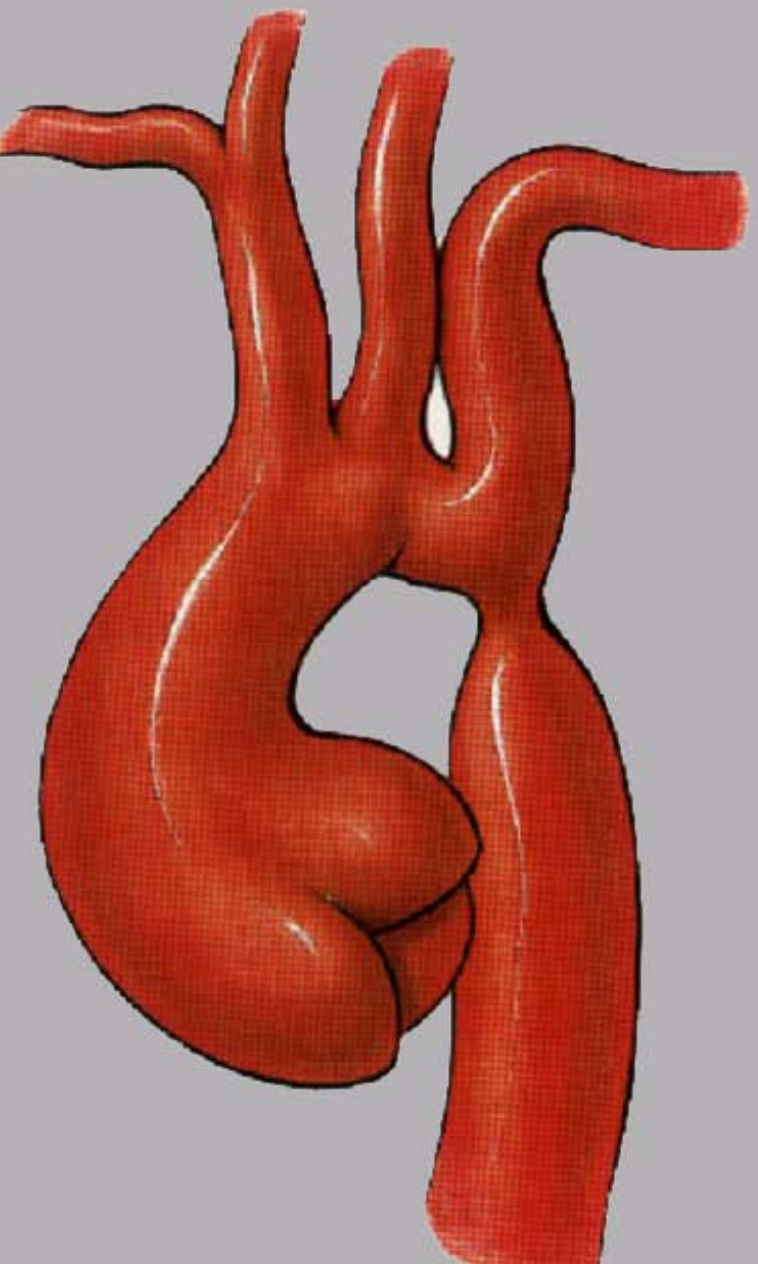
AORTIC COARCTATION



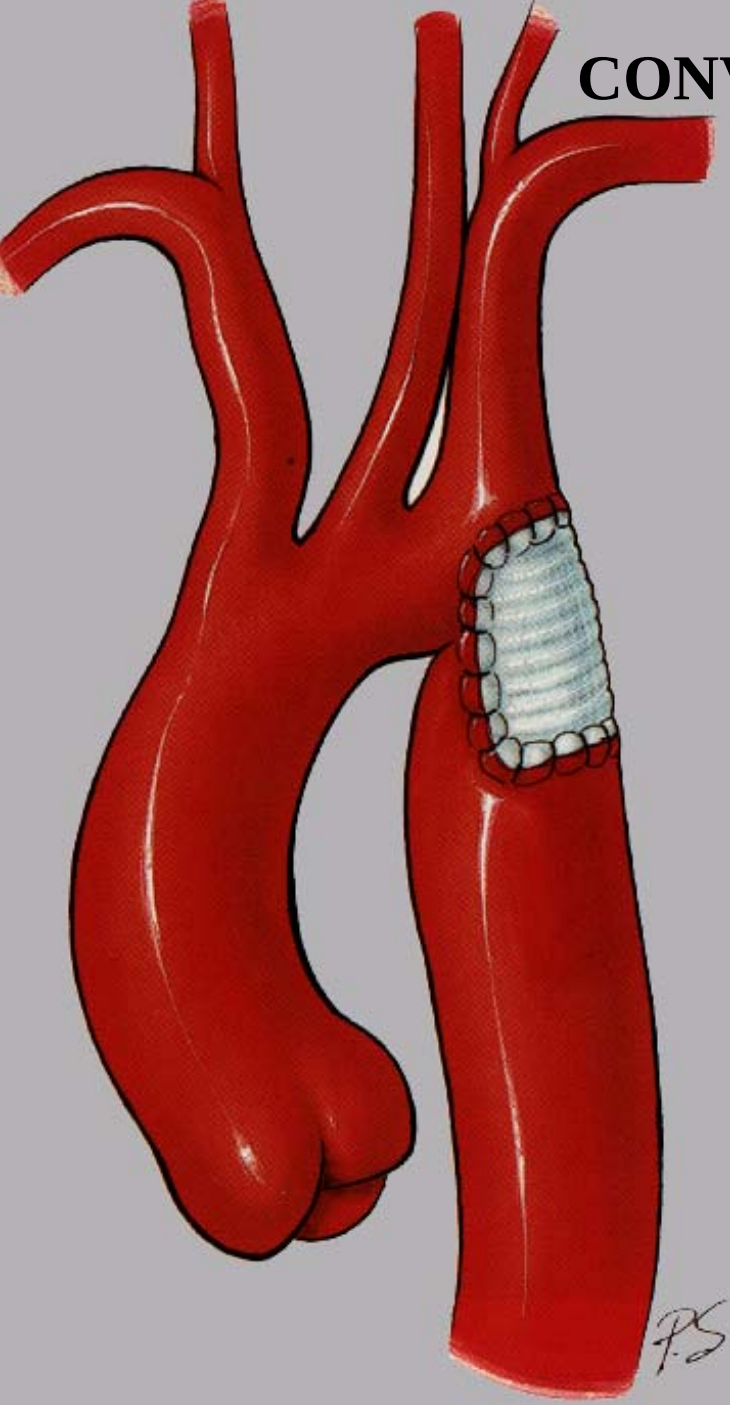
Incidence: 4 in 10.000 live births

=5-8% of all congenital heart defects

Frequently associated with hypo-plasia of the aortic arch and bicuspid aortic valve

Mn. Life expectancy without correction is 35 years and 90% of the patients die before the age of 50 years

CONVENTIONAL SURGICAL RECONSTRUCTION



Resection and end to end anastomosis
Patch graft repair (Dacron or subclavian artery)

Late (pseudo) aneurysm formation: 9%
Promoting factors:

- **advanced age at the time of repair**
- **hypoplasia aortic arch**
- **patch graft repair**

Reoperation is taken into consideration with an isthmic-diaphragmatic aortic diameter ratio >1.5

Endovascular reconstruction post CoA repair aneurysm
2000-2006: N=9

8 men – 1 woman

mn. Age: 38.7 (28 to 66) yrs.

Uncomplicated N=8
Aortobronchial fistula N=1

Fusiform aneurysm N=8
Localised false aneurysm N=1

Mn. delay after primary operation

23.2 (17 to 29 yrs)

Mn. aneurysm diameter

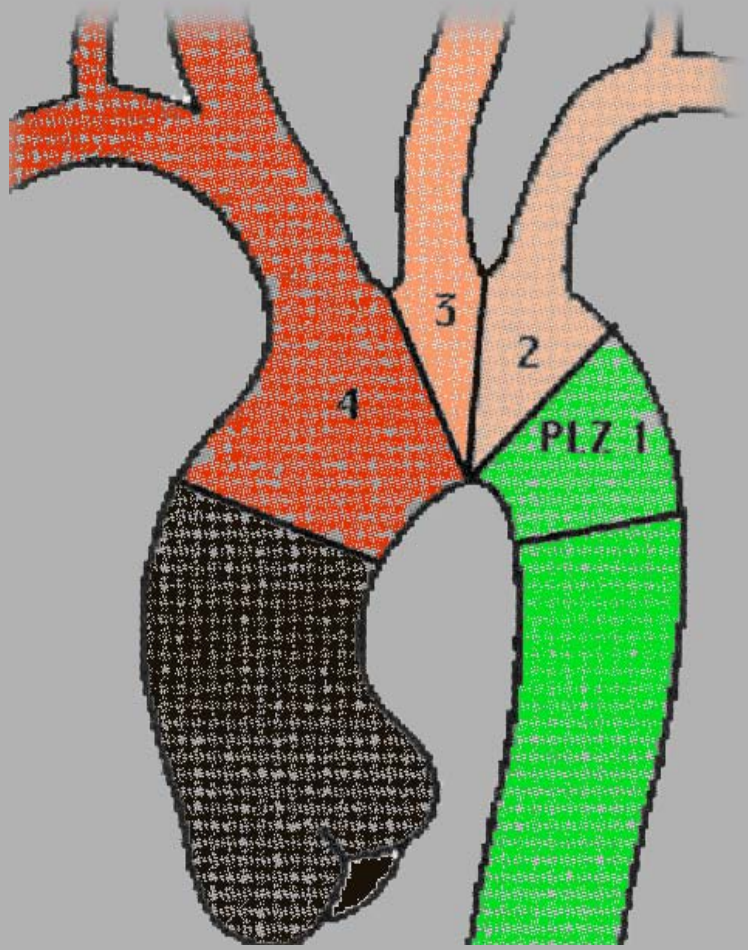
57 (48 to 74.6) mm.

Endovascular reconstruction post CoA repair aneurysm

2000-2006: N=9

Three different grafts:

- **Gore TAG N=2**
- **Zenith N=3**
- **Talent N=4**



Landingszone:

1	**N=0**
2	**N=3**
3	**N=4**
4	**N=2**

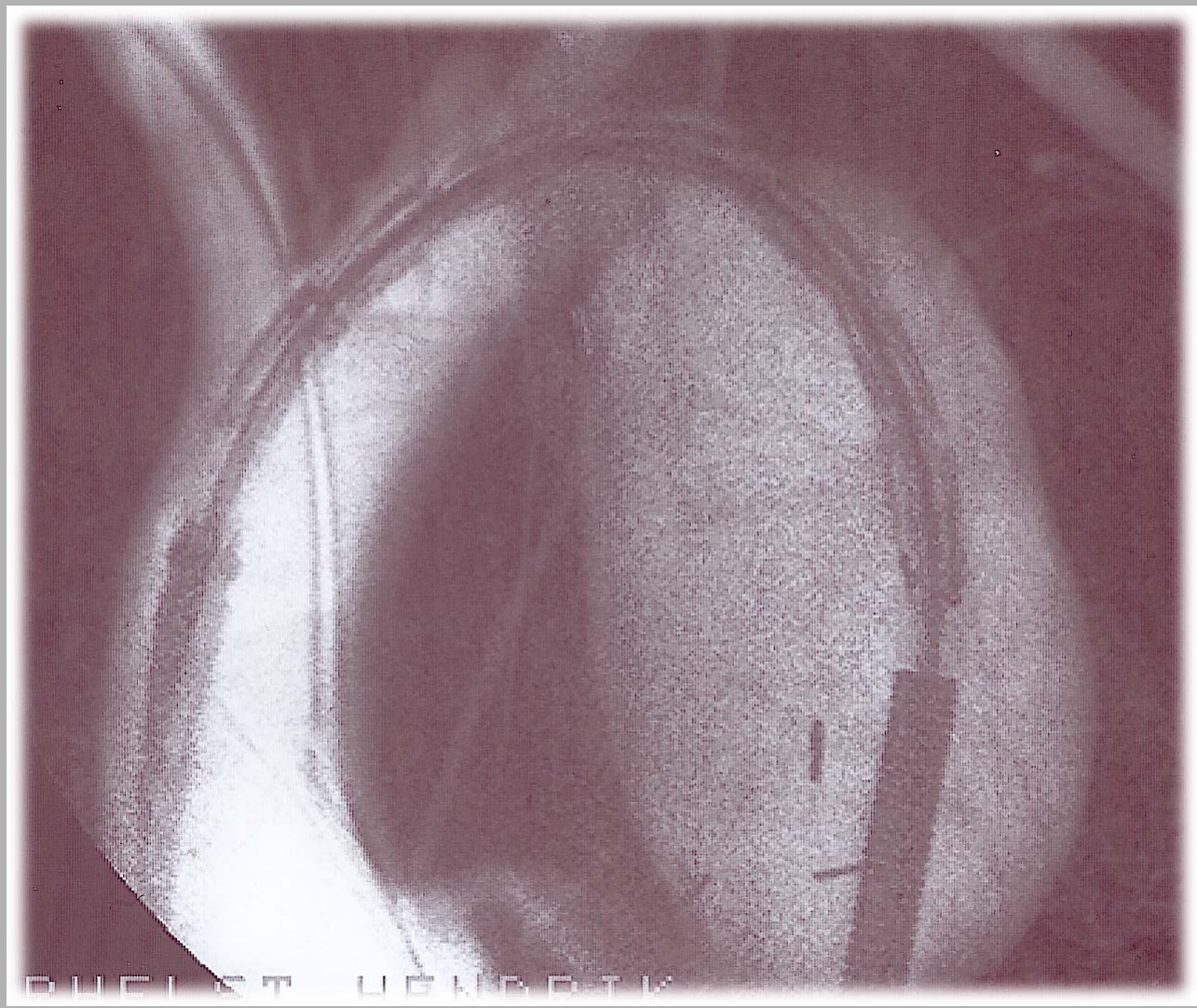
Hybridoperations N=7

- **extrathoracic (hemiarch transpos.) N=5**
- **intrathoracic (arch transpos.) N=2**

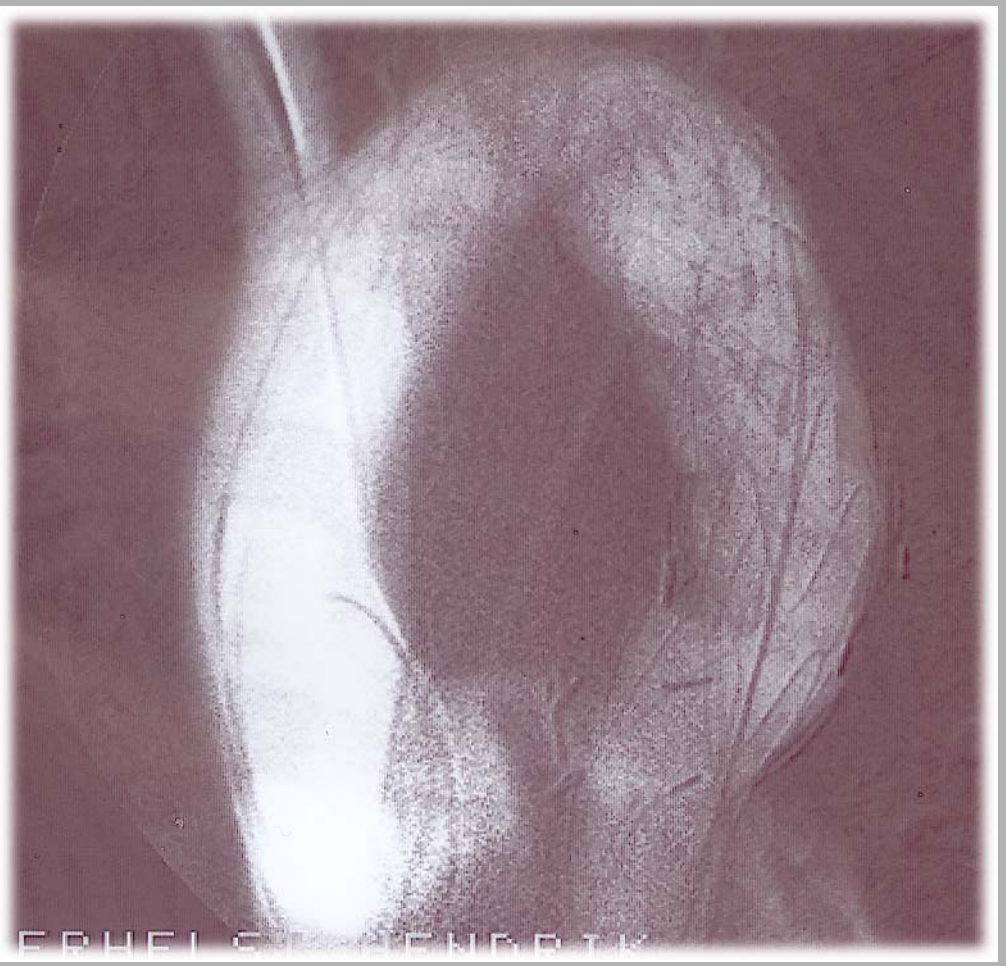
Technical success: N=8

One operative death!

Endovascular reconstruction post CoA repair aneurysm
Landingszone 3 - R/ Talent + hemi-arch transposition



Endovascular reconstruction post CoA repair aneurysm
Landingszone 3 - R/ Talent + hemi-arch transposition



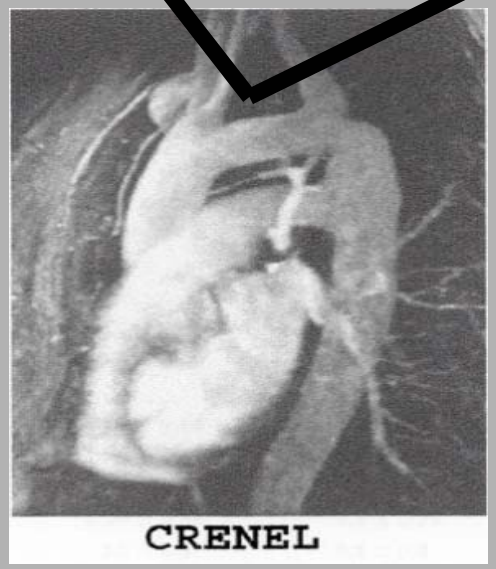
MEET, June 2007

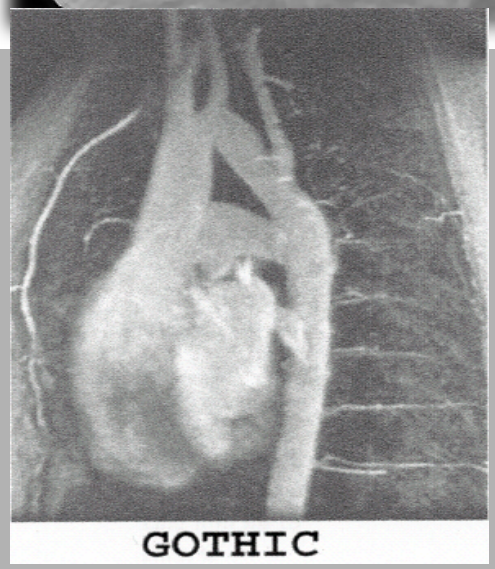
1. Geometry of the aortic arch

Atherosclerotic aneurysm

Aortic dissection

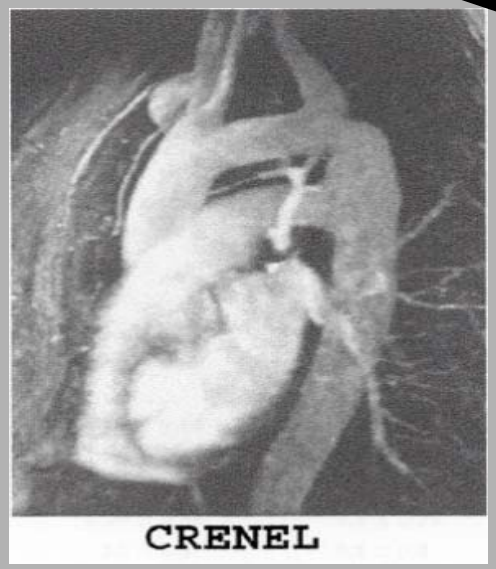
Geometry of the aortic arch after CoA repair

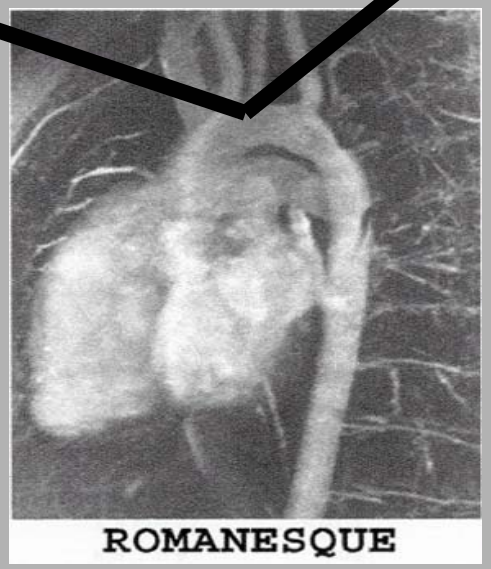


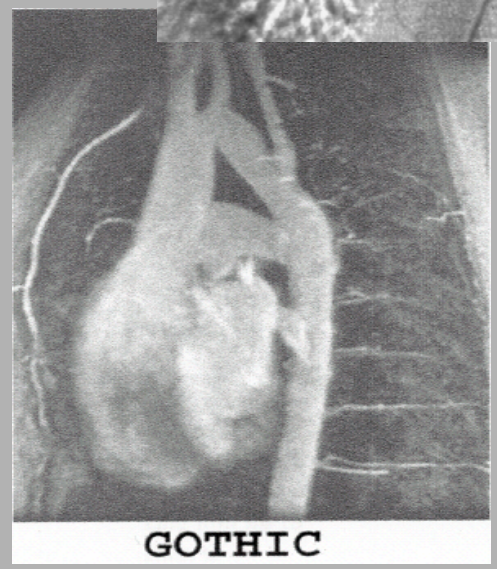


N=3 **N=2** **N=4**

Geometry of the aortic arch after CoA repair

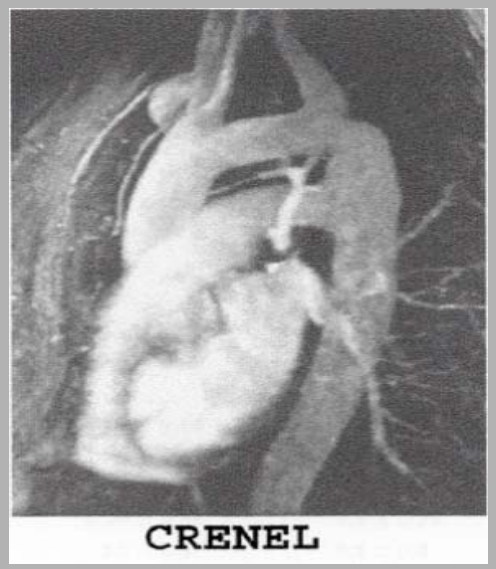






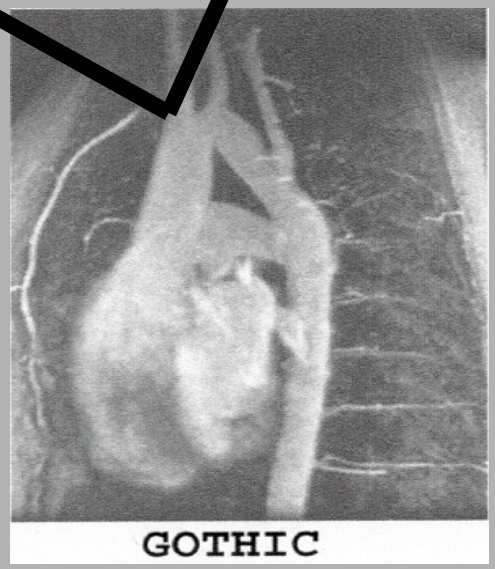
N=3 **N=2** **N=4**

Geometry of the aortic arch after CoA repair



CRENEL

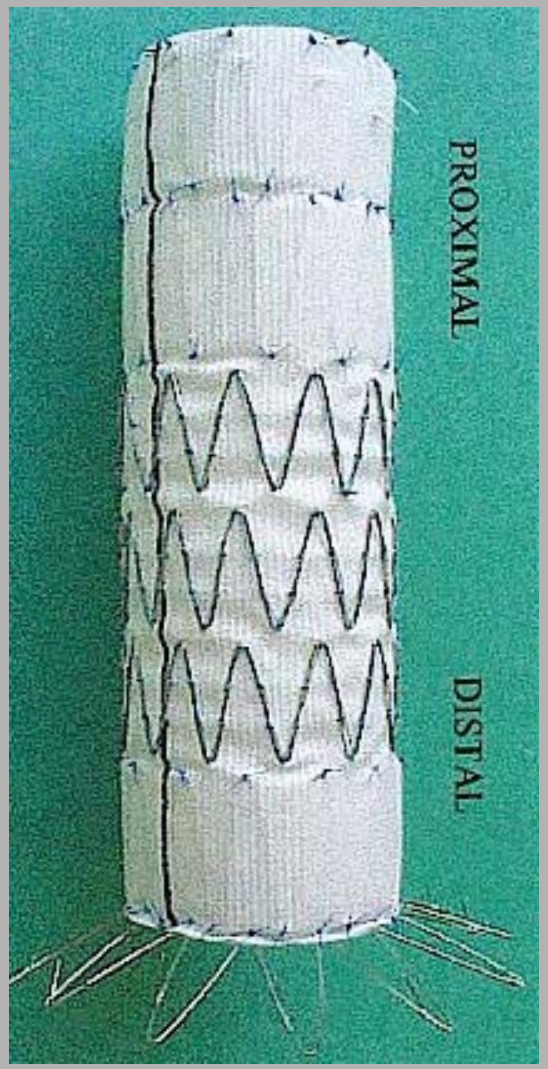
ROMANESQUE

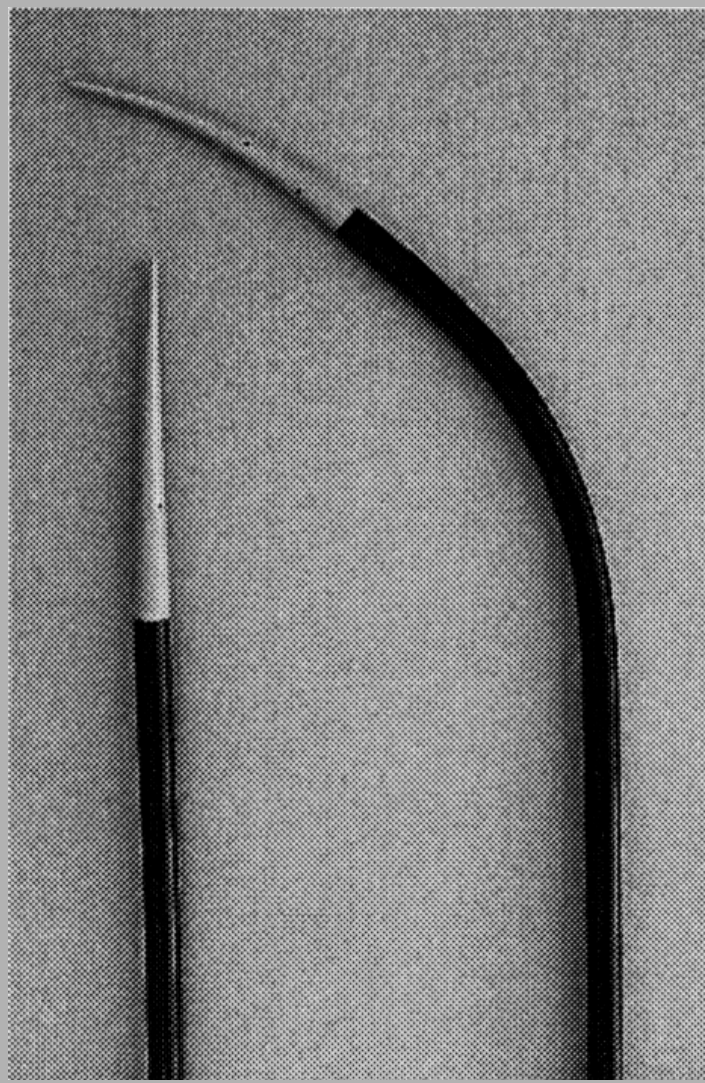


GOTHIC

N=3 **N=2** **N=4**

Crenel arch
R/ Zenith (precurved) + C-S transposition





Crenel arch
R/ Zenith (precurved) + C-S transposition

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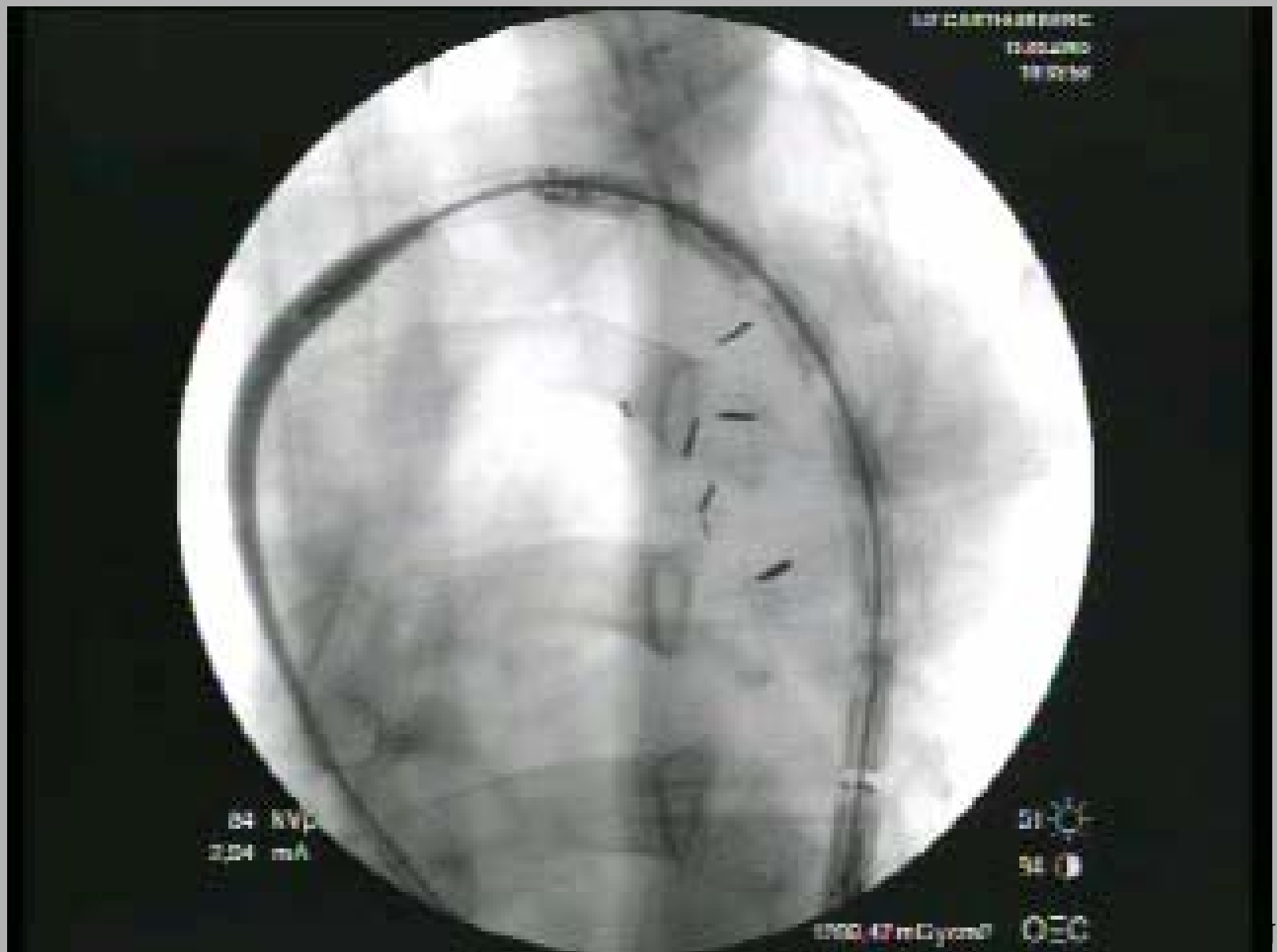
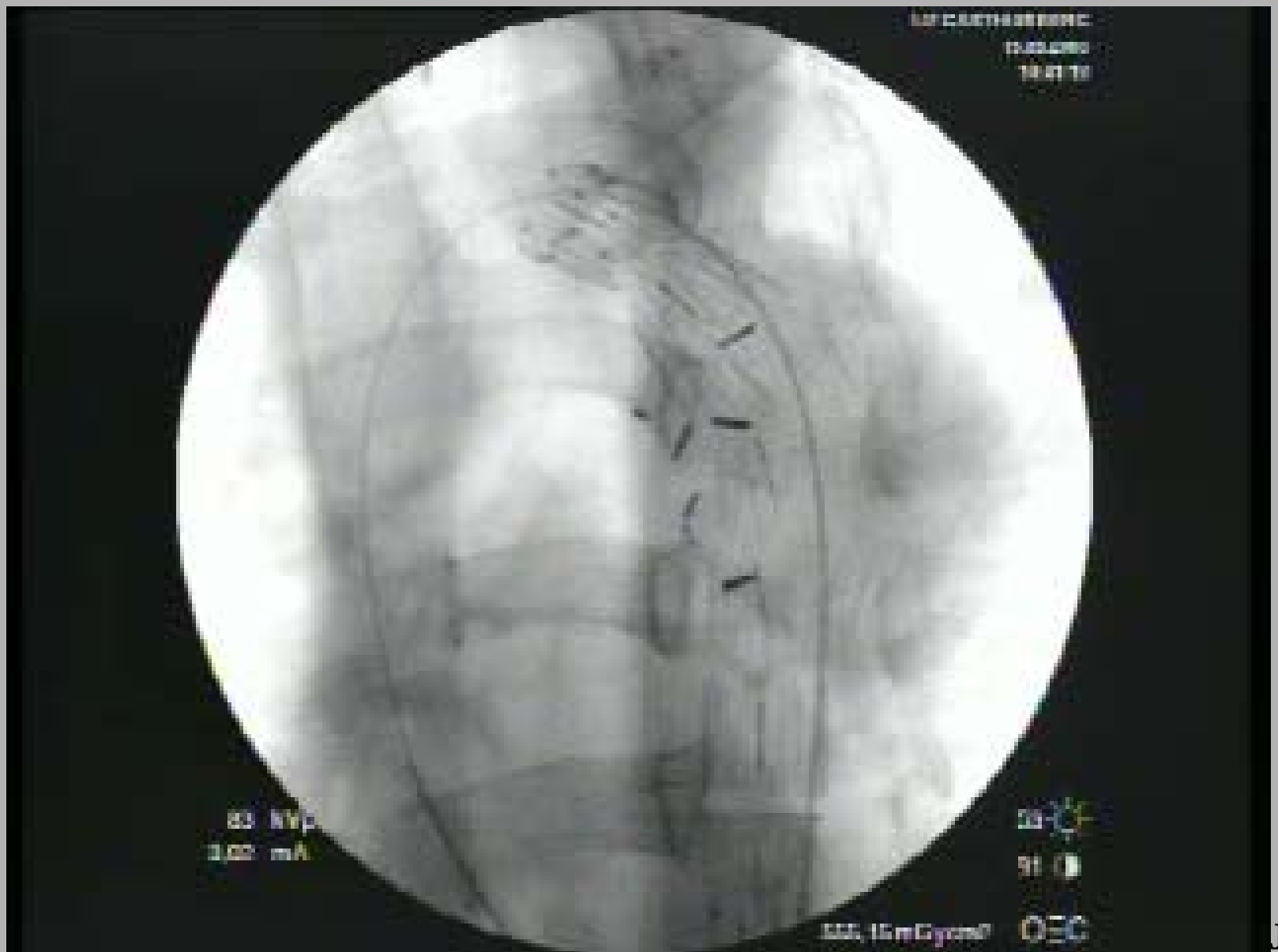
Crenel arch
R/ Zenith (precurved) + C-S transposition



Crenel arch
R/ Zenith (precurved) + C-S transposition



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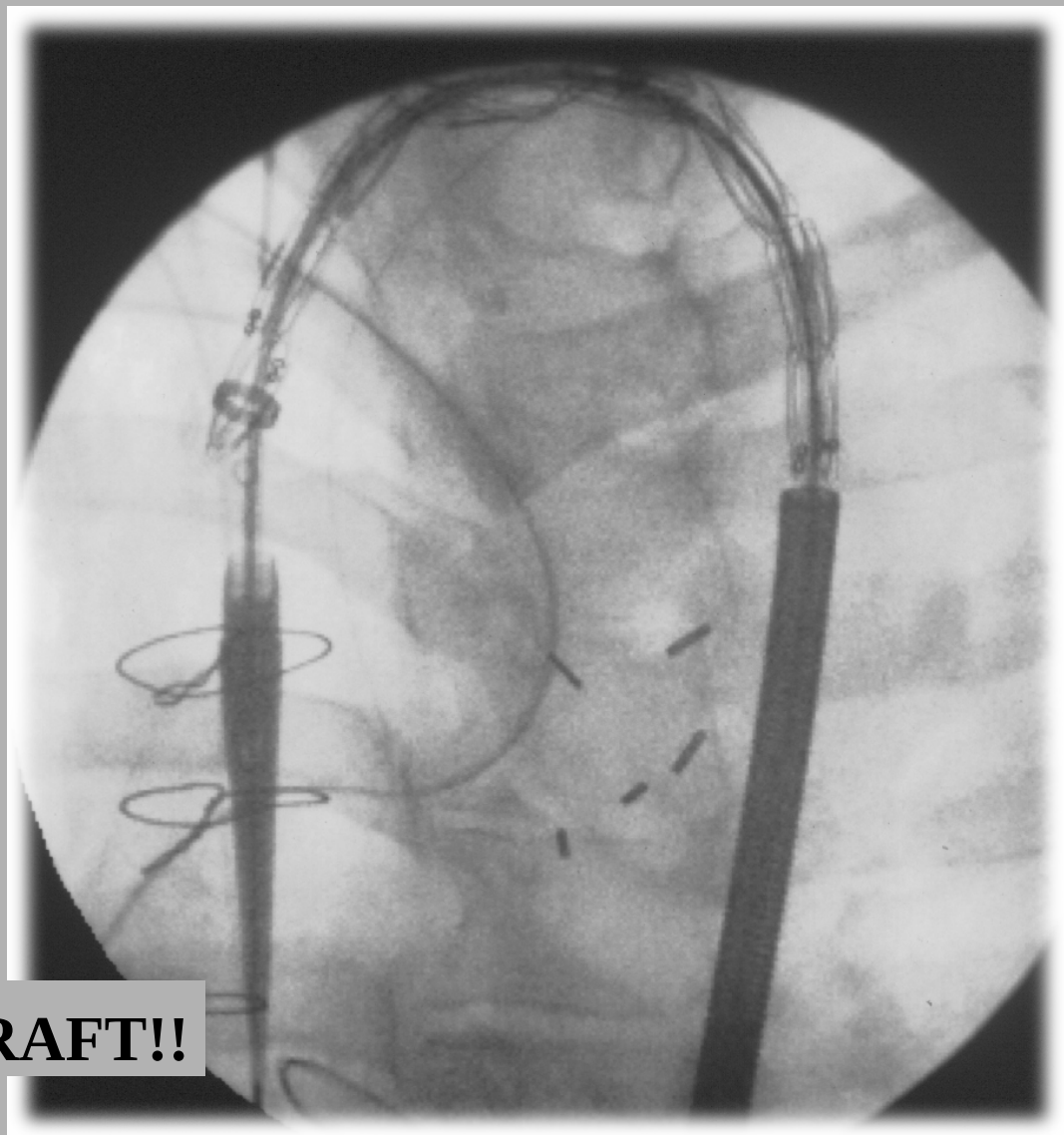
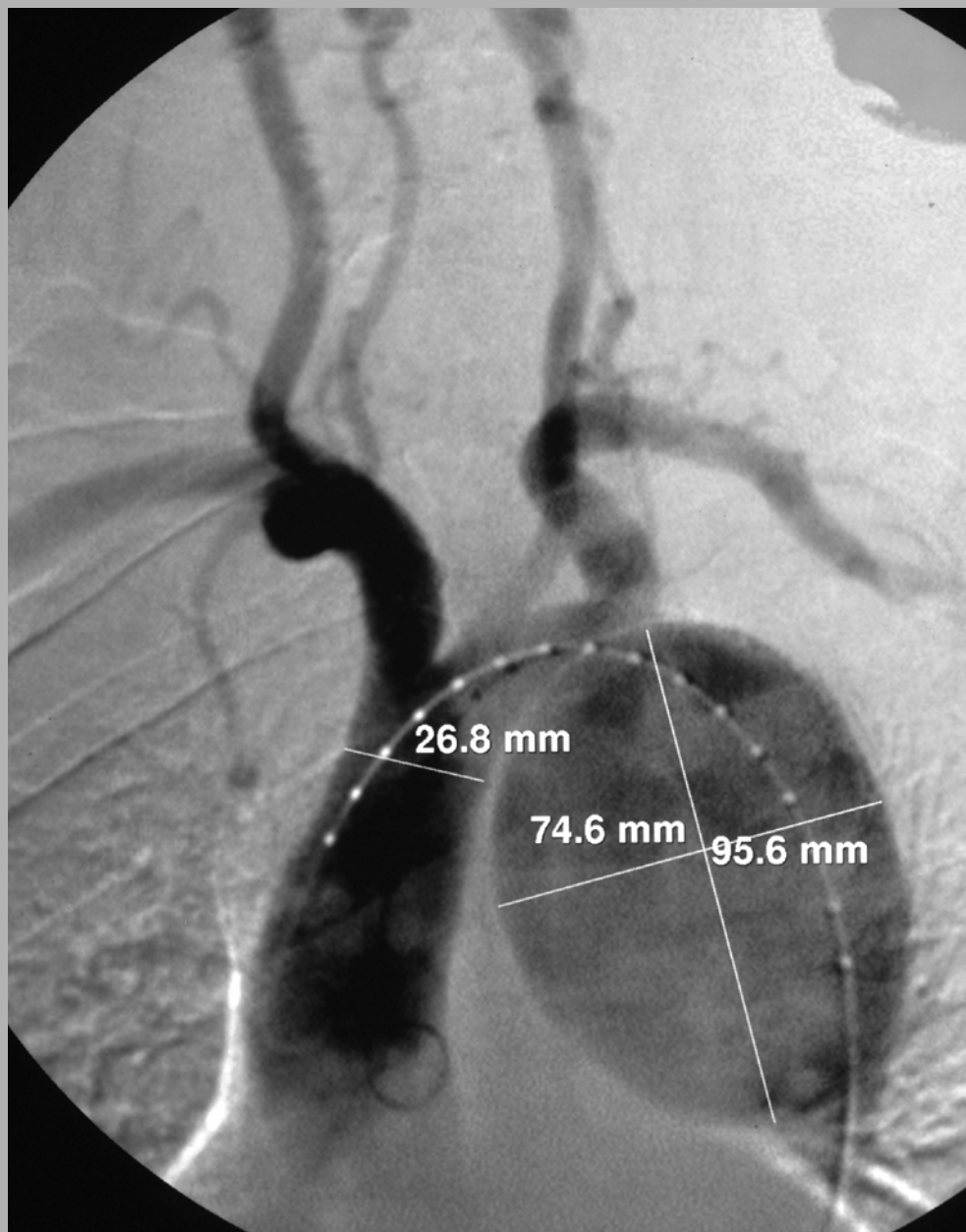
Gothic arch
R/ Talent + complete arch transposition



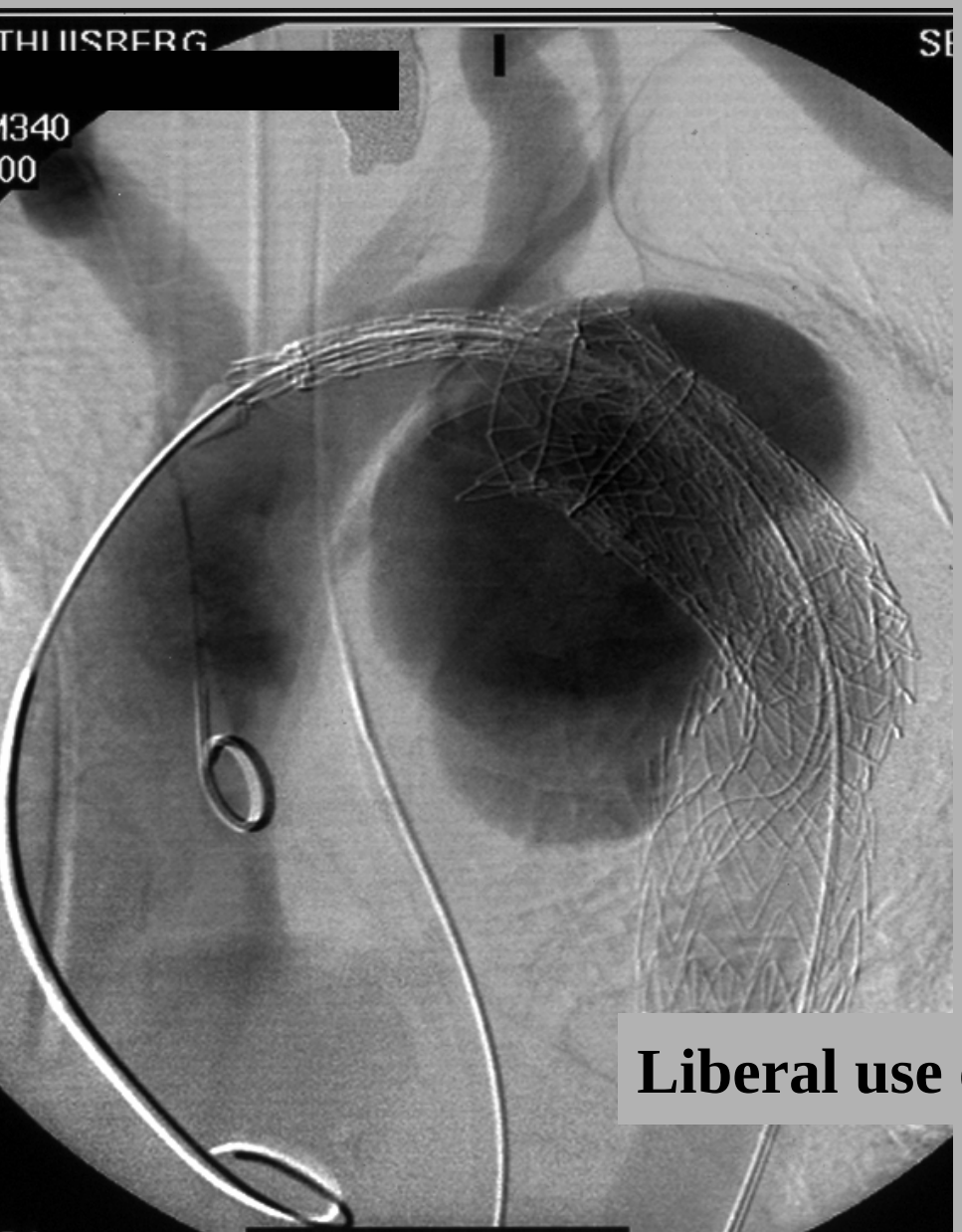
FLEXIBLE GRAFT!!

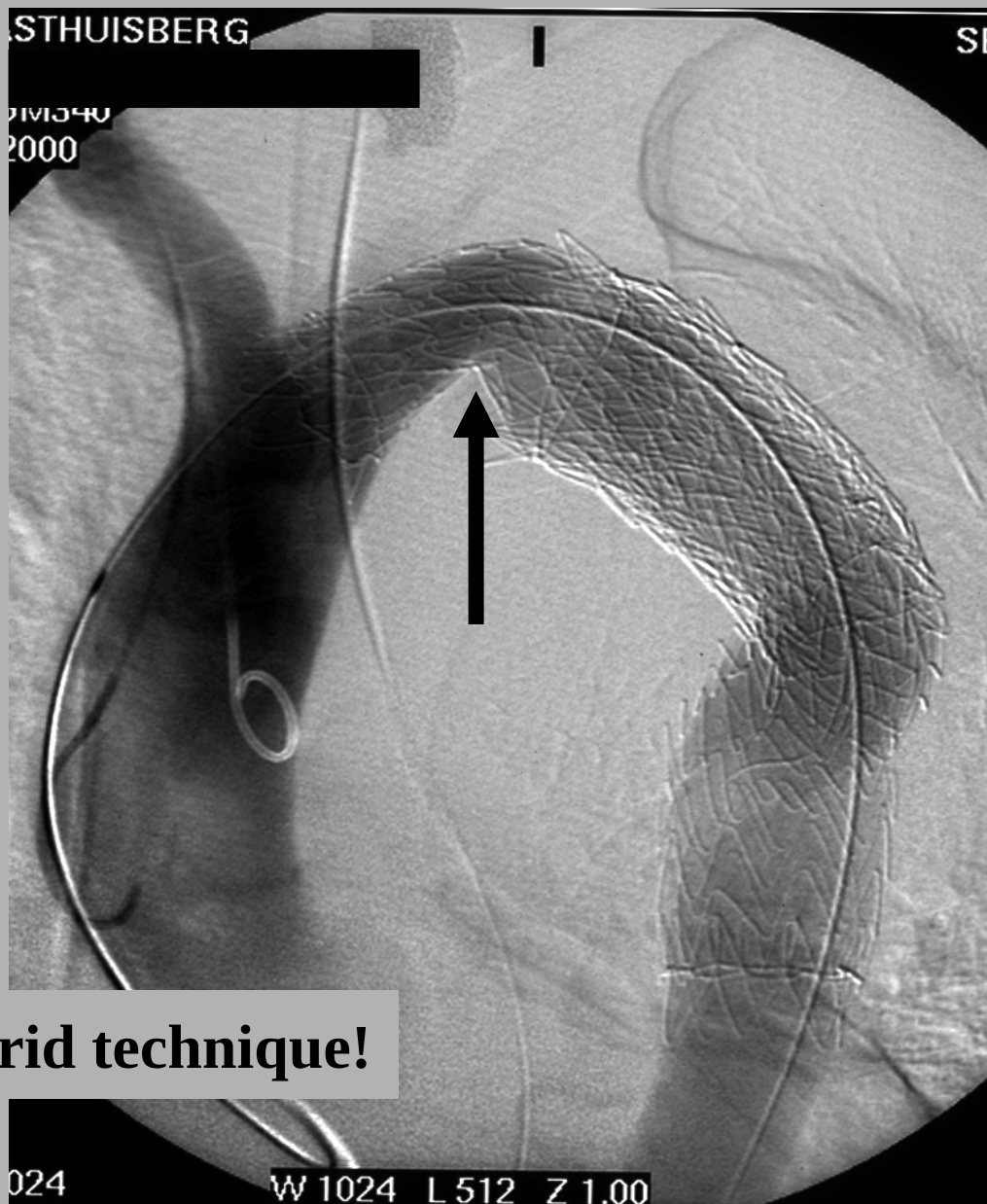
2. Postoperative fibrosis and stiffness at the aortic isthmus! Take care of a good proximal landingszone!!



Postoperative fibrosis and stiffness at the aortic isthmus!
Take care of a good proximal landingszone!!

Postoperative fibrosis and stiffness at the aortic isthmus!
Take care of a good proximal landingszone!!





Liberal use of hybrid technique!

3. Frequent mismatch between landingszones (distal>>proximal) →thrombone technique or (reversed) tapered grafts

Conclusion

Endovascular repair of postCoA repair aneurysms is feasible but challenging

Study the geometry of the arch
→Flexible graft

Postop. Fibrosis at the isthmus
→Landingszone

Dismatch arch – descending aorta
→Thrombone or reversed tapered graft