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Adult Cardiac Surgery Database

Monthly Webinar

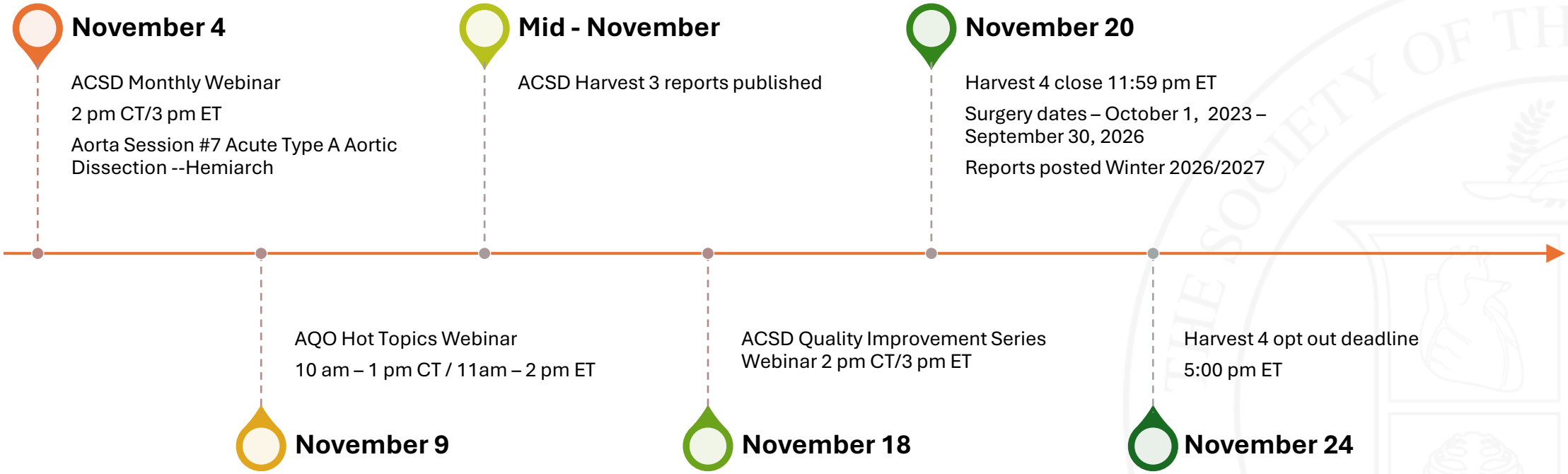
November 4, 2026



Agenda

- Welcome and Introductions
- STS Updates
- Aorta Session #7 – Acute Type A Aortic Dissection -- Hemiarch -- Melinda Offer
- Q&A

Important Dates



STS Updates

NEW **November 2026 training resources**
ACSD Training Manual Volume 1, Volume 2 and the updated FAQ Summary now available.

ACSD Public Reporting Page updated
Now includes the 2026 Harvest 1 analysis

Aorta procedure resources
Procedure Identification Chart and Risk Model Variable Chart now available on the STS website.

COMING SOON **Harvest 3 Reports**
Reports will be available mid-November.

COMING SOON **National Report Overview**
Harvest 3 overview will be available soon.

AQO 2026 – New Orleans

STS National Database™
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AQO Virtual Pass

Available through December 21, 2026

Purchase AQO 2026

For those unable to travel to New Orleans, STS offers a virtual option. Virtual Pass buyers will gain access to on-demand content, e-posters online and the recorded archive of all sessions following the conclusion of the meeting.

Category	Member	Non-Member
Virtual Pass	$450	$550

Buy Now

AQO 2026 Justification Letter Request



Hot Topics Webinar

November 9, 2026, 10 am-1 pm CT – 11 am- 2 pm ET

Agenda – ECHO Reports, Preoperative Risk Factors, Chronic Lung Disease and “Inquiring Minds Want to Know”

AQO 2027: Virtual-only

All databases. In-person format returns in 2028.

CE/CEU & EVALUATIONS

Claim your continuing education credit

STEP 1

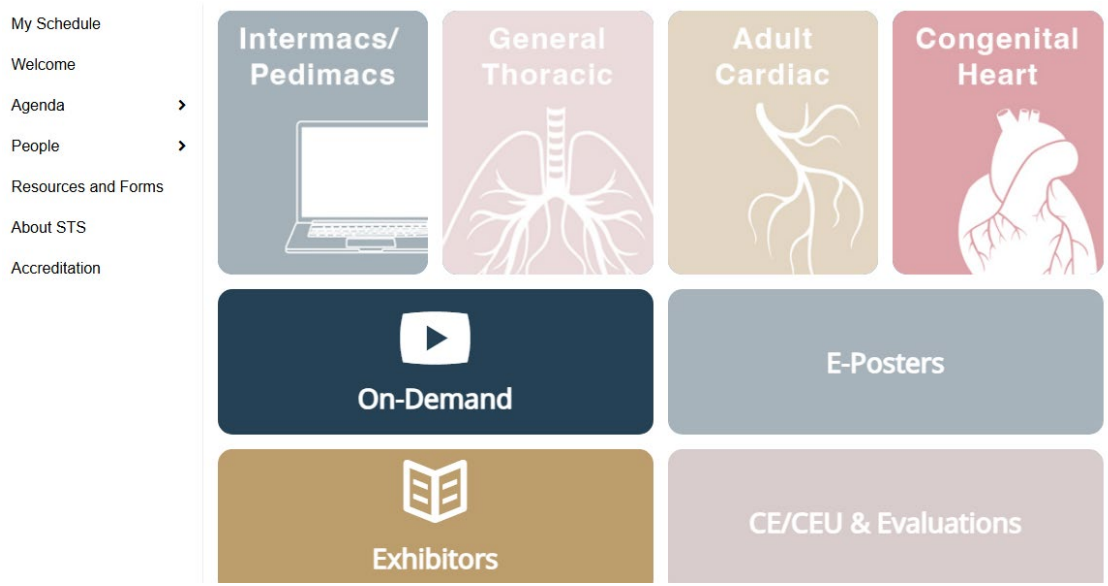
View all AQO content before you start your evaluation

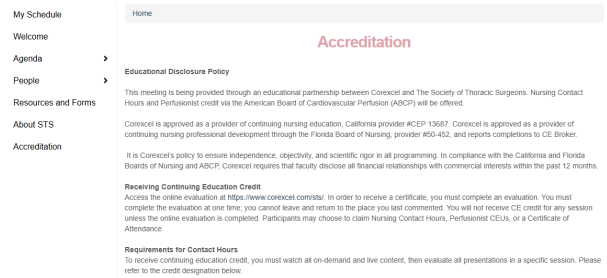
STEP 2

Complete the evaluation in one sitting — you cannot leave and return

DEADLINE

Claim your credit by Monday, January 4, 2027







Calculation of Prolonged Ventilation and Postoperative Renal Failure

STARTING WITH

Harvest 3

analysis

FIELDS AFFECTED

Prolonged ventilation

Postoperative renal failure

Calculated from objective data

The STS Research Center will calculate prolonged ventilation and postoperative renal failure using objective data.

Definitions unchanged, logic updated

The definitions for prolonged ventilation and renal failure have not changed; the logic used to calculate these fields has been updated.

ACSD UPDATE · PROLONGED VENTILATION

Prolonged ventilation must match total ventilation hours

CRITICAL ERROR WHEN (WAS A WARNING)

1 Condition 1

venthrstot ≤ 24

AND

cpvntlng is marked Yes

2 Condition 2

venthrstot > 24

AND

cpvntlng is **not marked** Yes

IMPACT

Record can’t be saved or uploaded until fixed.

ACSD UPDATE · RENAL FAILURE

Postoperative renal failure is now checked against creatinine

CRITICAL ERROR WHEN

1 Condition 1

dialysis = no

CreatLst < 4

PostCreat ≥ 3 × CreatLst

and crenfail is not Yes

2 Condition 2

dialysis = no

CreatLst < 4

PostCreat ≥ 4 and > CreatLst + 0.5

and crenfail is not Yes

3 Condition 3

PostCreat < PeakPostCreat48Hrs

IMPACT

Record can’t be saved or uploaded until fixed.

Aorta Session #7 — Melinda Offer, RN, MSN

Acute Type A Aortic Dissection

Aortic valve resuspension with ascending aorta and hemiarch replacement

Operative Note (1 of 3)

Pre-Op Diagnosis: Acute type A aortic dissection

Post-Op Diagnosis: Acute type A aortic dissection

Procedure: Repair of aortic dissection by aortic valve resuspension, ascending and hemiarch replacement.

An incision was made over the right deltopectoral groove and dissection was carried down to the axillary artery. Heparin was administered. A partial occluding clamp was placed on the subclavian artery, and a longitudinal arteriotomy was made. An 8 mm Hemashield graft was anastomosed end-to-side to the artery and used for arterial inflow.

A median sternotomy was then performed in the usual manner. **While clearing mediastinal fat and opening the pericardium, the aorta ruptured. This was controlled by direct pressure**. **The venous cannula was placed through the side of the right atrial appendage and cardiopulmonary bypass was initiated. Cooling was begun. A retrograde cardioplegia catheter was placed through the wall of the right atrium into the coronary sinus. An aortic cross-clamp was placed on the ascending aorta just distal to the site of rupture. Cold blood cardioplegia was administered in a retrograde manner. A left ventricular vent was placed through the right superior pulmonary vein**.

Operative Note (2 of 3)

The proximal ascending aorta was opened. **The aorta was excised down to just above the sinotubular junction**. **Additional antegrade cardioplegia was administered directly into the coronary ostia**. Fresh clot was removed from the false lumen in the aortic root. **The aortic valve was trileaflet. The aortic root was reconstructed by fashioning a piece of Teflon felt to fit into the false lumen and then gluing it in place with Bioglue**. **Aortic valve was resuspended**. **By this time, core temperature had cooled to 28° and venous outflow temperature was 25°.**

The proximal innominate artery was encircled. Pump flow was reduced and a clamp was placed on the proximal innominate artery. Moderate hypothermic circulatory arrest with antegrade cerebral perfusion was initiated. The aortic cross-clamp was removed. The remainder of the ascending aorta and proximal arch were resected. The left carotid artery and left subclavian artery were occluded using Fogarty balloon catheters. The false lumen was closed using a running horizontal mattress suture with felt strips inside and outside the aorta

Operative Note (3 of 3)

A 30 mm Hemashield graft was anastomosed to the distal aorta. Pump flow was reduced and the clamp was removed from the innominate artery. The distal portion of the aortic graft was clamped. **Full pump flow was resumed and warming was begun. Circulatory arrest with antegrade cerebral perfusion time was 50 minutes.**

The aortic graft was cut to appropriate length, and the proximal anastomosis was created down to the sinotubular junction with a felt strip outside the aorta. An aortic vent was placed into the aortic graft. The clamp was removed from the aortic graft. **Aortic cross clamp time was 130 minutes**. Sinus rhythm resumed spontaneously. After appropriate rewarming, cardiopulmonary bypass was weaned off without difficulty and without the use of inotropes. **Total bypass time was 195 minutes.**

Cannulation and Perfusion Strategy

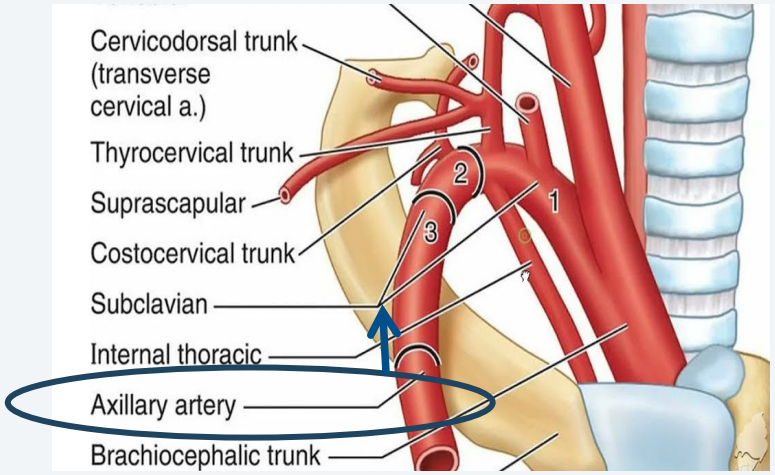
Right deltopectoral incision to the axillary artery; heparin given, subclavian artery clamped and opened and 8 mm Hemashield graft anastomosed end-to-side to the artery and used for arterial inflow

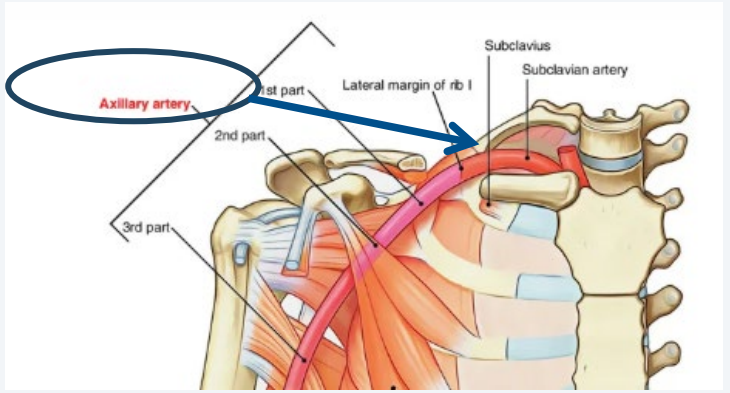
Venous cannula placed through the side of the right atrial appendage

The right subclavian artery arises from the brachiocephalic trunk and becomes the right axillary artery after crossing the lateral border of the first rib.

Arterial Cannulation Insertion Site: (Select all that apply)
ArtCannInsertSite (2336)
☐ Aortic ☑ Axillary ☐ Femoral ☐ Innominate ☐ Other

Venous Cannulation Insertion Site: (Select all that apply)
VenCannInsertSite (2361)
☐ Femoral ☐ Pulmonary Vein ☐ Jugular ☐ SVC
☑ Rt. Atrial ☐ Lt. Atrial ☐ Other

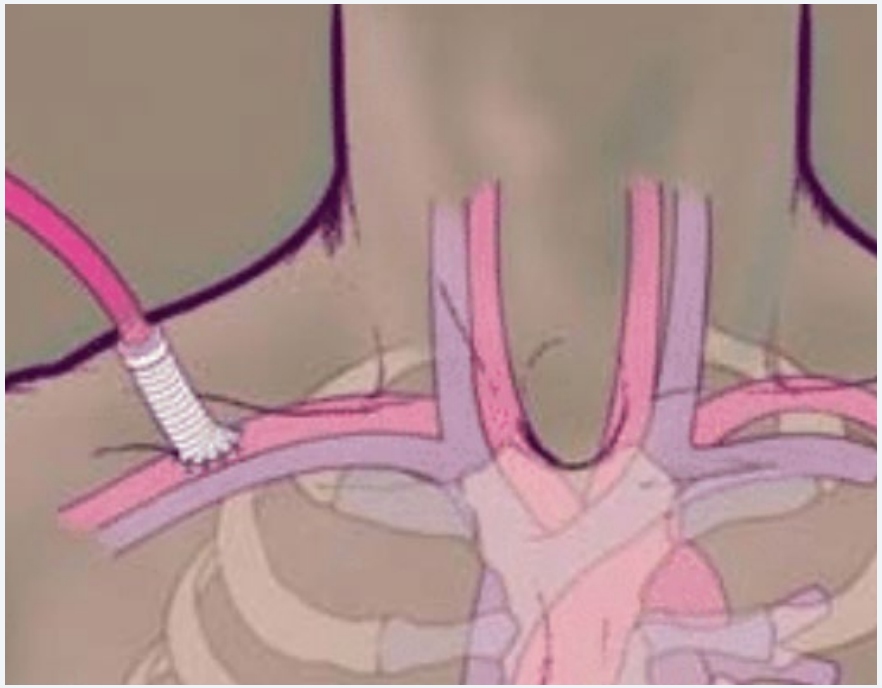




Cannulation and Perfusion Strategy

Right deltopectoral incision to the axillary artery; heparin given, subclavian artery clamped and opened and 8 mm Hemashield graft anastomosed end-to-side to the artery and used for arterial inflow

Sometimes this is called a Chimney graft



What is a Chimney Graft for Axillary Cannulation - Hemashield graft sewn end-to-side to the axillary artery carries bypass inflow instead of cannulating the vessel directly.

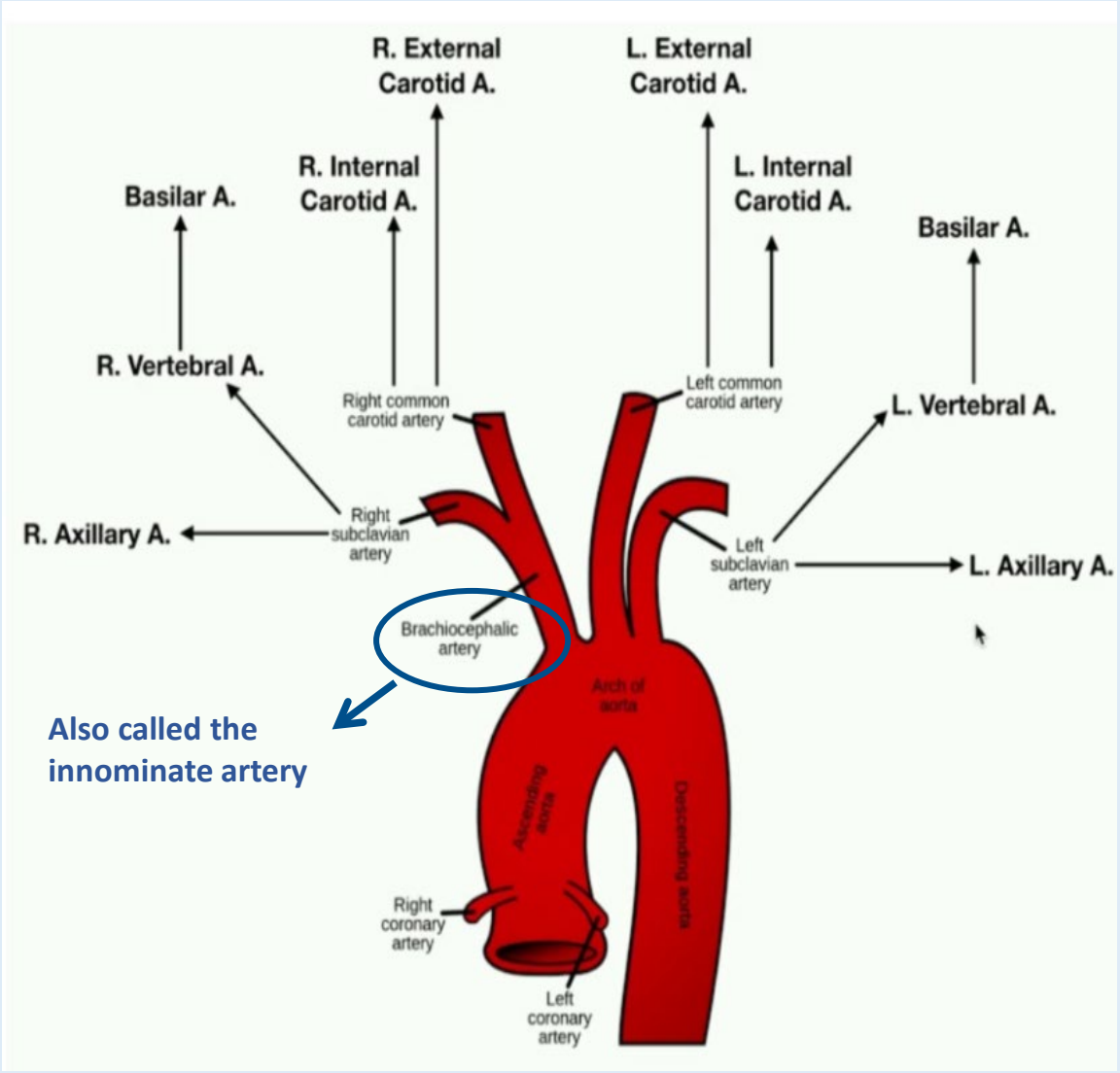
- ***Avoids direct axillary cannulation — less vessel trauma, bleeding, and arm swelling***
- ***Lower-resistance conduit for more efficient, reliable arterial inflow***
- ***Enables inflow when the ascending aorta is unusable — dissection, porcelain aorta, redo sternotomy***
- ***Supports selective antegrade cerebral perfusion in hypothermic arrest, lowering stroke risk***

Cannulation and Perfusion Strategy

Right axillary artery (RAA) cannulation for CPB, first reported by Villard et al. in 1976, is now a preferred alternative perfusion strategy — especially in acute aortic dissection, redo aortic surgery, and severe aortic atherosclerosis.

Key Advantages:

- Antegrade flow preserved through the aortic arch
- Antegrade cerebral perfusion
- Minimal aortic manipulation.



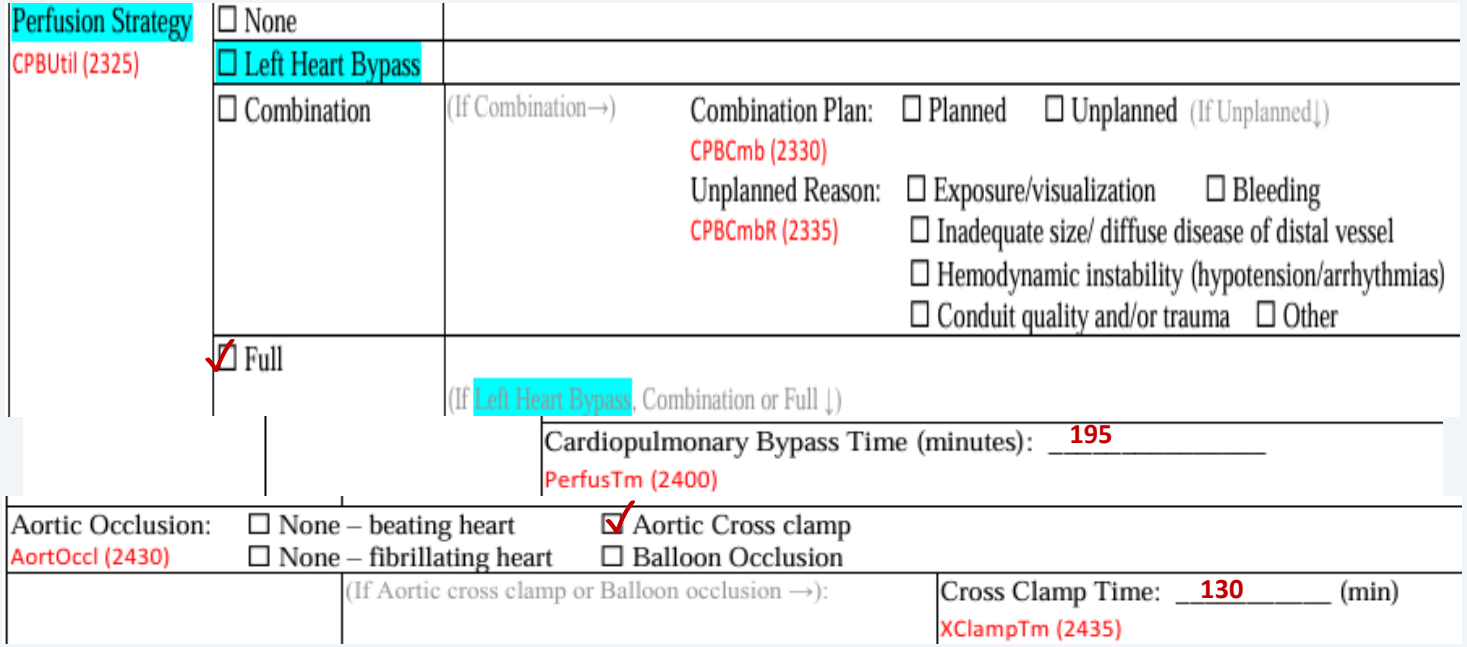
Cannulation and Perfusion Strategy

Cardiopulmonary bypass initiated and cooling begun

Circulatory arrest with antegrade cerebral perfusion 50 min

Aortic Cross Clamp time 130 min -
Aortic cross-clamp placed just distal to the site of rupture; left ventricular vent placed via the right superior pulmonary vein

Total bypass time 195 min



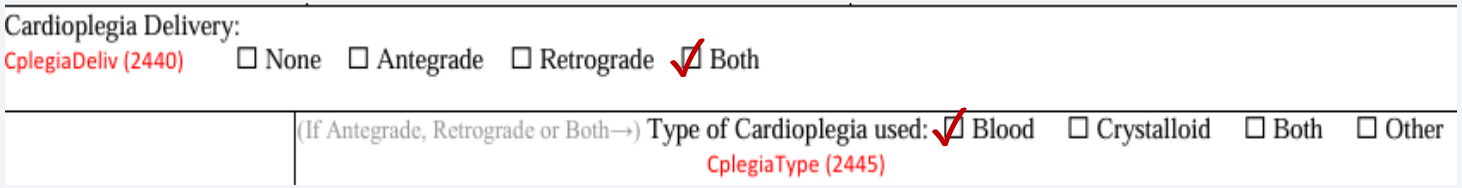
Cardiopulmonary Bypass Time
Total minutes systemic return is diverted into the CPB circuit and returned to the patient.

- ***Includes all periods of cerebral perfusion and sucker bypass***
- ***Excludes circulatory arrest***
- ***Excludes modified ultrafiltration (MUF), which is performed after CPB has ended.***

Cannulation and Perfusion Strategy

Retrograde cardioplegia catheter placed through the right atrial wall into the coronary sinus; cold blood cardioplegia given retrograde

Additional antegrade cardioplegia administered directly into the coronary ostia


Cardioplegia Delivery:
CplegiaDeliv (2440) ☐ None ☐ Antegrade ☐ Retrograde ☑ Both

(If Antegrade, Retrograde or Both→) Type of Cardioplegia used: ☑ Blood ☐ Crystalloid ☐ Both ☐ Other
CplegiaType (2445)

Cardioplegia is a solution and a process used to induce a controlled cardiac arrest. It protects the myocardium during ischemia by lowering metabolic demand and allows the surgeon work on a motionless, bloodless heart.

Antegrade vs. Retrograde Cardioplegia

Antegrade: infused into the aortic root, following normal coronary flow — efficient and evenly distributed when the coronary arteries are unobstructed, but uneven in severe coronary disease.

Retrograde: infused via the coronary sinus, flowing backward through the venous side into the coronary circulation — used when antegrade flow is compromised, as in significant coronary artery disease.

Cannulation and Perfusion Strategy

Core temperature cooled to 28° with venous outflow temperature 25°

Proximal innominate artery encircled and clamped; flow resumed for moderate hypothermic circulatory arrest with antegrade cerebral perfusion, cross-clamp removed

Moderate Hypothermic Circulatory Arrest (MHCA)

- *Cooling to roughly 25-30 °C slows metabolism and protects the brain while circulation is stopped for a limited period, typically 15-60 minutes, so the arch can be repaired.*
- *Circulation is arrested but the brain is perfused through a cannula in the axillary or innominate artery (antegrade cerebral perfusion).*
- *Used for type A dissection repair and arch reconstruction such as transverse hemiarch; stroke risk rises if cerebral perfusion is inadequate.*
- *Moderate hypothermia (25-30 °C) shortens arrest times, while deep hypothermic arrest (20-25 °C) allows longer arrest, up to 60 minutes, but requires more complex perfusion strategies.*

Sources: The Annals of Thoracic Surgery; Oxford Academic

Cannulation and Perfusion Strategy

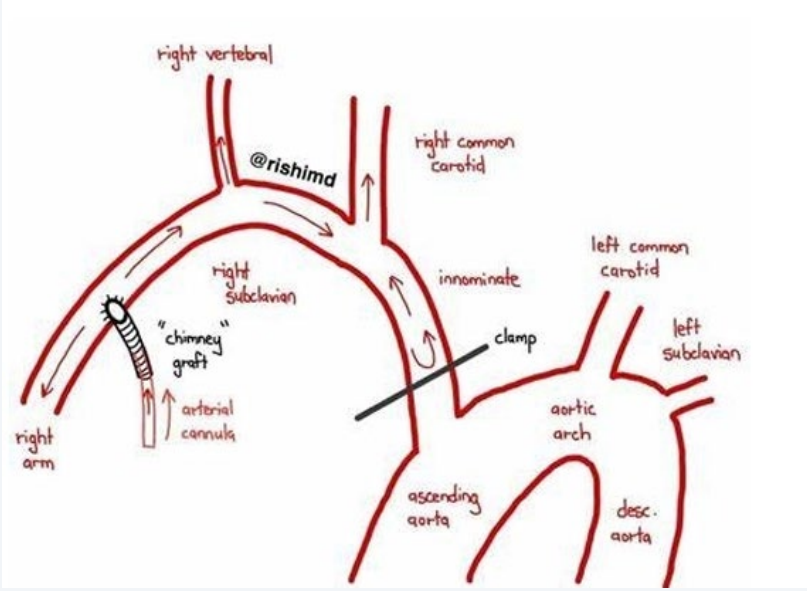
Core temperature cooled to 28° with venous outflow temperature 25°

Proximal innominate artery encircled and clamped; flow resumed for moderate hypothermic circulatory arrest with antegrade cerebral perfusion, cross-clamp removed

What is Antegrade Cerebral Perfusion (ACP)

- Physiologic forward flow through the carotid and vertebral arteries maintains cerebral oxygenation while the arch is repaired.
- Fewer strokes: about 2% with ACP versus 13% without.
- Better survival: 93% versus 78% at three years.
- Safely extends operative time for complex repairs such as type A dissection, avoiding prolonged circulatory arrest.
- More reliable perfusion of deep brain structures than retrograde perfusion, with better neurologic recovery and shorter postoperative ventilation.

Source: The Journal of Thoracic and Cardiovascular Surgery

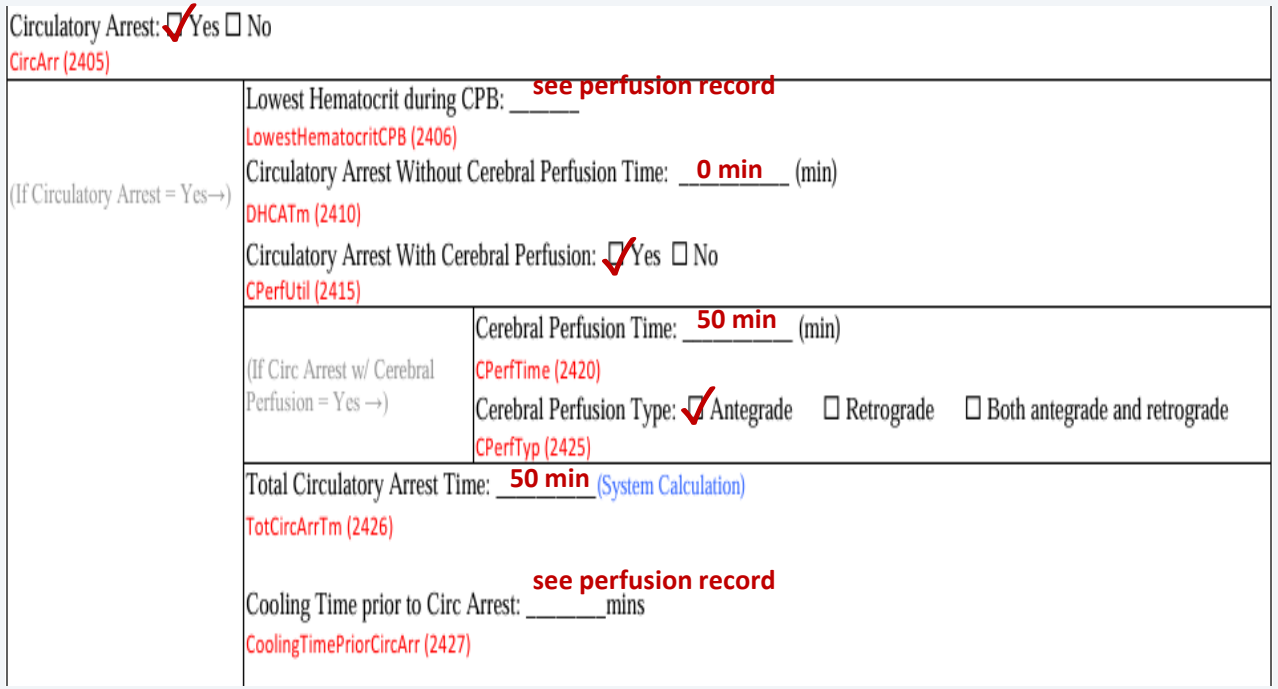


Cannulation and Perfusion Strategy

Proximal innominate artery encircled and clamped; flow resumed for moderate hypothermic circulatory arrest with antegrade cerebral perfusion, cross-clamp removed

Innominate clamp removed and distal graft clamped; full flow and warming resumed

Circulatory arrest with antegrade cerebral perfusion 50 min; aortic cross clamp time 130 min; total bypass time 195 min



Definition: 2426 Calculated variable measuring circulatory arrest without cerebral perfusion time plus any cerebral perfusion time.

Diagnosis and Procedure

PRE-OPERATIVE DIAGNOSIS

Acute type A aortic dissection

POST-OPERATIVE DIAGNOSIS

Acute type A aortic dissection

PROCEDURE PERFORMED

Aortic valve resuspension

Ascending aorta replacement

Hemiarch replacement

Aorta Procedure Performed: AortProc (2123)	☑ Yes, planned ☐ Yes, unplanned due to surgical complication ☐ Yes, unplanned due to unsuspected disease or anatomy ☐ No (If Yes complete Section M 2)	
	(If Aorta Procedure performed →)	Did the surgeon provide input for aortic surgery data abstraction? ☑ Yes ☐ No AortProcSurgInput (2124)
Valve Procedure Performed: OpValve (2129)	☑ Yes ☐ No	
	(If Yes →)	Was a valve explanted: ☐ Yes ☑ No ValExp (2130) (If Yes complete Section K)
		Aortic Valve Procedure performed: VSAV (2131) ☑ Yes, planned ☐ Yes, unplanned due to surgical complication ☐ Yes, unplanned due to unsuspected disease or anatomy ☐ No
		(If Yes →) Was a procedure performed on the Aorta? ☑ Yes ☐ No AVAortaProcPerf (2132) (If 'Yes' complete M2; If 'No' complete K1)

Operation

The aortic valve was trileaflet.
Aortic valve was resuspended.

- *The likelihood of AV leaflet commissural resuspension in aortic dissection is very high.*
- *Aortic valve leaflet commissural resuspension is indicated in acute type A dissection when the valve is competent and the leaflets and annulus are intact — the flap displaces the commissures, causing AR without intrinsic valve disease. Resuspension re-elevates the commissures and restores root geometry.*

Aortic Valve or Root Procedure Performed: ☑ Yes, planned ☐ Yes, unplanned due to surgical complication ☐ Yes, unplanned due to unsuspected disease or anatomy ☐ No
VSAVAo (4951)
(If Yes ↓)

Procedure Performed:
VSAVPrAo (4952)

☐ Replacement (If Replacement↓)

Transcatheter Valve Replacement: ☐ Yes ☐ No
VSTCVAo (4953)

(If Yes →) Approach:
VSTCVRAo (4954)
☐ Transapical ☐ Transaxillary ☐ Transfemoral ☐ Transaortic ☐ Subclavian
☐ Other ☐ Transiliac ☐ Transeptal ☐ Transcarotid. ☐ Transcaval

Surgical valve Replacement: ☐ Yes ☐ No
VSAVSurgRepAo (4955)

(If Yes →) Device type: ☐ Mechanical ☐ Bioprosthetic ☐ Surgeon fashioned pericardium (Ozaki) ☐ Other
VSAVSurgTypeAo (4956)

(If Bioprosthetic→) Valve type: ☐ Stented ☐ Stentless sub coronary valve only ☐ Sutureless/rapid deployment
VSAVSurgBioTAo (4957)

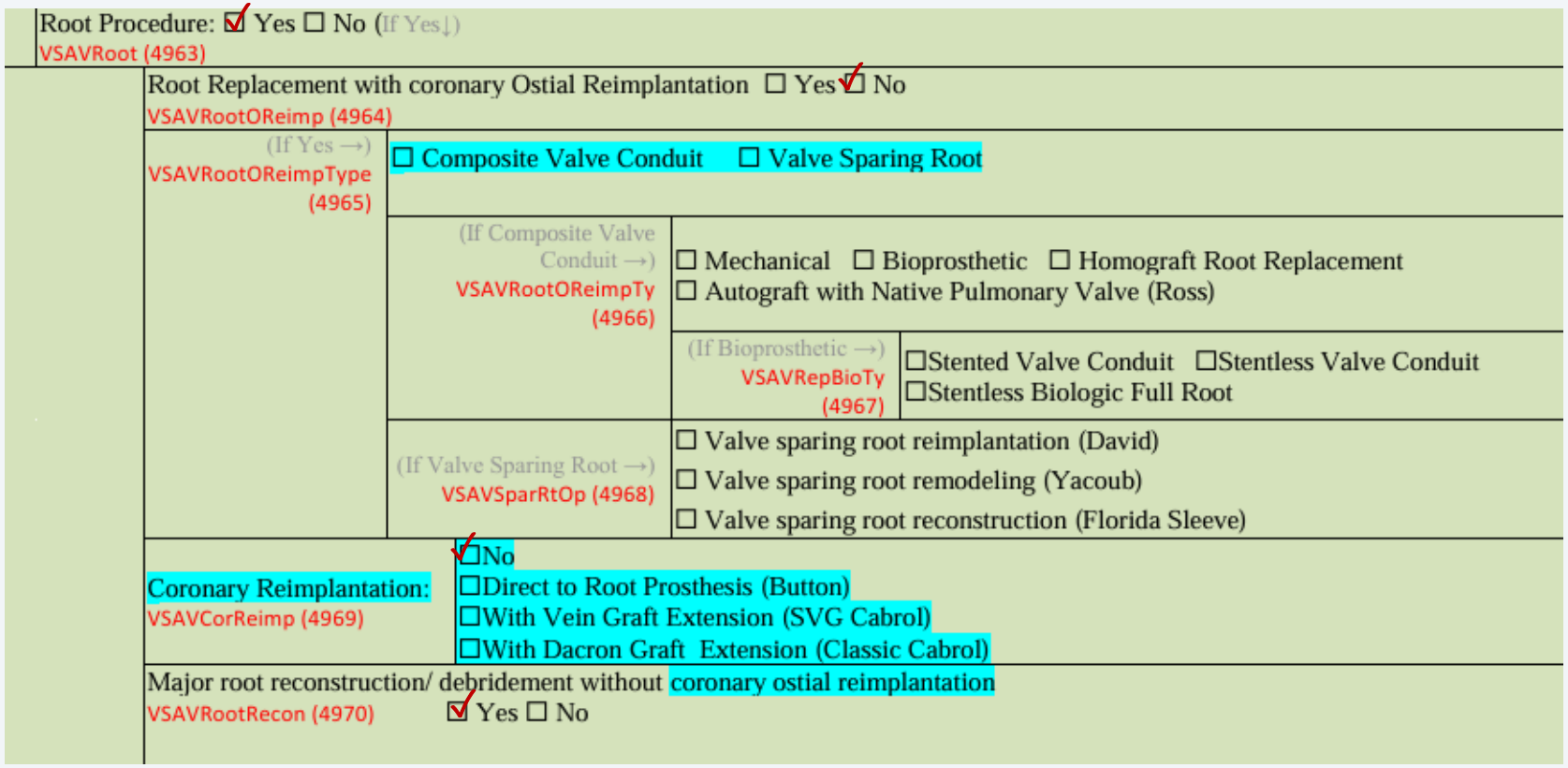
☑ Repair/Reconstruction (If Repair/Reconstruction ↓)

Repair Type (Select all that apply)
AVProcRepTypeAo (4958)

☐ Commissural suture annuloplasty	☐Nodular Release	☐Leaflet resection suture
☐Leaflet plication	☐Leaflet Shaving	☐Leaflet pericardial patch
☑Leaflet commissural resuspension suture	☐Leaflet debridement	☐Division of fused leaflet raphe
☐Leaflet free edge reinforcement (PTFE)	☐Ring annuloplasty external ring	☐Ring annuloplasty internal ring
☐External Suture Annuloplasty	☐Pannus/Thrombus removal (native valve)	

Operation

Fresh clot was removed from the false lumen in the aortic root. The aortic root was reconstructed by fashioning a piece of Teflon felt to fit into the false lumen and then gluing it in place with Bioglue. False lumen closed with a running horizontal mattress suture, felt strips inside and outside the aorta



Do we capture the felt as an aorta device?

Aorta Devices: Do not capture felt or Bioglue or autologous pericardium.

Operation

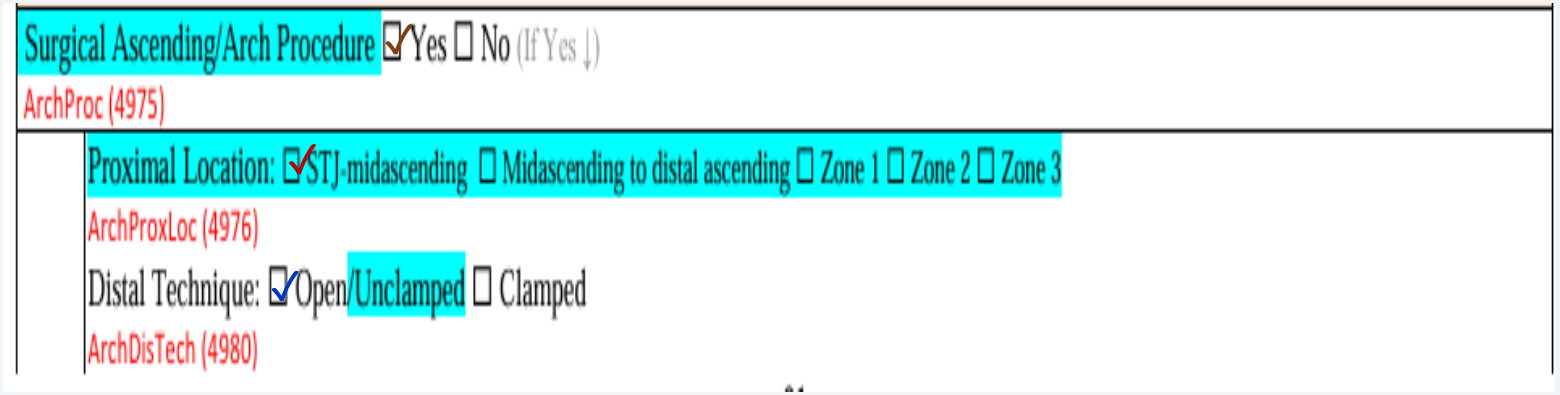
Procedure: Repair of aortic dissection by aortic valve resuspension, ascending and hemiarch replacement.

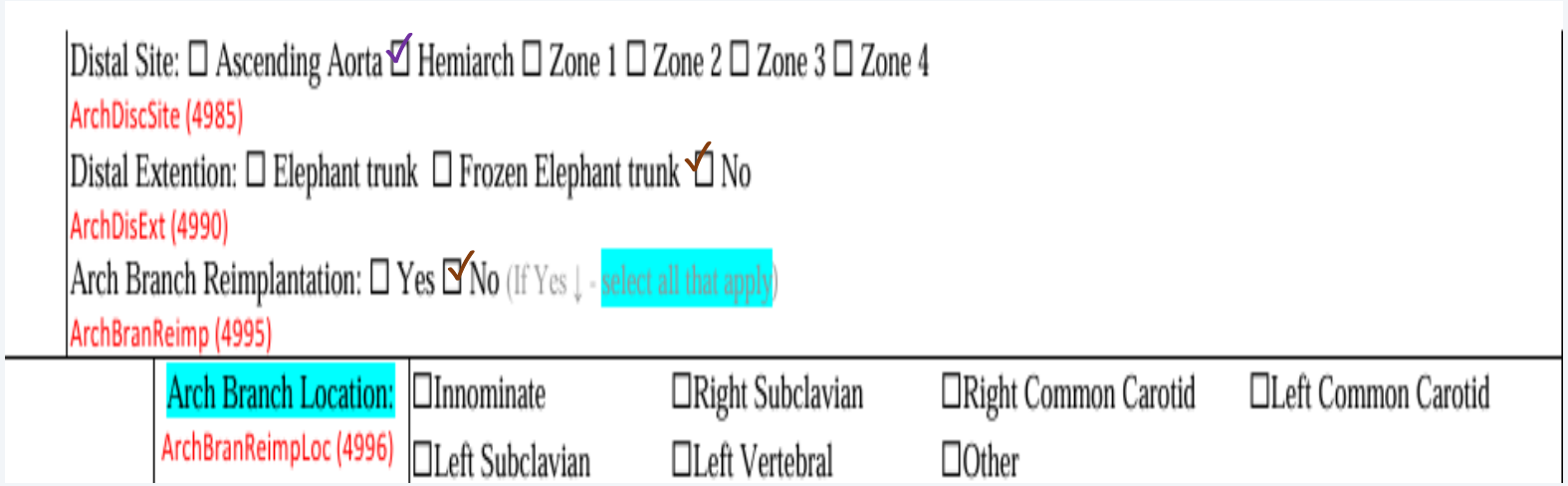
The proximal ascending aorta was opened. Aorta excised down to just above the sinotubular junction.

Moderate hypothermic circulatory arrest with antegrade cerebral perfusion was initiated. The aortic cross-clamp was removed

Remainder of the ascending aorta and proximal arch resected; 30 mm Hemashield graft anastomosed to the distal aorta

Graft cut to appropriate length; proximal anastomosis created down to the sinotubular junction with a felt strip outside the aorta





Hemiarch means a single anastomosis was done somewhere in the ascending or proximal arch without separate grafts to the head vessels

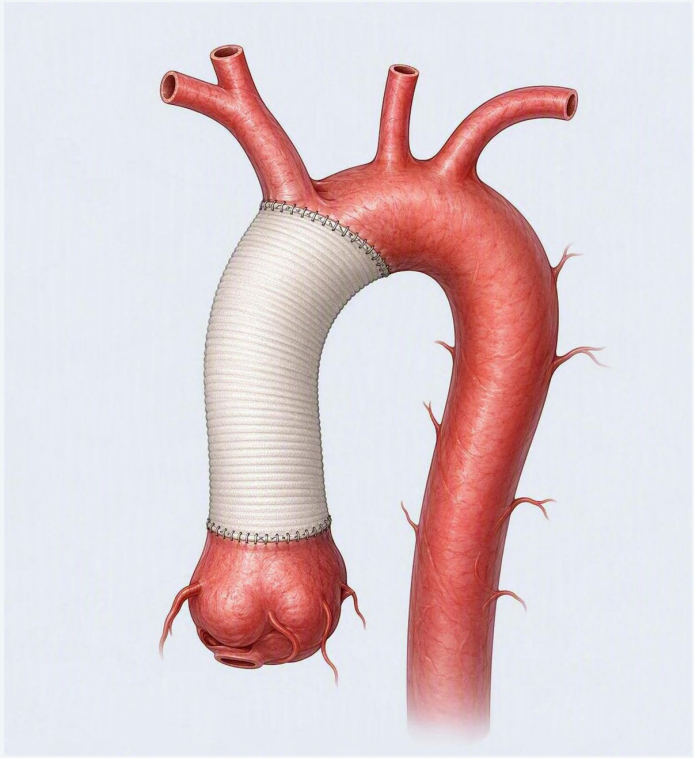
Before we code the devices, let's see what the device implanted looks like



Hemashield Platinum Woven Double Velour

Woven Vascular Grafts

- Collagen impregnated polyester graft
- Magnetic Resonance Safe
- Water permeability: < 5ml/cm²/min[1]





Devices

Devices

Device(s) Inserted: ☑ Yes ☐ No (If Yes, list aorta proximal to distal using device key ↓)
ADevIns (5440)

Aortic Valve or Aortic Valve Composite Graft Implanted ☐ Yes ☑ No (If Yes↓)
AVAVCompGraftImplAo (5441)

Implant Model Number: _____
AVAVCompGrImplMo…lAo (…42)

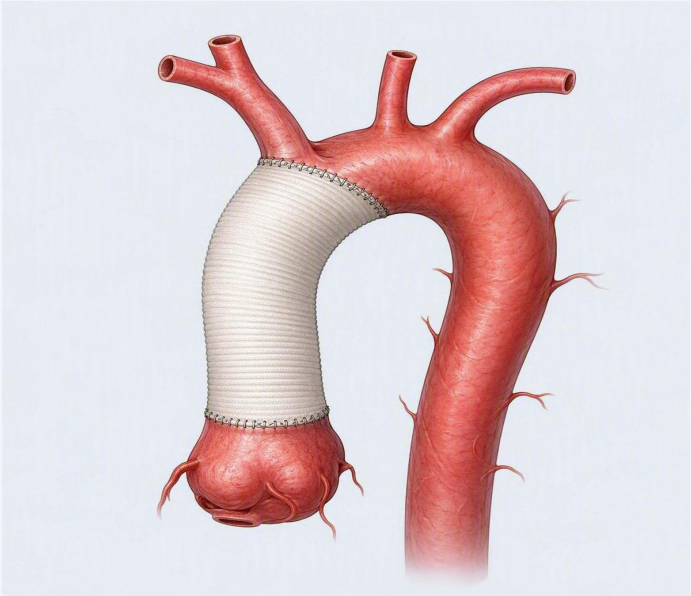
Implant Size: _____
AVAVCompGrImplSiz…

Unique Device identifier (UDI): _____
AVAVCompGrImplUDIAo (5444)

Seq 5441 – Aortic valve or Aortic Valve Composite Graft - The intent is to capture commercial valves and commercial valve conduits in this field.

Implant Information



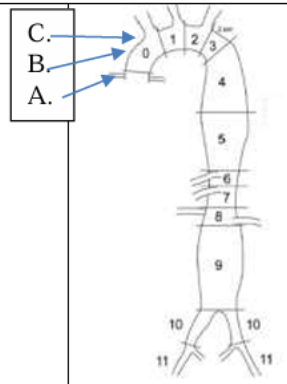


Before we get to the Coding the Hemashield Device, let's review our distal site choice of Hemiarch

Distal Site: ☐ Ascending Aorta ☐ Hemiarch ☐ Zone 1 ☐ Zone 2 ☐ Zone 3 ☐ Zone 4
ArchDiscSite (4985)

Aorta Devices

Location :



X.	No additional devices inserted (only for locations 2 – 15)
A.	Below sinotubular junction
B.	Sinotubular junction to mid ascending
C.	Mid ascending to distal ascending
D.	Zone 1 (between innominate and left carotid)
E.	Zone 2 (between left carotid and left subclavian)
F.	Zone 3 (first 2 cm. distal to left subclavian)
G.	Zone 4 (end of zone 3 to mid descending aorta ~ T6)
H.	Zone 5 (mid descending aorta to celiac)
I.	Zone 6 (celiac to superior mesenteric)
J.	Zone 7 (superior mesenteric to renals)
K.	Zone 8 (renal to infra-renal abdominal aorta)
L.	Zone 9 (infrarenal abdominal aorta)
M.	Zone 10 (common iliac)
N.	Zone 11 (external iliacs)

(Refer to Data Specifications for Harvest Codes)

For devices other than aortic valves and aortic valve composite grafts:

Implant Method:	1=Open Surgical 2= Endovascular
Outcome:	1= Unsucessfully implanted/maldeployed 2= Implanted/deployed and removed 3= Successfully implanted/deployed
Model Number:	Enter device model number
UDI:	Enter unique device identifier (not serial number)

Location (Letter)	Implant Method	Outcome	Model Number	UDI
ADevLoc01 (5450)	ADevDelMeth01 (5455)	ADevOut01 (5460)	ADevModel01 (5465)	ADevUDI01 (5470)
ADevLoc02 (5475)	ADevDelMeth02 (5480)	ADevOut02 (5485)	ADevModel02 (5490)	ADevUDI02 (5495)

In 4985 - we have a choice for hemiarch for the distal site and when you look at the definition of Hemiarch it indicates that a single anastomosis was done somewhere in the ascending or proximal arch without separate grafts to the head vessels.

When we get down to the device implant section, we don't have hemiarch as a choice for distal site, so we have to identify what zone it is based on where the graft is placed in the aorta. It is important to code where the actual graft is placed beveled or not, and it is likely that this may differ with different surgeons.

Devices

There is no drop-down selection set for Model Number in this section of the Aorta Device entry. Entry of Model Number is manual.

Procedure: Repair of aortic dissection by aortic valve resuspension, ascending and hemiarch replacement.

The proximal ascending aorta was opened. Aorta excised down to just above the sinotubular junction.

Seq 5450 Aorta Device - Location #01 – The intent of this field is to capture devices other than commercial aortic valves and commercial aortic valve composite grafts that are implanted in the aorta.



Implant Method:	1=Open Surgical 2= Endovascular
Outcome:	1= Unsucessfully implanted/maldeployed 2= Implanted/deployed and removed 3= Successfully implanted/deployed
Model Number:	Enter device model number
UDI:	Enter unique device identifier (not serial number)

Location (Letter)	Implant Method	Outcome	Model Number	UDI
STJ - mid-ascending	Open	Successful	M00202175430P0	

Devices

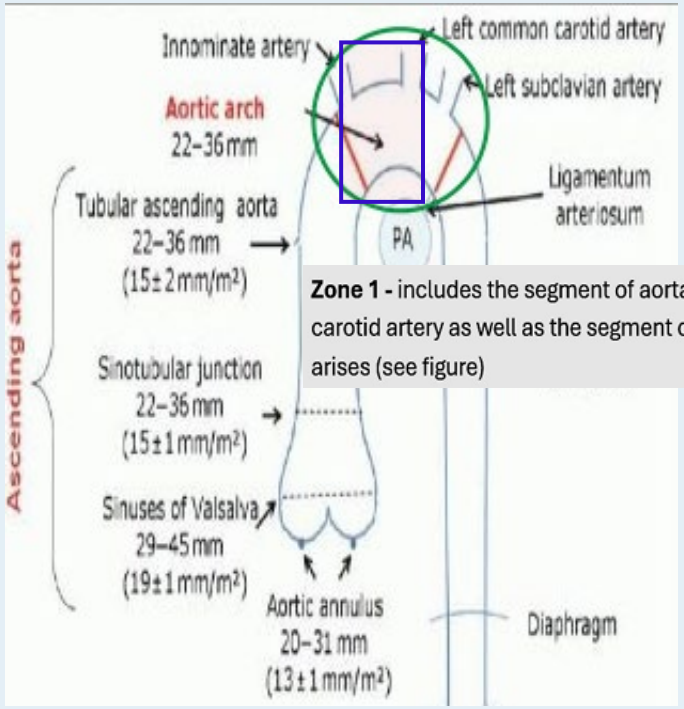
Procedure: Repair of aortic dissection by aortic valve resuspension, ascending and hemiarch replacement.

Remainder of the ascending aorta and proximal arch resected; 30 mm Hemashield graft anastomosed to the distal aorta

The proximal transverse arch is between the innominate and left carotid artery

The distal transverse arch is between the left carotid and left subclavian

The aortic isthmus is between the left subclavian and insertion of ligamentum arteriosum



Zone 1 - includes the segment of aorta between the innominate artery and left carotid artery as well as the segment of aorta from which the left carotid artery arises (see figure)

Implant Method:	1=Open Surgical 2= Endovascular
Outcome:	1= Unsucessfully implanted/maldeployed 2= Implanted/deployed and removed 3= Successfully implanted/deployed
Model Number:	Enter device model number
UDI:	Enter unique device identifier (not serial number)

Location (Letter)	Implant Method	Outcome	Model Number	UDI
STJ - mid-ascending	Open	Successful	M00202175430P0	
Zone 1	Open	Successful	M00202175430P0	

Thank you

Are there any questions?

Please use the raise-hand function.

Please use the Q&A Function.

We will answer as many questions as possible.

We encourage your feedback and want to hear from you!

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Thank You for Joining!

SAVE THE DATE

AQO 2026 Hot Topics

Monday, November 9, 2026

10 am–1 pm CT / 11 am–2 pm ET

NEXT WEBINAR

ACSD QI Series Webinar

Wednesday, November 18, 2026
2 pm CT / 3 pm ET