Open Arteriovenous Fistula Creation for Hemodialysis

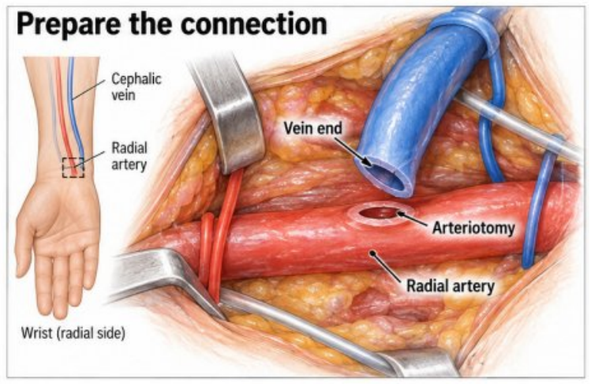
Open vascular surgery | 120-minute faculty-led lab | Radiocephalic fistula connection geometry using tissue surrogates

PREPARE / 15 MIN One connected aorta + one short carotid. Faculty sew the right end into the aorta as a return; leave the left end for the learner. Keep the original two tubing connections. Use minimum workable length and leave room to inspect the join. Pump off while the connection is open.

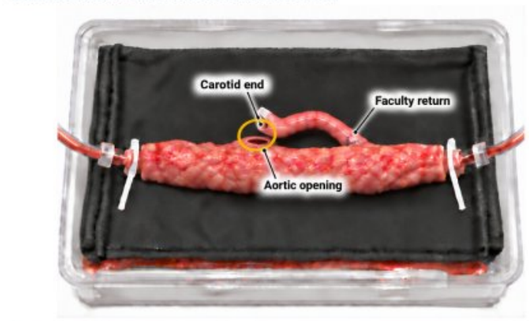
READ THE IMAGES Open wrist anatomy above; bench below. Faculty return is simulation plumbing.

01 Prepare the join

ORIENTATION AND APPOSITION / 20 MIN



CONNECTED AORTA / SHORT CAROTID LOOP

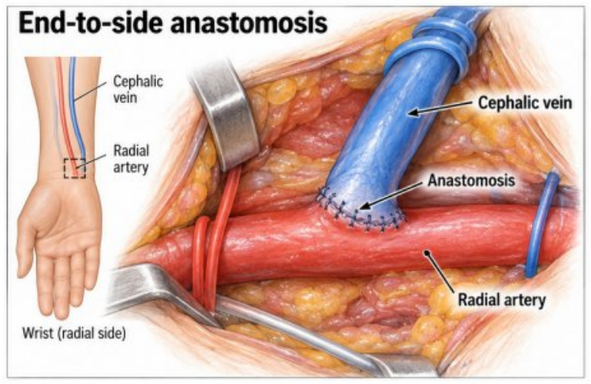


Short tissue / learner join and faculty return

Clinical: Orient the cephalic vein end to the radial artery sidewall in an open exposure.
Rehearse: Align the free carotid end with the aortic opening.
Check: Identify heel and toe; avoid twist or tension. The faculty return remains attached.

02 End-to-side join

VEIN-TO-ARTERY GEOMETRY / 25 MIN



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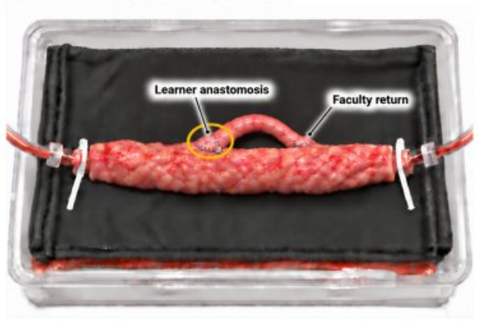
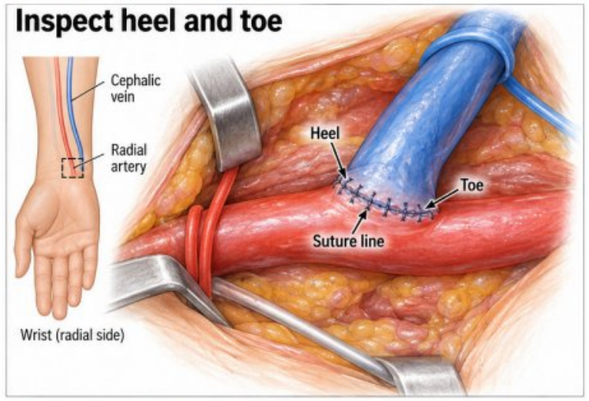


Short tissue / learner join and faculty return

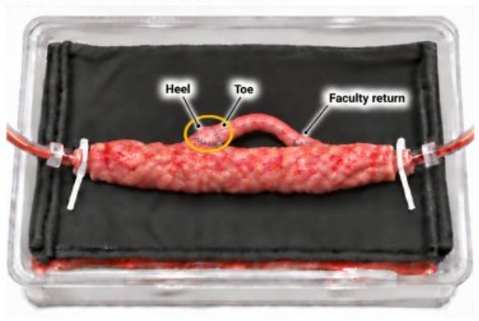
Clinical: Create the surgical fistula anastomosis.
Rehearse: Sew the carotid end to the aortic sidewall, completing the short loop.
Check: Maintain edge apposition, consistent suture spacing and lumen access. Avoid capturing the back wall.

03 Inspect heel and toe

ANASTOMOSIS REVIEW / 25 MIN



CONNECTED AORTA / SHORT CAROTID LOOP

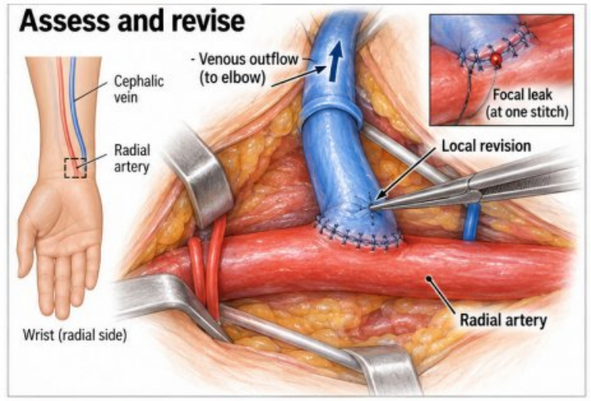


Short tissue / learner join and faculty return

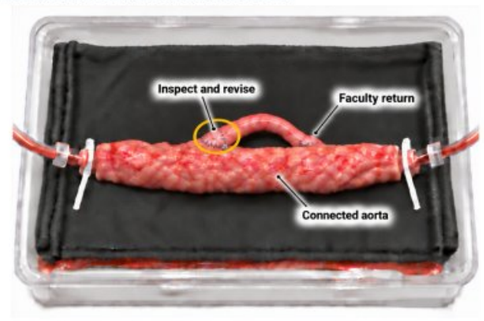
Clinical: Inspect the full anastomotic perimeter and vessel orientation.
Rehearse: Review the learner join, including heel, toe and posterior suture line.
Check: Look for gaps, narrowing, tension and distortion. Correct defects while preserving the connection.

04 Test and revise

LEAK ASSESSMENT / 15 MIN

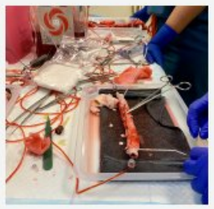


CONNECTED AORTA / SHORT CAROTID LOOP



Short tissue / learner join and faculty return

Clinical: Assess the fistula and distal hand perfusion.
Rehearse: Test the join at a faculty-validated setting; locate leakage, stop flow, revise and retest.
Check: Loop filling alone does not prove through-flow. The model cannot assess hand perfusion or maturation.



05 FLOW. FIND. REPAIR.

FINAL CHALLENGE / 20 MIN

Inspect the complete learner anastomosis, identify a focal leak, stop flow, revise and retest. Record heel and toe alignment, suture quality, revisions and completion time. **Target:** an intact learner join at the agreed bench setting. Assess loop through-flow by a separately validated method; filling alone is insufficient.

YOUR REAL BLEED™ SETUP

Photo at left: your original station. The aorta stays connected at both ends. One short carotid forms the loop: one faculty-prepared return and one learner end-to-side join. The clear tray, dark towel and original two external tubing connections stay in place. No additional conduit is required.

WHAT THE MODEL REPRESENTS

Carotid stands in for vein and aorta for artery at available tissue scale. The return join is bench plumbing; a clinical fistula drains into the venous system. Arterial tissue cannot reproduce venous wall behavior. The model does not simulate fistula maturation, clinical thrill, steal or dialysis performance.

Educational concept for faculty review. AI-generated illustrations are not operative photographs or calibrated drawings. Faculty validate tissue, anastomosis geometry and test settings; follow the Real Bleed IFU. This workshop teaches an open surgical join, not complete access planning, patient selection or postoperative care.

Sources: SVS access Real Bleed™
One page / 17 x 11 in / Open AVF / Version 01

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