REAL BLEED™ ADVANCED SUTURING WORKSHOP

Vascular Injury Repair

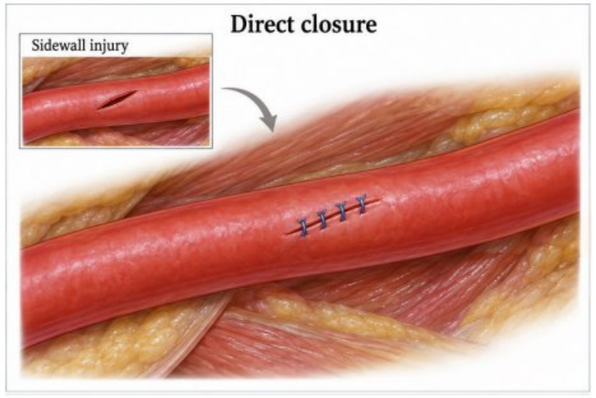
Trauma surgery: direct repair, patch, end-to-end and interposition | 135-minute faculty-led lab | Experienced residents, fellows and surgeons

PREPARE / 15 MIN One connected aorta + two short carotid loops + small patch + short ePTFE segment. Faculty attach both loops before the lab; one carotid specimen may supply both. Keep room for clamps and sutures. Create each defect only at its step. Pump off for open suturing.

READ THE IMAGES Clinical injury and repair above; completed bench stage below. All earlier repairs remain in place.

01 Direct closure

SIDEWALL REPAIR / 20 MIN



ONE CONNECTED AORTA / CUMULATIVE REPAIRS

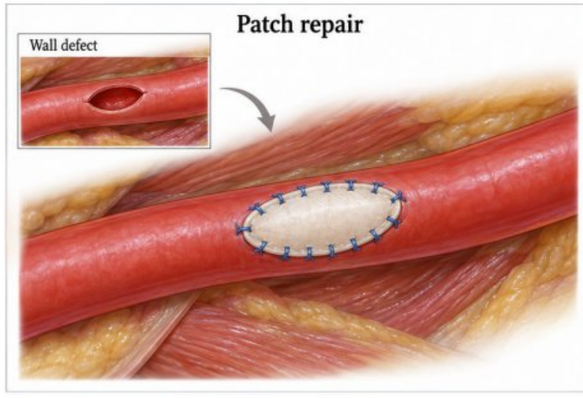


Small defects / short segments / earlier repairs retained

Repair: Close a limited arterial sidewall injury.
Rehearse: Repair a small faculty-created defect on the left aortic wall. Preserve both attached loops.
Check: Assess lumen narrowing and edge apposition. Stop flow before suturing or revision.

02 Patch repair

PRESERVE LUMEN CALIBER / 25 MIN



ONE CONNECTED AORTA / CUMULATIVE REPAIRS

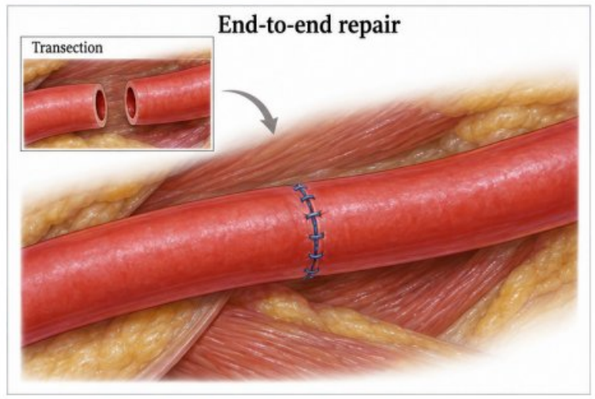


Small defects / short segments / earlier repairs retained

Repair: Reconstruct a larger sidewall defect.
Rehearse: Fit a small vascular patch to a separate right aortic site; retain the direct repair.
Check: Inspect patch corners and perimeter. Size the patch to the defect, using minimal material.

03 End-to-end repair

SHORT CAROTID LOOP / 25 MIN



ONE CONNECTED AORTA / CUMULATIVE REPAIRS

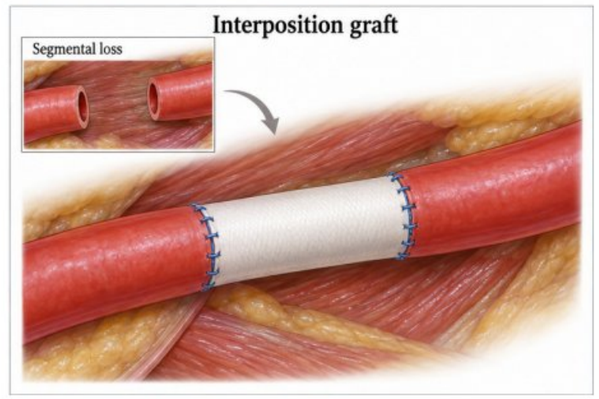


Small defects / short segments / earlier repairs retained

Repair: Rejoin a transected vessel.
Rehearse: Divide the upper carotid loop and reunite its ends. Keep both aortic repairs intact.
Check: Confirm orientation, lumen and a tension-free join. Use only a loop with adequate working slack.

04 Interposition graft

TWO SYNTHETIC-TO-TISSUE JOINS / 30 MIN



ONE CONNECTED AORTA / CUMULATIVE REPAIRS



Small defects / short segments / earlier repairs retained

Repair: Bridge a short segmental vessel loss.
Rehearse: Replace a small section of the lower loop with caliber-matched ePTFE; sew both ends.
Check: Preserve tissue cuffs for clamps and sutures. All five learner suture sites remain for testing.



05 FLOW. FIND. REPAIR.

FINAL CHALLENGE / 20 MIN

Locate leakage, control flow, repair and retest. Compare the direct closure, patch, tissue seam and two graft seams. Record leak sites, revisions and completion time. **Target:** five intact learner suture sites without visible leakage at the agreed setting. Filling alone does not prove loop through-flow; use a bench-validated test.

YOUR REAL BLEED™ SETUP

Photo at left: your original station. Both aortic cannulas stay attached. Two small wall sites and two short carotid loops provide four exercises. Preserve each repair. Cut loops from one carotid when length permits; use only enough patch and graft for workable joins.

WHAT THE MODEL REPRESENTS

Four injury-repair patterns on one training station, not a clinical sequence. Faculty prepare four loop attachment joins; learners create five repair sites. The aorta is a large-vessel surrogate. This bench model does not reproduce wound exposure, tissue viability or limb perfusion.

Educational concept for faculty review. Clinical and bench illustrations are AI-generated from anatomical descriptions and your equipment photographs; not operative photos. Follow Real Bleed™ and graft IFUs. Proposed bench setup requires validation. Synthetic graft use here is for skills practice, not a patient-specific conduit recommendation.

Sources: Vascular trauma Real Bleed™
One page / 17 × 11 in / Vascular Injury Repair / Version 01

REAL BLEED™ SYSTEM | PATENT PENDING

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