TECHNIQUES FOR CONTROLLING INTRAOPERATIVE BLEEDING DURING AORTIC OPERATIONS: SURVIVING NIGHTMARES

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NO CONFLICTS OF INTEREST

INTRAOPERATIVE CONSULTATION

“CALL FOR HELP”
ETHICAL DUTIES OF NEW SURGEON-PATIENT RELATIONSHIP

VASCULAR SURGEONS ARE OPERATING THEATER RESOURCES FOR NON-VASCULAR SURGEONS AND FOR HOSPITALS

“FIREFIGHTERS”

INTRAOPERATIVE CONSULTATION

MOST COMMON REASONS TO CALL VASCULAR SURGEON

1. BLEEDING (33% - 78%)
2. NEED FOR VESSEL RECONSTRUCTION
3. BOWEL ISCHEMIA

AORTIC AND AORTIC BRANCH SURGERY

• ARTERIAL INJURY
• VENOUS INJURY

EITHER MAY BE CATASTROPHIC

INTRAOPERATIVE BLEEDING

ARTERIAL - MORTALITY 6.2% - 9.2%
VENOUS - MORTALITY 18.0%
ARTERIAL INJURY

AORTA ITSELF
CLAMP SITE
ANASTOMOTIC SITE
BRANCHES
ILIAC
VISCERAL
LUMBAR

CONTROL BLOOD LOSS WITH AS LOCALIZED PRESSURE AS IS POSSIBLE. SINGLE FINGER PRESSURE SUPERIOR TO A WAD OF LAP PADS. LET ANESTHESIOLOGIST “CATCH UP”. IF NECESSARY, REVERSE ANTICOAGULATION; GIVE BLOOD PRODUCTS GET THE BEST HELP YOU CAN. OPEN ABDOMINAL EXPERIENCE

ARTERIAL INJURY

PROXIMAL CONTROL
SUPRACELIAC CLAMP
CONN AORTIC COMPRESSOR
AORTIC BALLOONS
FOLEY CATHETERS (DON’T FORGET CLAMP)
GRADUATED DILATORS
DISTAL CONTROL
MAY BE AS DIFFICULT

CONTROLLED HYPOTENSION IF NECESSARY DO NOT INJURE ADJACENT VEINS

RENAL VEINS AND TRIBUTARIES
MESENTERIC - PORTAL VEINS
LUMBAR VEINS
IVC
ILIAC VEINS

PROCEED APACE BUT UNDER CONTROL. INJURY TO VEINS OR BOWEL MAY RENDER IRREPARABLE

ARTERIAL INJURY

EXTEND MIDLINE INCISION ALONG XYPHOID
DIVIDE LEFT RENAL VEIN IF NECESSARY BETTER THAN TEARING VEIN WITH ATTENDANT BLEEDING REPAIR EASIEST LIMB FIRST

PRIMARY LATERAL REPAIR
PATCH ANGIOPLASTY
PRIMARY DEBRIDEMENT AND END-TO-END ANASTOMOSIS (NOT LIKELY)
GRAFT REPLACEMENT CONSIDER BOVINE RIFAMPIN-SOAKED GRAFT PLEDGETS, NONOFILAMENT
ARTERIAL INJURY

POST OP: MUST BE ALERT FOR
● LIVER DYSFUNCTION
● RENAL FAILURE
● COLON ISCHEMIA
● LIMB ISCHEMIA
● EMBOLI
● THROMBOSES
ENTITY SYNDROME

VENOUS INJURY

MORE TREACHEROUS WITH HIGHER
MORTALITY
CLAMPING NOT AS EASY OR AS
PREDICTABLY HEMOSTATIC
PRESSURE WITH
SPONGE STICK
TONSIL SPONGES
GELFOAM FOR “RENAL ANGLE”
ALLIS CLAMPS!!

VENOUS INJURY

LIGATION MAY BE NECESSARY IN
EXTREME SITUATIONS.
IF YOU CANNOT REPAIR IT, STOP
TRYING.
Packing in face of massive venous
injury may be prudent

VENOUS INJURY

POST-OP CHECK FOR
● DVT
● EXTREMITY SWELLING
● COMPARTMENT SYNDROME
● PE

INTRA-OP BLEEDING SUMMARY

KEEP YOUR WITS
MAKE A PLAN – OPEN CONTROL
BALLOON CONTROL
HAVE THE RIGHT INSTRUMENTS

SUMMARY

FOCUS ON LOCALIZED PRESSURE
CONTROL AT FIRST
EXTEND INCISION TO OBTAIN
PROXIMAL OPEN CONTROL
GET THE MOST EXPERIENCED
PHYSICIAN, NURSE, AND TECH HELP
YOU CAN. RIGHT EQUIPMENT
SUMMARY
PROXIMAL AND DISTAL CONTROL
EXPOSE EXPEDITIOUSLY BUT
CAREFULLY
DON'T TEAR VEINS AND BOWEL. YOU
WILL MAKE A BAD SITUATION
CATASTROPHIC.
TAKE IT A STEP AT A TIME. STAY IN
CHARGE BUT STAY CONTROLLED, TO
ALLOW YOUR COLLEAGUES TO HELP.
YOU FOCUS ON THE INJURY.

INTRAOPERATIVE
CONSULTATION
"INTRAOPERATIVE VASCULAR CONSULTATION IN
SUPPORT OF OTHER SURGEONS REQUIRES A
HIGH LEVEL OF OPEN TECHNICAL
OPERATIVE SKILLS ..."

IF WE FAIL TO TRAIN OPEN AORTIC SURGEONS,
THIS NECESSARY SKILL WILL DIMINISH

DANCZK R. ET AL, OREGON HEALTH AND
SCIENCE UNIVERSITY 2015