



Vascular Access Surgery Tips for Success

GORE-TEX®
STRETCH

VASCULAR GRAFT



GORE-TEX®
INTERING

VASCULAR GRAFT



*“The correct,
atraumatic
surgical technique
is the key for short -
and long-term graft patency.”*

Ingemar J.A. Davidson,
M.D., Ph.D., F.A.C.S.

PREOPERATIVE EVALUATION:

- Palpate patient arm
- Identify veins with a blood pressure cuff applied at 40-50 mm Hg while patient makes a fist
- Allen Test
- Duplex Doppler Sonography
- Venogram or arteriogram indicated if special circumstances

ANESTHESIA:

- Axillary block is preferred
- Premedication is avoided
- Sedatives such as midazolam (versed) or fentanyl administered with caution
 - Give one-tenth of the dose given to a non-renal patient and repeat until desired effect is obtained
- Use local anesthesia injections (1% lidocaine or 0.5% bupivacaine without epinephrine) as needed

SURGICAL INSTRUMENTS:

- Surgical magnifying lenses of at least 2.5 times magnification are recommended
- Nonlocking needle driver with a round handle can be held like a pen and rolled in the hand while suturing
- The sharp tipped “Blue Darter” forceps are useful for handling very small structures
- Small metallic vascular clamps (Heifet’s clips) of various sizes and configurations for both arteries and veins
- Large artery may be occluded with the disposable felt covered (yellow) MEDCOMP® clamp
 - Large vascular metallic clamps are discouraged
 - Double snaring of the vessels with a suture is strongly discouraged
- Vascular dilators to enlarge blood vessels in spasm in conjunction with topical 1-2% lidocaine
- Small self-retaining retractors (ALM® Retractors)
- Bipolar electrocautery for hemostasis
- The angled, smooth Christmas tree is helpful when attached to a syringe for flushing of small vessels or graft with heparinized saline
 - The straight, rugged Christmas tree is very traumatic and must not be used in connection with any living tissue
- Suture for AV fistulas: the 7-0 polypropylene on a CV-1 needle or the CV-7 GORE-TEX® Suture on a TtC-9
- Suture for vascular grafts: the CV-6 GORE-TEX® Suture on TtC-9 or TtC-12

OPERATIVE PROCEDURE:

- Skin incisions made with a #15 blade
- Hemostasis obtained using bipolar electrocautery and 5-0 absorbable material
 - Regular electrocautery creates excessive tissue damage (burn) in the small operating field
 - Do not use silk because of increased risk of infection and suture granuloma formation
 - Tying bleeders is achieved fastest with the needle driver or a mosquito hemostat
- Vein is dissected first ideally with one or two side branches at the site of the anastomosis
 - The vein is dissected free for 3-4 cm and each branch is surrounded with a vessel loop
 - Do not pull hard on the loops to prevent damage to the structures
- The artery is dissected and freed for about 3 cm
- The graft is placed in the subcutaneous tunnel with a sheath tunneler which causes less tissue injury and swelling (hematoma)
 - A sheath tunneler eliminates the risk of graft twisting or kinking and creates a uniform, smooth subcutaneous tunnel
 - Grafts placed too deeply in abundant subcutaneous fat often fail due to perigraft hematomas sustained as a result of difficulty cannulating the graft
 - Grafts placed too superficially tend to develop skin ischemia, swelling, redness and a greater risk of infection
 - Instead of suturing the graft to the rod, feed the graft through the tunneler
- Refrain from the use of saline under pressure in the graft as it will saturate the ePTFE material and possibly predispose it for continued “sweating”
- A mosquito hemostat is placed at the very tip of the 4 mm end of the graft to keep this portion of the graft away from the operating field
- A small incision is made at the intended anastomosis site in the vein with a #11 blade
 - The venotomy should be placed on the radial side of the vein
 - A common mistake is to make the venotomy directly on top of the vein which would create a 90 degree turn or twist of the vein
- Using a #18 or #20 angiocath attached to a 10-20 ml syringe filled with heparinized saline, slightly distend the vein
 - Systemic heparinization is not necessary and is discouraged because of the risk of postoperative bleeding from the suture lines and throughout the subcutaneous tunnel
- To relieve vasospasm, locally apply 1-2% lidocaine
- Extend the venotomy with Dietrich’s scissors to a length to match the intended anastomosis

- The graft is cut at the appropriate angle with a #11 blade
 - In cases of the GORE-TEX® Stretch Vascular Graft, the graft should be stretched and held under slight tension
 - The most distal portion of the cut graft should be rounded in order to maximize the anastomosis opening
- The first stitch is ideally placed in the proximal corner followed by a stitch in the distal corner
 - One should take care not to take big bites in the corner since this will use up lumen and compromise venous outflow
 - The back wall is run continuously taking 1-2 mm bites until the distal corner is reached
- The arteriotomy is made at a 45 degree angle in the direction toward the ePTFE graft
 - The arteriotomy is made with a #11 blade just large enough to snugly fit an angiocatheter which is needed to slightly expand the artery in spasm and to irrigate the vessel
 - The arteriotomy is extended using Dietrich's scissors to approximately 6 mm
 - The 4 mm end of the graft will be cut at a slight angle matching the 6 mm arteriotomy
 - Suture the arterial anastomosis using only one suture beginning at the proximal corner
- Except for a slight temporary ooze, there should be no significant bleeding
 - Surgical gauze placed on top of the operating field for 3-5 minutes uniformly stops all oozing
 - Constant manipulation of the anastomoses, looking for bleeding points, will only prolong the bleeding
- The wound is closed using 4-0 or 5-0 polycloctin interrupted subcutaneous sutures
- The skin is closed with 5-0 subcuticular suture
- No circular or semi-circular dressings or tapes should be used—only a loose gauze is applied
- The patient is encouraged to use the hand and arm freely and to elevate the arm while at rest, preferably on pillows
- The arm or hand should not be suspended in a sling



**Attention,
See Instructions for Use**



*Creative Technologies
Worldwide*

W. L. Gore & Associates, Inc.
Flagstaff, AZ 86004

For international contact and
additional product information,
visit goremedical.comH/1316

US: 800 / 437-8181

US: 928 / 779-2771

Europe: (00800) 6334 4673

GORE, GORE-TEX®, INTERING, and designs are trademarks of W. L. Gore & Associates.
All other trademarks are the property of their respective owners.

© 2004 W. L. Gore & Associates, Inc. AH1316-EN1 AUGUST 2004