

EVH a simple safe and efficient technique for your bypass

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INTRODUCTION

EVH / Endoscopic vein Harvest

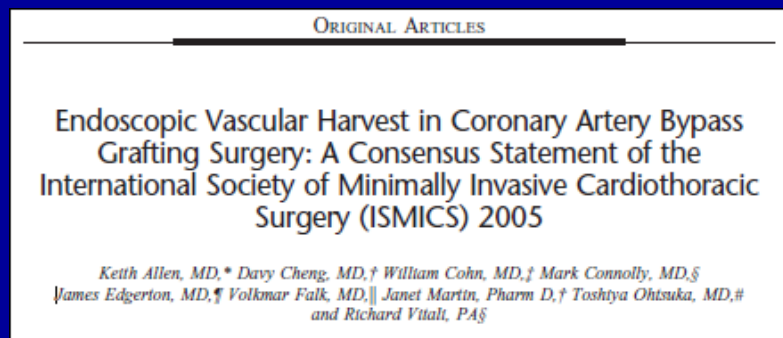


Minimally invasive vessel
harvesting technique

1995: Dr Al Chin used the first Vasoview for the first clinical case



2005: ISMICS CONSENSUS STATEMENT: *“EVH should be considered the standard of care for patients who require saphenous vein grafts for coronary bypass surgery”*



Innovations.
2005; 1:51-60.



2009: More than 1 million procedures

HISTORY OF CLINICAL USE

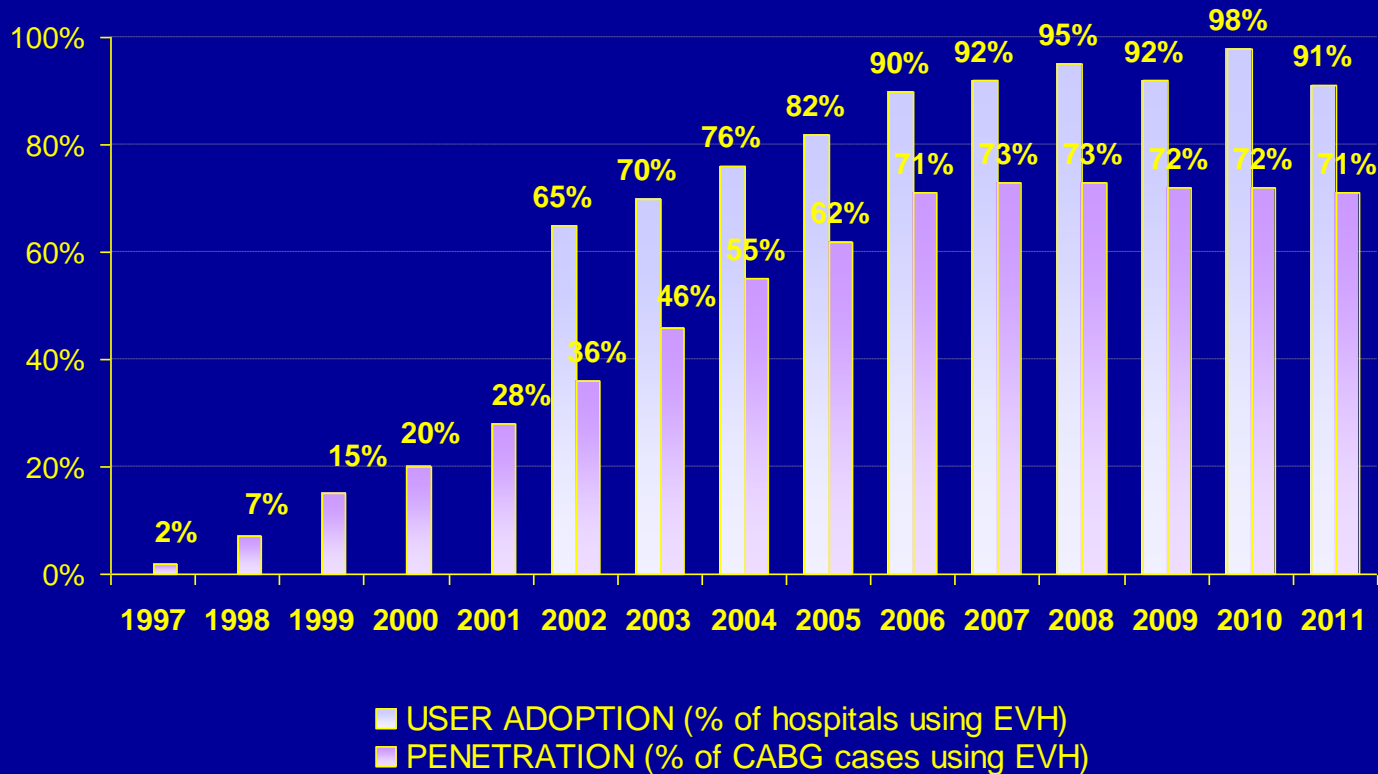
U.S. EVH ADOPTION AND PENETRATION

...and today, EVH is the standard of care for vessel harvesting in the majority of heart hospitals in the U.S.!

2007-2011

Mean Adoption Rate: 94%

Mean Penetration Rate: 72%

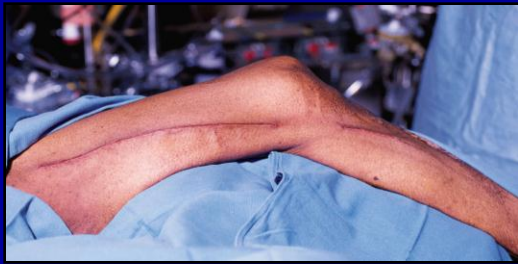


1. User Adoption data not available for 1997-2001 period

2. Margin of error in User Adoption rates for the sample size (N=100) is +/- 9%.

Source: CS Marketing estimates with reference to STS Floor Surveys, APACVS, and internal calculations

Technique for Saphenous Vein Harvest in Vascular Surgery



Open vein harvest (OVH)
Only one very long incision



“Bridging”
Skin bridges



EVH
2 cm incision usually extended for
bypass

This technology has been demonstrated to offer:

- excellent graft patency along
- with significant patient benefits such as:
 - Significantly less risk of infection and wound complications
 - Less postoperative pain and swelling
 - Faster recovery with minimal scarring
 - Greater patient satisfaction

REPORT RAISED CONCERN DESPITE MAJOR LIMITATIONS

The NEW ENGLAND
JOURNAL of MEDICINE

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Endoscopic versus Open Vein-Graft Harvesting in Coronary-Artery Bypass Surgery

Renato D. Lopes, M.D., Ph.D., Gail E. Hafley, M.S., Keith B. Allen, M.D., T. Bruce Ferguson, M.D.,
Eric D. Peterson, M.D., M.P.H., Robert A. Harrington, M.D., Rajendra H. Mehta, M.D., C. Michael Gibson, M.D.,
Michael J. Mack, M.D., Nicholas T. Kouchoukos, M.D., Robert M. Califf, M.D., and John H. Alexander, M.D., M.H.S.

Conclusion:

"...As compared with patients who underwent open harvesting, patients who underwent endoscopic harvesting had **higher rates of vein-graft failure** 12 to 18 months after CABG and, more important, also had significantly **worse clinical outcomes** at 3 years, **including higher mortality.**"

LIMITATIONS

Not randomized for EVH vs. OVH

- Groups differed on patient risk factors related to long-term clinical outcomes

No standardization of harvest technique, harvester experience or center volume

- What constituted EVH? Bridging?

Patients were enrolled in 2002-2003

- Significant advances in technology and technique since enrollment

1. Yun KL, Wu Y, Aharonian V, Mansukhani P, Pfeffer TA, Sintek CF, Kochamba GS, Grunkemeier G, Khonsari S. *J Thorac Cardiovasc Surg.* 2005 Mar;129(3):496-503.
2. Perrault LP, Jeanmart H, Bilodeau L, Lespérance J, Tanguay JF, Bouchard D, Pagé P, Carrier M. *J Thorac Cardiovasc Surg.* 2004 May;127(5):1402-7.

OVH / EVH

**OPEN VEIN HARVEST
(OVH)**



**ENDOSCOPIC VEIN
HARVEST
(EVH)**



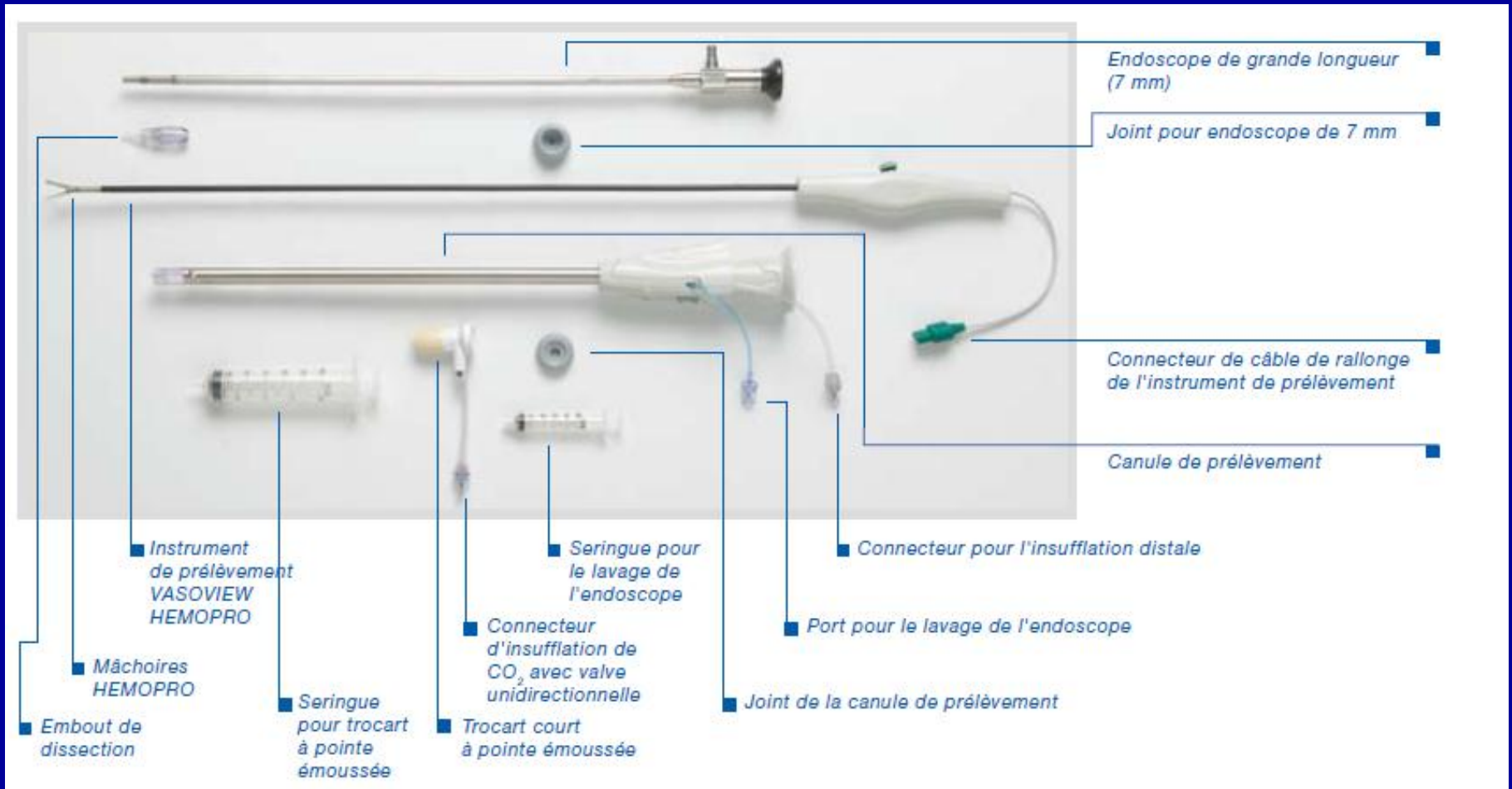
EVH for Femoro-popliteal bypass



Ulcer / stage 5 Rutherford Classification



HEMOPRO MATERIAL



Equipment Required

Better to have 2 screens !



REQUIRED EQUIPMENT

Required Equipment:

- VASOVIEW HEMOPRO Endoscopic Vessel Harvesting Disposable Kit
- VASOVIEW HEMOPRO Power Supply
- VASOVIEW HEMOPRO Extension Cable
- CO₂ Insufflator & CO₂ Tank
- Sterile CO₂ Insufflation Tubing
- Sterile 7 mm Endoscope
- Sterile Camera & Light Cord (see video equipment)

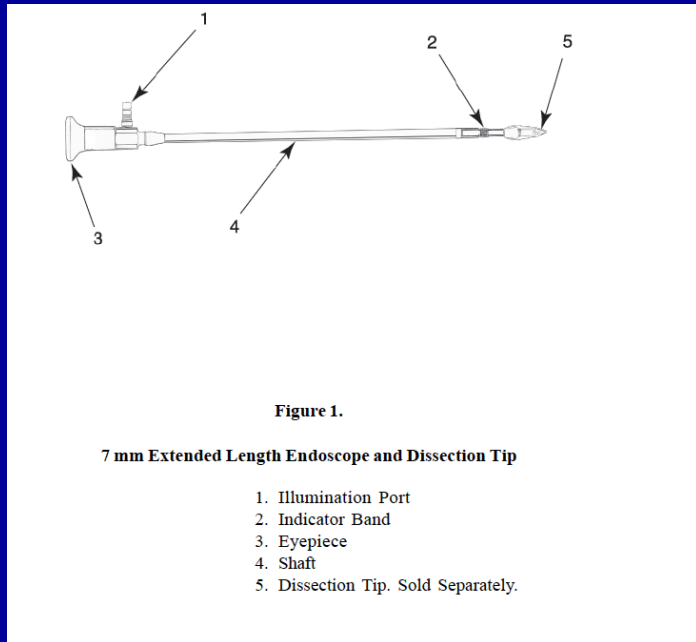
Video Equipment:

- Camera Box
- Video Monitor
- Light Source
- Fiber Optic Cable with appropriate Scope Adaptor End (sterile)
- Camera compatible to Endoscope (sterile)
- Video Cassette Recorder (optional)

Additional Optional Items:

- Sterile Water-soluble Lubricant
- Vessel Loop
- Anti-fog Solution (e.g. Fred)
- #11 Blade
- Marking Pen

First part: Endoscopic Dissection

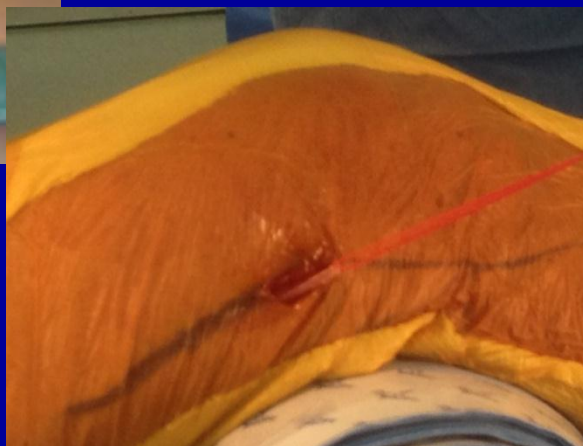


Attach the removable Dissection Tip to the Endoscope.
Thread the Dissection Tip onto the Endoscope until the proximal edge of the Dissection Tip lines up with the indicator band on the Endoscope shaft,



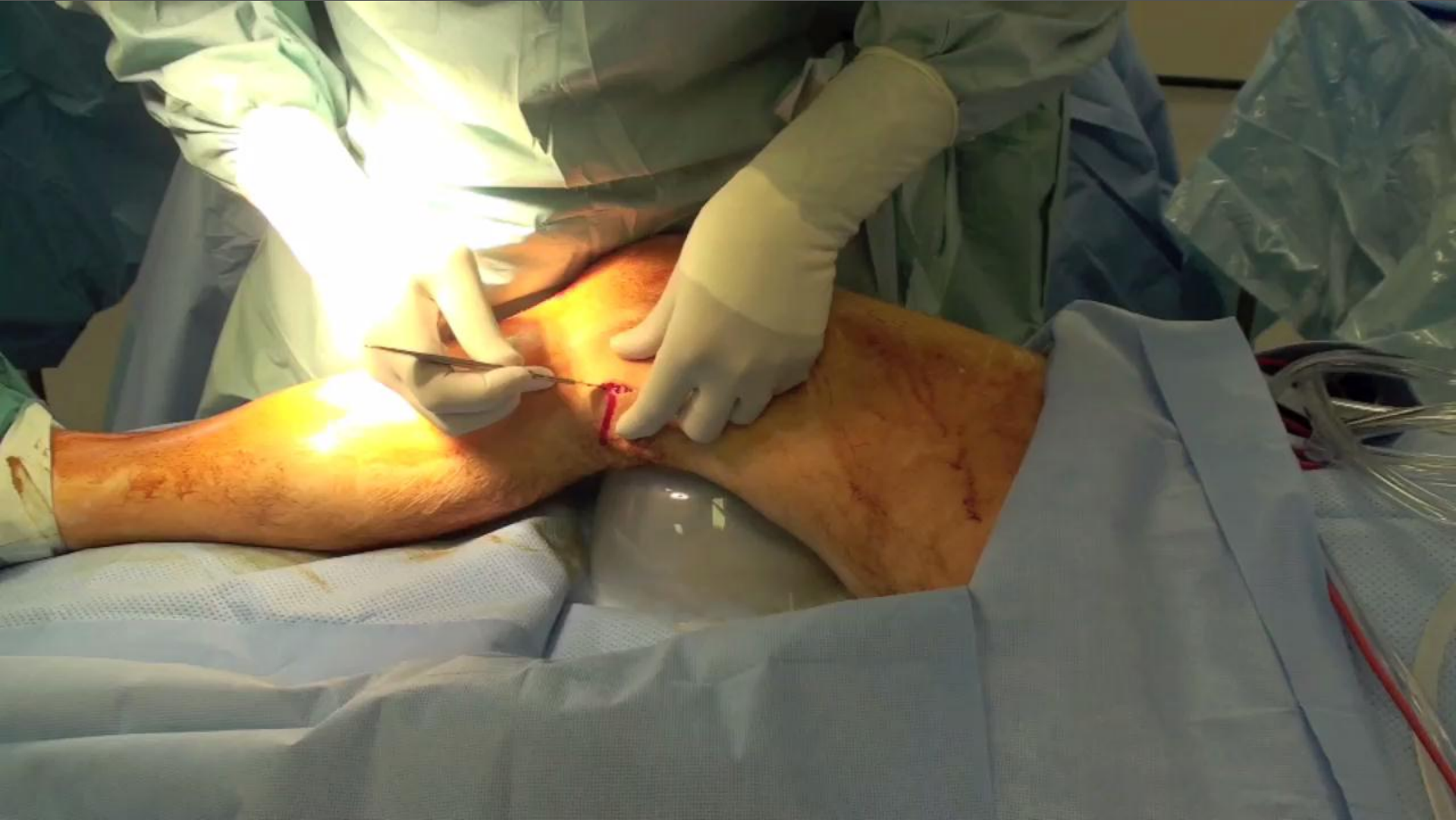
conical tip

Making the Incision Above / below knee



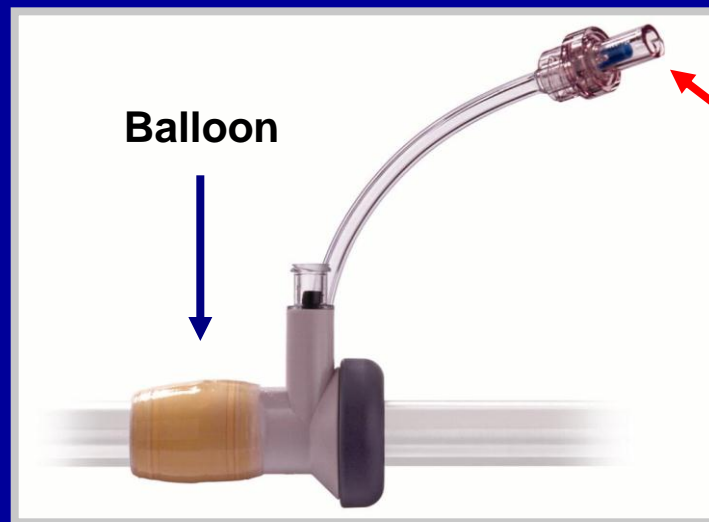
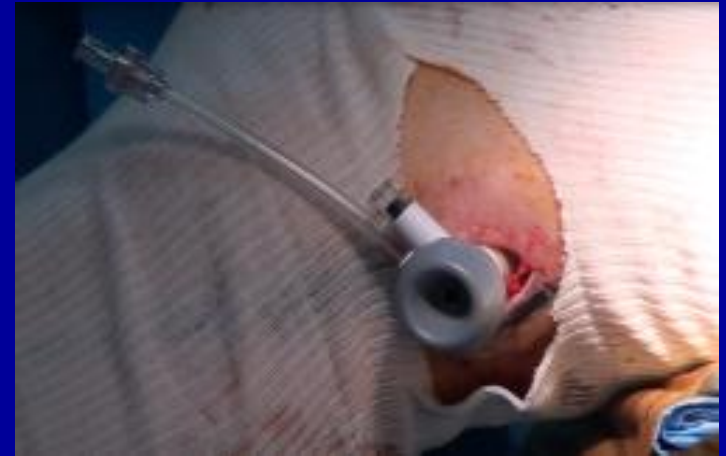
For morbidly obese patients,
an ultrasonic doppler may be used to help locate the vein





CO₂ INSUFFLATION

- CO₂ flow: 3-5 l/min
- CO₂ Pressure: 10-12 mmHg → low pressure



**Proximal
Insufflation
Port**



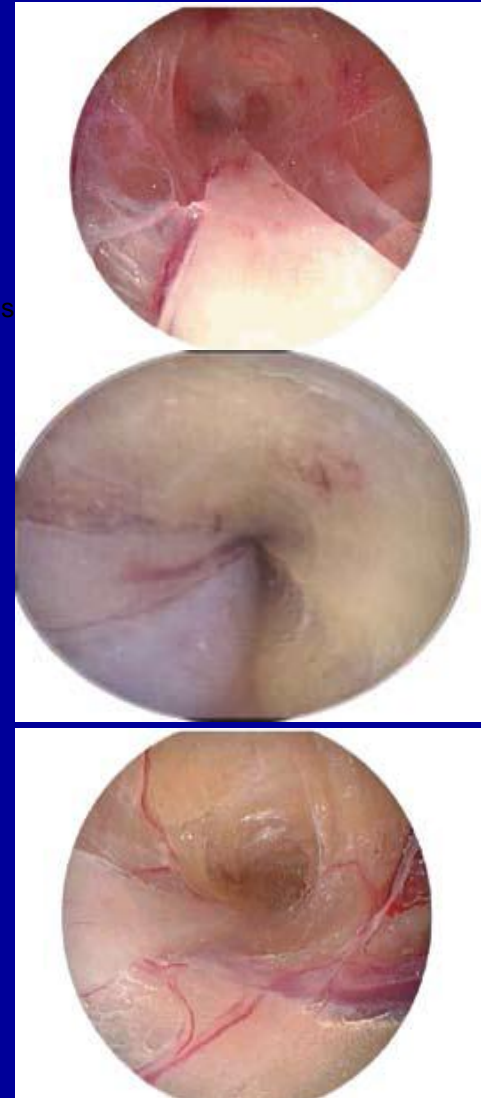
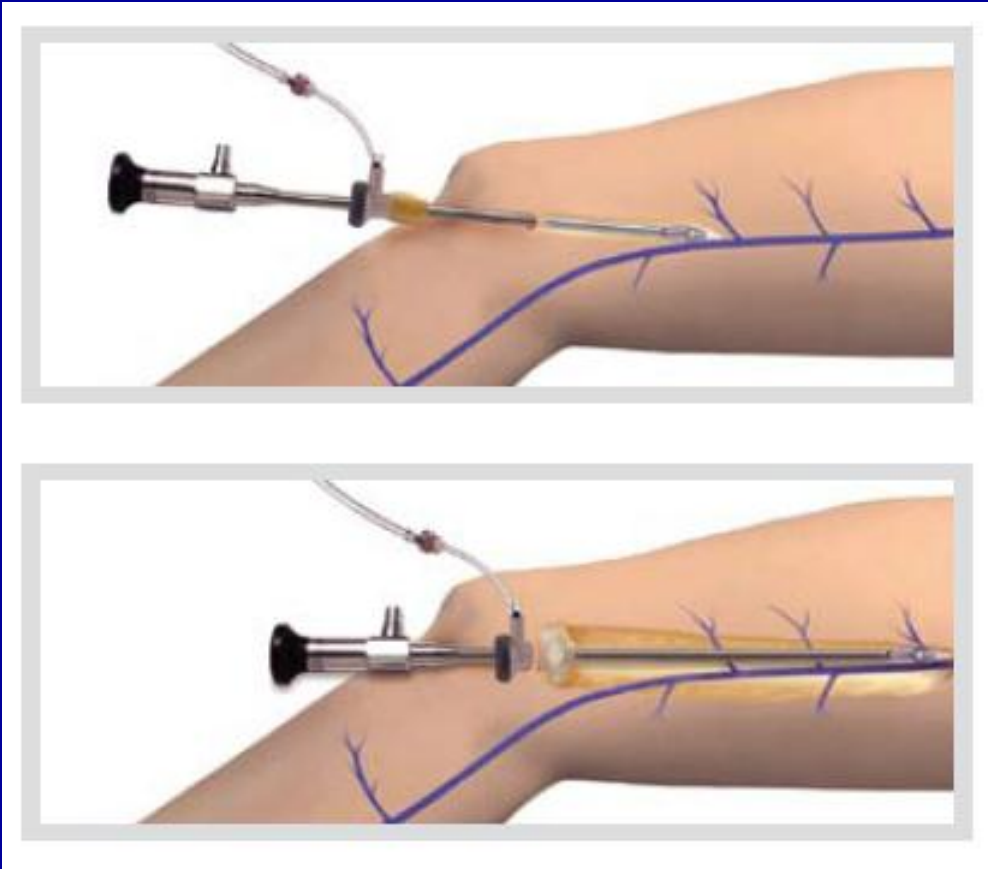
*Short Port Blunt
Tip Trocar (BTT)*

Endoscopic Dissection

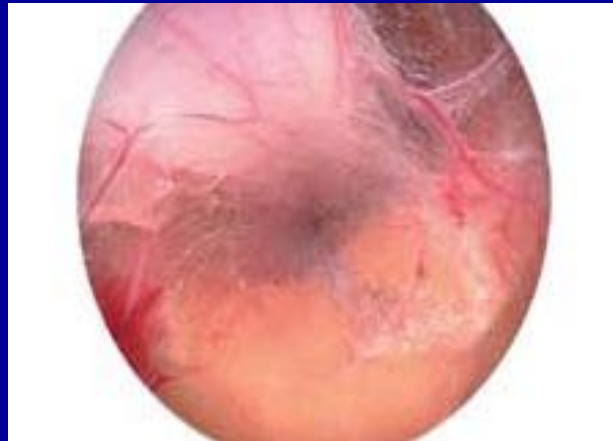
- Slide the Short Port
- Insert the Dissection Tip
- Inflate the balloon with up to 25 cc of air
- Connect the gas line to the insufflation port
- Infuse with CO₂ gas



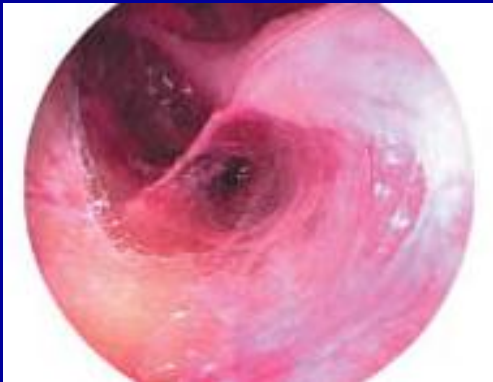
Step 1: Anterior Dissection



Step 2: Posterior Dissection



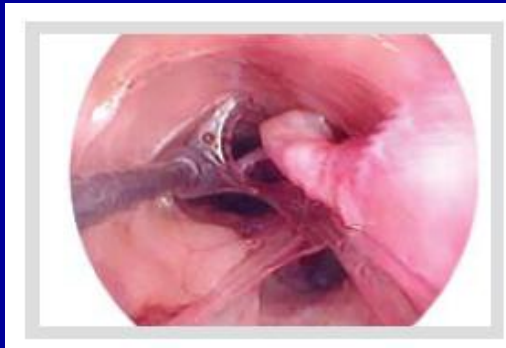
Step 3: Branch Dissection



Use of the HEMOPRO Harvesting Tool



- Divides and seals conduit branches in a single step,
- Providing a high level of hemostasisIn-
- Line instrumentation with “C-ring technology”

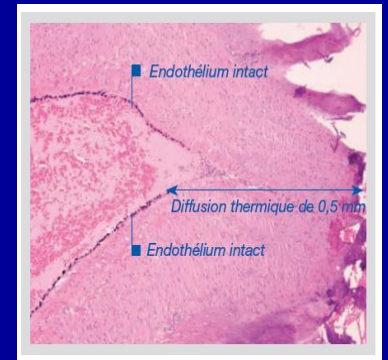


The cutting tool :

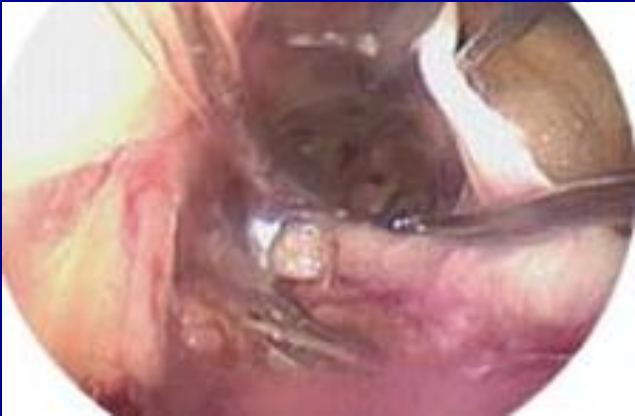
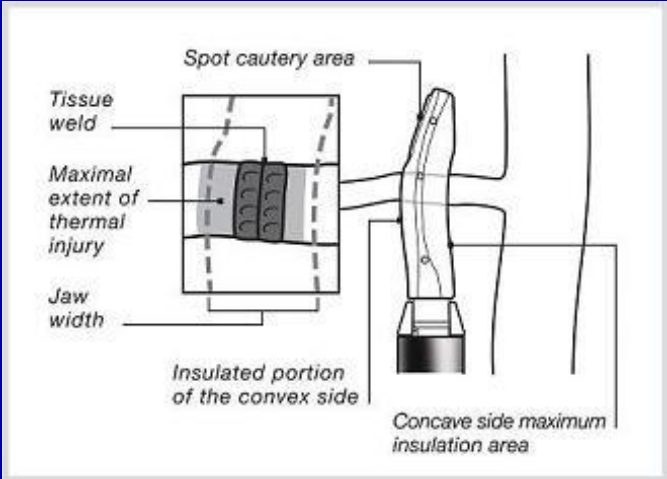
Serrated Jaw



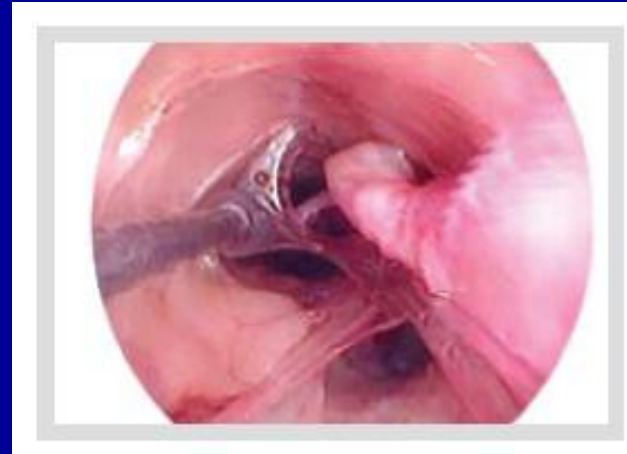
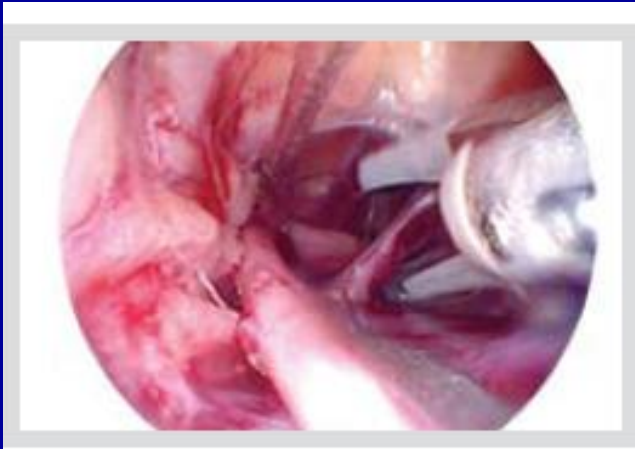
Wired Jaw



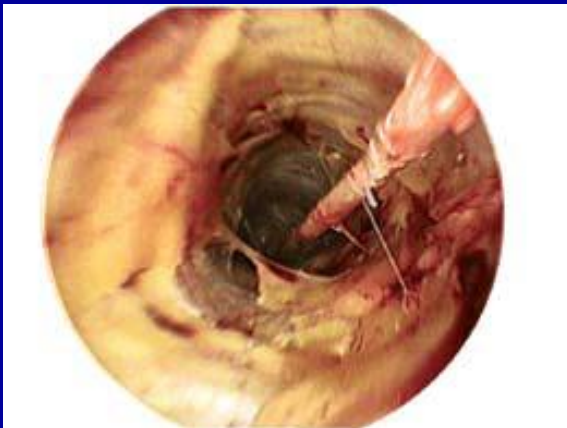
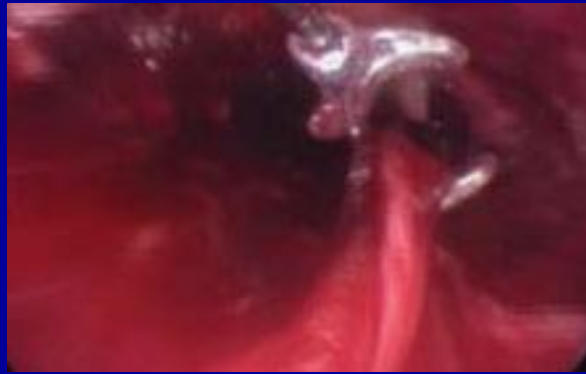
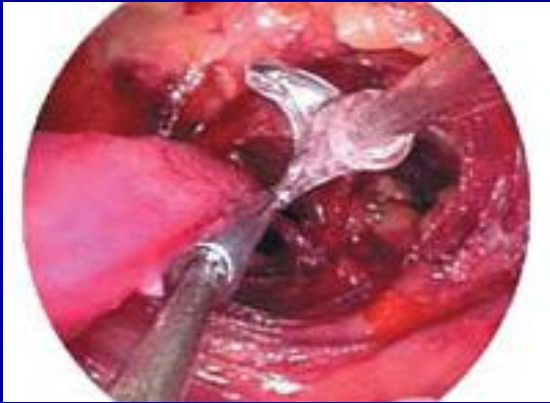
VASOVIEW HemoPro Jaws



Dividing and Sealing Branches

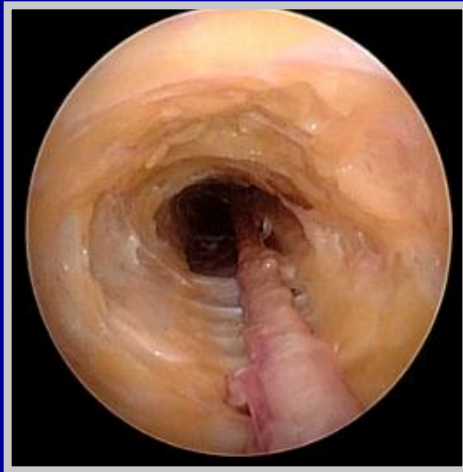
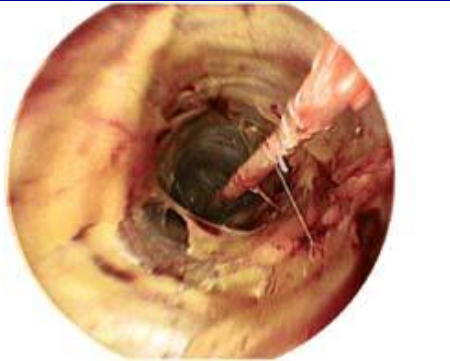


Running the Vessel

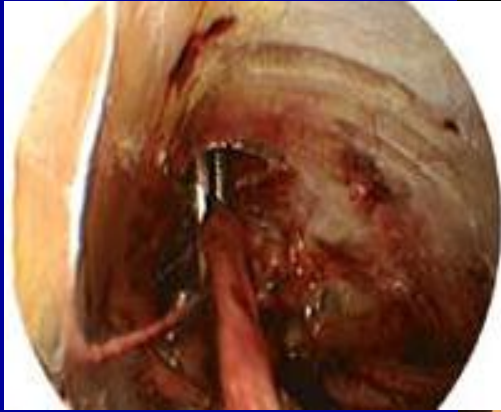


- Deploy the C-Ring to run along the vein
- Ensure that it is completely free.

READY FOR YOUR BYPASS



No Incision to close!





Conclusion

- EVH is simple safe and quicker than OVH
- EVH offers benefits in reduction of:
 - wound complications
 - Infection
 - pain
 - time to ambulation
 - patient satisfaction
- EVH is particularly beneficial in patients at increased risk for saphenectomy wound complications and infections : **diabetic, obese,...**
- EVH is cost-effective. Substantial savings are achieved by reducing wound complications and associated wound-care costs

The endoscopic venous harvesting will be in the next years the standart reference technique for saphenous harvest

Thank you !