VirtuoSaph™ Plus

Endoscopic Vessel Harvesting System

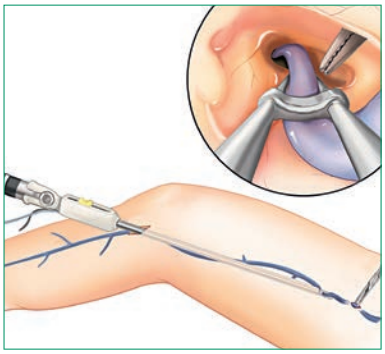
Easier minimally invasive technology to deliver the optimal vessel for CABG.

TERUMO

VirtuoSaph™ Plus

Endoscopic Vessel Harvesting System

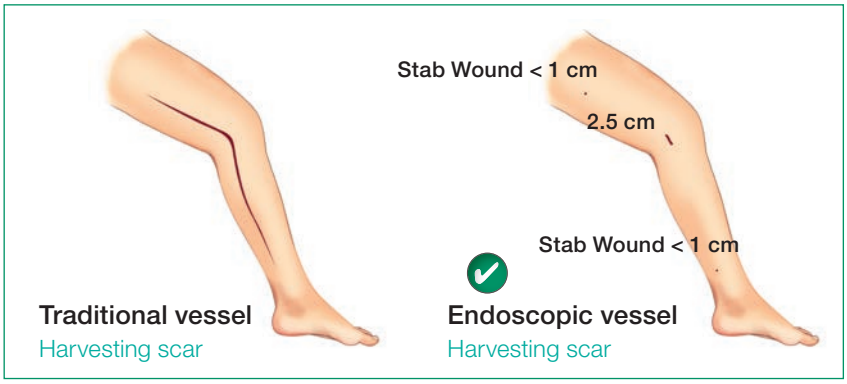
What is Endoscopic Vein Harvesting?



Endoscopic vein harvesting (EVH) is a minimally invasive procedure undertaken through keyhole surgery. EVH is the standard of care for patients who require saphenous vein grafts for coronary and lower limb revascularizations.[1]

With the Terumo VirtuoSaph™ Plus EVH System, the saphenous vein in the thigh and/or lower leg is harvested to be used as grafts for coronary artery bypass surgery (CABG). The saphenous vein remains an essential and most commonly utilized conduit for CABG procedures because it can be tailored to various lengths to fit anywhere across the heart.

Benefits with the VirtuoSaph™ Plus EVH System:



For Patients:

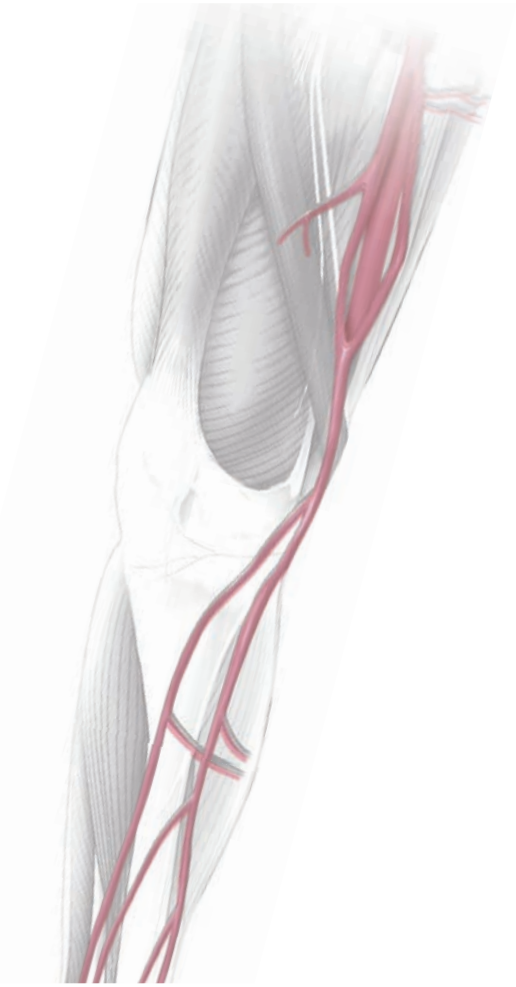
- Reduces wound healing complications[2]
- Less post-operative pain[3]
- Shorter stay in the hospital[4]
- Improved patient satisfaction (better cosmetic outcome)

For Clinicians:

- Excellent graft quality[5]
- Minimal thermal spread[6]
- Cost-effective[7]
- Easy to use

1 Allen KB, et al. Endoscopic vascular harvest in coronary bypass grafting surgery: a consensus statement of the ISMICS, Innovations 1 (2005), pp. 51-60, 2 Williams JB, Peterson ED, Brennan J, et al. Association Between Endoscopic vs Open Vein-Graft Harvesting and Mortality, Wound Complications, and Cardiovascular Events in Patients Undergoing CABG Surgery. JAMA. 2012;308(5): 475-484. doi:10.1001/jama.2012.8363. 3 Kiaii B, et al. A prospective randomized trial of endoscopic versus conventional harvesting of the saphenous vein in coronary artery bypass surgery. J Thorac Cardiovasc Surg. 2002 Feb;123(2):204-12. 4 Chou N, Lee, M, Wang. Endoscopic vein harvest in elective off-pump coronary artery bypass grafting. Available at: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2759881/ 5 3. Meyer DM, et al. Histologic evidence of the safety of endoscopic saphenous vein graft preparation. Annals of Thoracic Surgery: 2000 Aug, 70(2):487-91. 6 Rojas-Pena A. et al. Quantification of thermal spread and burst pressure after endoscopic vessel harvesting: a comparison of 2 commercially available devices. The Journal of thoracic and cardiovascular surgery 12/2010; 142(1):203-8. 7 Illig, Karl A, et al. Financial impact of endoscopic vein harvest for infrainguinal bypass.,Journal of vascular surgery: official publication, the Society for Vascular Surgery [and] International Society for Cardiovascular Surgery, North American Chapter 1 February 2003 (volume 37 issue 2 Pages 323-330)

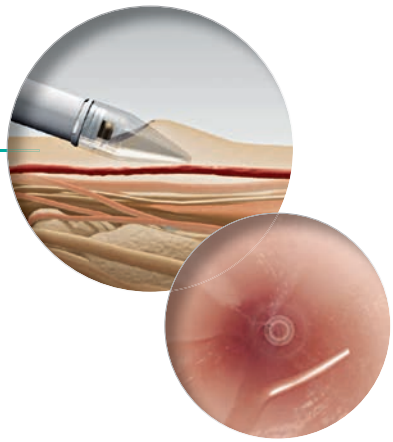
Simple Step by Step EVH Procedure.



+ Step 1

Dissection

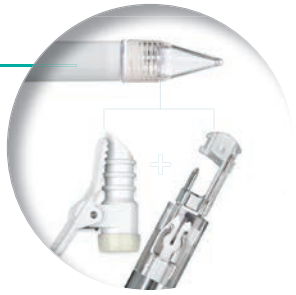
- Make a 2.5 cm incision below the knee and locate the saphenous vein. Insert the TROCAR (if used) in the direction of dissection.
- Dissect the thigh and/or calf through a two pass dissection (first posterior, then anterior of the saphenous vein).



+ Step 2

Switch instrument

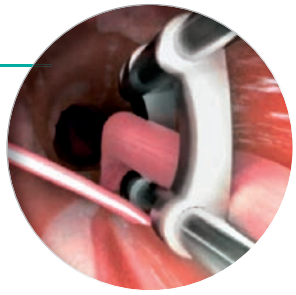
- Remove the Dissector and insert trocar (if not already inserted).
- Advance Harvester slowly through the trocar to the distal end from the incision site.



+ Step 3

Catch Vein

- Advance V-keeper to the middle position.
- Open V-lock mechanism and capture the main saphenous vein by closing the V-lock.



+ Step 4

Coagulate/Cut

- Move back towards the incision site and advance V-cutter to the side branch while applying slight tension on it.
- Coagulate and cut all the side branches via electro cautery.

Spot Cautery Function

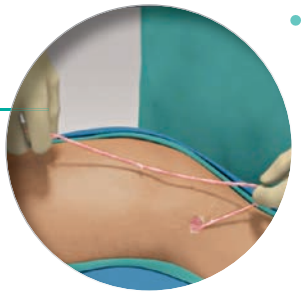
- If bleeding occurs, spot cautery can be applied to control hemostasis.

Wiper Function

- If fat/blood on the endoscope lens impairs visibility, use the unique wiper function to clear and clean it without adding fluid.

+ Step 5

Harvest

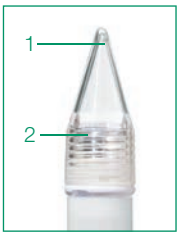


- After all branches are coagulated and cut, return to the distal end to perform a stab wound.
- Ligate the saphenous vein.
- Release the main saphenous vein from the V-keeper and remove the harvester and trocar.
- Gently pull the vein through the knee incision.

For complete procedure instructions, please refer to the VirtuoSaph™ Plus Instruction of Use.

Trocar

Clip-on trocar aids in facilitating the insertion and stability of the dissector and harvester.



Dissector

To dissect the saphenous vein and surrounding branches.

1 The **atraumatic conical tip.**

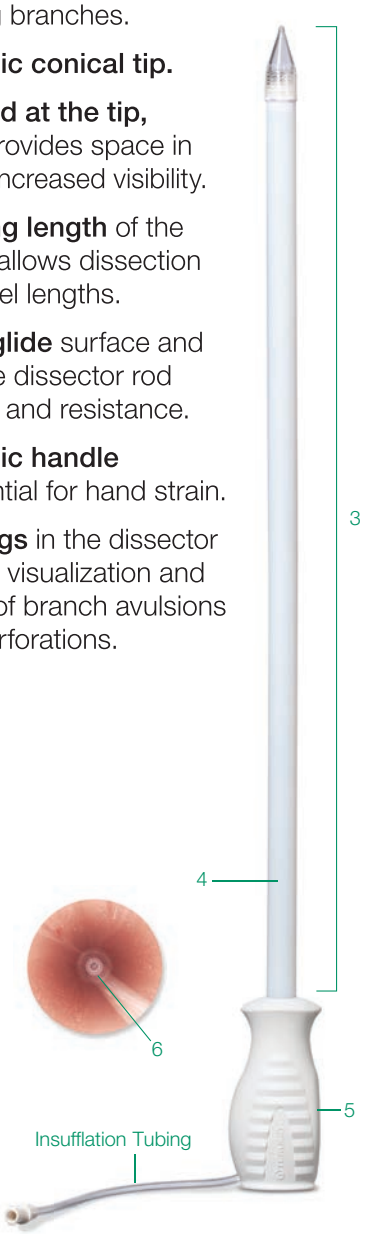
2 **CO_2, delivered at the tip,** consistently provides space in the tunnel for increased visibility.

3 40 cm **working length** of the dissector rod allows dissection of longer vessel lengths.

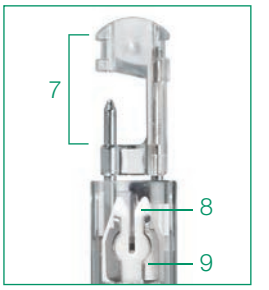
4 The **PTFE V-glide** surface and flexibility of the dissector rod minimize drag and resistance.

5 The **ergonomic handle** reduces potential for hand strain.

6 **Centering rings** in the dissector cone tip aid in visualization and minimize risk of branch avulsions and vessel perforations.



Harvester

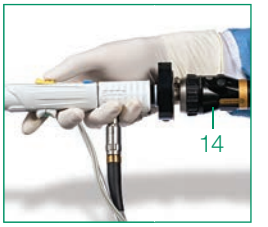


One-handed Instrument that coagulates and cuts the branches of the saphenous vein.

7 The **V-keeper** safely encapsulates the vein securing it during the procedure. It ensures that all branches are coagulated and cut prior to removing the harvester rod from the leg.

8 The **V-cutter integrates** coagulation and cutting of the side branches in one step employing targeted low energy. A controlled distance between the V-keeper and V-cutter is maintained providing optimal branch lengths and ensuring that sealing and cutting take place away from the vessel to be used as a graft.

9 The V-cutter can also deliver **spot cautery** for added hemostasis control; this can be activated by the **V-cautery** switch (10).

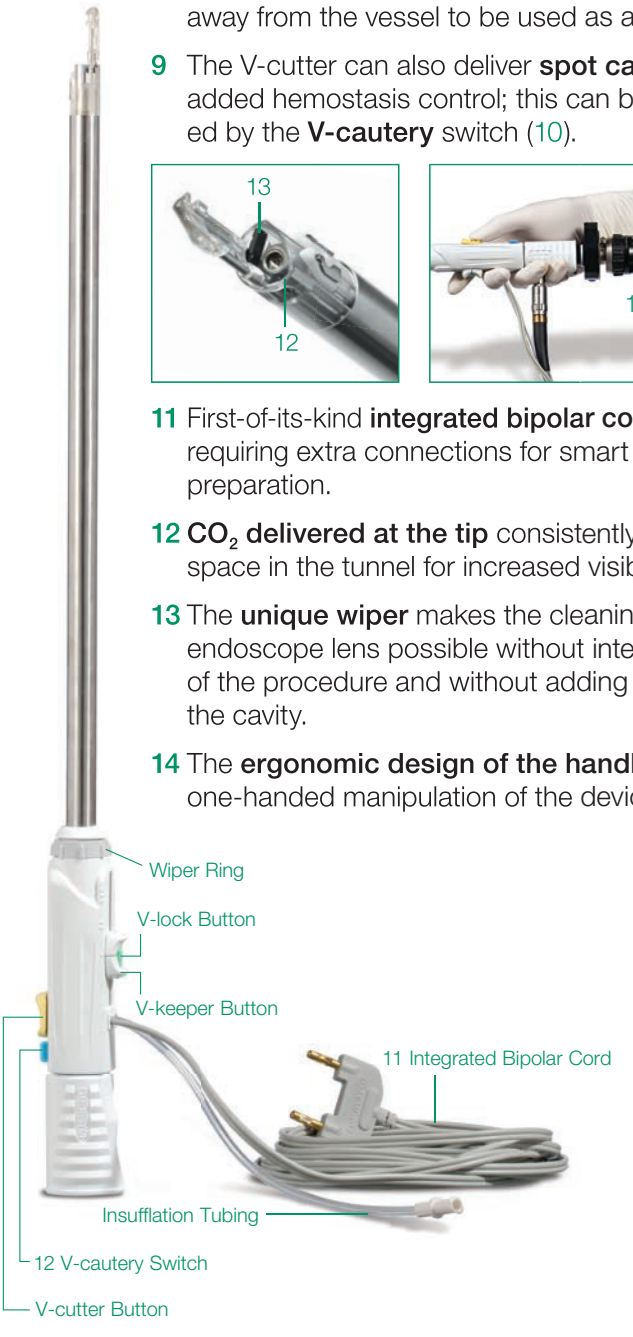


11 First-of-its-kind **integrated bipolar cord** not requiring extra connections for smart and quick preparation.

12 **CO_2 delivered at the tip** consistently provides space in the tunnel for increased visibility.

13 The **unique wiper** makes the cleaning of the endoscope lens possible without interruption of the procedure and without adding fluid in the cavity.

14 The **ergonomic design of the handles** allows one-handed manipulation of the device.



What are the advantages with the VirtuoSaph™ Plus?

Controls hemostasis

- The integrated coagulation-cut function of the V-cutter (V=Vein) allows for superior sealing and cutting capabilities.
- Its one of-a-kind spot cautery mechanism allows for precise control of when and where to apply spot cautery.

Limits thermal spread [6]

- The fixed distance between the V-cutter and V-keeper delivers simultaneous sealing and cutting of branches, as well as an optimal length of the side branches.
- Delivers low targeted energy away from the main vessel at the tunnel wall.

Reduces risk of CO_2 embolism and intraluminal thrombus [8,9]

- VirtuoSaph™ Plus is an “Open” EVH system with distal insufflation and a non-occlusive trocar minimizing the amount of CO_2 needed for tunnel maintenance.
- Minimizes contact and pressure on the vein at the incision site.

Provides space in the tunnel for increased visibility

- Consistently delivers CO_2 at the tip, where it counts.

Allows for atraumatic dissecting and harvesting

- Atraumatic conical dissector tip with centering rings allows the clinician to monitor the location of the dissector cone tip relative to the vein for consistent and uniform dissection.
- PTFE V-Glide surface of dissector rod minimizes drag and resistance and improves ease of dissection.
- The V-keeper gently encapsulates the vein minimizing potential damage during cauterization.

Is easy to use

- Unique integrated bipolar cord allows for an easy and quick set up.
- Unique wiper that immediately improves visibility in one activation.

8 Lin et al. Carbon dioxide embolism during endoscopic saphenous vein harvesting in coronary artery bypass surgery. J Thorac Cardiovascular Surg 2003;126:2011-2015

9 Burris et al. Incidence of residual clot strands in saphenous vein grafts after endoscopic harvest. Innovations: Technology & Techniques in Cardiothorac & Vasc Surg. 2006; 1 (6): 323-327

Ordering Information

	Product Code	Units/Case
Disposable Products		
VirtuoSaph™ Plus – Indicated for Vein + Radial Harvesting Endoscopic Vessel Harvesting System, sterile (includes dissector, harvester, and trocar)	VSP550EX[1]	5
Terumo Endoscope[2] 5.5 mm Endoscope	MCENDO550	1
Endodoctor Endoscope 5.5 mm Endoscope	ED-054426-0	1
Sterilization Trays Endoscope Only Tray	811497	1

1 The VSP550EX has CE and FDA approval for the indications of both endoscopic vein and radial artery harvesting.
2 Not available for sale in CE mark countries.

TERUMO
CARDIOVASCULAR

Terumo Corporation
+81 3 3374 8111

Terumo Cardiovascular Group
+1 734 663 4145

Terumo Europe NV
+32 16 38 12 11

EMEA SALES OFFICES

Terumo Europe NV
Africa Business Division
+32 16 38 13 08

Terumo Europe NV
Benelux Sales Division
Belgium: 0800 14468
The Netherlands: 0800 0231938

Terumo Europe NV
Emerging Market Division
+32 16 38 12 11

Terumo Deutschland GmbH
+49 6196 80 230

Terumo Deutschland GmbH
Switzerland
+41 56 419 10 10

Terumo Europe España SL
+34 902 10 12 98

Terumo France S.A.S.
+33 130 96 13 00

Terumo Italia S.r.l.
+39 06 94 80 28 00

Terumo Russia LLC
+7 495 988 4740

Terumo Sweden AB
+46 3174 85 880

Terumo Sweden AB Denmark
+45 7020 93 80

Terumo Middle East FZE
+971 4 292 0200

Terumo UK Ltd
+44 1276 480 440

Terumo BCT Tıbbi Cihazlar Dağıtım
ve Hizmetleri A.Ş.
+90 216 645 92 00

Addresses subject to change,
please consult our website.
www.terumo-europe.com