Generally the best patency rates are achieved with the in-situ left internal thoracic artery (the proximal end is left connected to the[subclavian artery](http://en.wikipedia.org/wiki/Subclavian_artery)) with the distal end being anastomosed with the coronary artery (typically the left anterior descending artery or a diagonal branch artery). Lesser patency rates can be expected with radial artery grafts and "free" internal thoracic artery grafts (where the proximal end of the thoracic artery is excised from its origin from the subclavian artery and re-anastomosed with the ascending aorta). Saphenous vein grafts have worse patency rates, but are more available, as the patients can have multiple segments of the saphenous vein used to bypass different arteries. Saphenous vein grafts have worse patency rates, but are more available, as the patients can have multiple segments of the saphenous vein used to bypass different arteries.

**AHA 2012 meeting**

**Cost-Effectiveness of PCI with Drug Eluting Stents versus Bypass Surgery for Patients with Diabetes and Multi-vessel Coronary Artery Disease: Results from the FREEDOM Trial**

Strategies for Multivessel Revascularization in Patients with Diabetes

Michael E. Farkouh, M.D., Michael Domanski, M.D., Lynn A. Sleeper, Sc.D., Flora S. Siami, M.P.H., George Dangas, M.D., Ph.D., Michael Mack, M.D., May Yang, M.P.H., David J. Cohen, M.D., Yves Rosenberg, M.D., M.P.H., Scott D. Solomon, M.D., Akshay S. Desai, M.D., M.P.H., Bernard J. Gersh, M.B., Ch.B., D.Phil., Elizabeth A. Magnuson, Sc.D., Alexandra Lansky, M.D., Robin Boineau, M.D., Jesse Weinberger, M.D., Krishnan Ramanathan, M.B., Ch.B., J. Eduardo Sousa, M.D., Ph.D., Jamie Rankin, M.D., Balram Bhargava, M.D., John Buse, M.D., Whady Hueb, M.D., Ph.D., Craig R. Smith, M.D., Victoria Muratov, M.D., M.P.H., Sameer Bansilal, M.D., Spencer King, III, M.D., Michel Bertrand, M.D., and Valentin Fuster, M.D., Ph.D. for the FREEDOM Trial Investigators

November 4, 2012DOI: 10.1056/NEJMoa1211585

 The increased use of internal mammary grafting in these trials has been postulated to play a key role in the improved survival with CABG. When considered together, the data provide a convincing signal that PCI results in increased long-term mortality, as compared with CABG, in patients with diabetes and multivessel coronary artery disease.

For patients with diabetes and advanced coronary artery disease, CABG was superior to PCI in that it significantly reduced rates of death and myocardial infarction, with a higher rate of stroke. (Funded by the National Heart, Lung, and Blood Institute and others; FREEDOM ClinicalTrials.gov number,

Twine CP, McLain AD. Graft type for femoro-popliteal bypass surgery.

Cochrane Database of Systematic Reviews 2010, Issue 5. Art. No.: CD001487. DOI:

10.10

From our analysis, autologous vein had a better primary patency rate than PTFE, HUV or Dacron for above the knee grafts. Adding a 'cuff' of vein improved the patency of PTFE for grafts extending to below the knee, in one trial (358 procedures). Few results were available for how long the limb survived following the bypass procedure. Protocols for patients to receive antiplatelet02/14651858.CD001487.pub2.

**A/ Joseph D. Cohn, MD, FACS\*, Keith F. Korver, MD, FACS**

**Selection of Saphenous Vein Conduit in Varicose Vein Disease**

**Ann Thorac Surg 2006;81:1269-1274**

**Accepted for publication November 4, 2005.**

**\* Department of Surgery, Sutter Medical Center of Santa Rosa, Santa Rosa, California**

**Address correspondence to Dr Cohn, 5773 Shiloh Ridge, Santa Rosa, CA 95403 (Email: jcohn@alum.mit.edu**

**“Conclusions: Ultrasound studies document that varicose veins are limited to accessory saphenous veins. Great saphenous vein conduits, identified by ultrasonography, are available in limbs with varicose vein disease.**

1. Moritz A, Grabenwöger F, Wolner E. Mesh tube-calibrated varicose veins for coronary artery bypass grafting Ann Thorac Surg 1994;57:240-242.[[Abstract/Free Full Text]](http://ats.ctsnetjournals.org/cgi/ijlink?linkType=ABST&journalCode=annts&resid=57/1/240)
2. Canver CC. Conduit options in coronary artery bypass surgery Chest 1995;108:1150-1155.[[Medline]](http://ats.ctsnetjournals.org/cgi/external_ref?access_num=7555129&link_type=MED)
3. MacFarlane R, Godwin RJ, Barabas AP. Are varicose veins and coronary artery bypass surgery compatible? Lancet 1985;2:859.[[Medline]](http://ats.ctsnetjournals.org/cgi/external_ref?access_num=2864578&link_type=MED)
4. Fligelstone L, Carolan G, Pugh N, Shandall A, Lane I. An assessment of the long saphenous vein for potential use as a vascular conduit after varicose vein surgery J Vasc Surg 1993;18:836-840.[[Medline]](http://ats.ctsnetjournals.org/cgi/external_ref?access_num=8230571&link_type=MED)
5. Hammarsten J, Pedersen P, Cederlund C-G, Campanello M. Long saphenous vein saving surgery for varicose veins Eur J Vasc Surg 1990;4:361-364.[[Medline]](http://ats.ctsnetjournals.org/cgi/external_ref?access_num=2204548&link_type=MED)
6. Mellière D. Why and when to preserve the saphenous veins of varicose patients to serve as an arterial conduit J Mal Vasc 1994;19:216-221.[[Medline]](http://ats.ctsnetjournals.org/cgi/external_ref?access_num=7798809&link_type=MED)
7. Lova RM, Cappelli M, Macchi C, et al. Macroscopic anatomy of the superficial veins of the lower limb. a systematic review based upon echography. It J Anat Embryol 2001;106:215-220.[[Medline]](http://ats.ctsnetjournals.org/cgi/external_ref?access_num=11732580&link_type=MED)
8. Caggiati A, Mendoza E. Segmental hypoplasia of the great saphenous vein and varicose disease Eur J Vasc Endovasc Surg 2004;28:257-261.[[Medline]](http://ats.ctsnetjournals.org/cgi/external_ref?access_num=15288628&link_type=MED)
9. Lescalié F, Germouty I, Chevalier JM, Enon B, Moreau P, Pillet J. Extrinsic arterial supply of the great saphenous vein. an anatomic study. Ann Vasc Surg 1986;1:273-277.[[Medline]](http://ats.ctsnetjournals.org/cgi/external_ref?access_num=3504339&link_type=MED)
10. Cohn JD, Korver KF. Optimizing saphenous vein site selection using intraoperative venous duplex ultrasound scanning Ann Thorac Surg 2005;79:2013-2017.[[Abstract/Free Full Text]](http://ats.ctsnetjournals.org/cgi/ijlink?linkType=ABST&journalCode=annts&resid=79/6/2013)
11. Head HD, Brown MF. Preoperative vein mapping for coronary artery bypass operations Ann Thorac Surg 1995;59:144-148.[[Abstract/Free Full Text]](http://ats.ctsnetjournals.org/cgi/ijlink?linkType=ABST&journalCode=annts&resid=59/1/144)
12. Kupinski AM, Evans SM, Khan AM, et al. Ultrasonic characterization of the saphenous vein Cardiovasc Surg 1993;1:513-517.[[Medline]](http://ats.ctsnetjournals.org/cgi/external_ref?access_num=8076088&link_type=MED)
13. Ruoff BA, Cranley JJ, Hannan LA, et al. Real-time duplex ultrasound mapping of the greater saphenous vein before in situ infrainguinal revascularization J Vasc Surg 1987;6:107-113.[[Medline]](http://ats.ctsnetjournals.org/cgi/external_ref?access_num=3302315&link_type=MED)
14. Van Dijk LC, Wittens CH, Pieterman H, van Urk H. The value of pre-operative ultrasound mapping of the greater saphenous vein prior to ‘closed’ in situ bypass operations Eur J Radiol 1996;23:235-237.[[Medline]](http://ats.ctsnetjournals.org/cgi/external_ref?access_num=9003931&link_type=MED)

**B/** [**^**](http://en.wikipedia.org/wiki/Great_saphenous_vein#cite_ref-3) Mamode N, Scott RN (2000). Mamode, Nizam. ed. "Graft type for femoro-popliteal bypass surgery". *Cochrane Database Syst Rev* (2): CD001487.[doi](http://en.wikipedia.org/wiki/Digital_object_identifier):[10.1002/14651858.CD001487](http://dx.doi.org/10.1002/14651858.CD001487). [PMID](http://en.wikipedia.org/wiki/PubMed_Identifier) [10796649](http://www.ncbi.nlm.nih.gov/pubmed/10796649).**This review did not find enough evidence from trials to show which type is best. However, autologous veins or HUV are generally better than synthetic grafts.**

**C/** Carella GS, Stilo F, Benedetto F, David A, Risitano DC, Buemi M, Spinelli F., Femoro-distal bypass with varicose veins covered by prosthetic mesh. J Surg Res. 2011 Jun 15;168(2):e189-94. Epub 2011 Feb 17.

Department of Vascular Surgery, Policlinico Universitario, Messina, Italy. gcarella@unime.it

“Polyester external mesh is a valid method to perform bypass with autologous material, as ecstatic or varicose veins. Moreover, in young patients with long-term bypass patency expectancy, it prevents vein dilatation during arterialization process”.

**D/** [Thorac Cardiovasc Surg.](http://www.ncbi.nlm.nih.gov/pubmed/12730812) 2003 Apr;51(2):62-6.

**External reinforcement of varicose veins with PTFE prosthesis in infrainguinal bypass surgery -- clinical results.**

[Neufang A](http://www.ncbi.nlm.nih.gov/pubmed?term=Neufang%20A%5BAuthor%5D&cauthor=true&cauthor_uid=12730812), [Dorweiler B](http://www.ncbi.nlm.nih.gov/pubmed?term=Dorweiler%20B%5BAuthor%5D&cauthor=true&cauthor_uid=12730812), [Espinola-Klein C](http://www.ncbi.nlm.nih.gov/pubmed?term=Espinola-Klein%20C%5BAuthor%5D&cauthor=true&cauthor_uid=12730812), [Reinstadler J](http://www.ncbi.nlm.nih.gov/pubmed?term=Reinstadler%20J%5BAuthor%5D&cauthor=true&cauthor_uid=12730812), [Kirsch D](http://www.ncbi.nlm.nih.gov/pubmed?term=Kirsch%20D%5BAuthor%5D&cauthor=true&cauthor_uid=12730812), [Schmiedt W](http://www.ncbi.nlm.nih.gov/pubmed?term=Schmiedt%20W%5BAuthor%5D&cauthor=true&cauthor_uid=12730812), [Oelert H](http://www.ncbi.nlm.nih.gov/pubmed?term=Oelert%20H%5BAuthor%5D&cauthor=true&cauthor_uid=12730812).

**Source**

Department of Cardiothoracic and Vascular Surgery, Johannes Gutenberg-University School of Medicine, Mainz, Germany. neufang@mail.uni-mainz.de

**“External reinforcement with a PTFE prosthesis allows the use of autogenous greater saphenous veins with varicose dilatation and enables the construction of all autogenous bypasses with promising graft patency and limb salvage.”**

**Giorgio Falaschi** g.falaschi@studiomedicofalaschi

Dear Claude

Forgive me,but as already expressed,I don't agree with your belief to save and preserve the GSV for future by pass needs, at any cost.
I do agree that too often the GSV is useless ruined by ablative procedures, and I am also a sustainer to preserve,(or try to preserve) whenever possible at least its thigh section, but let me make few considerations: how often and in which arterial surgery is it  indispensable? My answer is : very very seldom.
You know that:
-Coronary arteries : internal mammary artery is greatly preferred .Also ballons dilatations and stenting procedures are now more and more successfully implemented (whitout thoracothomy) and,in any case,brachial veins are good substitutes for SV.
-Proximal arterial surgery: synthetic grafts work very well (fem-pop);also endoarterectomy,patch graft,balloon dilatation,endovascular procedures (which are being improved) are allmost what we need.

-Distal arterial surgery : how often is it necessary,and,above all,really effective? When run off is poor or absent any by pass will fail ! I don't know the percentage of situations in which the GSV is absolutely necessary,but I suspect,in reality,it is very,very small if no nil (expecially in consideration of the rare statistical occurence of GSV disease with distal limb savage need by mean of a working GSV by pass).
Please,don't make majority of phlebologists feel like sinner!

I do appreciate your mind and your great,unique,contributions to Phlebology in any case !
Warm regards

Réponse

Caro Giorgio and all,

GSV preservation and informed consent of the patient based on scientific randomized trials. Scientific and legal issues.

1- Inform the patient about the GSV ablation and future possible by-pass:

 GSV is not the first choice for Coronary Arteyy By-Pass Graft but can be needed in multivessel coronary artery disease. (Ref 1)

 GSV is the first choice in below knee by-pass.(Ref2)

2- Inform the patient about alternative conservative methods:

 Abstention: varicose veins are a BENIGNE disease that can be treated later in case of clinical worsening.

 Compression

 Surgical/endovenous procedures that ablate the varicose veins except the GSV trunck which is preserved.

 CHIVA : less recurrences that ablative procedures ( 3 long term RCT CHIVA vs Stripping, 1 mid term CHIVA vs Laser) (Ref 3,4,5,7 and Cochrane review going on).

3/ Avoid a legal prosecution:

A french MD (otorhinolaryngologist) is filing complain for a double GSV stripping because not previously informed of alternative treatments and loss of venous graft capital.

No threat, just an information and a friendly warning.

Warm regards

 (1)“For patients with diabetes and advanced coronary artery disease, CABG was superior to PCI in that it significantly reduced rates of death and myocardial infarction, with a higher rate of stroke. r. . When considered together, the data provide a convincing signal that PCI results in increased long-term mortality, as compared with CABG, in patients with diabetes and multivessel coronary artery disease”. (Funded by the National Heart, Lung, and Blood Institute and others; FREEDOM ClinicalTrials.gov . Strategies for Multivessel Revascularization in Patients with Diabetes. November 4, 2012DOI: 10.1056/NEJMoa1211585. **AHA 2012 meeting. Cost-Effectiveness of PCI with Drug Eluting Stents versus Bypass Surgery for Patients with Diabetes and Multi-vessel Coronary Artery Disease: Results from the FREEDOM Trial**

(2) “From our analysis, autologous vein had a better primary patency rate than PTFE, HUV or Dacron for above the knee grafts. Adding a 'cuff' of vein improved the patency of PTFE for grafts extending to below the knee, in one trial (358 procedures). Few results were available for how long the limb survived following the bypass procedure. Protocols for patients to receive antiplatelet02/14651858.CD001487.pub2.”.Twine CP, McLain AD. Graft type for femoro-popliteal bypass surgery.Cochrane Database of Systematic Reviews 2010, Issue 5. Art. No.: CD001487. DOI:10.10

(3) Chan, C.-Y.a , Chen, T.-C.b , Hsieh, Y.-K.a , Huang, J.-H.c
[Retrospective comparison of clinical outcomes between endovenous laser and saphenous vein-sparing surgery for treatment of varicose veins](http://www.scopus.com/record/display.url?eid=2-s2.0-80051515766&origin=resultslist)(2011) *World Journal of Surgery*, 35 (7), pp. 1679-1686.

4 - P.Zamboni and all: Minimally Invasive Surgical management of primary venous Ulcer vs. Compression Eur J vasc Endovasc Surg 00,1 6 (2003)

5 - Josep oriol Pares and al: Treatment: a randomized Clinical Trial Varicose Vein Surgery Stripping versus the CHIVA method: a Randomized Controlled Trial Annals of Surgery \* Volume 251, Number 4, April 2010

6 - Iborra and all: clinical and random study comparing two, surgical techniques for varicose vein treatment : immediate results Angiologia 2000:6, 253-258

7- Carandina, C. and al.Varicose Vein Stripping vs Haemodynamic Correction (CHIVA): a Long Term Randomised Trial. Eur J Vasc Endovasc Surg xx, 1e8 (2007)

 CABG : Saphenous vein grafts have worse patency rates, but are more available, as the patients can have multiple segments of the saphenous vein used to bypass different arteries.