UNIVERSITÀ DEGLI STUDI DI FERRARA
- EX LABORE FRUCTUS -

PROSPETTIVE DI TRATTAMENTO DELL'INSUFFICIENZA VENOSA CRONICA IN REGIME AMBULATORIALE

TECNICHE ABLATIVE E CONSERVATIVE A CONFRONTO

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INSUFFICIENZA VENOSA CRONICA

DI COSA SI TRATTA?

- Consiste in un **AUMENTO DELLA PRESSIONE VENOSA** causata da anomalie primitive delle vene e da alterazioni secondarie a reflusso e/o ostruzione che portano gradualmente alla formazione di **VARICI**, accompagnate da **EDEMA, SENSAZIONE DI PESANTEZZA, PIGMENTAZIONE CUTANEA, ULCERAZIONI.**

OPZIONI DI TRATTAMENTO

- ***TERAPIA FARMACOLOGICA***

Migliorare il tono vascolare e la permeabilità capillare, favorire il ritorno venoso e ridurre il danno infiammatorio dell'endotelio (Bioflavonoidi, Glicosamminoglicani, farmaci Emoreologici, Anticoagulanti/Antiaggreganti).

- ***TERAPIA ELASTOCOMPRESSIVA***

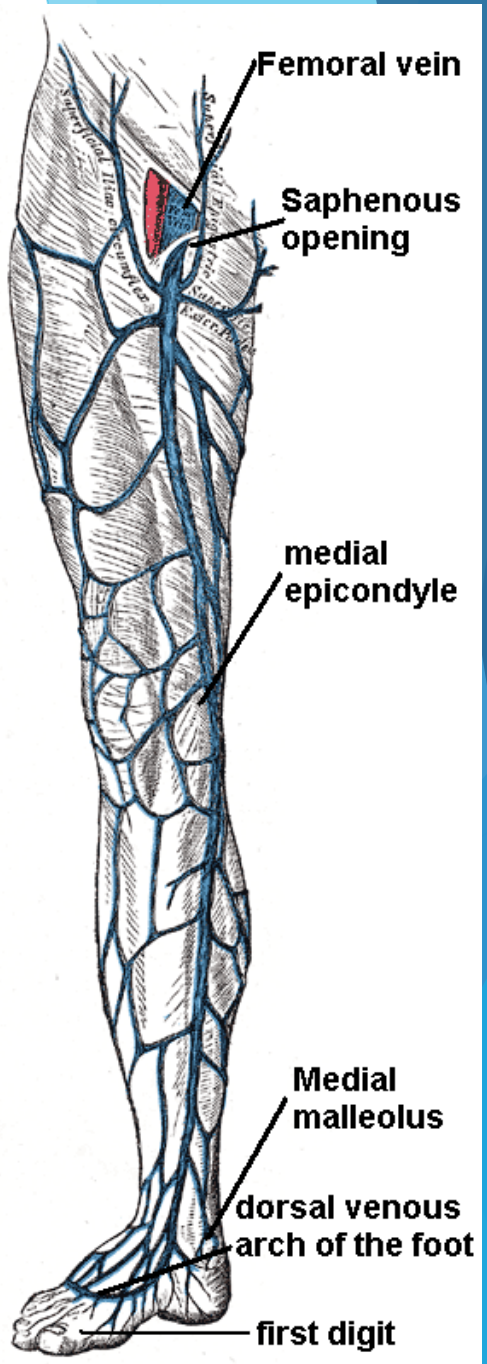
È il «*Gold Standard*» *conservativo* ed esercita molteplici azioni sul sistema venoso superficiale e profondo, sul volume ematico, sui tessuti, sul compartimento microvascolare e su eventuali trombi endoluminali.

Allevia temporaneamente i sintomi ma non è una soluzione definitiva al problema di fondo.

OPZIONI DI TRATTAMENTO

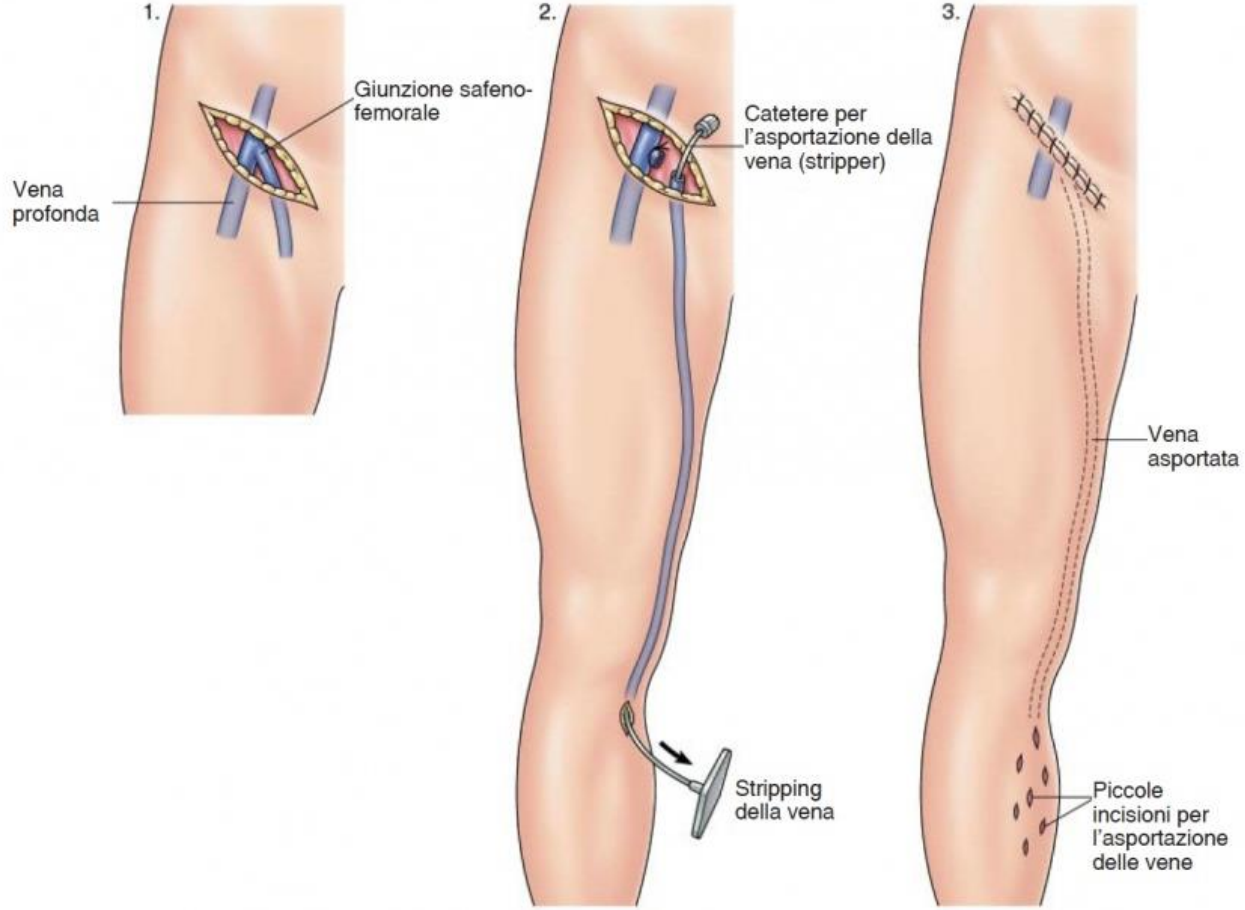
*TERAPIA **CHIRURGICA***

- ***LEGATURA ALTA E STRIPPING SAFENICO***
- ***FLEBECTOMIA (Muller, ASVAL)***
- ***SCLEROTERAPIA***
- ***TRATTAMENTO ENDOVASCOLARE (LASER, RADIOFREQUENZA)***
- ***CHIVA***



LEGATURA ALTA E STRIPPING SAFENICO

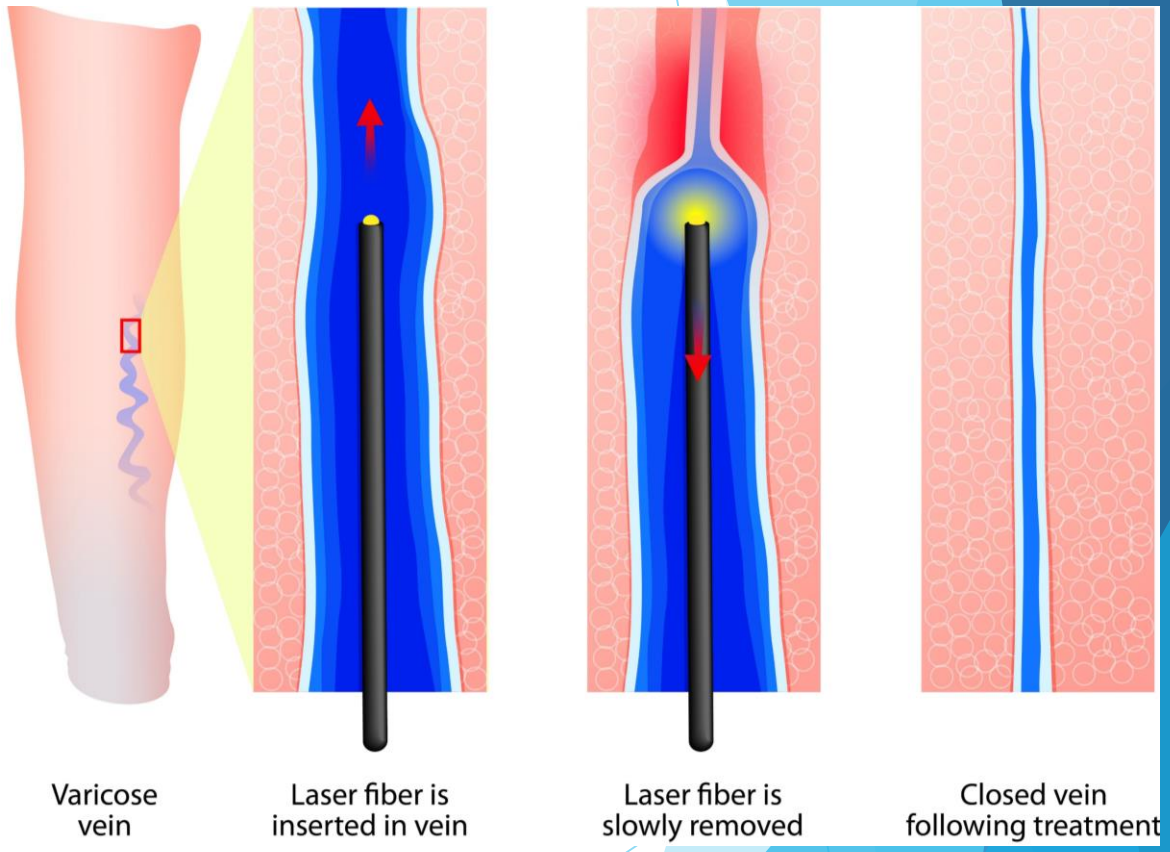
L'intervento prevede un primo tempo chiamato ***crossectomia*** (isolamento, legatura e sezione della giunzione safeno-femorale e/o safeno-poplitea e dei vasi collaterali presenti in tali sedi) a cui segue l'incannulamento della Safena mediante lo stripper e l'esecuzione dello **stripping**, che può essere "*lungo*", con asportazione della Safena in tutta la sua lunghezza, oppure "*corto*", lasciandone cioè in sede un tratto di varia lunghezza.



TRATTAMENTO ENDOVASCOLARE (LASER, RADIOFREQUENZA)

Procedura percutanea mini-invasiva che distrugge la vena dall'interno utilizzando il calore. Si esegue in **anestesia locale** e rigorosamente **sotto guida ecografica**.

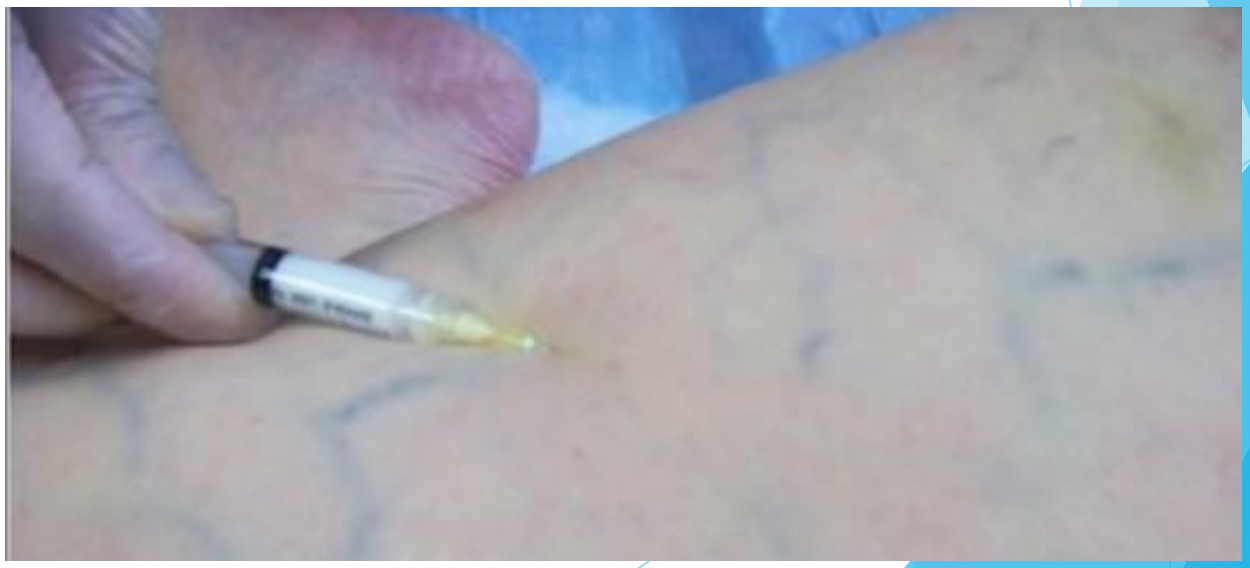
Consiste nell'inserimento nella vena di **una fibra ottica Laser** o di un **catetere per Radiofrequenza** che viene attivato e gradualmente ritirato lungo il corso della vena. Il calore liberato danneggia la parete interna della vena in provocandone l'occlusione.



SCLEROTERAPIA

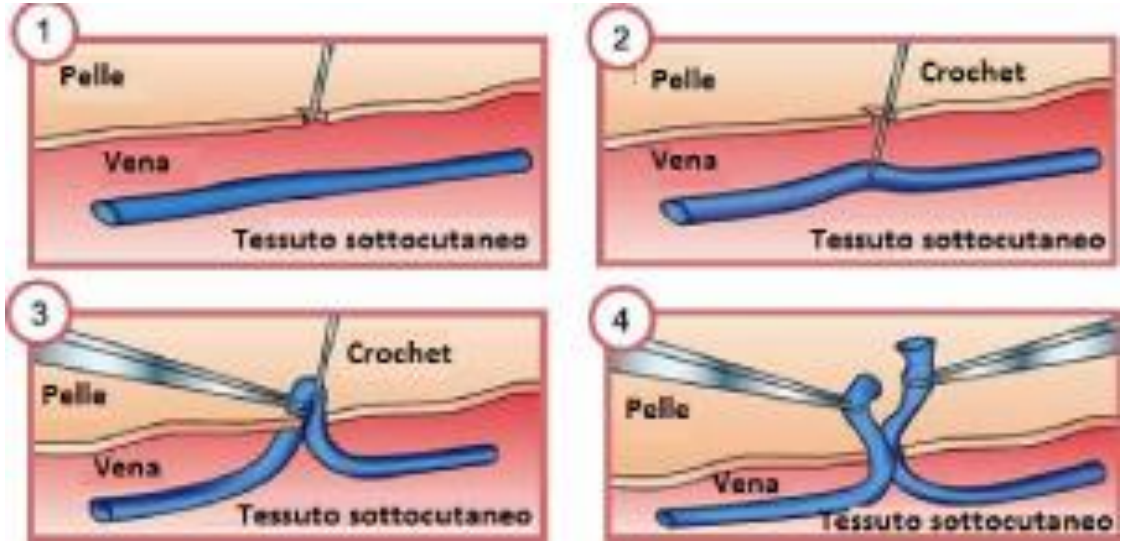
Iniezione nella vena di una **soluzione chimica sclerosante** che viene miscelata con gas o aria ambiente per formare una **schiuma**. Offre una buona alternativa al trattamento chirurgico delle vene varicose, anche se gravata di un **alto tasso di recidive** in tempi molto brevi e da **possibili effetti collaterali** dati dalla soluzione sclerosante (discromie, allergie, cicatrici, ecc…).

Preparing the foam for sclerotherapy



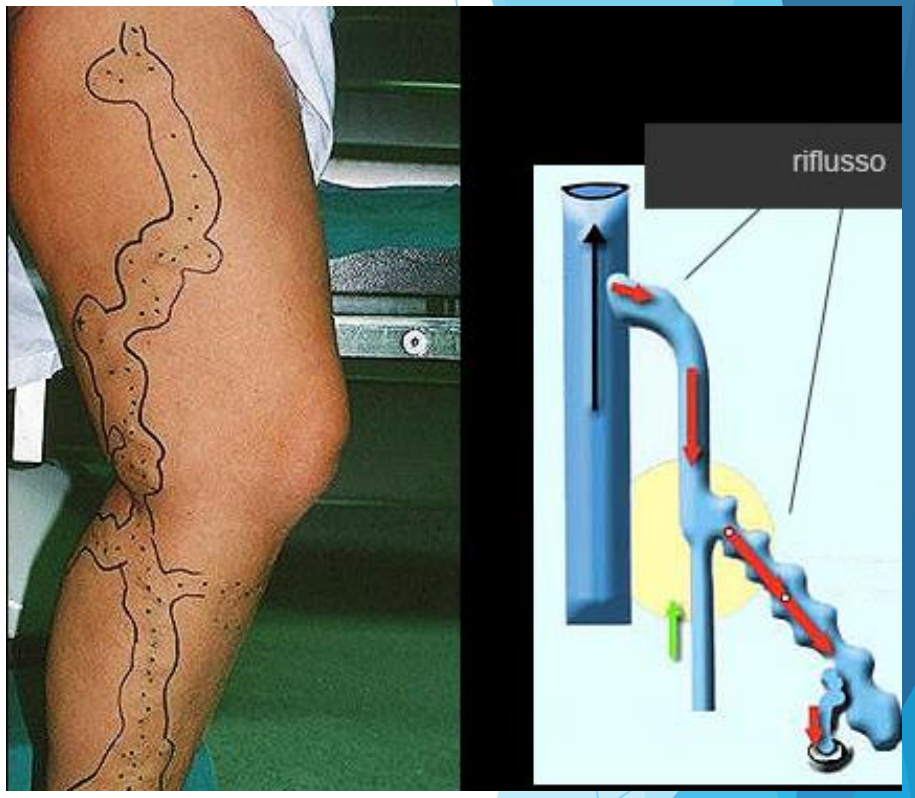
FLEBECTOMIA (MULLER, ASVAL)

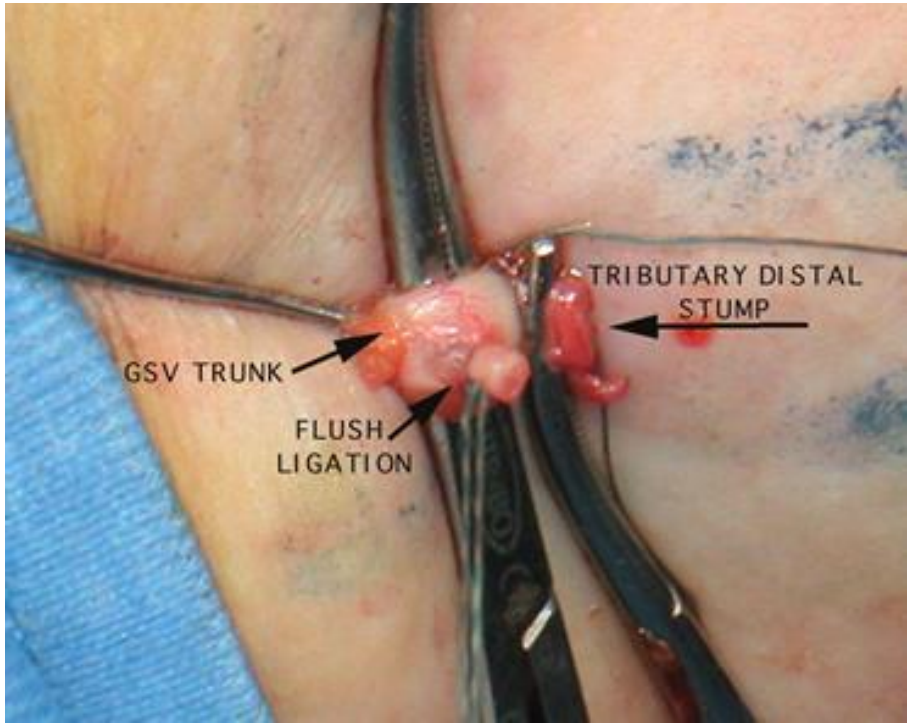
La flebectomia è la **rimozione di una vena attraverso una piccola incisione in anestesia locale**.
Un uncino viene inserito attraverso la pelle anestetizzata e con movimenti di trazione si agganciano i rami varicosi e si asportano. Questa tecnica può essere applicata a tutta la safena o limitata alle vene varicose tributarie/collaterali ad essa.



C.H.I.V.A.

La **CHIVA** (dal francese *Cure conservatrice et Hemodynamique de l'Insuffisance Veineuse en Ambulatoire*) è una terapia chirurgica **conservativa** della malattia venosa cronica il cui scopo è di **salvaguardare il sistema di drenaggio dell'asse safenico**, ristabilendo un corretto flusso dal circolo superficiale a quello profondo tramite **legature dei punti di reflusso**.





Un accurato studio emodinamico pre-operatorio (Eco-doppler) è fondamentale per la definizione della strategia d'intervento. Rappresenta **un'opzione terapeutica mini-invasiva e costo-efficace**.

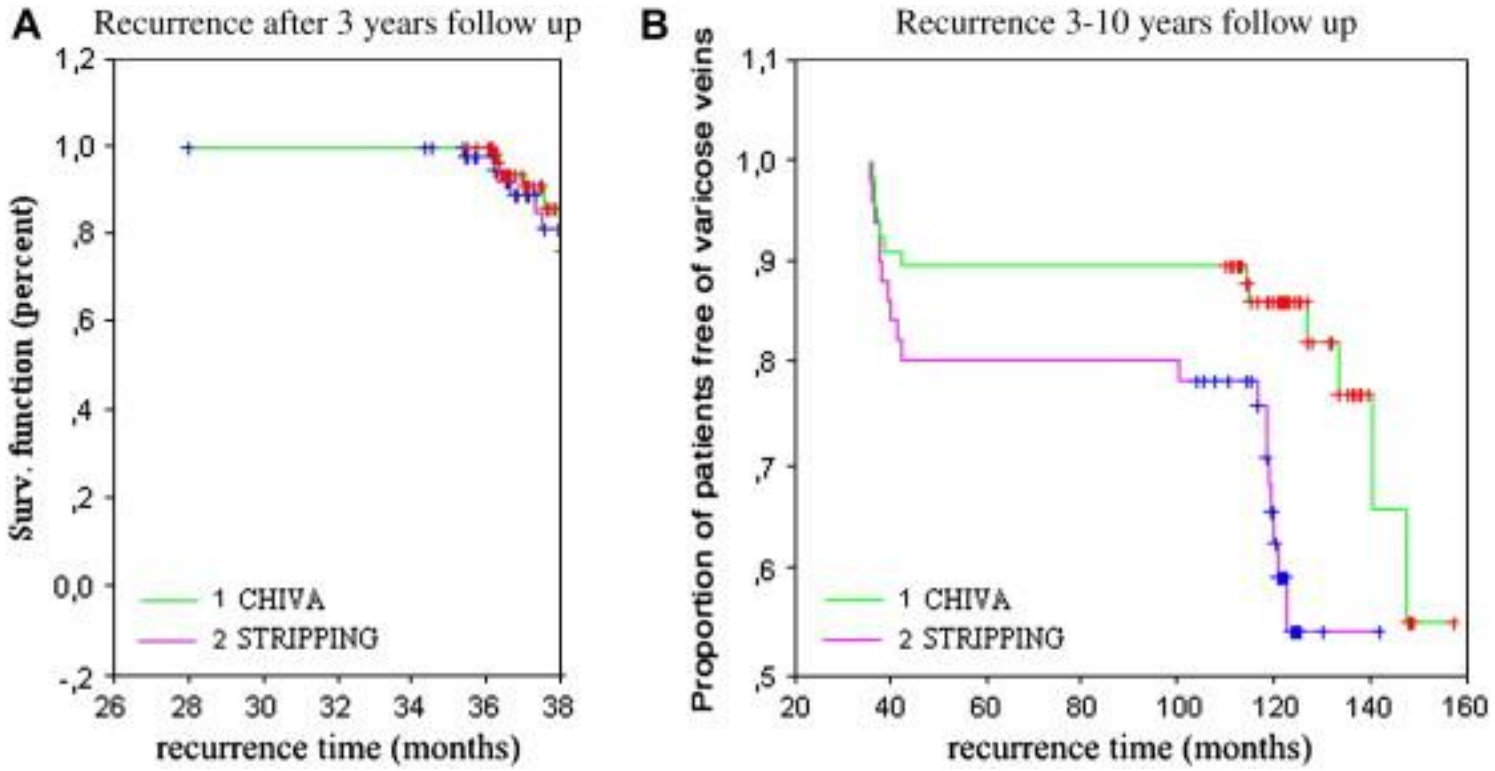

CHIRURGIA
CONSERVATIVA
CHIRURGIA
ABLATIVA

CHIVA VS STRIPPING

Eur J Vasc Endovasc Surg. 2008 Feb;35(2):230-7. Epub 2007 Oct 26.

Varicose vein stripping vs haemodynamic correction (CHIVA): a long term randomised trial.

Carandina S[1], Mari C, De Palma M, Marcellino MG, Cisno C, Legnaro A, Liboni A, Zamboni P.



CONCLUSIONS: At 10 years recurrent ***varices occurred more frequently following saphenous stripping*** than after CHIVA treatment. The deliberate preservation of the saphenous trunk as a route of venous drainage in the CHIVA group may have been a factor reducing the recurrence rate.

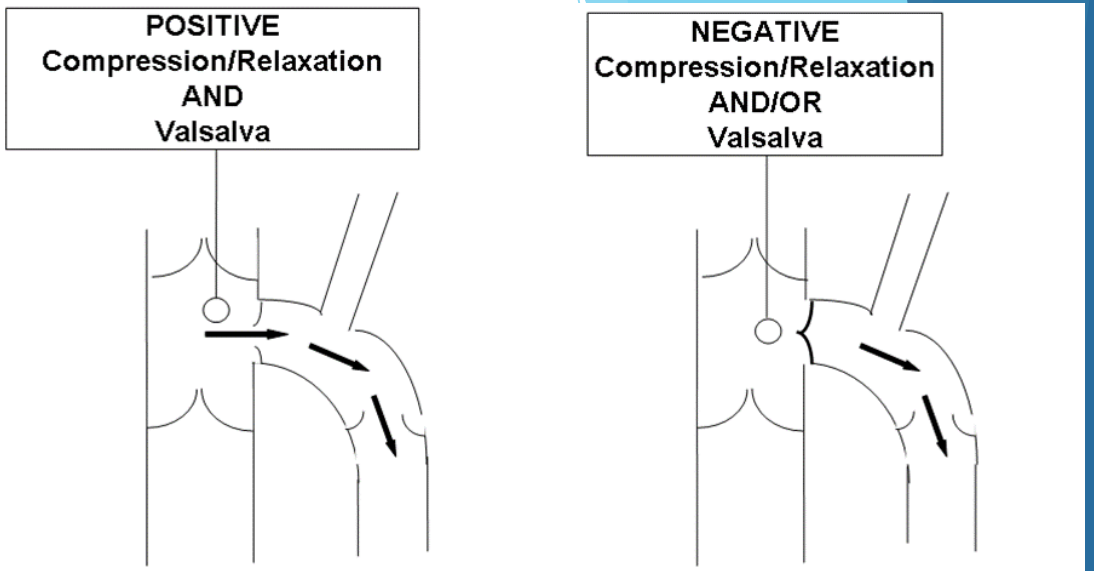
GREAT SAPHENOUS VARICOSE VEIN SURGERY WITHOUT SAPHENOFEMORAL JUNCTION DISCONNECTION.

Zamboni et Al., British Journal Surgery, 2010

- Un'accurata indagine Eco-Doppler dimostra che in **>50% dei casi si ha una giunzione Safeno-Femorale (SFJ) competente**;

- Questi pazienti, trattati con una tecnica conservativa della SFJ e con legature *ad hoc* dei punti di reflusso, hanno mostrato un tasso di recidiva del 14% (assolutamente in linea con le migliori tecniche ablative endovascolari).

- La ***continenza della SFJ è quindi indicazione per attuare una tecnica chirurgica conservativa***.



Incompetent terminal valve
174/445 (39%)

Competent terminal valve
271/445 (61%)

FOLLOW UP 3 YEARS	Incompetent terminal valve N° 100	Competent terminal valve N° 100	p	OR (95% CI)
SFJ reflux reappearance N° (%)	71 (71%)	3 (3%)	<.0001	79.2 (23.2-270.2)
Recurrence from new incompetent tributary N° (%)	7 (7%)	6 (6%)	0.7828	1.2 (0.4-3.7)
Recurrence from new incorrect tributary ligation N° (%)	4 (4%)	5 (5%)	1.000	0.8 (0.2-3)
TOTAL GSV RECURRENCES N° (%)	82 (82%)	14 (14%)	<.0001	31.5 (14.4-68.6)

Cochrane Database Syst Rev. 2015 Jun 29;(6):CD009648. doi: 10.1002/14651858.CD009648.pub3.

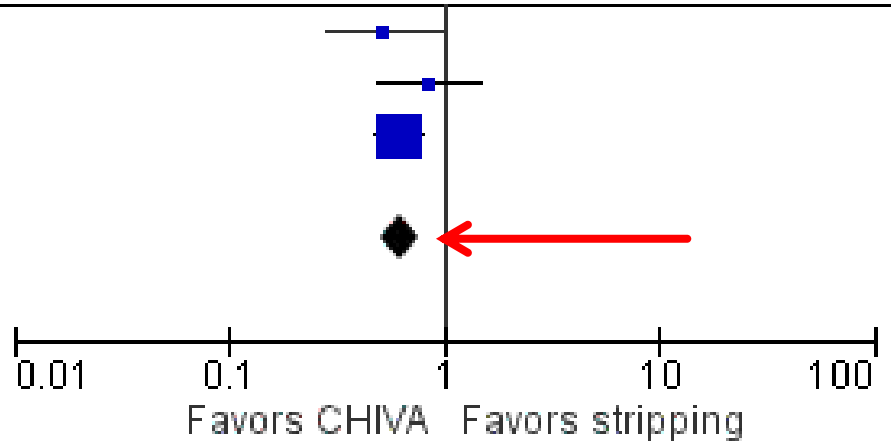
CHIVA method for the treatment of chronic venous insufficiency.

Bellmunt-Montoya S[1], Escribano JM, Dilme J, Martinez-Zapata MJ.

Study or Subgroup	CHIVA Events	CHIVA Total	Stripping Events	Stripping Total	Weight	Risk Ratio M-H, Fixed, 95% CI
Carandina 2008	13	70	19	54	14.1%	0.53 [0.29, 0.97]
Iborra-Ortega 2006	16	49	18	47	12.1%	0.85 [0.50, 1.47]
Pares 2010	52	167	168	334	73.8%	0.62 [0.48, 0.79]
Total (95% CI)		**286**		**435**	**100.0%**	**0.63 [0.51, 0.78]**
Total events	81		205			

Heterogeneity: Chi² = 1.53, df = 2 (P = 0.47); I² = 0%

Test for overall effect: Z = 4.20 (P < 0.0001)



CONCLUSIONS: The ***CHIVA method reduces recurrence of varicose veins and produces fewer side effects than vein stripping***. However, we based these conclusions on a small number of trials with a high risk of bias as the effects of surgery could not be concealed and the results were imprecise due to low number of events. *New RCTs are needed to confirm* these results and to compare CHIVA with approaches other than open surgery.

EVLA – *Endo Vascular Laser Ablation*

*Nel **1993** sono stati pubblicati i primi studi che proponevano **l'uso di cateteri LASER in chirurgia vascolare.***

PRO:

- ✓ *Riduzione di complicanze emorragiche*
- ✓ *Minor sorveglianza post-operatoria*
- ✓ *Possibilità di gestione di tipo ambulatoriale*
- ✓ *Minori effetti avversi.*
- ✓ *Miglior controllo del dolore e una miglior qualità di vita post-intervento.*
- ✓ ***Efficacia scientificamente dimostrata***

CONTRO:

- × ***Aumento dei costi (?)***

- **Randomized clinical trial comparing endovenous laser ablation, radiofrequency, foam sclerotherapy and surgical stripping for great saphenous varicose veins**. LH Rasmussen, M Lawaetz, L Bjoern., Br J Surg 2011;

- **Clinical effectiveness and cost-effectiveness of minimally invasive techniques to manage varicose veins: a systematic review and economic evaluation.** Carroll C, Hummel S, Leaviss J, Ren S, Stevens J, Everson-Hock E, *et al. Health Technol Assess* 2013;

- **Laser-Assisted Strategy for Reflux Abolition in a Modified CHIVA Approach**, *S. Gianesini et Al., Vein and Lympathics, 2015;*

EVLA – ENDO VASCULAR LASER ABLATION

J Vasc Surg. 2009 Jan;49(1):230-9. doi: 10.1016/j.jvs.2008.06.030. Epub 2008 Aug 9.

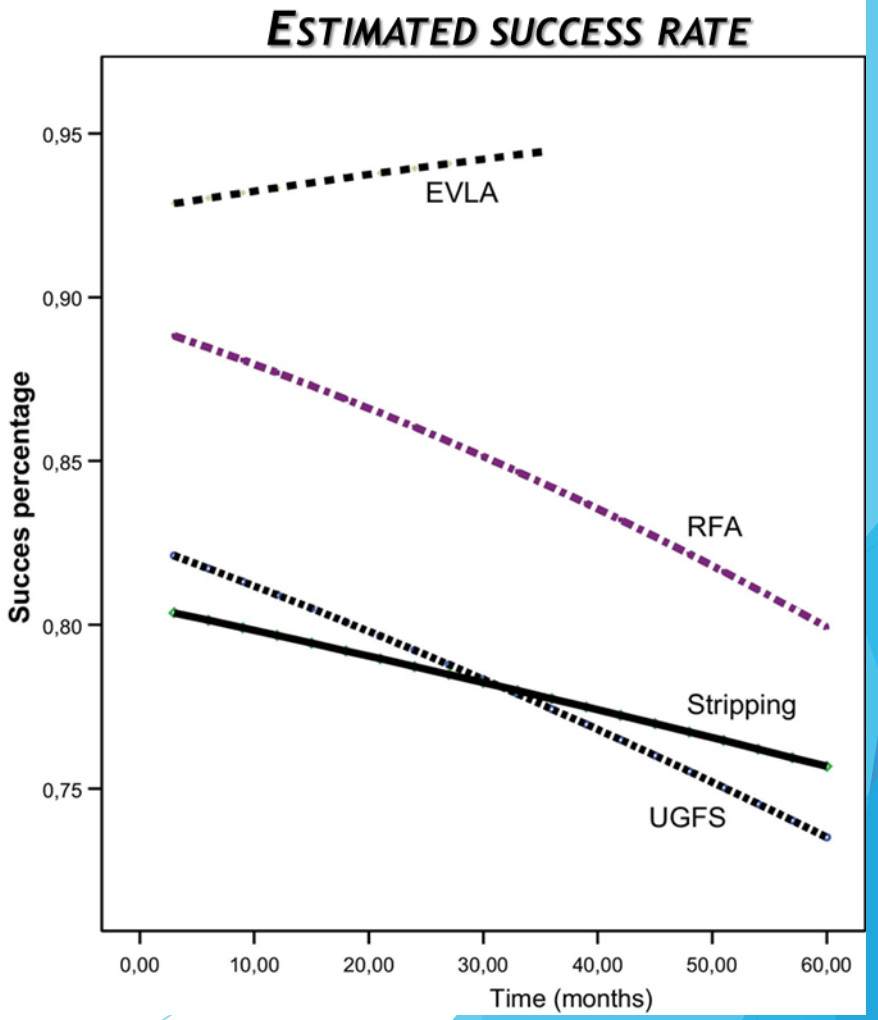
Endovenous therapies of lower extremity varicosities: a meta-analysis.

van den Bos R[1], Arends L, Kockaert M, Neumann M, Nijsten T.

Saphenous vein reflux recurrence	
EVLA	**6%**
RFA	16%
UGFS	23%
Stripping	***22%***

Conclusion

The results of this meta-analysis support the increasing use of minimally invasive interventions in the treatment of lower extremity varicosities. ***In the absence of comparative RCTs, it appears that EVLA is more effective than surgery, UGFS, and RFA.***



...MA QUANTO COSTANO?

Br J Surg. 2010 Dec;97(12):1815-23. doi: 10.1002/bjs.7256. Epub 2010 Oct 4.

Cost-effectiveness of traditional and endovenous treatments for varicose veins.

Gohel MS[1], Epstein DM, Davies AH.

Cost item	Details	Cost per patient (£)*	Source	Comments
Traditional surgery	Unilateral (inpatient)†	1583 (1172–1922)	NHS costs[24]	
	Unilateral (day case)	980 (706–1196)	NHS costs[24]	
Catheter	EVLA	395	List prices‡	Biolitec AG, Jena, Germany
	RFA	495	List prices‡	VNUS ClosureFAST™ (VNUS Medical Technologies, San Jose, California, USA)
Generator	EVLA	111	List prices‡	Biolitec 980-nm laser; acquisition cost £9995
	RFA	89	List prices‡	VNUS Medical Technologies; acquisition cost £7995
Ultrasonography		38	NHS costs[24]	Mobile intraoperative ultrasonography
Outpatient attendance	First attendance	154 (115–168)	NHS costs[24]	Consultant-led multiprofessional clinic
Sclerosant	Fibro-Vein™ 3%	10	List prices§	10 5-ml vials, £102·65

Conclusione

Questo studio suggerisce che sia la EVLA(an outpatient or office-based setting) che una chirurgia traduzionale eseguita in day hospital, sono probabilmente le strategie più "costo-efficaci" per il trattamento della IVC della grande safena.

EVLA e RFA sono ritenute ideali per una chirurgia in regime ambulatoriale in anestesia locale.

…MA QUANTO COSTANO?

J Vasc Surg Venous Lymphat Disord. 2014 Jan;2(1):98-103. doi: 10.1016/j.jvsv.2013.08.005. Epub 2013 Oct 25.

Cost analysis of endovenous catheter ablation versus surgical stripping for treatment of superficial venous insufficiency and varicose vein disease.

Lin JC[1], Nerenz DR[2], Migliore P[3], Young R[3], Shepard AD[4], Weaver WD[5].

Conclusions

"Treatment of saphenous vein reflux and varicose vein disease with vein ***stripping*** was associated with ***higher costs than RFA and EVLT***.

Endovenous RFA performed in the operating room is associated with net loss per case vs office-based interventions. At present, ***catheter-based interventions in an office setting can be considered the more cost-effective method*** for treating patients with superficial venous reflux and varicose veins".

Lasers Med Sci. 2014 Mar;29(2):493-9. doi: 10.1007/s10103-013-1453-8. Epub 2013 Oct 5.

Socio-economic impact of endovenous thermal ablation techniques.

Kelleher D[1], Lane TR, Franklin IJ, Davies AH.

Conclusions

Endothermal ablation has enabled clinicians to provide easy access to ***treatment that improves quality of life and reduces the societal and personal burden of venous disease***. Minimally invasive treatment with endothermal techniques results in ***high-quality treatment at low cost.***

SURELY, THIS IS THE WAY OF THE FUTURE. FURTHER STUDIES USING ADVANCING TECHNOLOGY WILL NO DOUBT CONFIRM THIS POSITION.

CONCLUSIONI

- La **CHIVA** ha dimostrato di essere una **TECNICA MINI-INVASIVA** e **ALTAMENTE COSTO-EFFICACE** e con **FORTI EVIDENZE SCIENTIFICHE**.

- Le conoscenze e l'abilità nella **DIAGNOSTICA ECO-DOPPLER** saranno estremamente importanti per **L'ESECUZIONE DI TECNICHE CHIRURGICHE ENDOVASCOLARI**.

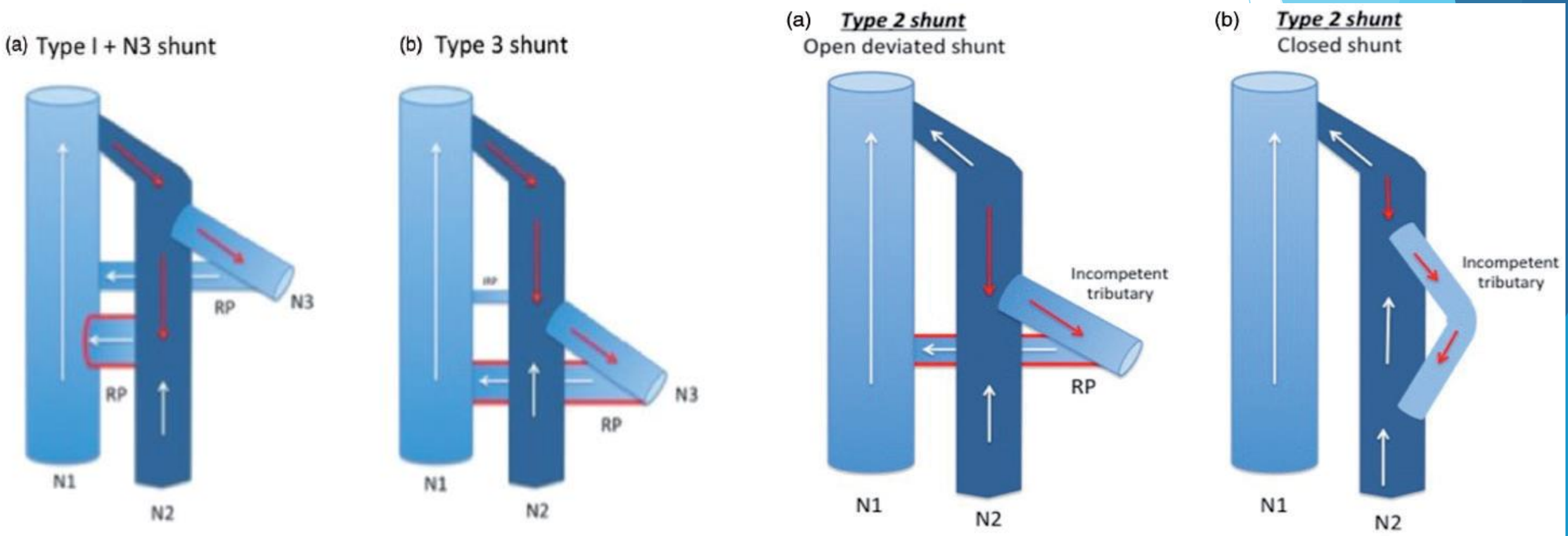
- Tra le tecniche ablative, la **EVLA** è quella maggiormente **COSTO-EFFICACE**, quindi ha la **MIGLIORE EFFICACIA CLINICA** con costi contenuti rispetto alle tecniche chirurgiche tradizionali.

- L'esecuzione delle **TECNICHE ENDOVASCOLARI IN REGIME AMBULATORIALE** permette di **RIDURRE I COSTI** ma allo stesso tempo deve **OFFRIRE ALTISSIMI STANDARD QUALITATIVI** e ottenere i migliori risultati in termini di clinica, complicanze e recidive.

- L'applicazione di un regime ambulatoriale deve prevedere una **RIORGANIZZAZIONE DELLA GESTIONE OSPEDALIERA DELLE RISORSE**, sia in termini di organizzazione dei reparti e del personale, sia in termini economici.


OGNI ANNO, CENTINAIA DI PERSONE MUOIONO PER UN POWER POINT.
FERMIAMO QUESTA STRAGE!
GRAZIE PER L'ATTENZIONE

CLASSIFICAZIONE SHUNT



CHIVA STRATEGY IN CHRONIC VENOUS DISEASE TREATMENT: INSTRUCTIONS FOR USERS
S Gianesini, S Occhionorelli, E Menegatti, M Zuolo, M Tessari, P Spath, S Ascanelli and P Zamboni, 2015, Phlebology

CHIVA 1

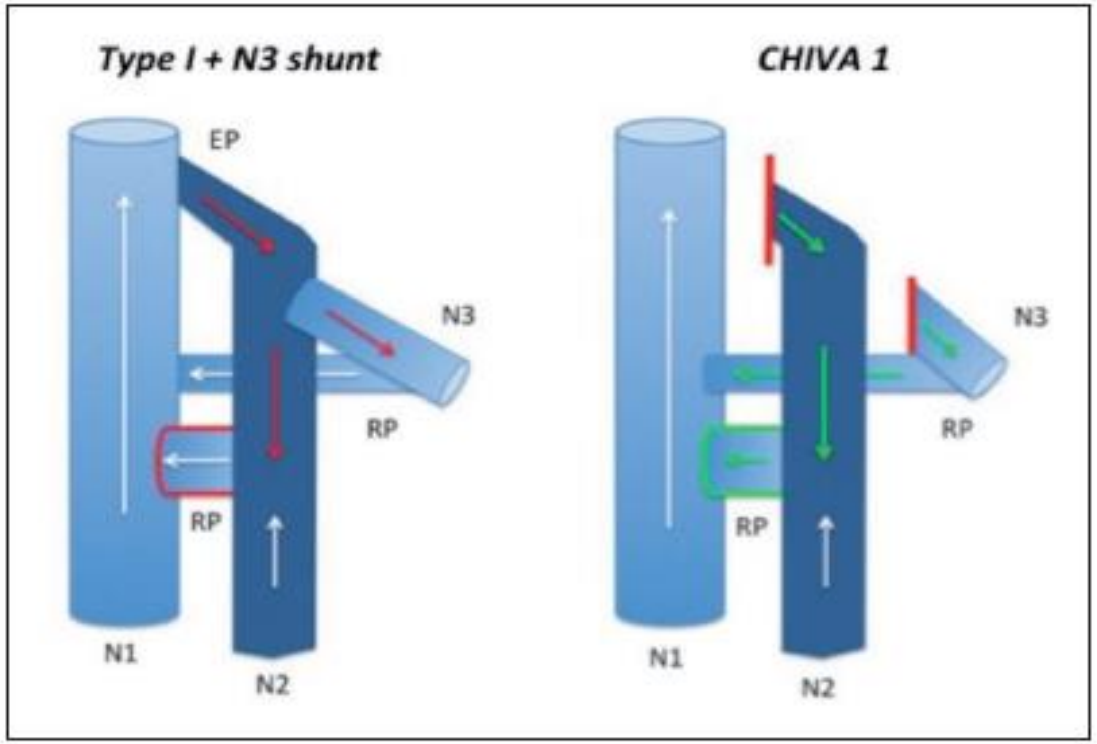
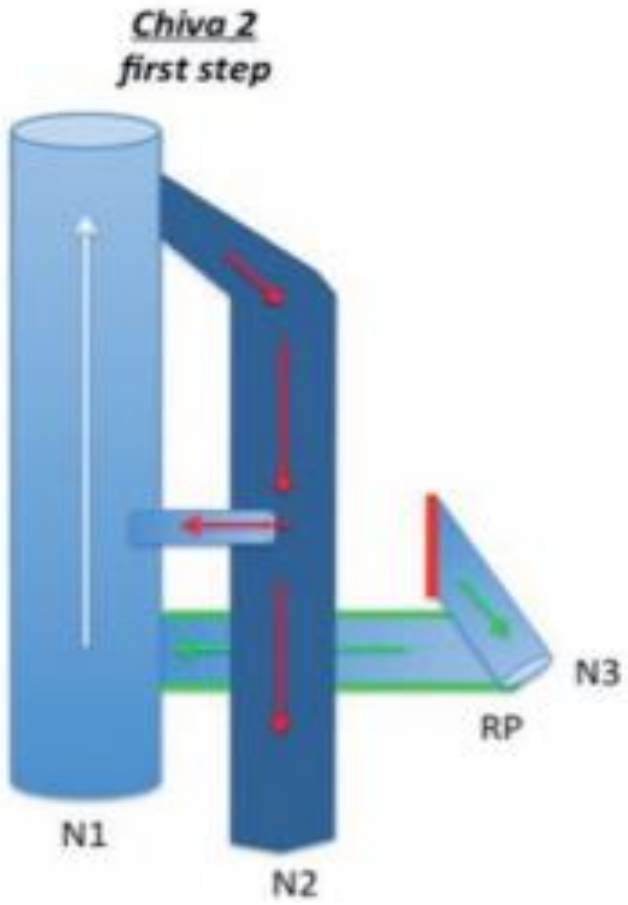
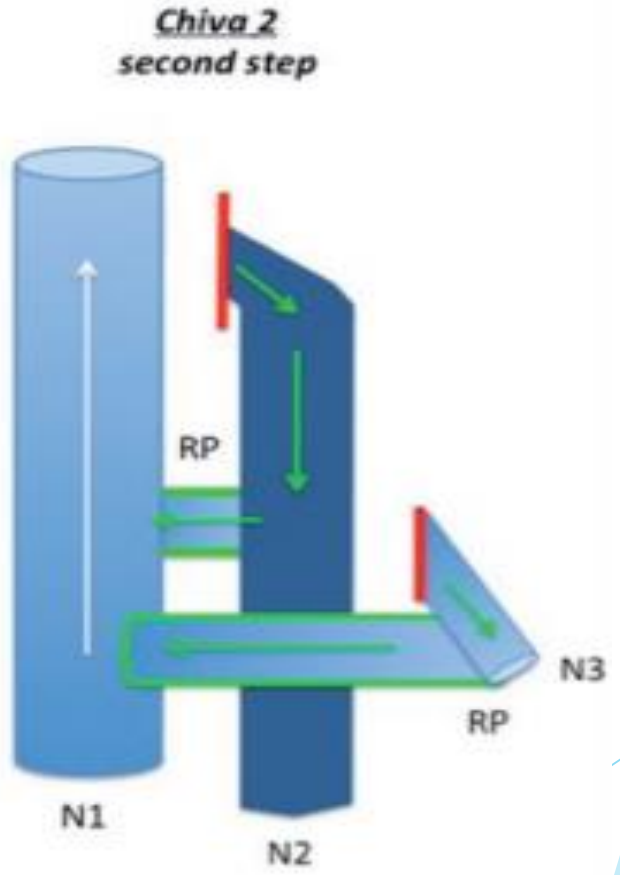


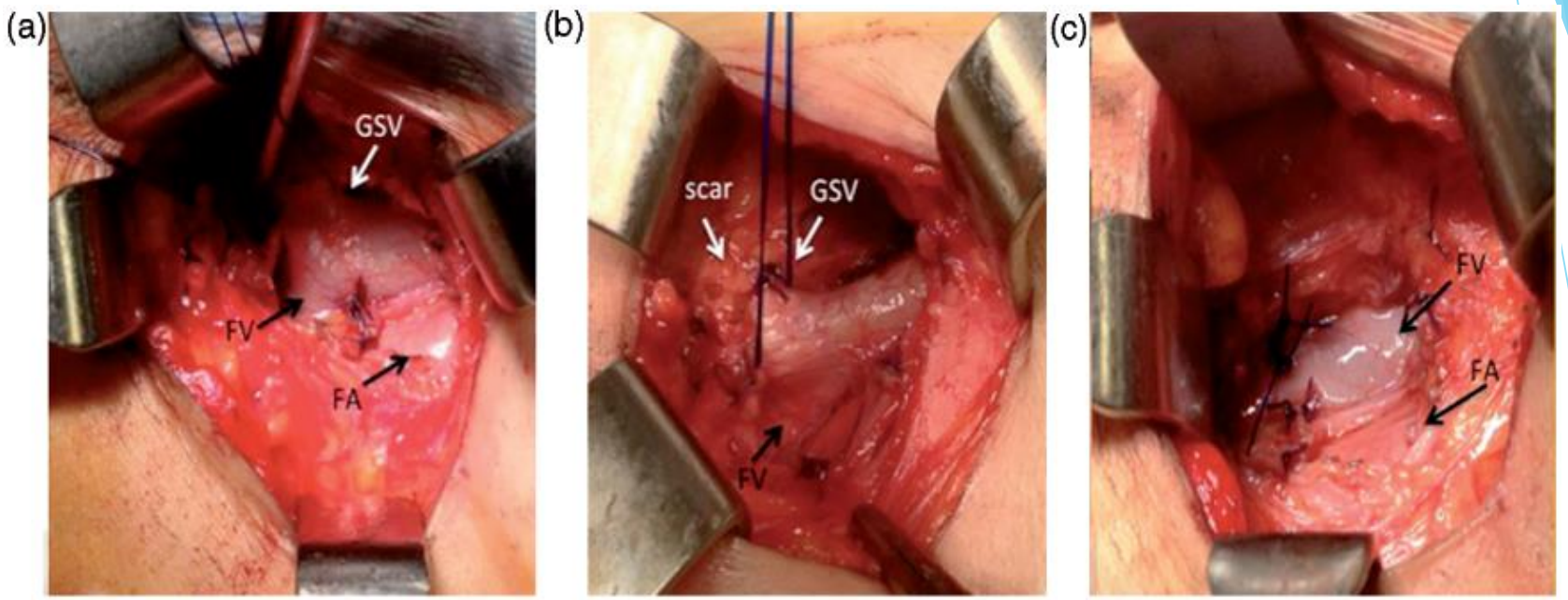
Figure 6. Type I + N3 shunt and indicated hemodynamic correction strategy (CHIVA 1): under local anesthesia a high tie is performed to treat the N1-N2 leaking point. The previously refluxing saphenous trunk is still draining in a retrograde direction also after the procedure, but into the RP focused on the saphenous trunk. At the following muscular diastole, no recirculation will occur because of the EP interruption. In case of an incompetent saphenous tributary, this will be flush ligated during the same procedure and its flow will be aspirated by the same tributary RP directly into the N1 compartment.

CHIVA 2



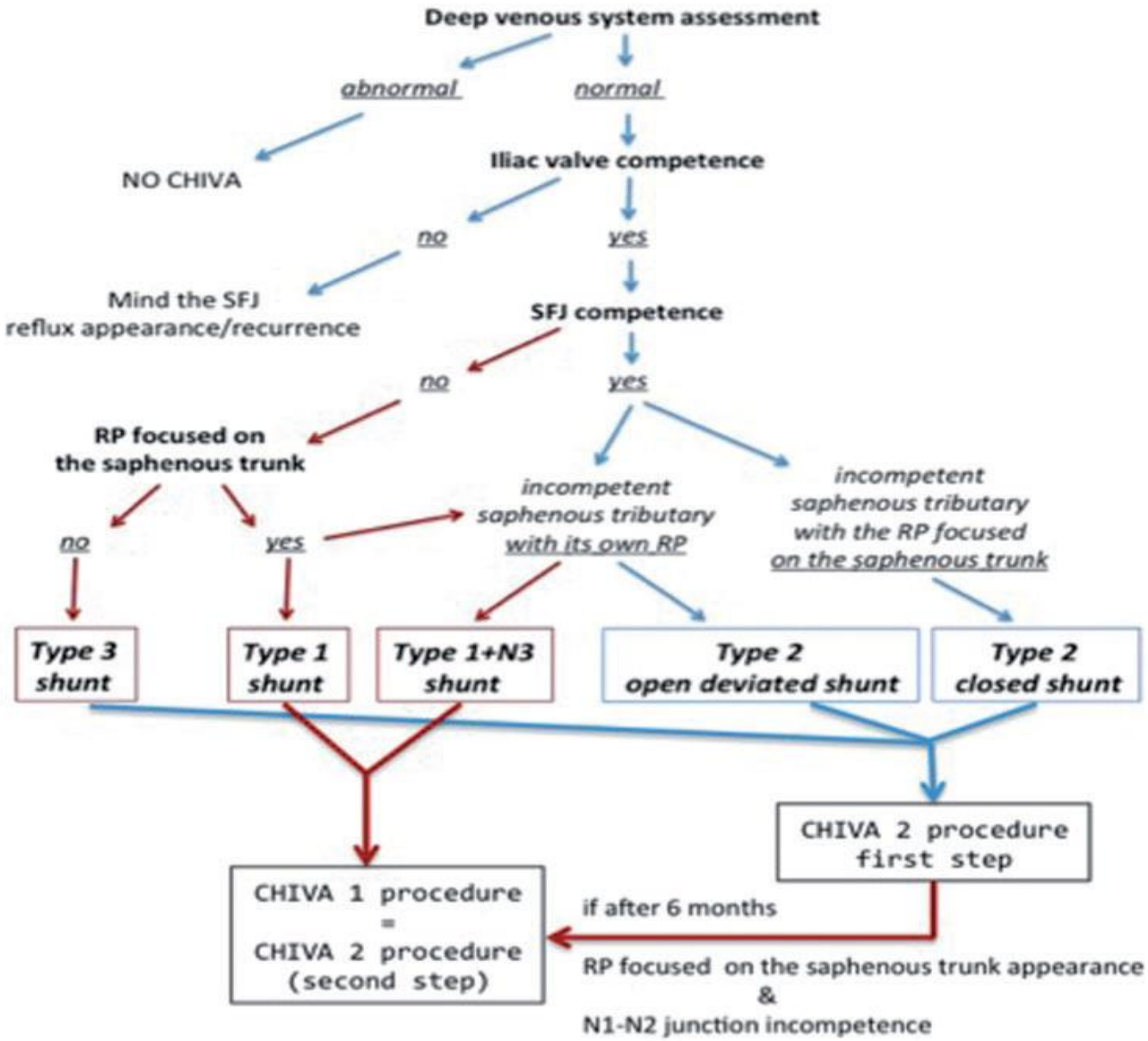


TRATTAMENTO RECIDIVA CHIVA

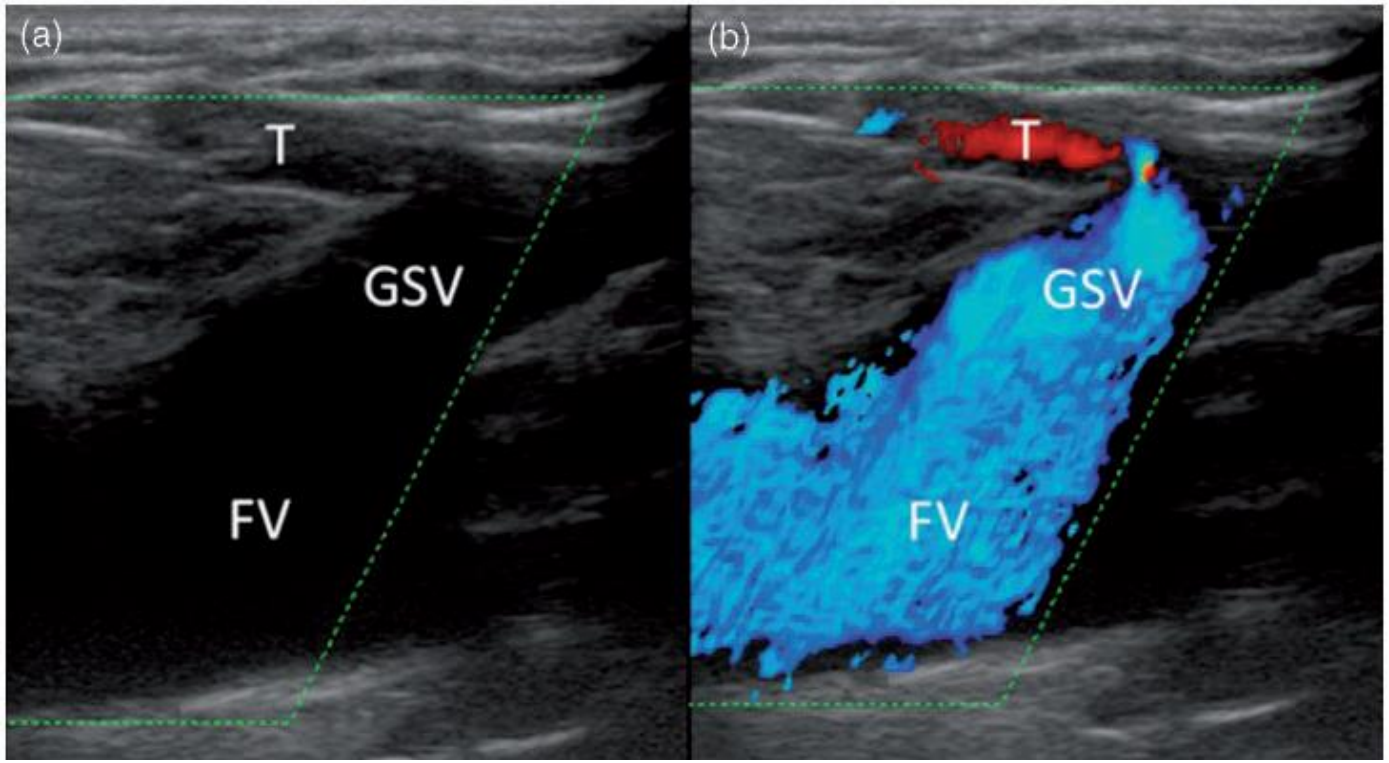


Li's procedure: (a) identification of the femoral artery that by the arterial pulse guide the identification and isolation of the
femoral vein above the recurrent sapheno-femoral junction. (b) Isolation of the recurrent sapheno-femoral junction underneath the
scar that was created following the previous high ligation. (c) High tie with a flush ligation on the femoral vein.

FLOW CHART PER INDIVIDUARE IL TIPO DI SHUNT

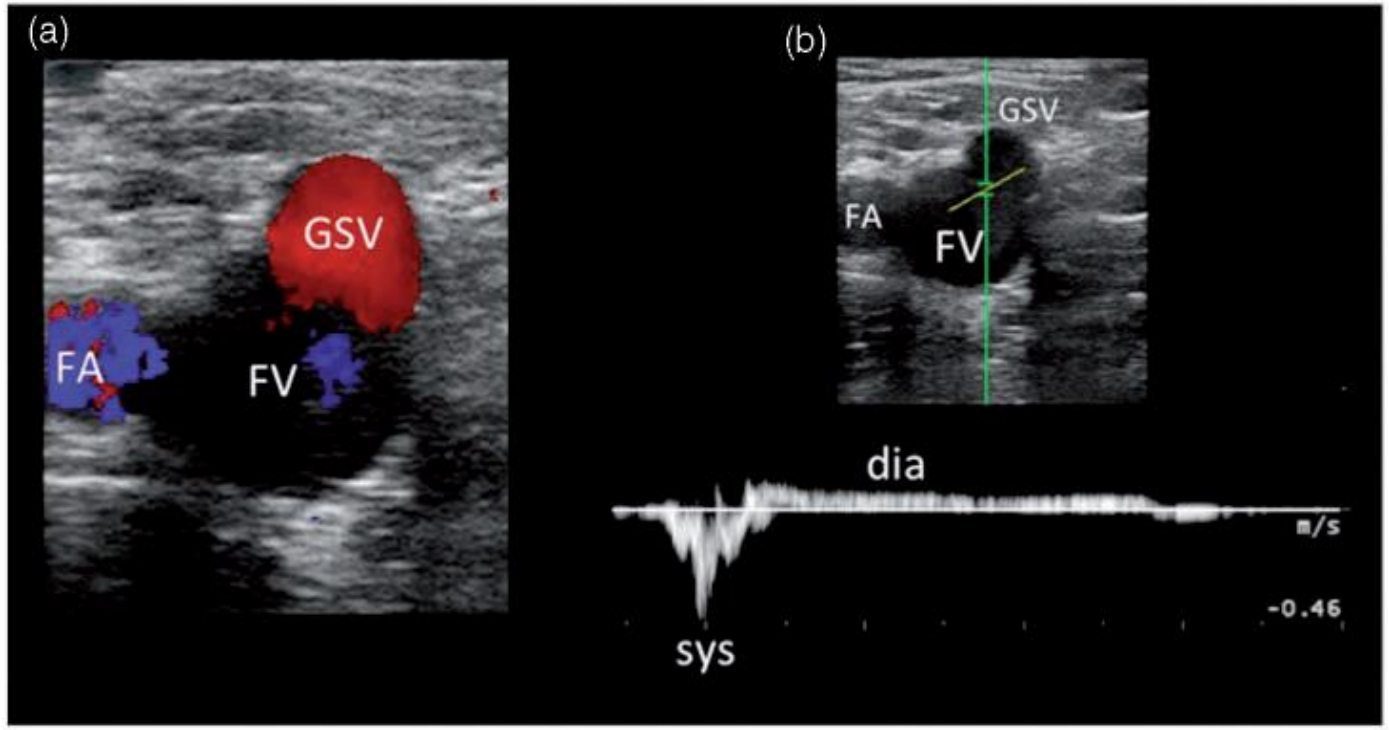


VALUTAZIONE DELLA COMPETENZA DELLA VALVOLA ILIACA



Iliac valve competence scanning: (a) longitudinal section of the iliac vein just above the SFJ. (b) Valsalva manoeuver release in a competent iliac valve case: the color (the flow) appears just during the release phase, not during the systolic push. This is an indirect sign of valve competence. In case of incompetence, the colour would appear also during the systolic Valsalva push, so pointingout an incompetence/agenesia of the iliac valve.

VALUTAZIONE DELLA COMPETENZA DELLA GIUNZIONE SAFENO-FEMORALE



Sapheno-femoral junction incompetence. (a) Colour-mode evidence of a sapheno-femoral reflux during the diastolic
phase. (b) PW reflux detection. According to the literature,7 it is mandatory to place the sample volume on the femoral side of the terminal valve. FA, FV and GSV transverse section form the so-called Miky-mouse image, a correct point of assessment for SFJ competence assessment.

4 Principali cause di RVV

Table. Four major sources of recurrence following varicose vein surgery (adapted from Kostas et al, 2004)

Causes	*Explanation*
Tactical error	The persistence of venous reflux in a saphenous trunk resulting from erroneous or inadequate preoperative evaluation and inappropriate surgery
Technical error	The persistence of venous reflux due to inadequate or incomplete surgical technique
Disease progression	As a result of the natural history and evolution of the disease
Neovascularization	The presence of reflux in previously ligated saphenofemoral junctions cause by development of thin incompetent serpentine veins linked with a thigh varicosity

INCIDENZA DELLE RECIDIVE

Pathogenesis and etiology of recurrent varicose veins

Maresa Brake, MBBS, BSc, Chung S. Lim, MRCS, PhD, Amanda C. Shepherd, MRCS, MD, Joseph Shalhoub, MRCS, PhD, and Alun H. Davies, DM, FRCS, *London, United Kingdom*

COMPARISON OF RVV BETWEEN TREATMENT MODALITIES

A meta-analysis of endovenous treatments for varicose veins found that endovenous laser ablation demonstrated significantly better occlusion rate, although this may not necessarily translate into clinical recurrences, than stripping, UGFS, and radiofrequency ablation.[60] The 5-year vein occlusion rate for endovenous laser ablation (EVLA) was 95.4% compared with 79.9% with the original radiofrequency ablation (RFA) catheters, however, the latest radiofrequency devices deliver a higher energy and medium- and long-term outcome data for these new devices is awaited.[61] Stripping and UGFS have reported 5-year success rates of 75.7% and 73.5%, respectively.[60] The long-term results of all forms of treatment may depend on the rates of neovascularization.[13,60] However, despite apparent reduc-

«TO SPARE OR NOT TO SPARE? THIS IS THE QUESTION»