

Ambulatory Phlebectomy: sixty-year-old but still looking great

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Abstract Ambulatory Phlebectomy (AP), conceived by Robert Muller starting from 1956, initially considered with great scepticism, became completely accepted and employed at the end of the XX century. AP may be employed in three strategic perspectives related to the Saphenous Veins (SV) situation: - In the course of SV stem incompetence treatment, either as a concomitant or a staged treatment of dilated tributaries. Both positions seem to have valid (different) reasons. - As a first step avoiding SV incompetence treatment, as in CHIVA or in ASVAL methods, although with different hemodynamic bases. - As an isolated procedure when SV is not involved. AP is a simple technique, easily office based, effective and safe, provided basic rules are followed (local anaesthesia, US assessment, correct mapping, small incisions, no sutures, post-op. compression); however, it is highly related to manual skill (together with patience, concentration and delicate touch), results depending heavily on details and less on routine.

Keywords Ambulatory Phlebectomy, CHIVA, ASVAL, SV incompetence, tributaries.

Ambulatory Phlebectomy (AP), conceived by Robert Muller starting from 1956, was ready in all its technical details from 1960. Presented in 1966 at the Plenary Session of the French Phlebology Society, resulted a complete “fiasco” as viewed from the academic phlebological community of the time, but rapidly begun to receive more and more credits by the numerous pupils coming to Neuchatel (where Muller worked as a dermatologist) spreading in the world¹⁻³. The simplicity of the technique, its harmlessness, the use of local anesthesia (LA), the immediate recovery of daily activities and, finally the high level of cosmetic result would rapidly overcome the original

skepticism of surgeons and phlebologists, in this helped by new acknowledgements due to the diffusion of Duplex facilities. The frequent “re-inventions” of the method and the creation of new phlebectomy hooks is a precise sign of this success. Curiously, the attempt of adding technology to a simple handicraft method (the TRIVEX)⁴ has fortunately failed, avoiding a “monster” to make damages.

From the end of the XX century AP was fully accepted and employed⁵ either in association with the different types of saphenous ablation or as an isolated procedure, basically for avulsion of tributaries.

The AP technical details have been fully described in several publications⁶⁻¹⁰, and don't need to be recalled. However, the good results of AP are highly related to the respect of few fundamental rules (Muller's rules were much stricter) that must not be ignored and are still valid after the sixtieth (and more) anniversary of the technique:

1. US assessment for strategy decision (state of the Sapheno Femora Junction and GSV)
 - ablation of GSV or possible respect
2. Precise mapping (veins to be avulsed)
 - veins must be marked in standing position with temporary markers, but resistant to disinfectants. Marks should be verified by US for non visible branches.
3. Local anesthetic infiltration
 - LA allows immediate ambulation; isolation of veins from tissues (nerves); office procedures; safer post op. compression.
4. Small incisions: (1-3 mm):
 - no skin sutures are needed, no ligations (with few exceptions) for avoiding inflammatory reactions.

5. Skin respect
 - avoid skin trauma by prolonged dissection in the same incision; better a new incision in proximity.
6. Post op. high compression
 - for immediate ambulation and hemostasis; bandaging more effective than stockings.
7. Long standing post op. low compression
 - low compression stockings (18-20 mm Hg) favour incisions healing and bruising with a rapid resolution.

AP may be employed in three strategic perspectives related to the Saphenous Veins (SV) situation:

- In the course of SV truncular incompetence treatment
- As a first step avoiding SV incompetence treatment
- As an isolated procedure when SV is not involved

AP in the course of SV ablation

Apart the stripping procedures, several SV ablations methods are available at present with similar results and variable advantages, all avoiding direct action on tributaries that, due to their more superficial (over the fascia superficialis) position, could induce skin lesions and pigmentation.

Tributary ablation has two tactics following truncal vein ablation: the “concomitant”¹¹ (or “synchronized”¹²) versus the “staged” (or “sequential”^{13,14} or “later”¹²).

Concomitant tributary ablation is favoured by operators willing to solve varicose correction in a single session, taking advantage from the surgical setting of Saphenous ablation: with the patient already on the operation table, a simple extension of local anesthesia will allow the varices avulsion in about twenty minutes¹⁵ session prolongation. A big advantage for the patient is that the post operative compression phase will be the same for both saphenous and tributary procedure (complete limb compression) with a common healing time, without the need of monitoring varices regression (and possible residual varices treatment).

Staged tributary ablation is preferred by operators wanting to avoid venous overtreatment believing that truncal interruption will induce varicose regression in an unknown number of patients (30-40%¹⁵). The advantage of a shorter procedure is the most important argument in favor of this tactic together with a veins-sparing attention. Sometimes “staged” ablation may correspond

to “avoided” ablation (small varices, cosmetic disinterest, 2nd operation refusal, insurance noncoverage). If a trunk procedure not needing anesthesia is performed – Glue, Endovenous Mechanochemical Ablation (MOCA), Laser Assisted FOam Sclerotherapy (LAFOS) - it will be improbable to add an anesthesia for the phlebectomy.

While the simplest decision point could easily be that largest proximal refluxing tributaries (usually the most involved) should be ablated while more peripheric varices could take advantage from abstention, the treatment staged attitude is more often dependent on extra vascular factors as: reduction of operating time, insurance non-coverage, endovascular skill prevailing on manual tedious handicraft, publicly funded healthcare systems restriction. In the private sector where patient cosmetic outcomes are of paramount importance tributary immediate ablation may be more requested while in public health treatments attention may be limited to the truncal causal aspects living residual varices to future attention^{16,17}.

Recently a systematic literature review¹¹ of 15 quality studies (6915 limbs) showed that both attitudes are “safe and effective”, the concomitant treatment needing “significantly lower rates of re-intervention “(6.3%) than the staged approach (36.1%); a good score in favor of the first approach, but also a 63,9% of overtreatments compared to the second. However, these data are highly confusing as the analyzed studies present “clinical heterogeneity and inherent bias of study designs.”¹¹ (variable anatomies, extension of varicosities, time of re-interventions, definition of recurrence, cosmetic attention, type of anesthesia, private vs public health care, sclerotherapy, truncal reflux recurrence).

Personal skill will probably prevail. At the end of the day, there are VV operators that love doing AP and will say: “GSV has been ablated; now finally we can enjoy phlebectomy”, while other operators that love GSV procedures will say: “GSV was perfectly done, what else?”.

AP without SV ablation

Saphenous vein sparing techniques already suggested during the last part of the XX century¹⁸⁻²¹, were given a haemodynamic basis in the CHIVA (Cure conservatrice et Hemodynamique de l’Insuffisance Veineuse en Ambulatoire) conceived by C Franceschi in 1988²²; the general idea is that by isolated strategic interruptions of refluxing points the blood flow can be re-directed through the perforator veins toward the heart eliminating venous hypertension; this could spare saphenous trunks for future arterial bypass, reduce recurrences, minimize complications, make venous surgery ambulatory. Duplex analysis and interpretation of single cases is of paramount importance, this being one of the obstacles to the diffusion

of the method especially in countries where operators don't handle directly the ultrasound probe. For unknown reasons CHIVA gave birth to a Myth where only few "priests" touched by Franceschi's truism would participate. In reality, under an unusual vocabulary, the technique is quite simple and could be grossly summarized in: do a phlebectomy (in reality called disconnection if limited to the tributary connection to the SV) of tributaries and close the Junction, if the GSV has a distal draining perforator (CHIVA I); do a phlebectomy (disconnection) and wait if no perforators are available for distal drainage to avoid GSV thrombosis (CHIVA II, 1st step). A new perforator will possibly activate secondarily, then allowing the Junction interruption (called crossotomy: without tributary interruption) (CHIVA II, 2nd step)²³.

In original, simple disconnection of tributaries was previewed for minimizing the surgical action, but often operators have the tendency of being more aggressive with phlebectomies for a quicker cosmetic result by a limited phlebectomy, the haemodynamic effect being the same²³.

In other words, AP (or disconnection) in any case is the leading technique, in few instances followed by Junction closure.

Few years later ASVAL (Ambulatory Selective Varicose veins Ablation under Local anaesthesia²⁴) was introduced as a simplified saphenous sparing strategy. In this method a phlebectomy is the first step of the treatment leaving the refluxing saphenous vein untouched; as a consequence, usually, the saphenous diameter reduces and occasionally the reflux disappears avoiding saphenous sacrifice. In case of recurrence the SV may be ablated or saved again by a new phlebectomy.

The simple theoretic bases of this method are founded on the "ascending" theory of venous insufficiency (in opposition to the "descending" theory of CHIVA): initial tributary reflux induces truncal dilatation and incompetence. So, eliminating the varices protects the saphenous vein; but in case of reflux persistence SV elimination is not excluded. ASVAL candidates are selected between young patients, nulliparous, with limited number of tributaries, with possible continent Junction, limited extension of reflux, limited dilatation²³. A big difference compared to CHIVA, that is addressed to all the cases.

Simply giving an acronym to Muller's technique a "new" method was created and many operators acknowledged to have been unaware ASVAL followers.

It may be interesting to recall that tributaries sclerotherapy (namely Fegan's technique)²⁵ may have the

same effect of phlebectomy, however with less precision, more pigmentations, possible thrombotic inclusions, longer recovery compression.

AP as an isolated procedure

Varices without truncal involvement have in AP the ideal cure. It is the case of varices fed by perforators (usually at the thigh) or pelvic escapes, of recurrent varices after successful saphenous ablation (as in "staged" phlebectomy), and typically, varices of the Anterior Accessory Saphenous Vein (AASV) (in this case the GSV is involved only at the Junction). AP is generally the only procedure needed, with possible sclerotherapy assistance when deeper veins need to be closed⁸.

Discussion

AP is probably the most important tool in the hands of phlebologists together with sclerotherapy and Duplex facilities. It potentially intervenes in nearly all the varicose veins procedures in alternative to sclerotherapy, may complete trunk ablation in any modality it may be done, may be the key factor of saphenous sparing strategies and, finally, may be used as the basic procedure.

Its value is surely due to its efficacy and cosmetic outcome when correctly performed; however, its real priceless specificity is the nearly complete absence of important complications, in particular deep veins thrombosis²⁶, due to the immediate post operative ambulation with heavy compression, possible only when local anaesthesia (LA) is adopted. All the other types of anaesthesia (general, spinal, truncular) in fact do not allow immediate active ambulation; moreover, haemostatic compression is applied on a limb with hypotonic muscles, with possible discomfort or even excessive pressures. Also, peripheric nerves lesions are avoided when LA is used, as nervous structures are spontaneously separated from veins and, if accidentally grasped, manifest pain, their sensibility not being eliminated by LA at low concentrations normally employed⁸. Finally, low costs, rapidity of the whole procedure and easy repeatability are obvious advantages that don't need to be recalled here.

AP, also named microsurgical phlebectomy, office phlebectomy, ambulatory stab avulsion phlebectomy and Muller' phlebectomy, is now currently performed and is only cited in operating reports, however AP is a technique highly ligated to manual skill (together with patience, concentration and delicate touch), results depending heavily on details (Devil's speciality) and less on routine.

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