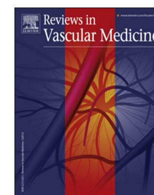
Reviews in Vascular Medicine 2 (2014) 123–126

Contents lists available at ScienceDirect

Reviews in Vascular Medicine

journal homepage: www.elsevier.com/locate/rvm



Review

Office based CHIVA: A conceptual variation of CHIVA. The OB CHIVA survey

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ARTICLE INFO

Article history:
Received 14 July 2014
Accepted 16 July 2014

Keywords:
CHIVA
Office based procedures
OB CHIVA
Chronic venous insufficiency
LASER
RF

ABSTRACT

CHIVA was ideated in 1988 by C Franceschi in France and was aimed to provide a conservative therapy for chronic venous insufficiency. Though CHIVA is based on an interesting hemodynamics model, many people find it time consuming and difficult to understand. In 2009 F Passariello and N Morrison performed the first Office Based CHIVA (OB CHIVA) interventions. The aim of the present interview/review is to underline the issues posed by OB CHIVA. We interviewed well-known and recognized experts like BB Lee, N Morrison, T King, C Lattimer, M Patel, F Passariello and asked them to share their perspectives about OB Chiva.

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OB CHIVA

A new key opportunity to simplify procedures and reduce requirements and costs in daily clinical work. A conceptual variation of CHIVA.

The cure Conservatrice et Hemodynamique de l'Insuffisance Veineuse en Ambulatoire (CHIVA or hemodynamic conservative treatment of venous insufficiency in the ambulatory) was ideated in 1988 by Claude Franceschi in France [1]. Since the beginning, CHIVA rational was based on the anatomic and functional detailed study of the venous network, detecting the so called Closed Shunts (CS) [2].

Therapy was derived by a conservative strategy, aiming to spare the main incompetent trunks and to achieve pressure reduction and CS disconnections. CHIVA was the start of the in office venous hemodynamics, tailored on each patient, at low cost and out of closed imaging departments.

Though CHIVA is universally considered an interesting model of venous hemodynamics, many people find it time consuming, difficult to understand and to approach, owing to its steep learning curve. However, people who overcome this starting difficulty, reach then an appreciable level of comprehension not only of CHIVA, but also of venous hemodynamics.

In 2009 F Passariello and N Morrison performed the first Office Based CHIVA interventions, opening to a new environment possibility [3]. It is essential to declare clearly that CHIVA and OB CHIVA are nowadays different strategies (differences in technical details), though the sincere target of OB CHIVA is to erase in the next future any difference [4–6]. The aim of the present interview is to underline the issues posed by OB CHIVA.

Well-known and recognized experts were asked to answer a few meaningful questions. The hope is that their expert opinions will properly be reflected in this review.

Interview with Byung Boong Lee, Nick Morrison, Ted King, Chris Lattimer, Malay Patel and Fausto Passariello. They were so kind to share their perspectives about OB CHIVA.

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http://dx.doi.org/10.1016/j.rvm.2014.07.003
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Question #1. In the last years an increasing interest toward venous hemodynamics has grown in diagnosis and therapy. Which is the most important obstacle to the diffusion of venous hemodynamics between venous specialists?

BB Lee – The terminology in the field of rheology (e.g. equations) and name-based eponyms (e.g. CHIVA; Parana, Riobamba, etc.) should be avoided whenever possible and limit its use unless there is absolutely no other way to express properly. Even CHIVA can be replaced with user-friendly “saphenous-sparing therapeutic strategy”.

N Morrison – At least in the U.S., the fact that treatment according to CHIVA principles is reimbursed by insurers dramatically less than thermal ablation methods. Put simply, physicians get paid much less for doing less, no matter the outcome for the patient

T King – In the United States, the biggest obstacle is acceptance of CHIVA and OB CHIVA by our prive and governmental insurers. CHIVA will never be done and will not catch on here without insurance acceptance first.

C Lattimer – Lack of sufficient training on the duplex ultrasound examination of superficial veins and the lack of interest in plethysmography. Everyone focuses on reflux as a target to destroy, rather than its contribution to recirculation and drainage.

M Patel – Venous hemodynamics or venodynamics as I call it, differs from flow in arteries yet almost all apply knowledge of arterial hemodynamics to flow in the venous system. Venous flow is non-pulsatile and pressure differences may cause centrifugal flow but ultimately almost all flow is centripetal. This is difficult to comprehend without duplex ultrasound and easy words for each type of flow, as most symptoms of venous flow disorders are due to centrifugal flow. This lack of understanding and a common vocabulary is the main obstacle.

F Passariello – Venous hemodynamics is a mix of basic science and diagnostic techniques. Duplex is nowadays the most used diagnostic tool and has a long and steep learning curve. Paradoxically however the most important obstacle to the diffusion of venous hemodynamics is given by difficulties in the comprehension of several basic theoretical concepts, like the shunt classification and its link to the surgical strategy.

Question #2. Is the knowledge in venous hemodynamics a mandatory requirement in the treatment of venous diseases [7–8]?

BB Lee – It will depend upon the treatment strategy like CHIVA but in general, NO, NOT necessarily! The clinicians would NOT need more than a basic principle to understand the hemodynamic aspect of venous disorder.

N Morrison – Mandatory? No. Exceedingly helpful to provide the best care for each patient? Absolutely. The more invasive and ablative the treatment, the more important knowledge of venous hemodynamic becomes.

T King – Without question.

C Lattimer – It should be mandatory. Varicose veins surgery is still performed in the UK without a prior ultrasound examination of the venous network. Consequently, many great saphenous veins are stripped unnecessarily, small saphenous reflux is missed and reflux from other sources remains unidentified.

M Patel – Yes.

F Passariello – It depends on the chosen treatment. Ablative therapies do not need a detailed diagnosis nor a hemodynamic assessment. Stripping performed with or w/o Duplex showed to have no significant difference in results [9]. On the contrary, hemodynamic assessment is mandatory for conservative surgery.

Question #3. Will the simplified flowchart-guided hemodynamic approach of OB CHIVA contribute to the spread of the hemodynamic knowledge to a new audience?

BB Lee – Absolutely!

N Morrison – It will certainly be helpful but economic considerations and the desire to produce better patient-care outcomes will ultimately determine the spread to a new audience.

T King – Anything that simplifies hemodynamic knowledge and understanding will remove some of the mystique out CHIVA and would certainly be helpful.

C Lattimer – This will contribute to the spread in a CHIVA audience who specialize in venous hemodynamics by taking the principles into a minimally invasive era. The UK recognize but do not practice CHIVA and are funded on patient reported outcomes with clinical endpoints rather than haemodynamics.

M Patel – Yes.

F Passariello – This is a distinctive sign of the OB CHIVA. Starting from basic diagnostic results, a flow chart drives quickly towards a diagnostic choice and a conservative therapy, overcoming the undesired theoretical difficulties. The flow chart asks only: – if the terminal valve is incompetent – if the saphenous reflux is confined to the saphenous trunk or deviated instead towards an incompetent tributary – if, in the latter case, the saphenous reflux eventually disappears after compression of the incompetent tributary [4]. Later, when the operator will be acquainted with CHIVA strategy, the need of a greater knowledge maybe will arise and guide him/her to a deeper comprehension. The simplified approach will immediately recall many phlebologists, who generally feel themselves excluded by the starting difficulties of CHIVA.

Question #4. Endo-Venous Conservative procedures (EVC), in analogy to Endo-Venous Ablation (EVA), are the core of the OB CHIVA. Can OB CHIVA stimulate people to prefer EVC other than EVA procedures?

BB Lee – Hopefully! It would NOT intimidate them so that it would attract their curiosity to step forward. But the mandate to learn unorthodoxy hemodynamic principle of CHIVA will remain a major obstacle.

N Morrison – Again only if the economic equations of each are essentially equivalent and as importantly, if it is proven that localized thermal ablation, for example, leads to equivalent results as traditional ligation.

T King – Possibly but the issue is still reimbursement. Reimbursement based medicine is what is practiced and if insurers do not pay for something, it does not get done.

C Lattimer – I am hopeful that it will, but UK clinicians require evidence in the form of randomised controlled trials.

M Patel – People will prefer conservative procedures as long as they do not get confused and believe that conservative treatment modalities could leave behind residual disease or can cause early recurrence. This will happen initially but as knowledge spreads confusion and misbelieves will decrease.

F Passariello – EVA procedures are standard and performed after a very simplified diagnosis, which essentially states that saphenous reflux requires saphenous ablation. OB CHIVA procedures are standard too and very similar to EVA and can be performed after a simplified and standard flow-chart guided Duplex approach. This new possibility could convince phlebologists to choose OB CHIVA instead than EVA procedures.

Question #5. Which are the possible side effects of OB CHIVA?

BB Lee – Medico-legal liability involved to misunderstanding on the recurrence issue and the core principles.

N Morrison – Inappropriate treatment based upon incomplete understanding of the principles of OB CHIVA.

T King – The side effects of OB CHIVA would potentially be the same as any other office based vein treatment procedure: discomfort, bruising, swelling, phlebitis, superficial and deep venous thrombosis, infection, thrombus extension and possibly PE. The risk of nerve injury would be minimal but probably not impossible.

C Lattimer – These are few. The office based setting should reduce the incidence of DVT. Saphenous conservation will reduce the risk of nerve injury and there should be no groin wound

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complications like infection or lymphatic disruption. Recurrence and the requirement for further treatments need investigation.

M Patel – Though they are very hard to predict and could be very rare these could be skin changes (hyperpigmentation or infection) and maybe deep vein thrombosis. My current knowledge on OB CHIVA is limited but I would look out for these side effects. Under or over assessment of the underlying disease is a possibility. Chances of having recurrence or residual disease will always be there.

F Passariello – OB CHIVA side effects are the same than EVA, maybe less important because a shorter length is treated.

Question #6. Can venous insufficiency have a recurrence after this treatment?

BB Lee – I do not understand clearly! Verify with more substances.

N Morrison – Absolutely! Any superficial venous treatment will have recurrences.

T King – Given enough time, recurrence happens after any treatment.

C Lattimer – Chronic venous insufficiency will reoccur in all patients irrespective of the treatment because the forces of gravity are relentless. Reflux may be observed after OB CHIVA, but this often represents a drainage pathway which is an improvement of the original “insufficiency”.

M Patel – Yes.

F Passariello – Of course, as after any other treatment. A careful attention however should be paid to re-canalization, though no evidence is reported in literature about the optimal segment length of saphenous treatment.

Question #7. Which kind of follow-up is needed if a patient undergoes OB CHIVA?

BB Lee – The follow up assessment should include the broad issue of the recurrence; the status of SFJ stump saved for the washing vessels, the arch recanalization rate, and the effect of the length of the treated saphenous vein, and indication/requirement of further management.

N Morrison – Probably limited follow up out to 1 year to be sure the treatment has been effective in eliminating the patient's complaints.

T King – Ultrasound follow-up is important, especially at 3–7 days, I think, looking for clot. Another ultrasound at 6 weeks to assess the success of treatment would also be a good idea.

C Lattimer – Unless the treatment is deliberately staged, a follow up ultrasound should be recommended in 3 months to see if all the varicose tributaries have regressed and to audit the work using quality of life, venous severity and duplex outcomes.

M Patel – Duplex ultrasound with color. The newer modality of multi-plane analysis will take over in future.

F Passariello – No special requirement, However, as the procedure is still under study, a not mandatory more frequent follow-up is planned. Aberdeen, VCSS and RAND-36 surveys can be used for QoL re-appraisal.

Question #8. Why is the Informed Consent important?

BB Lee – That is the LAW!!!!!!!

N Morrison – Patients must be informed that this type of treatment is investigational and the practitioner lacks extensive experience with it.

T King – To inform the patient about what to expect from treatment and to protect the physician.

C Lattimer – OB CHIVA is an emerging technique which is undergoing evaluation.

M Patel – Leaving behind any prominent vein can be misunderstood as incomplete therapy and the patient has to be aware of this before treatment. Going over the whole flow pattern before treatment with the patient will be required. It would decrease medico-legal complications.

F Passariello – Because it is generally important and because OB CHIVA is a new method.

Question #9. Is there a difference between an Office Based and an Ambulatory Based procedure [5]?

BB Lee – Not that I know of.

N Morrison – In the U.S. there is no difference since the majority of venous treatment already occurs as office-based procedures.

T King – In the US, an office based procedure is performed in a doctor's office. On the other hand, an ambulatory based procedure could be performed in a doctor's office or some other outpatient setting. The only reason difference is where the procedure is performed.

C Lattimer – The intensity of a procedure should match the resources of the environment. I believe these can be classified into levels. In very very general terms in the UK office based means outpatients and ambulatory means day case. However, general anaesthetic tooth extraction used to occur in the dentist's office! They have different meanings for different people and are loose terms.

M Patel – Depends on how reimbursements are made and how patients are willing to pay. This is also based on OB CHIVA being projected as a convenience and/or marketing tool.

F Passariello – The difference depends on the country. In some countries there is no difference, while in others a different organization is required, regarding presence/absence of anaesthetists, assisting personnel, instrumentation for monitoring /emergency and post-procedural organization.

Question #10. What about the costs of an OB CHIVA treatment?

BB Lee – Depending upon the insurance company.

N Morrison – Costs in the U.S. would probably be less since the technology is already present and routinely used, and OB CHIVA would require less time than traditional ablation techniques once the learning curve (which should be brief for practitioners skilled in endovenous procedures) is overcome.

T King – In the US, it would be assumed that OB CHIVA would be reimbursed by insurers at the same level that they reimburse other office based endovenous ablation procedures.

C Lattimer – It will cost less than CHIVA provided the environmental settings are less resourceful and the disposables are less.

M Patel – It appears that the treating doctor may be able to make more money for his own office because hospital costs will be eliminated. Final costs of OB CHIVA may approach treatment costs of other modalities.

F Passariello – The cost will be generally the same or maybe less, because the treated segment is shorter. Costs could also reduce according to the kind of procedure: less tumescence, less glue, less energy.

Question #11. Depending on local laws in each Country, will OB CHIVA benefit from the same reimbursement than EVA?

BB Lee – Absolutely!

N Morrison – This would be likely so in the U.S.

T King – Absolutely.

C Lattimer – In the UK reimbursement is the same for a unilateral procedure for varicose veins, irrespective of where or how it is performed. The costs obviously, are quite different.

M Patel – Yes.

F Passariello – I hope. The only (planned) variations are the length of the treated segment and its starting point, depending on the position of the washing and draining vessels. Procedure details then are the same and I think that treatment codes should also be the same. In the ICD9-CM [10] classification (mainly used in Europe) the applicable code could be 39.99 for “other operations on vessels”. In USA instead the Current Procedural Terminology (CPT) code set of the American Medical Association (AMA) [11] provides different codes for the first and the subsequent veins

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treated: 36475 and 36476 accordingly for the radiofrequency, 36478 and 36479 for the LASER.

Question #12. Will CHIVA benefit from the success of OB CHIVA?

BB Lee – Absolutely!

N Morrison – Certainly so! More widespread familiarity with the principles will be one of the results.

T King – I do not see how CHIVA could not benefit from the success of OB CHIVA.

C Lattimer – Yes. Both techniques will benefit from each other and increase our understanding of venous insufficiency and the effects of treatment.

M Patel – Yes.

F Passariello – I hope so. And I hope too that OB CHIVA will become in the future only a simpler variant of CHIVA.

Question #13. Can OB CHIVA arise a new interest in research?

BB Lee – Absolutely!

N Morrison – Again, certainly so. For example, it will take some time to see if laser ablation of a localized area actually works the same as a ligation, and for this reason alone it must be considered investigational.

T King – I think it is entirely possible.

C Lattimer – Most definitely.

M Patel – Yes.

F Passariello – Absolutely. Saphenous arch treatment deals with thrombosis after a planned injury of the venous wall. A great opportunity is then given to study the evolution/extension/re-canalization of thrombosis. EVA and OB CHIVA are a ready-made and ethical acceptable laboratory for thrombosis investigations in the human [12].

The experts

Thanks to the experts for their contribution and the time they spent participating to the survey [13].

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Conflict of interest

The authors declare no conflict of interest.

Acknowledgments

We thank Mrs. Iolanda Palma, for graphical and text editing.

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