ORIGINAL RESEARCH PAPER
Volume-6 | Issue-12 | December-2017 | ISSN No 2277 - 8179 | IF : 4.176 | IC Value : 93.98
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

THE CONTEMPORARY MANAGEMENT OF VARICOSE VEIN A HOLISTIC APPROACH

General Surgery

Dr. Ramanuj Mukherjee* MS DNB MNAMS MRCS FMAS Associate Professor, General Surgery, RGKAR Medical College, Kolkata 700004 *Corresponding Author

Dr. Prosenjit Das MS MRCS;Registrar.Apollo Hospital Kolkata.

Dr.GouriMukhopadhyay MBBS PGDCR(MS) Resident Surgery, IPGMER, Kolkata.

Dr.Dilip Das MS Associate Professor, General Surgery, RGKAR Medical College. Kolkata 700004

Dr.Gautam Bhowmik MS FRCS ; Consultant Vascular and General surgeon.

KEYWORDS

ASSESSMENT OF PATIENTS WITH VARICOSE VEIN:

Methods of assessment of varicose vein are categorised into three levels.

1. Level I
- history and physical examination
- hand held Doppler

2. Level II
- duplex scan
- venous plethysmography

3. Level III
- ascending venography
- descending venography
- ambulatory venous pressure monitoring
- CT/MR venography
- Varicography (for recurrent varicose vein)

Clinical examination:

Through clinical examination includes evaluation of GSV and LSV systems of lower limbs, abdominal viscera and pelvic anatomy. Identification of involved venous system, reflux/ incompetence at SFJ and/or SPJ and deep venous competence are mainstay of physical assessment.

Investigations:

1. Standard Hand-Held Doppler:
- Doppler probe at SFJ – calf sqeeze
- Biphasic signal – incompetence
- High tourniquet - probe at perforator veins sites – tourniquet released - retrograde flow = reflux at SFJ
- Poor method for SSV

2. **Duplex Scan**:
- B-mode USG + Doppler
- B-mode for direct visualisation of varicosity
- Doppler for retrograde flow/incompetence
- Standing+ lying down with/without calf squeeze

3. **Ascending Venography**:
- Dye in the dorsal venous arch of foot
- Good for DVT and perforator incompetence

4. **Descending Venography:**
- Dye in femoral vein
- Good for SFJ incompetence

5. **MR Venography:**

Good for

I. Congenital malformation
II. Acute and chronic venous thrombi
III. Abdominal and pelvic venous vasculature

6. **Venous Plethysmography:**

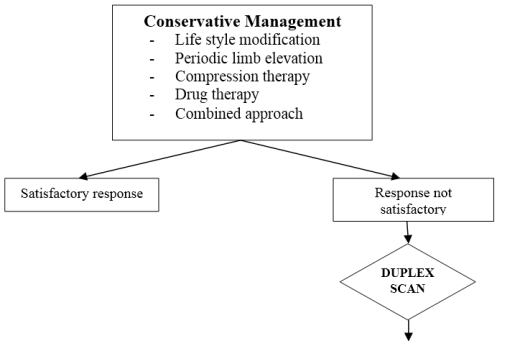
Assessment of benefit from surgical intervention

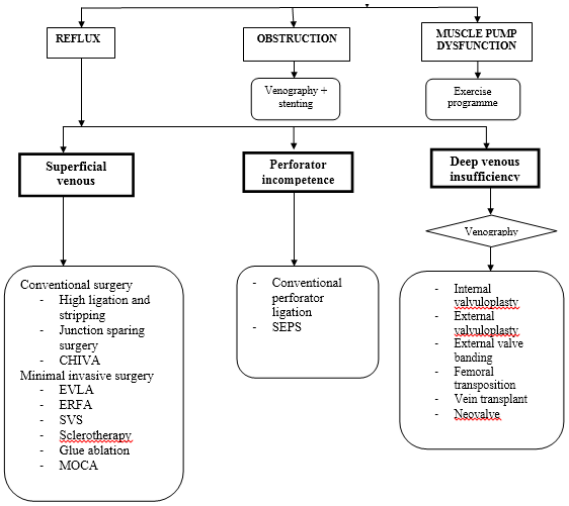
I. Functional venous volume = change in volume
II. Ejection fraction = calf muscle pump
III. Residual volume fraction = ambulatory venous pressure
IV. Venous filling index = venous reflux

Revised CEAP classification

Clinical (C)	C0	• No Visible/palpable venous disease
	C1	• Telengiectasia • Reticular vein
	C2	• Varicose vein
	C3	• Edema
	C4a	• Pigmentation • Eczema
	C4b	• Lipodermatosclerosis • Atrphie blanchie
	C5	• Healed ulcer
	C6	• Active ulcer
Etiogical (E)	Ec	• Congrnital
	Ep	• Primary
	Es	• Secondary
	En	• No venous cause
Anatomical (A)	As	• Superficial (1-15)
	Ad	• Deep (6 – 16)
	Ap	• Perforator (17- 18)
	An	• No location identified
Pathological (P)	Pr	• Reflux
	Po	• Obstruction
	Pr.o	• Reflux + obstruction
	Pn	• No pathology identified

MANAGEMENT ALGORITHM FOR VARICOSE VEIN





TREATMENT OF VARICOSE VEIN

CONSERVATIVE MANAGEMENT

I. Life style modification
- Avoid smoking/ prolonged standing
- Weight loss
- Exercise

II. Periodic limb elevation
- Decreases edema
- Improves microcirculation
- Increased lymphatic drainage

III. Compression therapy
- 18- 24 mm of Hg
- Good results for Chronic Venous Insufficiency
- NICE guidelines 2013 recommendation
- Classified into two types
- Non –elastic compression therapy (UNNA boots)
- Zinc oxide impregnated moist bandage
- No resting pressure
- Elastic compression therapy
- Ambulatory pressure
- Resting pressure

Elastic Compression Therapy			
Compression Stockings/ compression hosiery	**Elastic bandages**	**Elastic Wraps**	**Pneumatic compression devices**
• Graded pressure • Maximum pressure around ankle, which gradually decreases upwards • 20-30 mm Hg (preferred)	• Good alternative • PROFORE ®	Not usually recommended	Only for bed-ridden patients
Class I – 14 -17 mm Hg Class II – 18 – 24 mm Hg Class III – 25 – 35 mm Hg			

IV. Medications

Micronized Purified Fibrinoid Fractions (DIOSMIN)	**Calcium Dobesylate**	**Pentoxyphylin**	**Aspirin**
Increases venous tone. Improve lymphatic dreainage. Anti-inflammatory. Improves micro-circulation.	Decreases edema	Decreases platelet aggregation Decreases blood viscosity	Improves ulcer healing

INTERVENTIONS FOR SUPERFICIAL VARICOSITIES:

Conventional surgery	Truncal reflux	High ligation and stripping
		Junction sparing surgery
		CHIVA
	Perforator	Perforator ligation
	Tributaries	Phlebectomy
		TIPP
Minimally invasive surgery	Thermal	EVLA
		ERFA
		SVS
	Non-thermal	Sclerotherapy
		glue therapy
		MOCA

CONVENTIONAL SURGERIES:

A. High Ligation And Stripping:
- Groin incision
- SFJ identification
- SFJ high ligation/ flush ligation
- Tributary ligation
- Retrograde stripping of GSV up to knee
- Cribriform facial closure
- Recurrences are due to neovacularisation

B. Junction Sparing Surgery
- Below knee approach
- SFJ and junctional tributaries are spared
- Decreases recurrences
- Controversial procedure

C. CHIVA (Ambulatory Conservative Hemodynamic Correction Of Venous Insufficiency)
- Duplex guided anatomic and hemodynamic mapping of venous network
- Division of hydrostati pressure columns and veno-venous shunt, by ligation and division of venous network at precise points.
- Resulting in a superficial venous network draining into a perfectly competent deep venous network.

MINIMALLY INVASIVE SURGERIES:

A. Endovenous Laser Ablation (EVLA)
- Require Tumescence anesthesia
- Mechanism: luminal heat and steam bubblescauses thermal ablation of endothelium, which on the other hand undergoes fibrotic and thrombosed.
- Various lasers are equally effective when same LEED (Linear Endovascular Energy Density) are used

- **Complications**
- Skin burn/ discoloration
- Ecchymoses
- Nerve injury
- AV fistula
- Endothermal heat induced thrombosis
- DVT
- Phlebitis

B. Endovenous Radiofrequency Ablation (ERFA)
- Requires tumescence anesthesia
- Mechanism: bipolar electrodes provide direct thermal injury to endothelium and causes vessel wall collagen to contract; which finally result in endovenous thrombosis.
- Two techniques
- Continuous pull technique
- Sequential segmental technique

- **Complications**
- Skin burn/ discoloration
- Ecchymoses
- Nerve injury
- AV fistula
- Endothermal heat induced thrombosis
- DVT
- Phlebitis
- Vessel perforation

C. Steam Venous Sclerosis (SVS):
- Under tumescence anesthesia, hyper-heated steam is introduced into the desired vessel, which causes thrombosis by direct endothelial injury

D. Injection Sclerotherapy:

- Mechanism: Endothelial injury + vasospasm; results in vascular occlusion, followed by fibrotic thrombosis
- Three types of sclerosants are used
- Liquid (for small sized vessels)
- Foam (for larger vessels)
- Micro-foam

Liquid Sclerosants	*Foam Sclerosant*
• For vessels < 3mm • Na- tetradecyl sulphate • Polydocanol	• for vessels > 3mm • **TESSARI** method • Sclerosant : air = 1:3 to 1;4 • 10 -12 times oscillation • Used within 2 minutes of preparation • 1-2 ml injected at a time under USG • Max. 10 – 12 ml or until SFJ reached
	Microfoam
	Polydocanol: CO2+O2+NO2 = 1:7 Avoids microvascular complications (eg. CVA, TIA)

- Complications:
- CVA/ TIA
- Pain
- Discoloration
- Common femoral vein thrombosis
- Thrombophlebitis
- DVT

E. Glue Ablation:
- Cyanoacrylate glues are used
- Intimal damage by glues results in fibrotic thrombosis and occlusion of vessels

F. Mechanochemical Ablation (MOCA)
- Simultaneous mechanical (by tip of a rotating wire) and chemical (injection sclerotherapy) ablation
- CLARIVEIN ® systems

INTERVETION FOR ISOLATED PERFORATOR INCOMPETENCE

Conventional	Minimally invasive
Isolated perforator identification and ligation	Subfascial Endoscopic Perforator-vein Surgery (SEPS) • Less wound infection • No proven role in uncomplicated cases

INTERVENTIONS FOR DEEP VENOUS INCOMPETENCE

Various reconstruction techniques are available foe correction of deep venous incompetence.

1.	**Internal Valvuloplasty**	- Valve leaflets are repaired under direct vision through venotomy - **RiVAL** (reduction internal valvulopalsty)) • o Valvuloplasty through venotomy • o Redundant valve leaflets are excised • o Neo-commisure formation
2	**External Valvuloplasty**	- Luminal narrowing by transmural sutures at valve insertion site - No venotomy is required
3	**External Valve Banding**	• Luminal narrowing by Dacron cuff/PTFE cuff/ bovine pericardium
4	**Femoral Transposition**	• Superficial femoral vein is transposed to ipsilateral DFV/GSV
5	**Vein Transplantation**	• Compliant venous segments from brachial vein is transplanted
6	**Neo-Valve**	• **PLAGNOL/MALETI** technique • Autologous venous tissue is utilized for valve reconstruction