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Great Saphenous Vein Diameter at Different Regions and its Relation to Reflux

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Abstract

Background: Great saphenous vein incompetence is involved in the majority of cases of varicose disease. Standard pre-interventional assessment is required to decide the treatment modalities. GSV diameter measured at sapheno-femoral junction, proximal thigh, distal thigh, knee, proximal leg, distal leg. Analysis done to find at which diameter size the reflux expected to occur.

Aim of Study: To investigate a possible correlation of GSV diameters measured at sapheno-femoral junction, proximal thigh, distal thigh, below knee and at mid leg and there relation to the reflux.

Patient and Methods: Study involved 100 limbs from outpatient vascular clinic, GSV diameter measurement at the sapheno-femoral junction, at the proximal thigh, at the distal thigh, below the knee, mid leg in correlation to reflux.

Results: SFJ reflux (group I) at 7.16±2.30mm, proximal thigh (group II) at 6.60±1.89mm, distal thigh (group IIIa) at 6.12±1.63mm, knee (group IIIb) at 5.78±1.60mm, proximal leg (group IV) at 4.6±1.24mm, and mid leg (group V) at 3.59±1.16mm.

Conclusions: Measurement at six sites revealed higher sensitivity and specificity to predict reflux, GSV diameter correlates with reflux.

Key Words: *Varicose veins – Great saphenous vein – Vein diameter at different regions – Comparison of clinical trials.*

Introduction

VARICOSE disease affects one third of the population and has an impact on morbidity, quality of life and health costs. The Great Saphenous Vein (GSV) is involved in the majority of cases **[1]**.

Symptoms include distressing feelings of swelling and heaviness and frank pain. Objective findings are meandering and dilated superficial veins, oedema, dermatitis, dermatosclerosis and skin ulceration. These manifestations are the consequence of long standing volume overload and hypertension in cutaneous veins caused by wall distension, valve incompetence, blood flow abnormality and secondary phenomena such as allergy and inflammation **[2]**.

Treatment is directed towards abolition of venous reflux. For decades, this has been accomplished by ligation of the GSV at its junction with the Common Femoral Vein (CFV) and vein stripping, first of the entire GSV, later limited to its refluxing part. In the last decades, alternative options became available, such as haemodynamic surgery, **[3]** endovenous thermal ablation **[4]** and foam sclerotherapy **[5]**. Duplex ultrasound is widely employed to guide these interventions.

Comparison of treatment modalities requires exact documentation of the clinical, anatomical and functional situation prior to whichever treatment is given **[6]**.

Reflux and GSV diameter measurements may serve as surrogate parameters for disease severity and provide criteria for planning interventions and monitoring outcome. GSV diameters have been assessed at various sites with different techniques: Upright or recumbent patient position, cross sectional or longitudinal imaging, and various sites of interest **[2]**.

A consensus-based manual recommends two sites where GSV diameters should be measured, 3 cm below the SFJ and mid-thigh, **[6]** while earlier studies used a site 15cm below the SFJ **[7]**. Thus far, neither the clinical relevance of these measurements nor the relative significance of the site of measurement has been clarified. In this thesis, investigation done to find a possible correlation

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of GSV diameters measured at different regions and there relation to the reflux.

Various investigations have been carried out to establish the duration of reflux standing which correlates with venous disease [8-10].

In general, no difference was found between durations of 0.5 and 1s. In other words, the number of legs determined to suffer from reflux did not alter significantly depending on whether the duration of reflux was set at 0.5 or 1s.

Although the cut-off value was set at 0.5s, a definition of reflux set at 1s may avoid diagnosing pathology at borderline values when there are no clinical signs.

Reflux duration decreases with severity of disease and has been described as the time taken for the anti-gravitational mechanisms of the leg to fail [11].

Venous Arterial Flow Index (VAFI):

The first non-invasive option for a quantitative measurement of haemodynamic parameters is duplex ultrasound. This can measure the velocity of blood flow in a vein. This parameter can be used to calculate the volume flow (l/min) by multiplying the average blood flow velocity (cm/s) by the cross-sectional area of the vein.

Cross-sectional area = ν X r2 or ν X d2/4. Once the diameter (d=2r) is measured by positioning the cursors on the machine, the Time-Averaged Mean Velocity (TAMV) and Volume Flow (VF) are automatically calculated and displayed on the screen.

The common femoral vein can be taken as a representative vessel from which the volume flow can be measured. Volume flow can also be measured in the saphenous vein [12].

Conclusions can then be made on the venous haemodynamics draining the affected leg. Arterial parameters should be included in the quantitative assessment since they influence venous haemodynamics. For this reason, a ratio can be calculated for the venous and arterial volume flow in the common femoral vein and the common femoral artery, respectively. This ratio is called the Venous Arterial Flow Index (VAFI).

Volume Flow (VF) is measured in the relaxed, lying patient, with the leg rotated slightly outwards and the head supported on a pillow. While the measurements are taken, it is important that the patient should breathe calmly and that the vein should not be compressed by excessive pressure of the probe on the skin. The diameters of the common femoral artery and common femoral vein are then measured in transverse view. Volume flow is measured in longitudinal view.

Artery it is recommended to measure the flow over several pulses to calculate the Time-Averaged Mean Velocity (TAMV). This function is usually configured in the machine.

Vein the typical flow pattern is slow and relatively constant, modulated by respiration. It should be measured over several seconds and then the average calculated as with the artery.

Since the artery and the vein flow in opposite directions, the flow in the vein appears as a negative value. It must be treated as positive for calculating the VAFI. The flow velocity is given in m/s, m/min or cm/s, at the site of the measured vessel diameter (d). The Volume Flow (VF) in each vessel is calculated from the diameters and flow velocities using the following formula:

$$VF\ [cm^3/s] = TAMV\ [cm/s]\ X\ II\ d^2/4\ [cm^2]$$

$$1cm^3 = 1ml \text{ area is } II\ X\ r^3 \text{ or } II\ X\ d^3/4.$$

If the volume flow in the common femoral vein and common femoral artery are designated VFa and VFv, respectively, then

$$VAFI = VFv\ [ml/min] / VFa\ [ml/min]$$

In subjects with healthy veins, the VAFI is < 1.0. In patients with haemodynamically significant impairment, the VAFI increases >1.2. It can even increase up to 2.0 [13]. This means that the flow in the femoral vein is much higher than the arterial inflow into the leg. This occurs when there is a recirculation loop. The VAFI is also very useful for measuring the haemodynamic situation before and after intervention. The influence of intervention on haemo-dynamics is seen after only a few days when the high preoperative values return to normal. The non-invasive nature of ultrasound in measuring VF is a clear advantage compared to invasive measurement techniques.

Validation of the VAFI:

The index was measured in patients with different venous diseases under different conditions. It was shown that with primary varicose veins, significantly higher values were measured than those found in healthy subjects [13]. A similar pattern was found in patients with postthrombotic syndrome compared to healthy subjects [13] and that the level of the VAFI values correlated with the clinical severity of the disease. In the above studies, subjects with healthy veins were found to have an average VAFI ≤1.0. This may be interpreted to mean that there is a point of equivalence between arterial inflow per unit of time and the corresponding venous outflow per unit of time. The high VAFI values found in varicose patients may be an index of recirculation which normalises after intervention. With respect to the reliability of the measurement results, it was shown that the VAFI remained stable both during uninterrupted examination for 1h and over 3 consecutive days [13]. The VAFI is a repeatable, sensitive parameter for venous haemodynamics which has been confirmed with modern phase-contrast MR techniques [14].

The great saphenous vein at the proximal thigh was more uniform, easier to measure and more representative as a single measurement point. The average diameter in subjects with healthy veins was 7.5mm (±1.8) at the sapheno-femoral junction and 3.7mm (±0.9) in the proximal thigh. In subjects with reflux, the average diameter was 10.9mm (±3.9) at the sapheno-femoral junction and 6.3mm (±1.9) in the proximal thigh. The diameter did not correlate with the Hach Class [2].

Diameter measurements should be taken in a transverse image. For the reasons mentioned above, it is preferable to measure the diameter in the thigh, 10-15cm from the groin, in a segment where the walls of the great saphenous vein run parallel and there are neither inflows nor outflows.

Patients and Methods

It was a practitioner initiated prospective study performed in a vein clinic in Cairo and Menoufia from Jan. 2018 to Jan. 2019. Survey of the GSV was undertaken in consecutive outpatients who consulted with the suspicion or presence of a primary venous disorder.

The protocol was accepted by the Ethics Committee of the Menoufia University, Egypt.

Inclusion criteria:

- Primary varicose vein.
- Age: 18y-60.
- Eligible legs were included irrespective of the findings on the other leg, this study involved 100 limbs.

Exclusion criteria:

- Secondary varicose vein.
- Recurrent varicose vein.
- Deep venous reflux.
- Acute disorders (thrombosis/phlebitis/cellulitis).
- Lymphedema, pregnancy.
- Below 18y, above 60y.

Assessment: History taking will involve previous DVT, surgery, any comorbidity, clinical examination general and local including CEAP classification, Duplex u/s.

Examination:

- History taking.
- Clinical examination: General and local.
- Clinical findings were documented: CEAP classification.
- Protocol examination of varicose vein with duplex U/S: (Standing position).

Superficial system: SFJ, GSV reflux, vein diameter: Transverse, SFJ distal to terminal valve (2cm), proximal thigh (15cm after SFJ), distal thigh (just above medial trochanter 2cm), below the knee (proximal leg) (below medial trochanter 2cm), mid leg (below medial trochanter 10cm), anterior accessory saphenous vein, posterior accessory saphenous vein, sapheno-popliteal junction, small saphenous vein.

Deep system: IVC, CIV and EIV, common femoral vein, femoral vein and deep femoral vein, popliteal vein, posterior tibial vein and anterior tibial vein.

Duplex ultrasound examinations were performed by a single investigator with a Toshiba Apolio 400 colour-coded duplex scanner fitted with a 7.5-MHz linear probe and 2-5MHz curved probe [15,16].

Steps of examination: Asses patency and competency:

Standing position: SSV, intersaphenous V, PASV, SPJ, Calf v, GSV (SFJ, proximal thigh, distal thigh, knee, proximal leg, distal leg), AASV, SASV.

Lying position: CFV, SFJ, FV, DEEP FV, POP V, PTV, ATV, EIV, CIV and CIV diameter, IVC.

The GSV was examined in the standing position applying toe movements, manual compression and decompression as well as Valsalva manoeuvres to assess orthograde flow and reflux. Reflux lasting longer than 1s was considered pathologic [17].

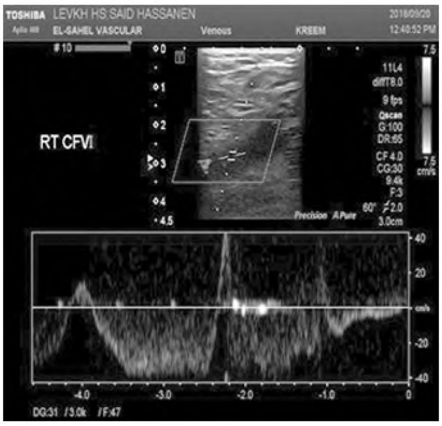
Patients were classified into 5 groups: Table (1).

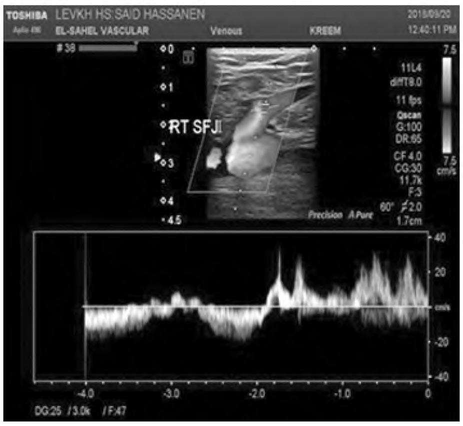
Table (1): Classification of patients in the study.

Group I	• SFJ reflux.
Group II	• Proximal thigh GSV reflux (15cm after SFJ).
Group III	• A: Distal thigh (just above medial trochanter 2cm). • B: Knee GSV reflux.
Group IV	• Below knee GSV reflux (proximal leg) (below medial trochanter 2cm).
Group V	• Mid leg GSV reflux (below medial trochanter 1 0cm).

No assessment was made of dilated distal branch veins and eventually incompetent perforator veins. Excluded lower limbs with reflux through the AASV, PASV and SSV. Trunkal GSV was examined only.

Clinical findings were documented according to the highest CEAP (clinical, etiologic, anatomic and pathophysiologic) class. Legs range from teleangiectasies (C 1) to active venous ulcers (C6).





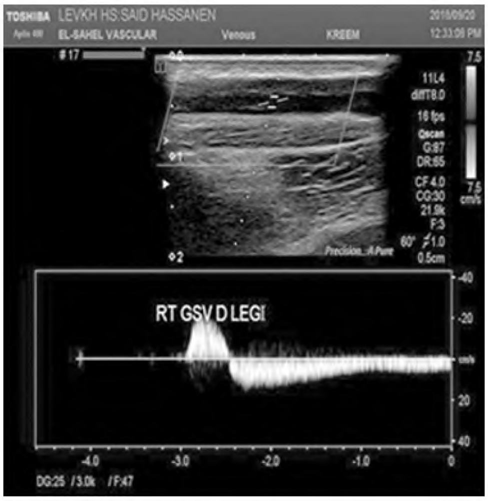


Fig. (1): Case examination of lower limb venous system during standing and supine position.

In all cases, the aetiology was primary (Ep) and pathophysiology reflux (Pr). The anatomy was varicose GSV trunk with or without branch varices.

Vein diameters were measured holding the probe transversely with no pressure. Duplicate measurements were taken at five sites: At the SFJ distal to the terminal valve and 15cm below the junction. (This site, chosen by CHIVA (Conservative ambulatory haemodynamic management of Varicose veins) group members, shows parallel walls of the GSV and is located above the junction of the most proximal branch veins **[18,19]**. At the knee, at the proximal leg and mid leg.

Results

Patients were randomized 100 lower limbs included with trunkal GSV reflux or segmental reflux.

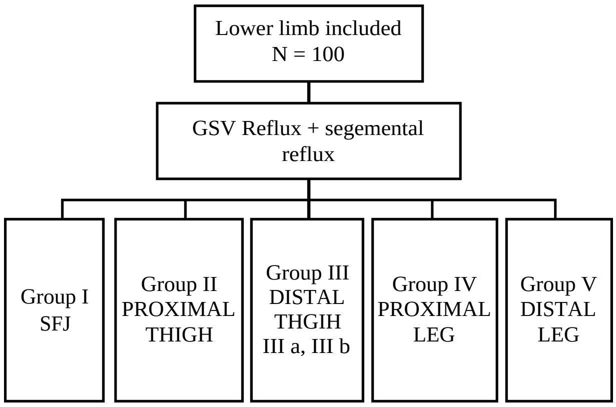


Fig. (2): Study flow chart.

Demography of patients, median age was 36y, female was 70% of lower limb examined, weight range from 50-130kg with BMI 28-30 C2 and C3 represent 74% of patients, correlations were found with body weight in each group and BMI but not with height (Table 2).

Table (2): Demography of the patients.

	No.=100
Age:	
Mean ± SD	35.74±7.76
Range	18-52
Gender:	
Female	70 (70.0%)
Male	30 (30.0%)
Weight:	
Mean ± SD	91.78±16.39
Range	50-130
CEAP:	
C1	2 (2.0%)
C2	32 (32.0%)
C3	42 (42.0%)
C4	18 (18.0%)
C6	6 (6.0%)

Clinical findings of a venous disorder were teleangiectases (C1) were found in 34%, branch varices (C2) in 32%, oedema (C3) in 42%, dermatosclerosis (C4) in 18% and active venous ulcer (C6) in 6% Fig. (3).

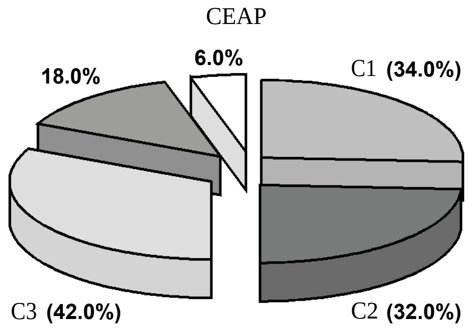


Fig. (3): Clinical findings of venous disorder.

In patients with SFJ reflux (group I), reflux occur at (7.16±2.30mm) (Table 3).

Table (3): SFJ reflux.

SFJ	Not reflux No.=46	Reflux No.=54	Test value	*p*-value	Sig.
Mean ± SD	5.66±1.59	7.16±2.30	–3.743	<0.001	HS
Range	3.50-9.50	4.00-14.00			

p-value >0.05: Non Significant (NS).
p-value <0.05: Significant (S).
p-value <0.01: Highly Significant (HS).
•: Independent *t*-test.

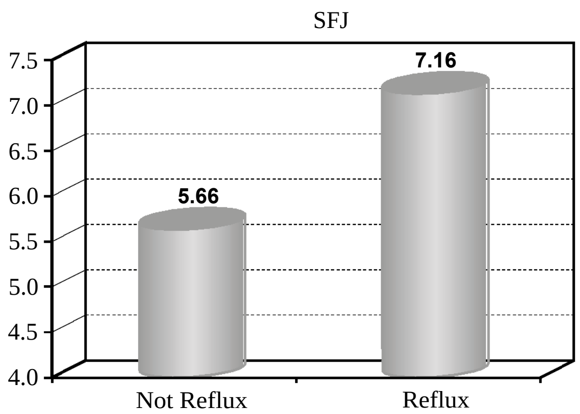


Fig. (4): SFJ diameter at which reflux occur.

In patients with proximal thigh reflux (group II), reflux occur at (6.60±1.89mm).

Table (4): GSV proximal thigh.

GSV Prox thigh	Not reflux No.=42	Reflux No.=58	Test value	*p*-value	Sig.
Mean ± SD Range	4.38±0.93 2.40-6.00	6.60±1.89 3.60-11.00	–7.031	<0.001	HS

p-value >0.05: Non Significant (NS).
p-value <0.05: Significant (S).
p-value <0.01: Highly Significant (HS).
•: Independent *t*-test.

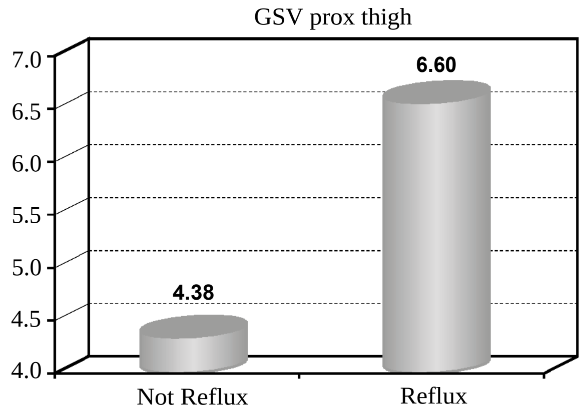


Fig. (5): GSV proximal thigh diameter at which reflux occur.

In patients with distal thigh reflux (group IIIa), reflux occur at (6.12±1.63mm).

Table (5): GSV distal thigh.

GSV DIST thigh	Not reflux No.=40	Reflux No.=60	Test value	*p*-value	Sig.
Mean ± SD Range	4.19±1.04 2.50-6.50	6.12±1.63 3.10-9.50	–6.619	<0.001	HS

p-value >0.05: Non Significant (NS).
p-value <0.05: Significant (S).
p-value <0.01: Highly Significant (HS).
•: Independent *t*-test.

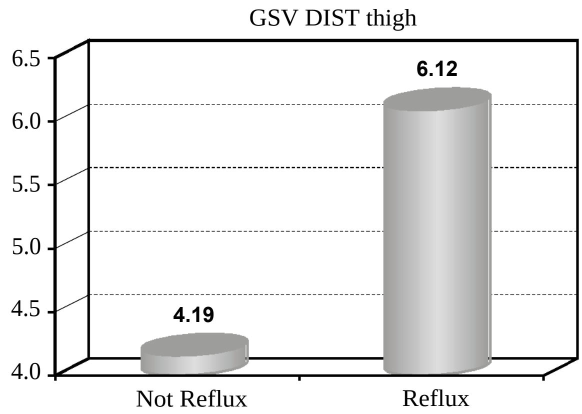


Fig. (6): GSV distal thigh diameter at which reflux occur.

In patients with knee reflux (group IIIb), reflux occur at (5.78±1.60mm).

Table (6): GSV knee region.

GSV knee	Not reflux No.=40	Reflux No.=60	Test value	*p*-value	Sig.
Mean ± SD Range	3.66±0.82 2.30-5.50	5.78±1.60 3.60-11.00	–7.711	<0.001	HS

p-value >0.05: Non Significant (NS).
p-value <0.05: Significant (S).
p-value <0.01: Highly Significant (HS).
•: Independent *t*-test.

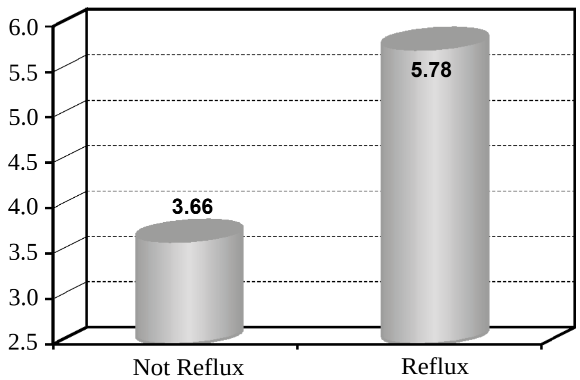


Fig. (7): GSV knee diameter at which reflux occur.

In patients with proximal leg (group IV), reflux occur at (4.6±1.24mm).

Table (7): GSV proximal leg.

GSV PROX leg	Not reflux No.=40	Reflux No.=60	Test value	*p*-value	Sig.
Mean ± SD	3.09±0.74	4.60±1.24	–6.933	<0.001	HS
Range	2.00-4.80	2.80-7.50			

p-value >0.05: Non Significant (NS).
p-value <0.05: Significant (S).
p-value <0.01: Highly Significant (HS).
•: Independent *t*-test.

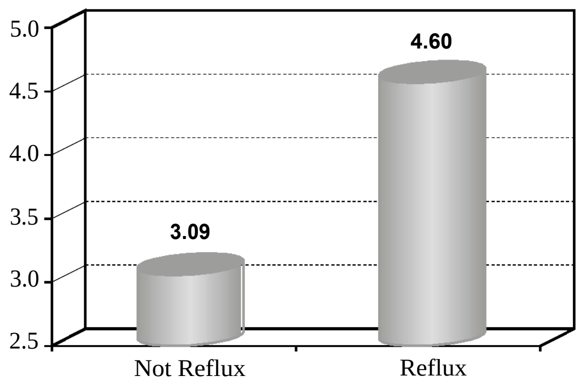


Fig. (8): GSV proximal leg diameter at which reflux occur.

In patients with mid leg reflux (group V), reflux occur at (3.59±1.16mm).

Table (8): GSV mid leg.

GSV MID leg	Not reflux No.=68	Reflux No.=32	Test value	*p*-value	Sig.
Mean ± SD	2.56±0.46	3.59±1.16	–6.396	<0.001	HS
Range	1.50-3.80	1.90-6.00			

p-value >0.05: Non Significant (NS).
p-value <0.05: Significant (S).
p-value <0.01: Highly Significant (HS).
•: Independent *t*-test.

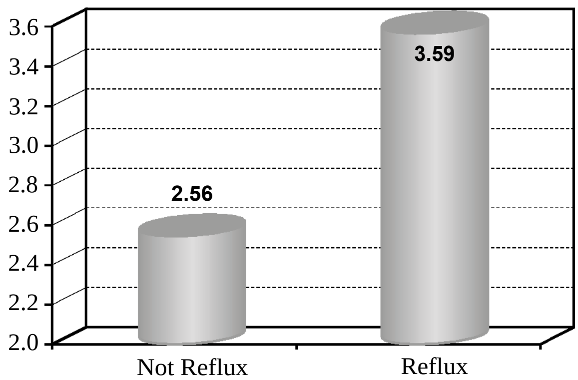


Fig. (9): GSV mid leg diameter at which reflux occur.

Vein diameters were larger in the presence of reflux, compared with its absence, GSV diameters were assessed with regard to their value to predict reflux, curves were used to assess the relative performance of the five sites of measurement.

Sensitivity and specificity are calculated for thresholds at the mean: Fig. (9):

- Cut of point at SFJ >5.7mm with sensitivity 77.7%.
- Cut of point at proximal thigh >7mm with sensitivity 44.4%.
- Cut of point at distal thigh >5.5mm with sensitivity 60%.
- Cut of point at knee >4.2mm with sensitivity 86.6%.
- Cut of point at proximal leg >3.5mm with sensitivity 73%.
- Cut of point at distal leg >3mm with sensitivity 56%.

CFV was screened to make a relation between the diameter and reflux also: (Table 9): CFV diameter).

Sensitivity and specificity are calculated for thresholds at the CFV: Cut of point >10.5mm with sensitivity 77.8%.

100 limbs included, SFJ reflux (group I) at 7.16±2.30mm, proximal thigh (group II) at 6.60±1.89mm, distal thigh (group IIIa) at 6.12±1.63mm, knee (group IIIb) at 5.78±1.60mm, proximal leg (group IV) at 4.6±1.24mm, and mid leg (group V) at 3.59±1.16mm.

Measurement at six sites revealed higher sensitivity and specificity to predict reflux.

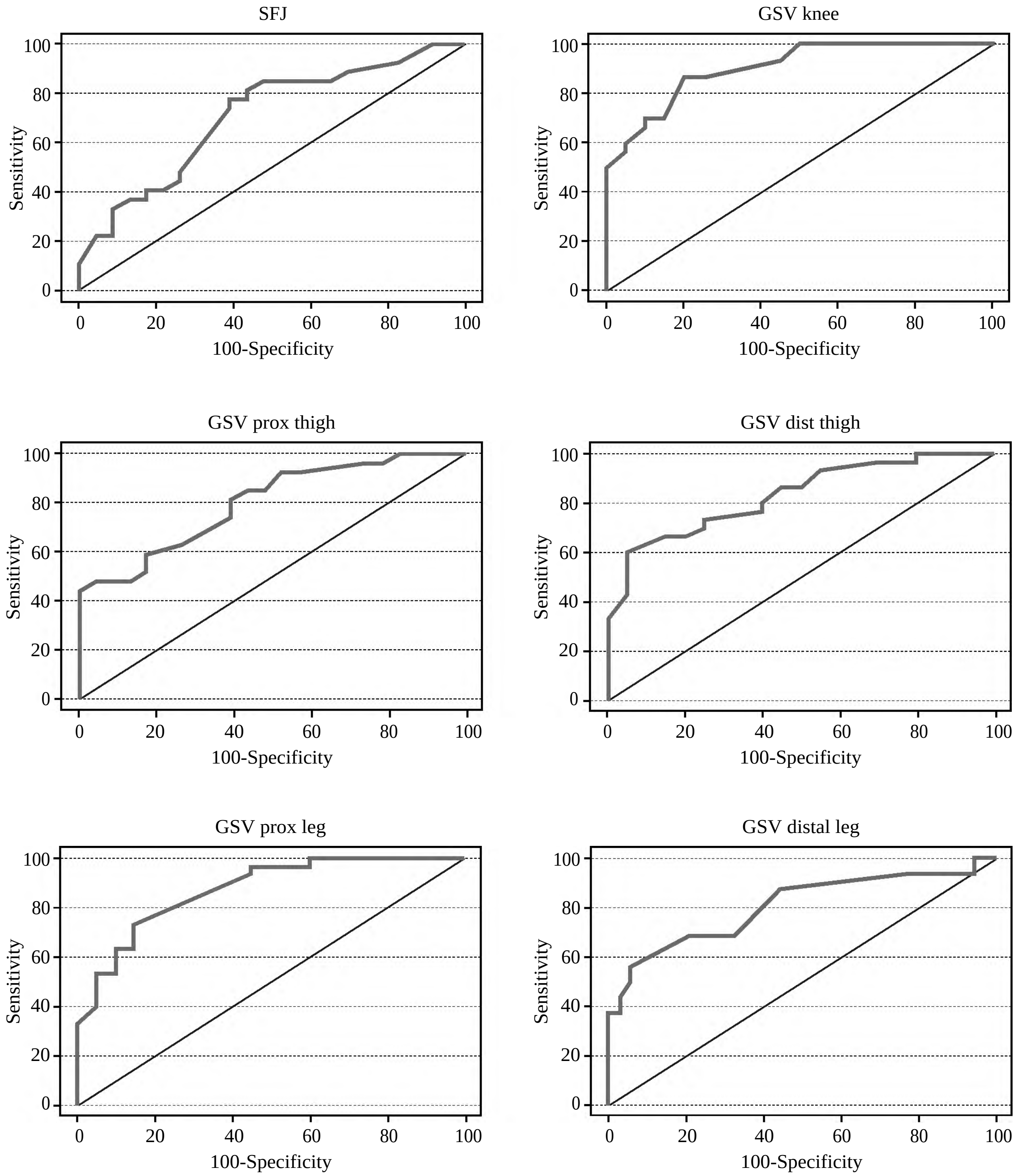


Fig. (10): Sensitivity and specificity are calculated for thresholds at the mean.

Table (9): CFV diameter.

CFV diameter	Not reflux No.=64	Reflux No.=36	Test value	p-value	Sig.
Mean ± SD	9.28±2.52	11.51±1.28	–4.965	<0.001	HS
Range	4.00-15.00	9.00-14.00			

p-value >0.05: Non Significant (NS).
p-value <0.05: Significant (S).
p-value <0.01: Highly Significant (HS).
•: Independent t-test.

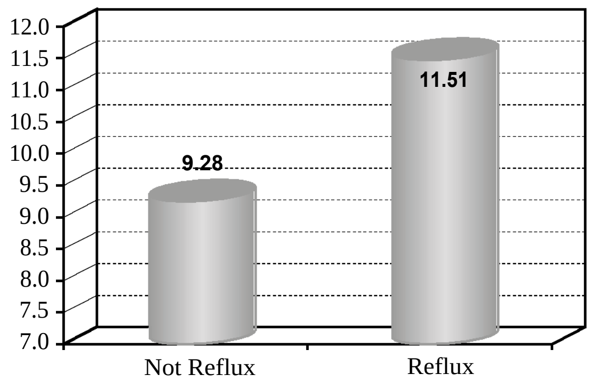


Fig. (11): CFV diameter at which reflux occur.

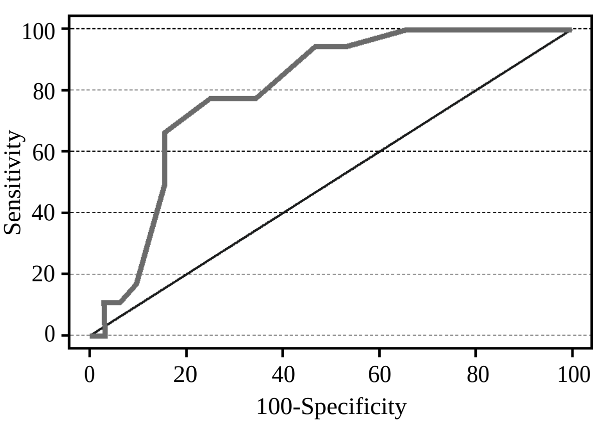


Fig. (12): CFV diameter sensitivity and specificity.

Discussion

Comparison of treatment modalities requires exact documentation of the clinical, anatomical and functional situation in each patient using standardised and validated techniques. However, even the recommendations of the Union Internationale de Phlébologie (UIP) regarding measurement of GSV diameter at different sites lack proper validation [15], diameter measurement at the PT seems to have some advantages as compared with measurement at the SFJ, which is a landmark easily identified with ultrasound. While GSV reflux in the groin is readily identified measurement of vein diameter right there is challenging for several reasons [20].

The curvature of the inguinal GSV renders adjustment of the ultrasound probe exactly perpendicular to the vein axis difficult. Further, the shape of the vein is influenced by joining epigastric, pudendal and accessory veins and eventual aneurysmatic dilatations caused by deep venous refluxes. Thus, diameter assessment in the groin appears less reliable [20].

The proximal thigh site 15cm below the SFJ is located in the truncal portion of GSV where the vein is cylindrical and largely devoid of joining branches. The site is also well accessible and diameter measurements can be taken reliably [20].

The CHIVA Group measures diameters 15cm distal to the SFJ because the PT site allows outcome assessment, as their treatment strategy leaves the GSV trunk in situ even when crossectomy is performed [18,19].

Data revealed a debatable finding: GSV diameter, venous haemodynamics [refilling times in photoplethysmography (PPG)] and clinical disease class did not differ whether reflux was above knee only or above and below knee. The finding is in disagreement with the understanding that the length of reflux in the GSV would have an influence on disease severity [21-23].

The correlation between the two measurement sites permitted calculation of a conversion factor used to review selected publications. It disclosed a wide range of diameters in patients worked up for interventions with different techniques (Table 10). The data suggest that some studies included patients with minor disease. The same may be true for a recent study that found no correlation between GSV diameter and quality of life. The reported diameters were within the limits of the control subjects of this study [24].

Diameter assessment at the PT seems suitable for stratification of patients allocated to future interventional trials as well as for outcome evaluation. With more data available it may also become an argument in the discussion of treatment options with patients, which is not the case at the moment. (Mendoza et al., 2012).

Study by Mendoza et al., 2012:

- Measurements were took at the SFJ as proposed by the UIP and compared it with measurements at the PT as used and published by the CHIVA group because no data on the mid thigh point have been published until 2010.

- Measurement at the PT as compared to measurement at the SFJ demonstrated higher accuracy and both higher sensitivity and specificity for venous disease class as well as for prediction of reflux. Thus, diameter measurement at the PT may develop as a surrogate parameter for specific clinical situations.
- *Results:* Of 182 legs, 60 had no GSV reflux (controls; group I), 51 had above-knee GSV reflux only (group II) and 71 had GSV reflux above and below knee (group III). GSV diameters in group I measured 7.5mm (±1.8) at the SFJ and 3.7mm (±0.9) at the PT. In groups II and III, they measured 10.9mm (±3.9) at the SFJ and 6.3mm (±1.9) at the PT (p<0.001 each).
- Measurement at the PT revealed higher sensitivity and specificity to predict reflux and clinical class.
- Concluded that GSV diameter correlates with clinical class, measurement at the PT being more sensitive and more specific than measurement at the SFJ.

Table (10): Literature derived pre interventional GSV diameters measured at one of the sites studied in this survey and converted to the other site. Data are sorted according to diameter size.

Author treatment investigated	Year	Number	Site of measurement	SFJ diameter	Proximal thigh diameter
Pittaluga, P ASVAL	2009	303	SFJ	7.1±0.2	4.0±0.4
Gonzalez-Zeh Foam	2008	53	SFJ	7.6±3.0	4.3±1.7
Theivacoumar LASER	2008	84	SFJ	7.7±2.0	4.4±1.1
Theivacoumar LASER	2008	27	SFJ	7.9±1.6	4.5±0.9
Gonzalez-Zeh LASER	2008	45	SFJ	8.2±3.2	4.6±1.8
Pittaluga, P HLS	2009	270	SFJ	8.4±0.3	4.8±0.5
Creton Closure Fast	2010	295	SFJ	8.4±2.3	4.8±1.3
Pannier LASER	2010	85	SFJ	10.0±0.4	5.7±0.2
This study	2010	122	SFJ and proximal thigh	10.9±3.9	6.3±1.9
Parés Stripping	2010	167	Proximal thigh	11.5±1.1	6.5±1.9
Cappelli CHIVA	2000	177	Proximal thigh	11.7±1.0	6.7±1.7
Doganci LASER	2010	54	SFJ	11.8±4.1	6.7±7.3
Parés CHIVA	2010	167	Proximal thigh	12.0±1.1	6.8±2.0
Doganci LASER	2010	52	SFJ	12.1±4.3	6.8±7.6
Cappelli CHIVA	2000	77	Proximal thigh	12.4±1.1	7.1±2.0

Table (11): GSV diameters measured at the SFJ and PT as a function of the presence and extent of reflux.

	Number	SFJ diameter	Proximal thigh diameter	p-value
Group I (no GSV reflux)	60	7.5mm±1.8	3.7±0.9	<0.001
Groups II & III (GSV reflux)	122	10.9mm±3.9	6.3mm±1.9	<0.001
Group II (thigh reflux only)	51	10.5mm ±3.2	6.2mm±1.7	<0.001
Group III (lower leg reflux)	71	11.2mm±4.3	6.3mm±2.1	<0.001

In this study patients were classified into 5 groups:

Classified reflux according to the site of measurement, number of patients 100, results were nearly equal as introduced by Mendoza et al., 2012 at SFJ and proximal thigh, measurement of GSV at knee joint can predict reflux if >5.5mm.

REFL UX AT:

Table (12): Results of the study.

SFJ	7.16±2.30
Proximal Thigh	6.60±1.89
Distal Thigh	6.12±1.63
KNEE	5.78±1.60
Proximal Leg	4.60±1.24
Mid Leg	3.59±1.16
CFV	11.51±1.28

Limitation of study: Duplex is operator dependant to avoid this conflict one operator do all cases, number of patients were 100 only, study target only patients came to vein clinic, no relation found between quality of life and diameter.

The paper adds: Sites to predict reflux not only at SFJ and proximal thigh, GSV measurement at knee joint can predict reflux, CFV reflux can be affected by superficial venous system reflux.

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Conflict of interest:

None.

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قياس قطر الوريد الآكبر فى المناطق المختلفة وعلاقتها بالإرتجاع الوريدى فى مرضى دوالى الساقين

آعراض مرض دوالى الساقين: تورم وثقل وآلام شديدة مع الوقوف طويلاً آو فى نهاية اليوم ومن علاماته: وجود دوالى سطحية بالساقين وتورم وإلتهاب فى الجلد آو قرح وريدية. هذه الآعراض والعلامات نتيجة وجود حمل زائد وضغط مرتفع فى الآوردة السطحية بسبب وجود تمدد فى الآوردة وعدم كفاءة الصمامات الوريدية مما آدى إلى إرتجاع فى الدم وحدوث دوالى الساقين. علاج دوالى الساقين يتوجه إلى منع حدوث إرتجاع فى الوريد وهناك إختيارات كثيرة فى علاج دوالى الساقين منها الجراحة المفتوحة ونزع الوريد الصافى الآعظم آو بإستخدام القسطرة الوريدية وعمل كى للوريد الصافى سواء كان بإستخدام القسطرة الليزر آو التردد الحرارى. الدوبلر الملون يستخدم بكثرة من آجل توجيه التدخلات الجراحية سواء المفتوحة آو بإستخدام القسطرة الطرفية الوريدية.

هدف البحث: البحث عن وجود علاقة بين قطر الوريد الصافى الآعظم وعلاقته بوجود إرتجاع فى الوريد فى المناطق المختلفة فى الطرف السفلى.

طريقة البحث: هدف الدراسة سوف تجرى على مائة طرف سفلى قدموا إلى عيادة جراحة الآوعية الدموية يشتكون من دوالى الساقين.

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المرضى داخل نطاق البحث:

١– دوالى آولية فى الطرف السفلى.

٢– ١٨–٦٠ سنة.

المرضى خارج نطاق البحث:

١– دوالى ثانوية ودوالى مرتدة.

٢– وجود إرتجاع فى الآوردة العميقة.

٣– الحالات الحادة (إلتهاب خلوى – جلطة حادة).

٤– آمراض الآوعية اللمفاوية.

٥– الحمل.

٦– تحت ١٨ سنة، فوق ٦٠ سنة.