

VARICOSE VEINS
HÆMORRHOIDS
AND OTHER CONDITIONS
THEIR TREATMENT BY INJECTION

R. ROWDEN FOOTE

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BY

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WITH 54 ILLUSTRATIONS



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PREFACE

THIS small volume is written in the hope that it will serve to present the position of injection therapy as it strikes me today. It appears that no manual dealing with this subject has been published in this country for at least ten years. During this time the position regarding the treatment of varices has undergone much change. Ten years ago injection therapy of varicose veins was on a much firmer ground than it is at present. In those days the recurrence rate from injections was not fully appreciated, and the operation of high ligature was not in general use. It is hoped that this small book will help to place injection treatment in its proper perspective, and that the reader will be able to appreciate the large field which still remains for this treatment. The writer considers that the pendulum has swung too far in the direction of operation, and that many cases require treatment by injection only. However, both sides of the question are discussed in the text and it is hoped that this may prove helpful.

The injection treatment of hæmorrhoids is a well-established therapy, and most of us realise that provided the cases are properly selected and the right technique is employed, nothing but good can come from this form of treatment.

Parts of this book have appeared as articles in the *Medical Press and Circular*, and I wish to tender my thanks to the editor for his permission to include this matter in this small manual. I also acknowledge with gratitude the painstaking trouble which Mrs. Maingot, F.R.P.S., has taken in presenting me with various photographs of patients. I am also indebted to Miss Trotman for some of the drawings and to Messrs. May and Baker for liberal supplies of Neo-varicane solution.

R. R. FOOTE.

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CONTENTS

	PAGE
Preface	v
Illustrations	vii

PART I—VARICOSE VEINS

CHAPTER

I. Ætiology : an Evaluation of Some of the Factors .	1
II. The Injection Treatment	13
III. Modern Operative Treatment (by Rodney Maingot) .	45
IV. Varicose or Gravitational Ulcers	60

PART II—HÆMORRHOIDS

V. The Injection Treatment	74
--------------------------------------	----

PART III—HYDROCELE

VI. The Injection Treatment of Idiopathic Hydrocele .	91
---	----

PART IV—SOME OTHER CONDITIONS

VII. The Injection Treatment of Hernia, Varicocele, Bursa, Ganglion, Nævus and Anal Fissure	98
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APPENDIX—Useful Prescriptions ; and Some Points in the Organisation of an Injection Clinic	106
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Index	116
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LIST OF ILLUSTRATIONS

	PAGE
1. A saccular varix	3
2. 'Hair veins'	4
3. The normal distribution of the veins of the leg . . .	5
4. A venous valve	6
5. Some variations in the tributaries of the long saphenous vein	7
6. A common type of varicosity	9
7. The Brodie-Trendelenburg test	16
8. A diagrammatic representation of Fig. 7	18
9. The tourniquet test of Ochsner and Mahorner	20
10. A case demonstrating deep venous thrombosis . . .	22
11. The anterior view of Fig. 10	23
12. A method of emptying a vein prior to its injection . .	29
13. A point in the technique of injection	31
14. Incorrect and correct methods of injection	32
15. The position of the hands during injection	33
16. An injection ulcer.	34
17. A leak ulcer	35
18. A 'roller' vein	36
19. An injection ulcer	37
20. A case of varicose veins	40
21. High saphenous vein ligation. The incision	51
22. High saphenous vein ligation. The exposure of the veins.	52
23. High saphenous vein ligation. A common error . . .	52
24. High saphenous vein ligation. Further errors . . .	53
25. High saphenous vein ligation. The Stevenson needle .	54
26. High saphenous vein ligation. The operation completed .	55
27. A case after the operation of high saphenous ligature .	56
28. Diagrammatic representation of the ulcer-bearing area .	61
29. The pre-ulcerative state	62
30. The injection site in cases of ulceration	63
31. Treatment of ulceration by compression with felt . .	64
32. Compression of the ulcer site by means of rubber sponge .	64
33. A case of healing ulceration	65
34. Varicose ulceration	67
35. A case of deep venous thrombosis	68
36. Ulceration subsequent to excision of varices	69
37. The posterior view of Fig. 36	70

	PAGE
38. A case showing healed ulceration	71
39. Diagram of the ano-rectal area	75
40. Graeme Anderson's hæmorrhoidal syringe	79
41. Gabriel's hæmorrhoidal syringe	80
42. Gabriel's speculum	80
43. Kelly's speculum	80
44. Hartmann's forceps	81
45. Tilley's forceps	81
46. A view through the speculum	83
47. A method of injecting above the pile-bearing area	84
48. The injection of a ganglion	100
49. The method of evacuating and injecting the prepatellar bursa	102
50. The injection of an anal fissure	104
51. The application of an elastoplast bandage	106
52. A twin injection with the three-way syringe	110
53. The use of the three-way syringe in the injection of an hydrocele	111
54. The injection trolley	113

PART I

VARICOSE VEINS

CHAPTER I

ETIOLOGY : AN EVALUATION OF SOME OF THE FACTORS

THE condition of varicose veins is one which is extremely prevalent and which offers an enormous scope for those who are interested in the therapeutics of the subject. The statistics concerning the incidence of this condition vary considerably, but probably more than 10 per cent. of the population are afflicted with this complaint in greater or less degree. As an example of the prevalence of varicose veins it is interesting to note that of a group of Danish conscripts recently examined 17 per cent. were found to be suffering from varices (Meisen quoted by Franklin). De Takats quotes the results of an examination of 1,000 healthy young industrial workers, among whom the incidence was 10 per cent., suggesting that an examination of the general population would yield an even higher rate.

Varicose veins have many distinguishing features ; among those most frequently present are :

- (1) Dilatation.
- (2) Elongation.
- (3) Tortuosity.
- (4) Diminished elasticity.
- (5) Variations in the thickness of the vein wall.

Microscopically a thickening of the intima and a hypertrophy or an atrophy of the muscle layer may be observed.

Calcification, thrombosis and valvular atrophy are associated conditions sometimes present.

For a vein to be classed as varicose, dilatation and elongation must be present. The other characteristics in this list are, however, among the most constant pathological signs in a well-developed varix. Tortuosity is due to the elongation of the vein and is more obvious in large varices with thickened walls.

Varices lose their elasticity from an increase in the connective tissue in the walls.

The variations in the thickness of the wall of a varicose vein may be considerable. Thinness sufficient to cause rupture and thickness producing a wall several times denser than normal are frequent findings. The thickening of the intima is a change similar to that which normally occurs with advancing years. The hypertrophy of the muscle layer may be so considerable as to give the microscopical appearance of the media of an artery.

Valvular atrophy and enlargement of the collateral veins are associated pathological findings of much importance, which receive further comment in the text later.

Varicosities may affect the entire length of a vein or be localised to portions only. Deep veins never become varicose to any great extent, this probably being due to the fact that the circulation in these deep veins is aided by the muscular action of the leg.

The *sites of occurrence* of varicose veins in the human body have been tabularised by Meisen (1932) as follows :

- (1) Lower limbs ;
- (2) Pampiniform plexus ;
- (3) Hæmorrhoidal veins ;
- (4) Submucous veins of the antrum cardium of the œsophagus ;
- (5) Subcutaneous veins of the abdominal wall in cirrhosis of the liver (caput medusæ) and after phlebitis ;
- (6) Superficial veins of the upper extremities (rare) ;
- (7) Subcutaneous veins of the upper chest and neck associated with upper mediastinal tumours ;
- (8) Veins of the broad ligaments ; and
- (9) Veins of the vulva.

Part I of this manual will deal only with varicose veins of the lower extremities.

The classification of the various clinical types of varicose vein is well described by Berntsen, who groups them according to their pathological formations :

(1) **The Saccular Varix.**—This is an isolated swelling most commonly occurring above the knee and usually involving the internal saphenous vein.

(2) **The Tortuous Varix.**—Again usually associated with the internal saphenous vein.

(3) **A Uniformly Dilated and Hypertrophied Venous Segment** running between two varicosities.

(4) **Fine Telangiectasia** known as ‘skyrockets’ (McPheeters) or ‘hair veins’ (Thornhill). These most commonly occur in

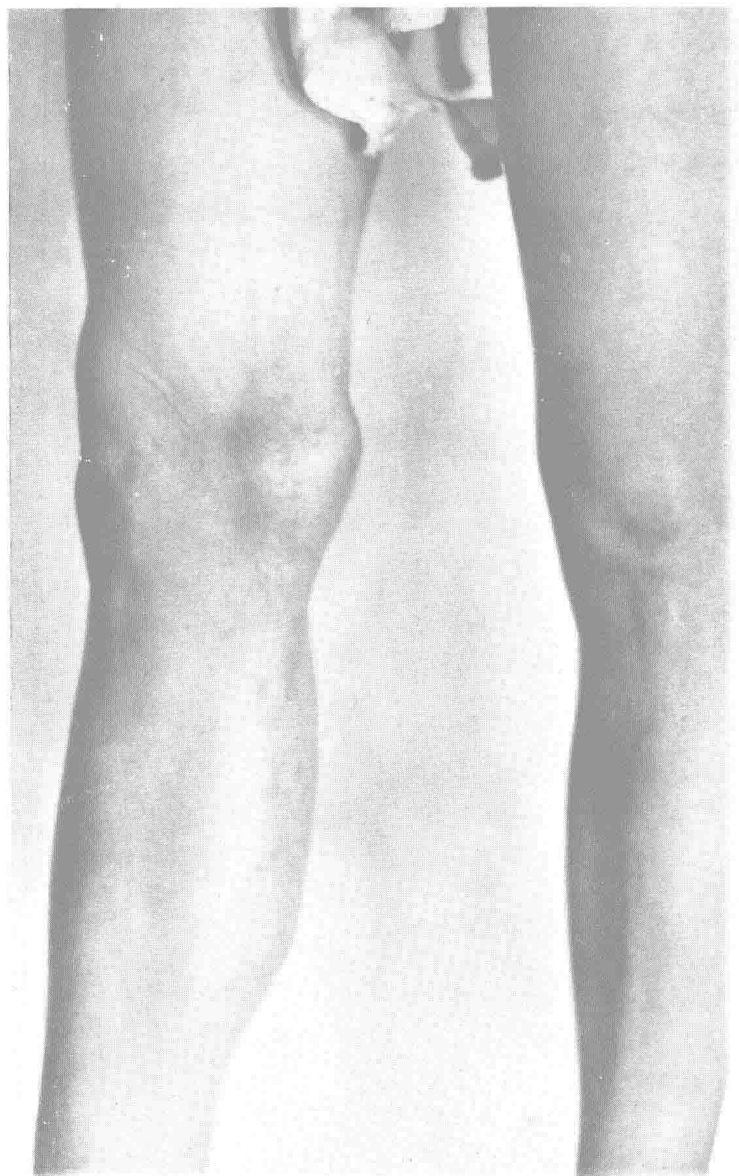


FIG. 1.—A saccular varix. This type of varicose vein forms an isolated swelling. The common position is as shown in this photograph, just above the knee and in connection with the internal saphenous vein.



FIG. 2.—This photograph demonstrates two common types of varicose veins. The multiple fine telangiectatic varices shown on the thigh are often termed 'hair veins.' They occur as intracutaneous varices, with a resemblance to a spider's web.

The varicosities in the calf of this patient are of the tortuous dilated type.

As will be found in the text, both types react well to injection treatment, the technique of which needs to be varied in each case.

obese women, and are often present at or about the menopause.

Before discussing some points in the ætiology of this condition it is well to have a clear understanding of the anatomy of the venous system of the lower limb, which consists of the deep and the superficial systems.

The *deep veins* collect blood from the deeper tissues around the foot and ankle and are surrounded by the muscles and bones. At the lower margin of the popliteal space these deep veins become the popliteal vein. At the entry into Hunter's canal this vein becomes the femoral and travels upwards towards Poupart's ligament. At this point the surface marking is best determined by taking a point $\frac{1}{2}$ -inch internal to the pulsating femoral artery.

The *superficial venous system* consists of the internal or long saphenous vein and the external or short saphenous vein. The internal saphenous vein passes forwards on the medial side of the edge of the tibia, past the internal condyle of the femur and along the inner side of the thigh. It joins the deep

system through the foramen ovale by its junction with the femoral vein. This union occurs 2 inches below Poupart's ligament,

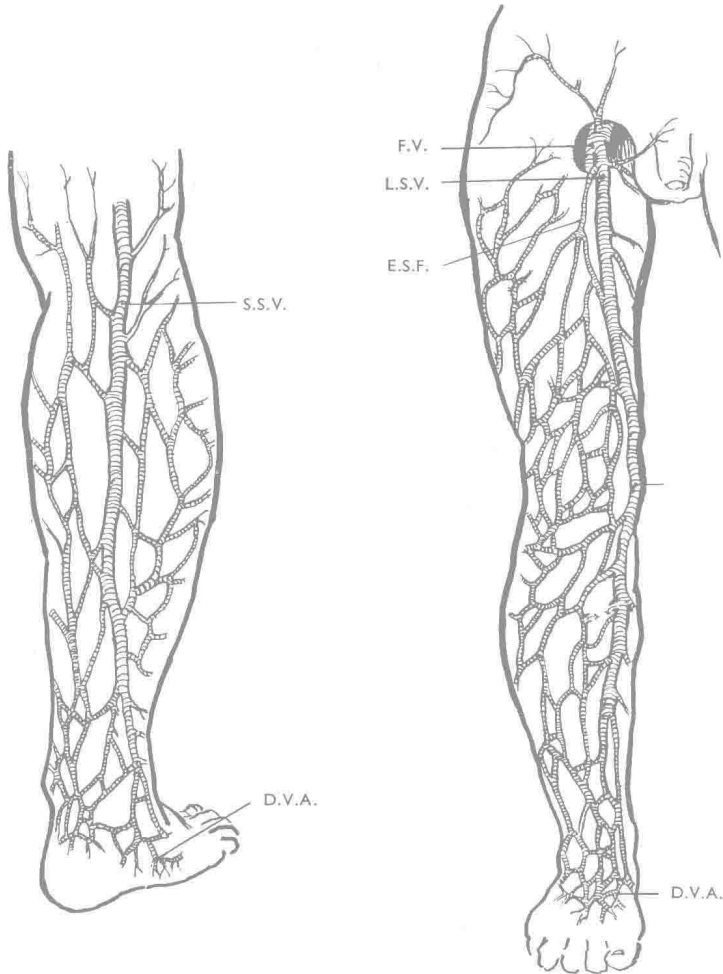


FIG. 3.—The normal distribution of the veins of the leg. The network of anastomosing collateral veins is shown.

F.V.—Femoral vein. L.S.V.—Long or internal saphenous vein. E.S.F.—External superficial femoral vein. S.S.V.—Short or external saphenous vein. D.V.A.—Dorsal venous arch.

being $1\frac{1}{2}$ inches below and $1\frac{1}{2}$ inches external to the pubic spine. The external saphenous vein forms along the external border of the foot and back of the calf, and enters the popliteal vein at the lower margin of the popliteal space.

These main veins are connected by *collateral and anastomosing veins* which form a network over the whole of the lower leg. The deep and the superficial veins are connected by means of *communicating veins* throughout the entire limb. Both systems and the communicating veins are supplied with *valves*, whose function it is to prevent a reflux of blood.

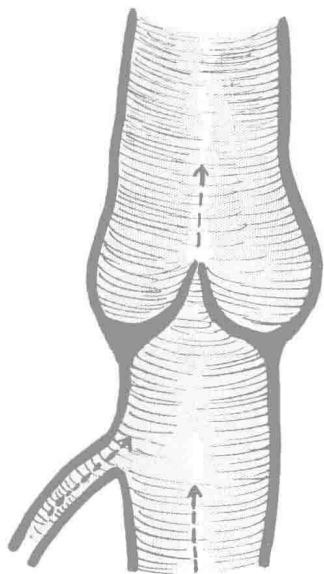


FIG. 4.—A venous valve. The numbers of these valves are variable, but certainly tend to diminish in older subjects. Most authorities accept the following figures regarding the frequency of their occurrence in the main veins of the lower extremity:

Internal saphenous, 12 to 18 pairs; short saphenous, 9 to 10 pairs; femoral, 1 to 5 pairs; popliteal, 1 to 4 pairs; and peroneal veins, 8 to 10 pairs.

These valves are usually bicuspid, but may present from one to three cusps, consisting of thin folds of intima which are attached in such a manner that the free margins have a lunate configuration. The number and position of the venous valves vary considerably in different individuals. Valveless areas of some length are often followed by segments in which there may be three or more pairs of valves within a few centimetres. From twelve to eighteen pairs of valves are a common finding in the internal saphenous vein, and it is usual for several of these to be confined to the termination of the vein. The long middle course of the vein is frequently poorly supplied with valves.

It has been stated by Bardeleben that in the developmental stage valves occur at regular distances, but that later on in life many of these valves retrogress and disappear.

A valve will usually be found just below the junction of any medium-sized tributary. Meriel states that this occurs in 85 per cent. of cases, while Hesse and Schaak have observed that in 77 per cent. of subjects examined there is a valve to be found in the femoral vein just above the entrance of the internal saphenous vein. This is the most constant valve in the lower extremity.

As will be seen later, these congenital variations have a

bearing on both the ætiology of varicosities and also on their treatment.

Special attention should be paid to the tributaries of the internal

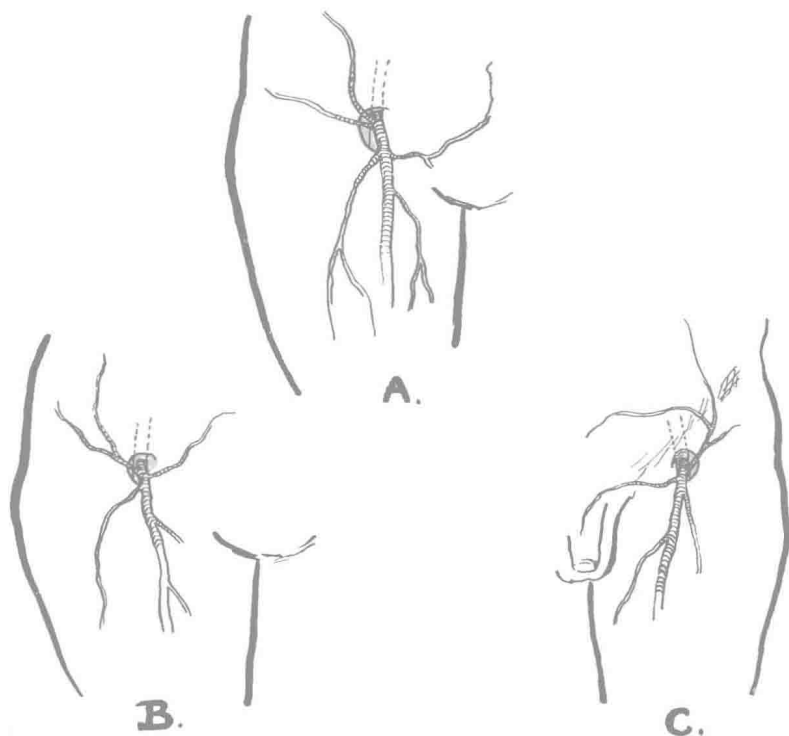


FIG. 5.—Some variations in the distribution of the tributaries of the internal saphenous vein at its termination.

A.—The usual distribution, the three main tributaries joining the internal saphenous vein separately.

B.—The next most common method, in which the superficial circumflex iliac and superficial epigastric veins join to form a common trunk before their union with the main vein. The lateral superficial femoral vein will be seen to be joining at the sapheno-femoral junction in this case.

C.—A fairly common finding, in which a common trunk is formed by the three main tributaries, i.e. the superficial epigastric, the superficial circumflex iliac and the external pudendal veins. This picture also shows the dorsal vein of the penis making a direct entry into the internal saphenous vein. This is seen to occur quite frequently.

The above are the common findings, but considerable variations occur in the anatomy of these tributaries.

saphenous vein at its point of entry into the femoral vein (see diagram). These branches, which normally join the external saphenous vein at the foramen ovale in the manner shown, fre-

quently present variations, as depicted in diagrams A, B and C. There are also other aberrations of a less common type. It will thus be appreciated that a knowledge of the anatomy of these branches is of particular importance when studying the chapter dealing with operative procedure.

There is still wide diversity of opinion as regards the *ætiology of varicose veins*. Even in the days of Hippocrates, as is clear from his writings, varices had long been recognised as clinical entities. Yet now, after the lapse of some 2,400 years, we find ourselves still obliged to treat diseased veins by means of injection and operation, and we are as yet unable to arrive at a clear conception regarding the correct method of treating their causation.

It is obvious from the variety of theories held concerning their ætiology that there must be several '*varicosity factors*' involved in their production, and it is possible that all the selected factors which I am about to mention tend to play their part in the initiation of this interesting condition.

Out of the mass of writing which has resulted from much thought and experimental work, two simple statements have always impressed me as being particularly important. Firstly, that of Kasinski, who in 1926 pointed out that varicose veins occur only in man and not in animals. Secondly, that of Lower, who stated that in humans, due to the erect posture, the veins are enlarged by the weight of the column of blood, causing them to become distended, with the resulting formation of varices. These distended veins gradually lose their ability to contract, which is the normal reaction when the weight of the column of blood is removed upon the patient assuming the prone position. It is of interest to note that these two statements were made at an interval of nearly 200 years.

Pierre Delbet, as the outcome of his experimental work, supported the *mechanical and postural theories*. He divided the saphenous vein in a man's thigh and found that the intravenous pressure as shown by a manometer varied from 16 mm. Hg while sitting, to 160 mm. Hg while standing. This pressure reached 260 mm. after severe exertion.

Among many other theories, that of some *endocrine disturbance* is worthy of notice. The first to call attention to this factor was Sicard. He has pointed out that bluish cords frequently develop at the age of puberty and enlarge with each menstrual period. During pregnancy these grow more pronounced, and finally at the

menopause become extreme, changes which correspond with what he termed the three endocrine-ovarian periods of a woman's life.

Additional evidence in support of Sicard's theory was given by De Takats and Quint, who found that in 20 per cent. of their cases the onset of varicose veins was at puberty. Delater in his series also discovered that varicosities tended to develop at the period of endocrine dysfunction.

Kramer, together with many other writers, noted also the marked frequency of the development of varices at puberty, and there seems little doubt but that the ovarian hormones must play their part in the production of the condition.

Heredity is claimed by many authorities to be a most important causative factor. McPheeters in 1931 confirmed the presence of this tendency in 10 per cent. of his patients. Personally, I have



FIG. 6.—The superficial, blue, thin-walled type of vein. This is frequently seen in women at the time of the menopause. Multiple small injections of mono-ethanolamine oleate, using a fine needle, is the treatment of choice.

not been impressed by the hereditary factor, since varicose veins are so generally prevalent, although it is an accepted fact that the condition frequently 'runs in families.' The theory of a *congenital factor*, i.e. that there is a general congenital weakness of the vein walls, is one which has received much support from many writers, including Turner Warwick.

Systemic disorders, such as cardiac disease, cirrhosis of the liver and hyperthyroidism, may be contributory factors. The *destruction of valves by infection* is a popular theory, and Dickson Wright considers it probable that even the mildest phlebitis may lead to shrivelling of the venous valves.

Vitamin C deficiency is said by many workers to be a contributory factor. This theory is, however, difficult to prove. Nevertheless, in passing it may be of interest to note that the ingestion of vitamin C frequently improves the scaly ichthyosis of the skin which so often accompanies varicose veins.

A recent paper by Lake, Pratt and Wright (1942) throws some light on this vexed problem of aetiology, and even though these statistics were obtained from a small number of cases it is of interest to observe certain of their findings. They examined 536 workers in a large store, and divided them into groups according to the work they had been doing during the previous ten years :

- (1) Sitting (typists, etc.) ;
- (2) Standing (shop assistants, etc.) ;
- (3) Walking (porters, etc.) ;
- (4) Climbing stairs (delivery men, etc.).

They found that the women who sat at their work had definitely fewer varices than either those who walked or those who stood. In the men there was no difference in the incidence of varicose veins, whether they came from the group who stood, walked or sat. A suggested possible explanation of this difference was the fact that in the female the surrounding tissues are softer and less supportive.

Further evidence came to light from this examination regarding the *incidence of varicose veins in the two sexes*. The ratio of female to male cases was 7 : 4. This finding is at variance with that of some authors who have had the opportunity of examining a large number of recruits for the Forces. They tend to place the ratio of male to female as being approximately equal. This view is supported also by Moore and Knapp, who, in an analysis of cases

in 1942, found the distribution to be about equal in men and in women. Mahorner and Ochsner, on the other hand, place the female incidence higher, while Meisen states that the distribution is fairly even in men between the ages of 25 and 55, but that in women the maximum number of cases occurs around the age of 35 years. Bernstein claims that the occurrence in both sexes is equal up to the 20th year, whereas between the ages of 30 and 40 years three women to one man are affected. After the age of 40 this figure rises to four women to one man.

The difficulty in determining the sex ratio is complicated by many factors such as age, pregnancy, occupation, and the fact that for cosmetic reasons women come for treatment more frequently than men.

These few facts and theories tend to show that there is still a big field for research and observation before a true picture of the aetiology of this complaint can be secured.

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