It is suggested that γ -radiation at 20° C. or at -15° C. is an unsatisfactory sterilizant for arterial homografts.

The tensile strength measurements were carried out by one of us (A. V. P.) in the Department of Textile Industries of the University of Leeds. We are greatly indebted to Professor J. B. Speakman and Mr. W. J. Onions for their help and advice.

REFERENCES

- Buchanan, J. L., and Marrangoni, A. G. (1955). *Surgery*, 38, 999.
Flewett, T. H., Zinnemann, K. S., Oldfield, M. W. C., Shucksmith, H. S., and Dexter, F. (1955). *Lancet*, 1, 888.
Meeker, I. A., and Gross, R. E. (1951a). *Surgery*, 30, 19.
— (1951b). *Science*, 114, 283.
Zinnemann, K. (1957). *Univ. Leeds med. J.*, 6, 116.

VULVAL VARICOSE VEINS IN PREGNANCY

BY

HAROLD DODD, Ch.M., F.R.C.S.

Surgeon, St. Mary's Hospital Group, Paddington;
King George Hospital, Ilford; and London Royal
Homoeopathic Hospital

AND

H. PAYLING WRIGHT, Ph.D., B.Sc., L.M.S.S.A.

Research Assistant, Obstetric Unit, University College
Hospital Medical School, London

The proportion of young women who first develop or show deterioration of varicose veins of the legs during pregnancy is high. In the antenatal department of University College Hospital a weekly varicose vein clinic has been established to advise mothers concerning this condition and to attempt, by antenatal care, to reduce the incidence of puerperal phlebitis and thrombosis.

This varicose vein clinic received about 8% of all women booked for antenatal care during the period 1955-7 (343 cases of varicose veins from a total of 4,267 bookings). This figure does not represent the true incidence of the condition, for only those women who complained of pain or disfigurement, or whose condition was so severe that it attracted attention at the routine blood-pressure examination, were referred to the vein clinic. Hence the figure of 8% in this selected group is a conservative one, and the proportion of women with some degree of incompetence is probably nearer 12%, or even higher. This high incidence is especially important when it is remembered that the majority of women accepted for antenatal care are young primiparae; in multiparae, who are not usually seen in hospital, the proportion with varicose veins must be higher.

Though varicosities of the leg veins in pregnancy are widely recognized, involvement of the veins of the vulva have hitherto received little attention. During the routine examination of the women in the antenatal clinic, however, the frequency of such varicosities has impressed itself upon us. The probable reason why the condition has so far apparently been overlooked is due to the natural reticence of most of the women, who nevertheless are often extremely uncomfortable because of the bulk, tension, and warmth of one or both labia majora, especially in the posterior part.

Of the 343 women seen in the varicose vein clinic, 80 (23.3%) had involvement of the vulva. This varied from a single node on the margin of the labium major

to a mass of varices causing so much swelling that walking was difficult because of chafing of the dependent labia. Analysis of these 80 cases for (1) site of varicosity, (2) week of gestation when first observed by the patient, and (3) parity of the patient are set out in the Table, together with similar figures

Analysis of Varicose Veins in Pregnancy

Site	Week of Onset	Parity
<i>Vulval Varicosities (80 Cases)</i>		
Right side .. 40 (33%)	12-26 weeks 46 (19.5%)	Para 0 .. 15 (11.8%)
Left .. 31 (27.5%)	27 weeks-term 34 (32%)	" 1 .. 31 (28%)
Both sides .. 9 (8.5%)		" 2 .. 13 (28%)
		" 2+ .. 21 (37%)
<i>Leg Varicosities (343 Cases)</i>		
Right side .. 121	12-26 weeks 237	Para 0 .. 127
Left .. 113	27 weeks-term 106	" 1 .. 112
Both sides .. 109		" 2 .. 47
		" 3 .. 57

The percentages are based on the number of women with corresponding leg varices

for leg varices in the 343 patients examined. It will be seen that there is little difference in incidence between the right and left sides, and that the majority developed after the 26th week of gestation. Though the figures for parity are not a true indication of incidence, for, as stated earlier, primiparae predominate in the antenatal clinic, the figures available show clearly that multiparous women suffer more frequently from vulval varicose veins than do women having their first child.

Treatment of Varicose Veins in Pregnancy

The treatment of varicose veins in pregnancy resolves itself into expectant and operative measures. Most of the patients referred to one of us (H. D.) had gross distressing varices that were not responding to bandaging, elastic stockings, injections, and extra rest. In many instances the home circumstances required the mother's services until the day of delivery, whilst a few patients had veins which were unrelieved except by continuous recumbency for the last 6 to 12 weeks of pregnancy. These groups have been treated operatively.

In considering varicose veins in pregnancy, a diagnosis is first required. Most of these patients had frank incompetence of the long saphenous vein; it was often present before conception. An impulse was palpable in their veins when they coughed. Percussion of the long saphenous vein at the groin gave a discernible impulse in varices of the leg. The tourniquet tests gave down-filling waves or cascades. Fifty such patients have been treated by a flush sapheno-femoral ligation and destruction of the saphenous trunk; since December, 1951, it has been by stripping. Three patients who had incompetence of the short saphenous vein had a sapheno-popliteal ligation and stripping to the ankle.

Varicose Veins of the Vulva

Varicose veins of the vulva are an embarrassing form of varicosity which is distressing mentally and physically. Vulval veins may be distended from one or more of three sources of hypertension. (1) The long saphenous vein through its incompetent tributaries, the superficial and deep external pudic veins. (2) The spermatic veins passing with the round ligament from the labia majora into the inguinal canal and thence to the posterior abdominal wall to join the inferior vena cava on the right and the renal vein on the left. Their varicosity causes a bulge in the groin like an inguinal hernia, with an increasing pear-shaped swelling of the

labium major on the affected side, attaining grotesque proportions in the perineum. Apart from its disfigurement, the mass is an embarrassment and a discomfort during sitting and walking. (3) The pudendal tributaries of the internal iliac vein also fill varices of the perineum, posterior part of the labia, and upper part of the postero-medial aspects of the thigh. Fortunately after parturition these veins disappear; it is therefore only those of exceptional extent that require surgical treatment.

Diagnosis.—This is difficult in the vulval and perineal varices. Varicosity of the long saphenous and round ligament veins together has been found four times. The varicose round ligament veins would correspond to a varicocele of the spermatic veins in the male. They are denoted by a bulge in the inguinal canal, which steadily enlarges to the labium major and perineum. There is an impulse in these veins on coughing. Compression empties them, and they are largely controlled after emptying by pressure with the finger over the internal ring when the swelling remains smaller and softer, but reappears immediately the pressure is released. This control is not absolute, for there are usually contributory vessels from the long saphenous or pudendal veins.

Treatment.—Where clear signs of venous incompetence were found, which was causing considerable distress not relieved by other measures, operation has been advised, up to the end of the seventh month. Varicosity of the labium major requires exploration of the sapheno-femoral junction and its ligation if incompetent, together with the tributaries joining here, followed by excision of the round ligament with the associated distended veins. This is done under a bland general anaesthetic.

Operation

The patient is tilted into a 10 degrees head-down supine position which materially reduces the size of the veins and the bleeding.

The incision extends from the anterior superior iliac spine to the pubic tubercle and curves on to the thigh for 1 in. (2.5 cm.). The procedure consists of two steps.

1. *The Sapheno-femoral Junction is Defined.*—This requires division of the tributaries of the long saphenous vein, being the superficial external pudic, superficial epigastric, superficial circumflex iliac, antero-lateral, and postero-medial veins; the superficial external pudic vein may be greatly enlarged. After the ligation of these veins it is possible to open the foramen ovale and inspect the femoral vein, especially its medial aspect, for the presence of the deep external pudic vein which is present in 40% of cases and may be obviously varicose. This is ligated with thread. The sapheno-femoral union is tied and transfixed.

2. *Veins of the Round Ligament.*—The upper flap of the wound—that is, skin and subcutaneous tissue—is reflected to expose the surface of the external oblique and the external abdominal ring. The distended veins are visible as they enter the ring. The external oblique aponeurosis is split in the line of its fibres (as in a hernial operation) from the apex of the external ring to beyond the internal ring—that is, two-thirds of the way to the anterior superior iliac spine. The two leaves of the external oblique are reflected generously to expose the cremaster and conjoined tendon. A large vein from the superficial fat passes into the external ring and is divided between ligatures (haemostats tend to tear fragile varicose veins). The upper leaf of the external oblique is wiped off the internal oblique towards the rectus abdominis. The cremaster and its contained bulky mass of veins and the round ligament are wiped up off Poupart's ligament and also off the pubic tubercle until it can be elevated out of the inguinal canal

on the finger. A large vein passing between it and the pubic tubercle is divided. The cremaster is separated along its fibres from the conjoined tendon above and divided just lateral to the internal ring until, with the round ligament, it is free from abdominal musculature; the cremasteric vessels are divided in the process. The round ligament and its veins are drawn taut at the internal abdominal ring and divided after transfixion with a secure ligature. The large veins immediately shrink and become manageable; they have a few connexions posteriorly, including a considerable one at the medial border of the internal ring. This is divided. The mass is gently elevated and stroked clear from the fat below the pubic tubercle and drawn out of the labium major. Several vessels need securing in the process and gradually the mass of dilated veins emerges from the labia and is removed.

Varicose Veins from the Peripheral Tributaries of the External Iliac Vein

When it is recalled that the uterine vessels enlarge to 30 to 40 times their normal size in pregnancy, it is not surprising that other tributaries of the internal iliac vein participate in this increase, especially the peripheral ones. In our experience its pudendal tributaries may become varicose. One such patient has been operated on by exposing the lower internal border of the gluteus maximus and dividing the enlarged veins running from the perineum. The procedure gave worth-while relief.

Results

No mother or baby has suffered from the procedure. All patients have agreed that their operation was beneficial, many have had one and two babies since, and one has had three. Our experience leads us to advise operation where there is real need.

Summary

Distressing vulval varicose veins occurred in 80 women from a total of 4,267 who booked as antenatal patients in a large teaching hospital—that is, about 2%.

The majority of these varicosities were first apparent after the 26th week of gestation.

The incidence rose with parity.

The diagnosis of various anatomical types of vulval varicosities is discussed.

Eradication of such vulval varicosities during pregnancy is frequently beneficial and details are given for the surgical approach for each type.

City Life in Japan, by R. P. Dore (Routledge & Kegan Paul, London, price 45s.), is published as a volume in the International Library of Sociology and Social Reconstruction. The author lived in a lower middle-class district of Tokyo for several months in 1951 and carried out a social survey there, examining standards of living, family life, community life, and religion and morality. The chapter he devotes to "Health and Security" is a useful summary of public-health methods in a Japanese municipality. Much is expected of the individual householder, whose sense of communal duty seems to be strongly developed. A public-health campaign in 1951 was supported by posters declaiming, "A flush toilet is the first condition of civilized living," and as a result of this some 90% of houses in the district were connected to the main sewer. There is a high degree of health consciousness among the people, and families spend quite large amounts of money on medicines and doctors' fees. Most sophisticated middle-class households possess their own hypodermic syringe and ampoules for injections. The author remarks that "the increase in the number of abortions reported yearly since the operation became legal in 1948 has been of astonishing proportions."