SIGNIFICANCE OF VASCULAR ANASTOMOSIS IN THE MESOSALPINX

by

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It is customary to consider endocrine deficiencies to be the result of metabolic disorders as evidenced by studies of glandular histology, cytology and histochemistry. Little thought is given to the possibility that disturbed vascular function may be an etiological factor in an endocrine dysfunction. Such a situation is likely to arise in case of ovarian function following operations on the fallopian tubes. It has been also our clinical experience that some of the patients complain of symptoms of ovarian dysfunction after operation for sterilisation. With this point of view, a naked eye study, in vivo, was undertaken on the angiological pattern of blood vessels in the mesosalpinx while performing operation for sterilisation. Opportunity permitting a more accurate study may be possible in future following the technique of Vinyl Resin injections with subsequent corrosion on our surgical materials.

The text books do not give the description of vascular anastomosis in the mesosalpinx; and its influence on ovarian blood supply does not seem to have been fully appreciated. W. Shaw (1936) suggests that vascular anastomosis in the mesosalpinx which supplies blood vessels to the tubes prevents it from becoming gangrenous when acutely inflamed in which respect the oviduct is in marked contrast with the vermiform-appendix. R. G. Whitelaw (1958) observes that loss of ovarian activity following hysterectomy may arise from failure to ensure adequate blood supply to the ovaries.

The angiological pattern of blood vessels in the mesosalpinx were studied in 63 cases of sterilisation. 29 were operated within one month after child-birth; 33 after one month of delivery; and one after termination of twelve weeks' pregnancy. The method of anastomosis of blood vessels was identical on both sides except in two cases. The following four patterns were recognised.

1. Single arcade connecting the anastomosing branches of the uterine and ovarian arteries with the accompanying veins (Fig. 1). It is placed 2-3 mm. below the lower border of the tube. In ten cases this type of arrangement of blood vessels was seen.
2. More than one arcade of anastomosing blood vessels in the mesosalpinx was found in 40 cases (Fig. 2). The vessels

forming the pillars of the arcade ran obliquely across between the two layers of the broad ligament and the mesosalpinx.

3. In one case there were three layers of vascular arcades in the mesosalpinx as one finds in the mesentery (Fig. 3).
4. Blood vessels branch dichotomously as they reach the lower border of the tube. This type of angiological pattern was observed in 13 cases (Fig. 4).

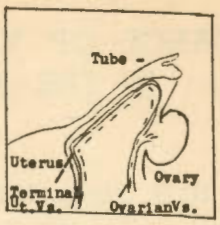

Fig. 1.
Blood vessels anastomosing in a single arcade in the mesosalpinx.

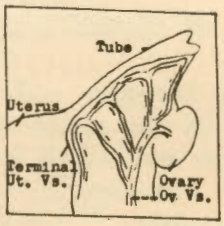

Fig. 2.
Multiple arcade pattern of vascular anastomosis in the mesosalpinx.

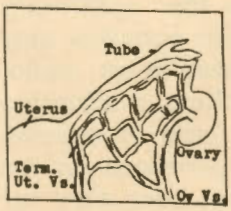

Fig. 3.
More than one layer of anastomosing vascular arcades in the mesosalpinx

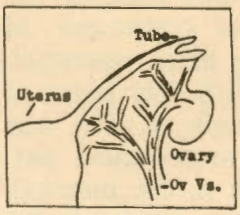

Fig. 4.
Dichotomous branching pattern of blood vessels in the mesosalpinx.

The angiological network in the mesosalpinx is formed by the anastomosing branches of the ovarian and uterine vessels. Ovarian artery, a branch of the abdominal aorta, on its course in the pelvis, runs between the two layers of the infundibulopelvic ligament, and enters the broad ligament of the uterus where it lies below the uterine tube. At this point it may get partially or completely occluded while performing salpingectomy. The post-operative phlebothrombosis may extend from the mesosalpinx to the hilum of the ovary. Both the above mentioned conditions, will affect the endocrine function of the ovary.

At the level of the ovary its artery passes backward in the mesovarium, and breaks into branches which pass through the inferior portion of the venous network. Its terminal and other branches which anastomose with the corresponding uterine branches are more slender. The terminal part of the uterine artery is of good size and is easily recognised. A harmonious intercommunication between two unequal vessels is achieved through the interconnecting vessels in the mesosalpinx. The angiological pattern of blood vessels in the mesosalpinx may have also to play a part in the equalisation of blood flow and regulation of blood pressure in the ovary, to the importance of which factors, in relation to the function of the gland, attention has been drawn by Reynolds (1950). Through this vascular anastomosis, part of the venous blood, from the placental site in the upper segment of the uterus,

drains in the ovarian veins which may become the seat of a thrombophlebitis following puerperal sepsis (Smout, 1948).

The calibre of the veins is bigger than that of the arteries. This difference is more marked during pregnancy. Ovarian veins empty in the renal vein or inferior vena cava to which thrombi-embolus may pass from the placental site via the plexus in the mesosalpinx or broad ligament.

The blood vessels are convoluted. There is stasis of venous blood which carries hormones from the gland. This fact may explain unequal action of the hormones on the arteries and veins during pregnancy or different phases of the menstrual cycle. Therefore after salpingectomy, the character of menstruation may change as a result of disturbed utero-ovarian anastomosis. Lastly, if biochemistry of the endometrium has any role to play in the function of the ovary, it would be effective through the vascular anastomosis in the mesosalpinx.

In conclusion, it may be observed that vascular anastomosis in the mesosalpinx has to subserve many important functions in the physiology of internal genital organs; and that this fact should always be borne in mind while performing operations on the uterine appendages.

References

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