STERILITY AND RETROVERSION*

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In this paper I do not propose to cover all the conditions associated with sterility and retroversion, in many of which the retroversion is incidental and the condition itself the cause of sterility, but to confine myself to those where the retroversion would seem to be, if not the only, at least the main factor. This rules out all the inflammatory conditions, endometriosis, developmental abnormalities, and the like.

We shall therefore only be dealing with those cases where potentially the tubes are patent, the ovaries, at least to begin with, are normal, and the sterility merely mechanical in origin. Such cases may be congenital or acquired.

Let us deal first with an extreme instance of the idiopathic or congenital type, for it is among these that one finds the greatest divergence from what we consider the normal position of the pelvic viscera:

The patient is essentially the thin willowy, aesthetic type that one associates with Vogue and Milady fashion plates, and with general visceroptosis. Her posture is typical; her lumbo-sacral curve is obliterated and she stands with her pelvic floor tilted forward so as to increase the support that it can give to her ptosed viscera, but in spite of this she often complains of continuous backache only relieved by lying on her face.

Pelvic examination shows that her cervix is pointing forwards with the anterior fornix closed, while the posterior fornix is opened up, and this in spite of the fact that her uterus is often acutely retroflexed. The body of the uterus can be readily palpated in the posterior fornix, and frequently prolapsed ovaries as well. The right ovary is usually the first to assume this position, followed later by the left, and if the condition has existed for some time they may both be irregularly enlarged, firm and acutely tender. It is possible at times to diagnose a deep pouch of Douglas or even an enterocele, by making a combined vaginal and rectal examination and at the same time getting the patient to bear down strongly. In this way one can sometimes feel bowel between the examining fingers. These are the cases that respond best

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to operative treatment and the results are surprisingly good.

On looking into the abdomen with the patient in the Trendelenburg position and with the bladder empty one can see the supravaginal cervix lying in the centre of the pelvis with both ovario-pelvic ligaments disappearing into the depths of the true pelvis on either side of it. At the same time the round ligaments may be seen, usually more or less attenuated, running outwards and forwards to disappear beneath the lateral pelvic peritoneum.

If the sigmoid is lifted out of the pouch of Douglas it will be found to be slung on a long mesentery, and indeed it is often difficult to decide where descending colon ends and sigmoid begins. As we continue this manoeuvre it will be seen that the tube and ovary of this side are dragged out of the true pelvis, attached by a thin transparent membrane to the upper edge of the broad ligament and left tube.

Very little reference seems to have been made to this condition; Curtis refers to its comparative frequency, but he does not seem to attach much significance to it.

After this procedure has been carried out there may still be quite a quantity of sigmoid lying in the pelvis, but it can be pulled up without significantly altering the position of the uterus any further. It seems likely that the constant backache that is so frequently complained of by these patients may be largely due to the drag of the sigmoid on its mesentery and, resulting from its loss of fixity, its inability to drive forward its contents. In consequence, these loops may contain a quantity of hardened faeces.

It can be readily understood, moreover, that when the ovaries have reached a position below the fundus they must be exposed to pressure from these loops; we know they can cause acute dysparunia.

Any further alteration in the position of the uterus must now be made by lifting up the organ itself and, as it comes into view, it often has a rather dusky appearance which gives place quite quickly to a mottled colouring, presumably from patchy contractions, the uterus itself at the same time becoming shorter and broader. This condition soon gives way to its normal colour and texture, and occasionally there seems to be some reduction in its size.

On looking into the pouch of Douglas one sees that the walls of its lowest portion, where the loops of bowel have been lying, are smoothed out and symmetrically rounded, reminding one of the smooth concavity of a bird's nest, with little differentiation of the structures in its walls. The pouch of Douglas is normally deep and may even amount to a true enterocele, as we have already seen.

When the large bowel is allowed to fall back into the true pelvis, the sequence of events is reversed and the retroversion is completed by the left tube and ovary being pulled back into the acutely retroverted position as that portion of the sigmoid which is attached to the upper edge of the broad ligaments and tube falls into its former position.

In the more advanced cases the ovaries have come to lie underneath the fundus, for their ligaments have become sufficiently elongated to allow them to assume this position, the right one usually prolapsing before the left. Under these circumstances they are usually enlarged, with white thickened tunicae, and are full of small follicular cysts varying in size. This thickening of the tunicae is probably a protective mechanism much the same as the protective thickening of the palms of a manual labourer; and this is not to be wondered at, for they have been lying among the coils of prolapsed large bowel, which are frequently full of hard inspissated faeces. The cysts develop in their turn from the inability of the ripening follicle to break through this tunica. It is possible that there may be some alterations in their blood supply, though I would not stress this point. It is certain, however, that the ovaries, after being replaced in their normal fossae, recover, with re-establishment of the usual menstrual cycle, even if nothing is done to them such as removing a thin sliver of their capsule to relieve their tension and allowing developing follicles to dehisce. This often occurs within 3 months of operation, though occasionally it may take much longer.

It is difficult to assess the position of the tubes in these cases, and salpingography does not help very much, for it is not easy to be certain that one has fixed the cervix exactly in its usual position when the radiographs are taken; but usually they appear fairly well out, and one would expect these relative positions in relation to the ovaries to be considerably altered, especially when the latter have developed long ligaments of their own and are lying below the fundus.

We know that the tubes are at times sufficiently kinked to prevent the dye passing out to their extremities, and on two occasions in which I opened the abdomen immediately after salpingography, lipiodol was seen to gush from both fimbriae as the uterus was lifted forward. Professor D. Crichton tells me also of one occasion when lipiodol was seen to flow through the tubes as the full bladder was emptied.

The reaction to alteration of position may account at times for the spill seen into the peritoneal cavity in the picture taken 24 hours later. It may also account for the discrepancy found when both gas and opaque media are used, in that either may be successful where the other has failed.

I feel that it is not stretching the point too much to say that in all cases of retroversion there must be a considerable alteration in the relative position of the tubes and ovaries, even in those of a mild degree, and in those where the ovaries lie below the fundus this must be very marked. That this is the case seems to be born out by the not unfrequent success obtained when the uterus is brought forward by means of a pessary of the Hodge type.

With regard to alterations in the blood supply we have to rely very much on conjecture. Probably the position of the uterine arteries and veins is very little affected as they run inwards from the pelvic wall towards the uterus, but from this point onwards, where they pass alongside the uterus, there must be a considerable deflection backwards and downwards. One can imagine some delay in the venous return, at least where this sudden twist occurs—perhaps sufficient to account for the changes in appearance of the uterus noted earlier on.

When one considers the vessels running in the ovario-

pelvic ligaments, one can imagine that there may be marked alteration in their positions and a certain amount of venous dilated stasis in the ovaries from pressure of the coils of bowel in their vicinity, as well as varying degrees of torsion. This is unlikely to make any difference to the flow of arterial blood, but could easily cause a varying degree of stasis in the veins, according to the degree of fullness of the coils of bowel.

Up till now I have described the condition in its final stage but, as can well be imagined, there must be many intermediate ones before this is reached, especially in those where there is little or no prolapse of the sigmoid and Curtis's adhesion is not present.

RETROVERSION CAUSING STERILITY

Let us examine *seriatim* the reasons why retroversion causes sterility and then show in what manner these can be rectified:

1. First and foremost, the gross alterations in the position of the tube in relation to the ovary. Normally the fimbriated end of the tube lies in close proximity to its corresponding ovary, curving round to hold it as it were in its embrace, and attached to it by an elongated finger. Indeed there is evidence to show that at the time of ovulation the tubal extremity weaves over the ovary. It has been shown by injecting a little opaque medium into it that it moves as though it were searching for the tiny ovum to help it on its incredibly, adventurous and momentous journey. With this close relationship gone the ovum must depend on being picked up fortuitously by some wandering, almost imperceptible, current of capillary fluid which the tube causes to flow towards it by reason of its ciliated lining. This must indeed be a precarious journey, for the life of the ovum is short and it may die, as many must, before it can find its way to the waiting sperm in the tubal lumen.

2. Kinking of the tube preventing the ovum and spermatozoa from meeting.

3. Thickening of the tunicae of the ovary, due to continuous trauma, preventing rupture of the Graafian follicle, which in turn leads to

4. Prevention of the formation of the corpus luteum, with upset of the menstrual rhythm. (This is not invariably so, for in spite of this a corpus luteum is sometimes found at operation.)

5. Severe dyspareunia with consequent infrequency of coitus.

TREATMENT

The following measures may be taken to relieve this condition:

1. *Without Operation*

(*a*) Insertion of a Hodge pessary is sometimes successful. If pregnancy supervenes replace a pessary *post partum* in the hopes that if the uterus is kept in its normal position during involution the ligaments may shorten up in this position.

(*b*) Encourage the patient to sleep on her face, especially round about the ovulation period.

2. *Surgical Measures*

Carry out an operation devised to rectify the malpositions described above:

(*a*) Antevert the uterus so as to bring the ovaries back into their normal fossae, shortening their ligaments if necessary.

(*b*) Draw the cervix backward into its right position, i.e. pointing directly towards the posterior vaginal wall or even backwards.

(*c*) If the ovaries are very sclerosed remove a thin sliver of tissue so as to allow the follicle to rupture with consequent formation of corpus luteum.

The Operation may be done under Pentothal and Flaxedil:

(*a*) Mid-line incision to deep fascia.

(*b*) Expose the fascia in two little pockets ready-made for the purpose about 2 inches above the symphysis pubis.

(*c*) Open peritoneal cavity. Deal with Curtis's adhesion by dividing it and re-suturing in line of bowel and upper edge of broad ligament.

(*d*) Bring together utero-sacrals in the mid-line where they spring from the back of the uterus, with several thread sutures.

(*e*) Shorten ovarian ligaments by Angleworm method.

(*f*) Cover these with peritoneum by means of a fine catgut suture.

(*g*) Treat round ligaments by a modified Gillam's operation, bringing the doubled round ligaments through the inguinal canal on either side and joining them in front of the deep fascia.

Should the pouch of Douglas be very deep the enterocele in its lower portion can be closed by a series of purse-string sutures beginning at the bottom and reaching up as high as thought necessary. This has the disadvantage that there may be cystic formation where this space is not completely obliterated; but this is not likely to occur, and a very small cavity should be left for fluid to reach the base of the new-formed pouch of Douglas.

Caution should be taken to leave sufficient room between the posterior edge of the approximated utero-sacrals and the sigmoid to prevent any bowel from above becoming herniated at this point. This can be easily rectified in the early stages, if such a catastrophe should occur, by making the patient assume the knee-chest position, when the bowel readily falls back out of the pelvis.