ON OPEN FALLOPIAN TUBE.*

By J. MATTHEWS DUNCAN, M.D.,

Physician-Accoucheur to, and Lecturer on Obstetric Medicine at,
St. Bartholomew's Hospital.

THE uterine end of the Fallopian tube is regarded almost exclusively as a closed, or a merely potential, tube or canal. It is spoken of as large enough to permit a bristle to be pushed through it; but this is done with difficulty, and, for practical purposes, it is no doubt generally closed, for fluids accumulate in the uterine cavity under considerable pressure; and the use of intra-uterine injections, whether after delivery or at other times, is feasible, because the injected fluids, as a rule, do not find an open passage in the tubes. The closure of the tube is not by such apposition of its walls as is seen when a piece of gut is pressed flat between two parallel surfaces, but is stricture-like, or such as is produced by an active sphincter.

The cervix uteri has a canal, which is generally neither closed, nor a merely potential tube, there being an easily appreciable quantity of mucus, even in its external and internal os. If it be a mere potential canal, its closure is by apposition of its anterior and posterior walls; and a large probe—the ordinary uterine probe—can be passed easily through it. Fluids do not accumulate in the uterine cavity because of want of opportunity of exit, if the cervix be in its ordinary condition. Indeed, although it is often asserted that such closure of the cervix as arises from smallness of either of its two terminal openings, or from flexion, leads to distension of the uterine cavities by accumulation of retained secretions or excretions, there is no evidence to this effect; while examples of these cervical conditions without retention are very frequently observed.

The canalisation of the cervix, or rather its further canalisation, or increased canalisation, is different from the canalisation of a tube, which begins by having no available canal or passage at all.

The opening of the os uteri, at either end of the cervix, so as, with the intervening passage, to form a cylindrical tube of considerable diameter—say that of a No. 9—is easily effected by bougie in the healthy female; and its further rapid dilatation, so as to permit the passage of the finger, may also be effected. The canalisation of the cervix in labour is well known, and to a great extent understood.

The dilatation and canalisation of the cervix has often been described as occurring in sexual excitement; and Rouget has described a supposed mechanism of its production (see the author's *Researches in Obstetrics*, p. 431). This canalisation has also been described by Beck (*American Journal of Obstetrics*, November 1874), as seen in progress through the speculum; and I have observed, in the same way, the external os uteri forming a rounded wide opening in a woman who had never been pregnant, and whose external os was, a short time previously, in the ordinary virgin state. The improvement of the canalisation of the cervix is the chief object of most of the methods of treating sterility. (For further references, see Pallen, *American Journal of Obstetrics*, 1880, "On a Case of Abdominal Pregnancy".)

Apart from pregnancy, the otherwise healthy cervix becomes spontaneously canalised in certain hemorrhages, which I have described in a paper on Hemorrhage, with Dilatation of the Unimpregnated Uterus, and in another on Intra-uterine Menstrual Coagula (*Obstetrical Journal of Great Britain and Ireland*, January and March 1880).

The canalisation of a tube is provided for by its anatomical structure, and it must take place spontaneously, regularly, and naturally, in order to transmit the fecundated ovum; but little is known of its occasional occurrence as a condition morbid in itself, or leading to morbid results. This occurrence of dilatation or spontaneous canalisation was long ignored, as may be seen by reference to the literature of hæmatocele (*Edinburgh Medical Journal*, November 1865, p. 409). Indeed, long after its description (*ibid.*, June 1856), many attempts were made to explain away the evidence on which its occurrence was asserted.

No one now denies the occurrence of patent Fallopian tube, for it is frequently observed in practice, the probe passing through it in making uterine investigations. It has also been frequently seen in dissections, and of this I recently had an example. Investigating the pelvic conditions of a case, destined, by a colleague, for ovariectomy, I found the uterine probe pass to the right side of the pelvis, and far beyond the limits of the uterine body, which was pretty easily and certainly felt. When the woman was on the operating table, I failed to pass the probe again through the tube, probably from the unfavourable circumstances under which the attempt was made. A few days subsequently,

in the *post mortem* examination, the right tube was observed lying in the route which the probe had taken, and its uterine extremity was patent, not to the extent of being big enough to transmit a uterine sound, with its large bulbous point, but to transmit a common small surgical probe.

Interesting evidence of the patency of the tubes is found in the intra-uterine clots discharged in some cases of metrorrhagia. These, coming away as models of the uterine cavity, bear at their upper angles long clots drawn out of the tubes, and found hanging from the main intra-uterine clot. Appendages of the same appearance and origin may be found attached to the decidua in cases of abortion (see the author's *Researches in Obstetrics*, p. 296); but these are decidual in structure, and have some strength, and are not extracted from the tube, but are part of the tube. They do not indicate patency; but the extraction of a long clot, so delicate and perishable as it is, attached only by the feeble cohesion of coagulation to the main intra-uterine clot, indicates a decided patency of the canal from which it passed. In Pirie's case (*Obstetrical Journal*, January 1880, p. 5), "the upper part of the clot was firm, even somewhat tough, and the tubal cords were nearly four inches long". In the case of C. Rokitsky (*ibid.*, March 1880, p. 133), the body of the uterus contained "a three-cornered coagulum, ending above on both sides in a short thin thread running to the tubes". Whitehead (*ibid.*, March 1880, p. 137) says that, in his case, "small fibrous prolongations from the clot corresponded to the Fallopian tubes".

Of the possible evil results of persistent patency of a Fallopian tube, the following is an example related to me by Mr. Hewer, as having occurred in the practice of his partner Mr. Calthrop. A widow, aged 48, had a polypus of the cervix snipped off by scissors. On the fifth day after the operation, her sister gave her, gently, a vaginal injection of warm water with Condy's fluid. Whilst receiving the injection, the patient cried out, "You have killed me", and was seized with sudden pain in the right side of the abdomen. She lived for three days in great pain, till within a few hours of death. On *post mortem* examination, there was found general peritonitis with flaky lymph on the intestines. The right Fallopian tube was seen to be much larger than the left—twice as broad; it was freely patulous. The section of the pedicle of the polypus was healthy. There were two other polypi in the cervix. Here, as Mr. Hewer says, it was plain that the injected fluid passed into the peritoneal cavity through a canalised tube, and caused peritonitis and death. Of this accident, many cases are now on record, the injections being either vaginal, as in Hewer's case, or intra-uterine.

By the same route, I have long held that blood frequently passes from the uterine cavity into the peritoneal cavity, and gives rise to hæmatocele. Indeed, I incline to the opinion that this diversion of blood, whether menstrual, menorrhagic, or metrorrhagic, is the most frequent cause of this not uncommon disease. Of course, it is necessary to suppose, what has been well accounted for, that the morbid course of the blood is mechanically easier than the natural or ordinary one through the cervix uteri into the vagina; and there can further be no doubt that, ordinarily, even when a tube is patent, the mechanically easier progress of the blood is through the cervix into the vagina. Were it not so, hæmatocele would be much more frequent than it is. I have often known a woman lose blood from her uterus *per vaginam* while a tube was freely patent.

Besides the passage of blood, there is the almost certain, but very rare, passage of a lumbricus through a patent tube (Winckel, *Die Pathologie der weiblichen Sexual-Organen*, S. 321). This kind of passage is effected by the movements of the animal.

Further, openness of a tube is a necessary condition for the accomplishment of the wandering of the ovum in certain cases of extra-uterine pregnancy.

In conclusion, it is necessary to remember that, besides natural and morbid conditions of patency, there may be unnatural absence of temporary patency, or of occasional dilatation of the tubes; for it is probable that they dilate during sexual excitement, and permit the passage of the semen. Indeed, it is scarcely conceivable that semen can permeate the tubes while they are in their usual closed state. This absence of dilatability of the tubes, or their rigidity, may thus be a cause of barrenness.

The proposition of Tyler Smith to catheterise the tubes, and thus cure sterility, was brought forward under the influence of different theoretical views from those expressed in this paper. It has, as yet, led to no more practical result than the proposal of Forriep to close them by cauterisation, in order to produce sterility.

* Read in the Section of Obstetric Medicine at the Annual Meeting of the British Medical Association in Cambridge, August 1880.

MEDICAL MAGISTRATE.—Dr. Moorhead, of Cootehill, has been placed on the Commission of the Peace for Cavan County.