

A MODIFIED METHOD OF INSERTING A VAGINAL FISTULA FOR THE GRAPHIC RECORDING OF UTERINE CONTRACTIONS

V. M. Klebanov

Department of Normal Physiology (Head – Professor M. G. Mogendovich), Perm Medical Institute

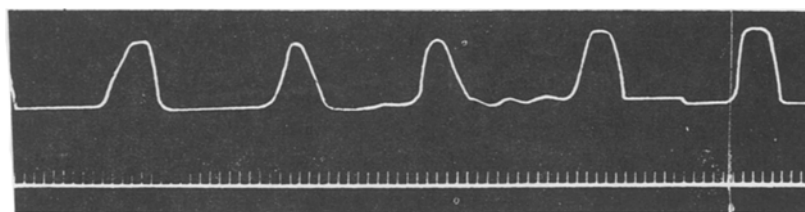
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To solve the problems concerned with the regulation of uterine mobility, it is essential to use chronic preparations in which the normal blood supply and innervation of the uterus are preserved.



Uterine contractions of rabbit. Curves, from above downwards: uterine contractions; time marker (5 sec).

These conditions are not satisfied by any of the methods previously used. Several approaches have been made: 1) Observation of the contractions of the different regions of the uterus by use of isolated portions [7, 11, 12, et al.]; 2) experiments on the uterus in situ [10]; 3) a study of the uterine electrical activity [3,4,8, et al.]; 4) development of a method based on the use of a chronic uterine fistula [1,2,5,6,9, et al.].

The last method corresponds most nearly to our requirements, but it has certain drawbacks. The small diameter of the uterine cervix makes it difficult to introduce a transducer into it. The cervix may easily be damaged. If an animal is repeatedly used for experiments, hyperplasia of the mucosa occurs, leading to hemorrhage and inflammation.

To establish a chronic uterine fistula for animals under normal living conditions, we attempted to perfect the operation of Kamenister and Reynolds, who substituted a vaginal for a uterine fistula. The drawback of their method was that preparation of the animal involved three previous operations, and caused extensive vaginal trauma.

We have worked out a method for establishing a uterine fistula in a rabbit at one operation; the transducer may be introduced through the opening of the fistula and the cervical canal into the uterine horn lying beneath the skin.

The operation is carried out as follows. A laparotomy is performed under general anesthesia, and the vagina brought out into the wound. An incision 1.5-2 cm long is made in the anterior wall of the vagina near to the anterior fornix and then two stages of knotted interrupted sutures are inserted. In the first stage the sutures embrace the adventitial and muscular layers of the vagina, and attach them to the peritoneum. The second stage of sutures passes through all three layers of the vagina, and joins them to the muscles and skin of the abdominal wall. The incision in the abdominal wall is sewn up by layers, so as to preserve the fistula.

After the wound was healed, by the 7th-10th day the experiment may be undertaken. To record uterine mobility we used a cigar-shaped rubber balloon measuring 18 × 4 mm, made by sticking together thin rubber sheet, and it was connected by means of a rubber tube to a vertical water manometer and a sensitive Marey's capsule, 10 mm in diameter.

The uterine contractions were recorded by a writer in which the inertia of the writing arm had been reduced, and the record was made on a smoked drum moving at 0.5 mm per sec (see figure).

This trans-vaginal method of recording uterine contractions in chronic rabbit preparations has proved reliable.

SUMMARY

To meet a requirement for a chronic uterine fistula under nearly normal conditions, we have improved the operation of Kaminester and Reynolds, who substituted the vaginal for a uterine fistula. In the modified method the vaginal fistula is introduced in a single stage, and allows the transducer to be introduced through the fistula and cervix into the uterine horn which is brought to lie under the skin. The uterine contractions were recorded by means of a rubber cigar-shaped bulb of thin rubber, measuring 18×4 mm. The bulb was connected by a rubber tube to a vertical water manometer and a sensitive Marey's capsule 10 mm in diameter. A record of the contractions was made by means of a sensitive recorder on kymograph tape.

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All abbreviations of periodicals in the above bibliography are letter-by-letter transliterations of the abbreviations as given in the original Russian journal. *Some or all of this periodical literature may well be available in English translation.* A complete list of the cover-to-cover English translations appears at the back of this issue.
