ARTIFICIAL FISTULAE OF HOLLOW ORGANS OF SOME DUCTS IN SMALL ANIMALS

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V. N. Boldyrev has justly said that all operations for artificial fistulae of hollow organs should be regarded as one and the same type of operation. Thus the operative techniques of Basov for gastric fistula (1842), and of Schwann (1844) and Dastre (1890) for gall bladder and urinary bladder fistulae, are virtually identical. This technique is very simple, and requires hardly any modification, except for special purposes, such as for the study of comparative physiology and ontogenesis.

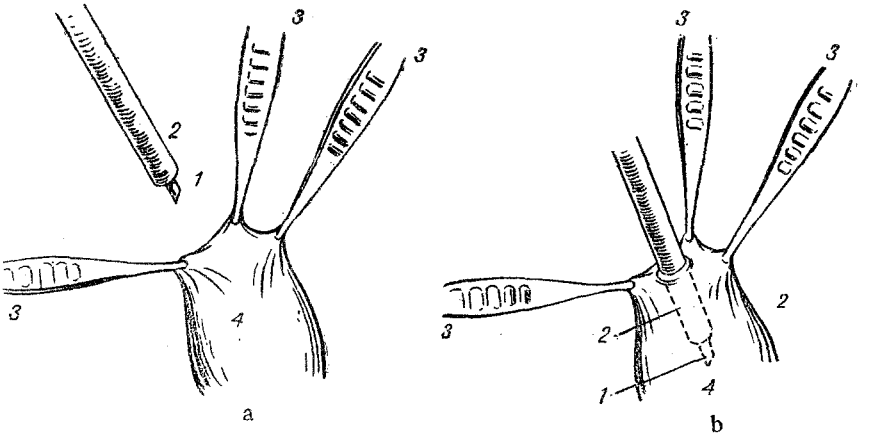

Fig. 1. Insertion of a fistula cannula into the gall bladder. A) before insertion, B) insertion of the fistula cannula with trocar into the gall bladder. 1) trocar, 2) fistula cannula, 3) forceps, 4) gall bladder.

In working with small animals, however, the application of a serosa-muscle suture is difficult and often impracticable, because of the fragility of the structures. In such cases the procedure described below may be applied; it was worked out by us, and applied to production of fistulae of the stomach, gall bladder, and urinary bladder of guinea pigs, cats, and rats.

The fistula cannula was made of teat-rubber tubing 2-2.5 cm in length, fitted on a large-bore hypodermic needle, in much the same way as the sleeve is fitted on a trocar. The end of the tube is bevelled, so as to form a continuation of the surface of the needle, which acts as a trocar.

In any of the three operations (we here describe, as an example, the production of a gall-bladder fistula), the fundus of the bladder is held by 3 forceps, so as to give a fixed area (Fig. 1, A), through the center of which is inserted the needle, and with it the rubber tube (Fig. 1, B). The needle is then withdrawn from the tube (this is facilitated by previous lubrication of its inner surface with vaseline oil).

The tube is held in place by 2-3 ligatures, as shown in Fig. 2. The whole of the part on which the ligatures are placed is then peritonized.

Cannulae made of plastic may be used instead of rubber (Fig. 3), and these are similarly fitted over needles of appropriate diameters. The insertion operation is the same as for rubber cannulae.

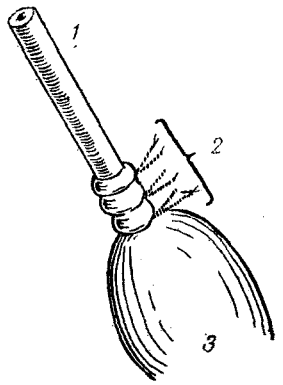

Fig. 2. Attachment of a fistula cannula into the gall bladder.
1) fistula cannula, 2) ligatures, 3) gall bladder.

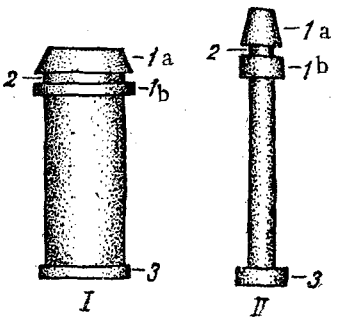

Fig. 3. Plastic fistula cannulae (schematic). I) fistula cannula for rat's stomach. II) fistula cannula for guinea pig gall bladder. 1 (a, b) – flanges entering the gall bladder or stomach, 2 – groove for ligature, 3 – external flange.

Thin rubber or plastic cannulae may be inserted and attached similarly, into the biliary, pancreatic, and ureteric ducts.

The operation is a very simple one, and no incision or suturing of the organ is required. The cannula is fixed on the ventral surface of the animal in the usual way.