

METHODS

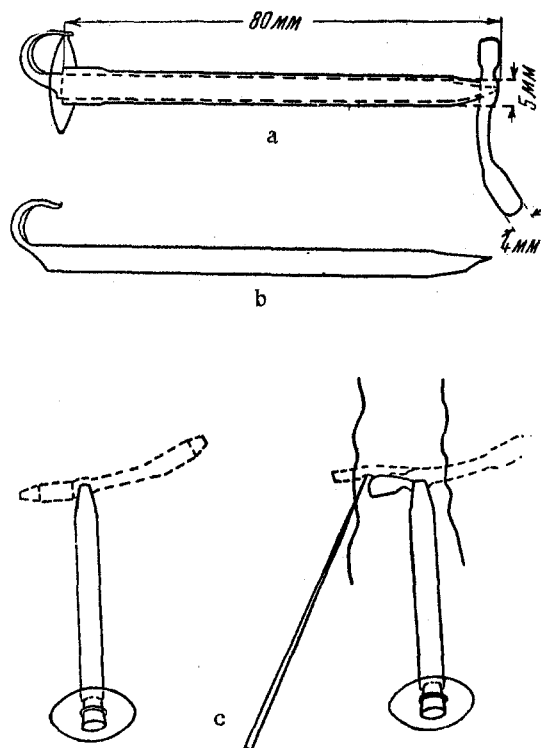
A NEW METHOD OF FORMING A FISTULA OF THE COMMON BILE DUCT IN DOGS

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The study of bile formation and excretion is of both theoretical and practical importance. This problem has for many years attracted the attention of physiologists and clinicians.



Sketch of the fistula tube. a) Fistula tube with accessory tube inserted; b) accessory tube; c) diagram of the sequence of insertion of the fistula tube in the duct.

It must be pointed out that all the information obtained on bile formation and excretion is based on the results of the I. P. Pavlov school, on dogs with chronic fistulas of the common bile duct and the gall bladder [1, 2, 3].

In the course of work in our laboratory on problems of bile formation and excretion we became convinced that the existing methods of formation of a fistula of the common bile duct have many essential defects. This is also mentioned in several reports in the literature [1, 2, 3, 4, 5].

The worst defects of the existing methods of formation of a fistula of the common bile duct are as follows:

1) The animal loses the whole of its bile through the orifice of the fistula.

2) Bile flowing through the orifice of the fistula spreads over the abdominal wall, often causing considerable irritation of the skin and in some cases even leading to the formation of marked eczematous changes.

3) From 4-6 months after the production of a chronic fistula of the common bile duct the excretion of bile through the orifice of the fistula sometimes ceases, since the bile finds an alternative route into the duodenum.

These considerations impelled us to turn our attention to the development of a new method of formation of a fistula of the common bile duct.

We started from the assumption that the method must satisfy the following demands: at other times than during the experiment the bile must pass into the duodenum, and during the experiment it must be collected freely in a vessel.

EXPERIMENTAL METHOD

In carrying out these experiments a special fistula tube was made from copper plated with chromium or silver (it is best to use a silver tube). The fistula tube is T-shaped (see figure). The horizontal part of the tube is 30 mm long. The diameter of the tube at its ends is 4 mm and the remainder is thicker which permits easier retention of the tube in the bile duct and also makes it possible to apply a ligature. The vertical part of the fistula tube is 70-80 mm long and 5-5.5 mm in diameter.

At the time of the experiment an additional hollow tube with obliquely cut ends is inserted in the fistula tube just described in order to close the outlet of bile into the intestine and to direct it externally.

On the external end of the fistula tube there is a round metal cap to prevent the tube being drawn into the abdominal cavity.

For the operation it is best to choose a dog with a wide thorax. Under general morphine and chloroform anesthesia an incision 8-10 cm long is made in the abdominal wall along the linea alba. The duodenum and pancreas are brought out through the incision. The common bile duct is identified. It is easily found by traction on the duodenum. When the duct has been found two ligatures are passed under it at a distance of 15 mm apart. A longitudinal incision 8 mm long is made in the duct between the ligatures (it is not advisable to dissect out the duct between the ligatures in order to avoid damage to the nerves and blood supply of the duct). By means of a hook the long horizontal limb of the fistula tube is inserted through the incision into the duct on the side of the liver as far as it will go (see figure, c). Next the opposite end of the incision is lifted up with the hook and the second limb of the fistula tube inserted, directing it towards the duodenum. The incision in the duct is then sutured around the thin part of the tube, and the two ligatures previously applied are tied lightly (they must not be tied tightly to avoid necrosis of the duct and interference with its blood supply).

After the fistula tube has been sutured the duct is covered with the free end of the omentum to improve the healing of the wound.

The incision in the abdominal wall is closed in layers. During this process the free end of the fistula tube is sutured into the anterior end of the incision. This concludes the operation.

EXPERIMENTAL RESULTS

Observations over a period of 13 months on animals undergoing operation by this method have shown that the dogs appear quite fit; no disorders of the digestive organs are observed. Outside the experiments the bile passes to the duodenum. During the experiment all the bile can be directed externally by inserting the accessory tube.

SUMMARY

Experiments were performed on dogs. This method gives an opportunity to collect bile into tubes during the experiment, at other times it enters the intestine, as in normal conditions. With this purpose a T-shaped tube is inserted into the common bile duct. Its horizontal part is introduced into the incision of the duct, while the vertical part comes out through the abdominal wall.

For suturing the tube an incision of the abdominal wall is made along the linea alba. The duodenum and the pancreas are exposed. 2 ligatures are placed under the bile duct, the distance between them being 15 mm. Then a longitudinal incision of the duct is made and the horizontal part of the fistula tube is inserted. The opening in the duct is sutured and covered by the omentum. The incision of the abdominal wall is also sutured with the exception a small opening through which the vertical part of the fistula tube comes out. In 7 to 10 days one may commence to collect and examine the bile.

This method has a number of advantages over the existing ones. Observations of dogs (8 months) operated by this method demonstrated that the process of digestion, as well as the processes of formation and secretion of bile is quite normal.

LITERATURE CITED

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*In Russian.

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