

## ANGIOSTOMY USING AN ISOLATED SEGMENT OF SMALL INTESTINE

K. V. Smirnov and V. A. Shaternikov

(Presented by Active Member AMN SSSR A. V. Lebedinskii)

Translated from *Byulleten' Éksperimental'noi Biologii i Meditsiny*, Vol. 51, No. 6, pp. 105-106, June, 1961

Original article submitted April 29, 1960

A great deal of work has been done on the function of intact organs in chronic experiments. Considerable difficulties are encountered, and one of the most promising methods is that of angiostomy.

It was proposed by E. S. London [2], who used a metallic cannula. The operation is carried out in two stages: first the vessel is prepared to receive the cannula, and then it is sewn in position. However, a metallic cannula is not convenient, because it constitutes a foreign body.

In I. A. Pigalev's [3] modification, a skin fragment is used as a cannula. In our opinion, the method is still unsatisfactory. Firstly, such a cannula may close up, and any maceration of the skin will produce this effect; secondly, because of the insufficient blood supply such a cutaneous cannula may necrose.

F. D. Vasilenko [1] used an isolated segment of the small intestine as a cannula. After a portion of intestine had been isolated, one end of it was split open for a distance of 1.5 cm, after which the inferior vena cava was freed from the surrounding tissue and surrounded by the doubled portions of the intestine, which were then sewn in place. A disadvantage of the method is that it can be used only on large vessels; in addition, there is always the danger that the vessel may be compressed by the intestine, which is supplied with powerful muscle layers.

We have used successfully a new modification of the angiostomy method in experiments on 28 dogs. We followed F. D. Vasilenko in using an isolated segment of small intestine as a cannula. The method has the following advantages: the cannula cannot close up; because of the continuity of blood vessels and nerves which supply the isolated intestinal segment, it cannot necrose; the extensibility of the portion of gut enables the lumen of the cannula to be altered; the operation may be applied to various vessels; animals on whom this operation has been performed do not require any special care.

The whole of the operation was carried out at one time. To begin with, one or two portions of small intestine, depending on how many were required, were isolated without breaking the continuity of the mesenteric vessels and nerves. The two cut ends of the remaining intestine were joined. Next, a portion of mucous membrane at the oral end of the isolated segment (measuring 0.5 cm) was cleaned, three or four silk stitches were inserted in it, and it was sewn on to the wall of the vessel so as to include the surrounding tissue. A layer of mesentery was then placed around the angiostomy, and the other end of the isolated segment of small intestine was brought out through the opening in the peritoneal cavity.

In our experiments we sewed the intestinal cannulae to the portal and hepatic veins. Experiments using this method were performed on 28 dogs. It was found that the small amount of fluid which is secreted by the isolated intestinal segment does not in any way harm the vessel to which it is sewn. A dissection performed at the end of the experiment showed that the isolated intestinal segment had healed beautifully to the vessel walls.

### SUMMARY

A new modification of E. S. London's angiostomy method is described. Isolated segments of the small intestine were used as cannulae. The intestinal cannulae were joined to the portal and hepatic veins in 28 dogs. The advantages of this method were as follows: the isolated intestine has the convenient property that its size may be changed at will; there is no danger of necrosis or of loss of patency, because the vessels supplying the cannula remain intact. Good unity with the vessels guarantees reliability of the results.

#### LITERATURE CITED

1. F. D. Vasilenko, Reflexes from the Venous Receptors, Dissertation for Doctorate [in Russian] (Moscow, 1955)
2. E. S. London, Arkh. Klin. i Eksper. Med., 5, 35 (1923).
3. L. A. Pigalev, in book: Problems of Pathology and Metabolism [in Russian] (Leningrad, 1950) p. 13.