

region of the anterior lobe;^{1, 6} and, furthermore, the changes in the anterior lobe itself are sufficiently marked to account for the appearance of the hormone in the 5-day but not in the 4-day chick embryo.

It is proposed to extend this work to include a study of the appearance of the pressor and oxytocic hormones in the pituitary of the developing chick embryo.

Conclusion. The melanophore-dispersing hormone is first detectable in the developing chick embryo of 5 days' incubation. At this stage, the anterior lobe no longer appears as a simple evagination of the buccal epithelium. The fact that the neural lobe first appears at this stage may or may not be of significance.

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A Method of Preparing Isolated Intestinal Loops in the Dog.*

MILDRED E. DOSTER-VIRTUE AND ROBERT W. VIRTUE.

From the Department of Chemistry, University of Denver, Denver, Colorado.

Intestinal absorption experiments were carried on for 2 years with open fistulous loops of the Thiry type as modified by Johnston.¹ The double balloon method as adopted by Riegel² was also used for some months. Our results were not satisfactory as leakage often occurred and the animals required too much attention during experimental periods.

Therefore, a new operative method of closing intestinal fistulae has been developed and used during the past 2 years.† Present results indicate it to be successful physiologically, and superior experimentally to former procedures for constructing isolated intestinal loops for absorption studies.

A cylinder of especially prepared bone is implanted at the proximal end of the loop so that granulation tissue invades the interstices of the cancellous bone and forms a sealed closure for the loop.

⁶ Kleinholz, L. H., and Rahn, H., *Anat. Rec.*, 1940, **76**, 151.

* A portion of this work has been done at the Medical School of the University of Colorado by the courtesy of Dr. R. W. Whitehead.

¹ Johnston, Chas. G., *Proc. Soc. Exp. Biol. and Med.*, 1932, **30**, 193.

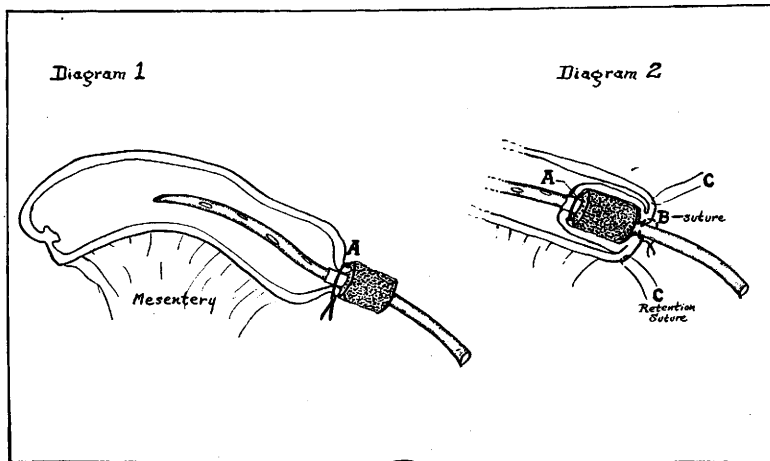
² Riegel, Cecelia, Elsom, K. O., and Ravdin, I. S., *Am. J. Physiol.*, 1935, **112**, 669.

† This work was aided by a grant from the New Orleans Academy of Sciences.

Previously reported work with bone transplants has been done by Orell,^{3, 4} Bisgard,^{5, 6} Albee,⁷ Wurm,⁸ Girliani,⁹ and Pokotilo.¹⁰

Female dogs varying from 10 to 25 kg in weight have been used for the following surgical procedure. Six to 9 inches of small intestine are isolated for the loop, and the distal end is closed. The intestinal tract is anastomosed by a side-to-side apposition in the smaller animals and an end-to-end in the larger ones, by usual surgical methods. The open end of the loop is then inverted about the cylinder of bone which has been prepared and sterilized with a size 14 catheter through it. The accompanying diagrams show this procedure. Sutures hold the bone cylinder invaginated into the end of the loop so the serosal layer is held snugly to the surface of the bone. The catheter is brought out through the right rectus muscle, and the loop is anchored by retention stitches.

The work of Orell,^{11, 12} Ghormley,¹³ and Tavernier¹⁴ on heterogeneous bone transplants and implants suggested some methods of



- 3 Orell, S., *Acta. Chir. Scandinav.*, 1934, **74**, 1.
 4 Orell, S., *Surg. Gynecol. and Obstetrics*, 1934, **59**, 638.
 5 Bisgard, J. D., *Arch. Surg.*, 1935, **30**, 748.
 6 Bisgard, J. D., and Farris, J. M., *Surg., Gynecol. and Obstetrics*, 1938, **66**, 173.
 7 Albee, T. H., *Proc. Royal Soc. Med.*, 1930, **23**, 31.
 8 Wurm, H., *Verhandl. d. deutsch. path. Gesellsch.*, 1930, **25**, 191.
 9 Girliani, G., *Arch. Ital. de Chir.*, 1932, **31**, 268.
 10 Pokotilo, K. L., and Kosdoba, A. S., *Mitt. a. d. Grenzgeb. d. Med. u. Chir.*, 1936, **44**, 390.
 11 Orell, S., *J. Bone and Joint Surg.*, 1937, **19**, 873.
 12 Orell, S., *Surg., Gynecol. and Obstetrics*, 1938, **66**, 23.
 13 Ghormley, R. H., and Stuck, W. G., *Arch. Surg.*, 1934, **28**, 742.
 14 Tavernier, *Lyon Chir.*, 1930, **27**, 233.

treating osseous tissue for surgical uses. Our modified procedure is to use the solid areas of femorii or humerii of cattle and cut them into small cylinders about one-half inch long. These pieces of raw bone are placed in 5% alkali overnite, washed with water for one hour, placed in acetone for one hour, and dried thoroughly. Size 14 catheters are cemented into the cylinders by a special rubber cement.‡ The lower end of the bone is also coated with it to seal the porous opening and stop any possible seepage through the cylinder. Ordinary rubber cement and several common plastics disintegrated in from one to 8 weeks in the animal body.

In 10 dogs autopsied or reoperated for removal of the loops, the specimens were studied microscopically. A sealed union of tissue into bone was always present macroscopically. Two microphotographs are presented that demonstrate this invasion of granulation tissue into the scaffolding offered by the bone matrix, and later a definite epithelialization from the serosa into the minute channels of the osseous cylinder. Thus, a combined organic and mechanical

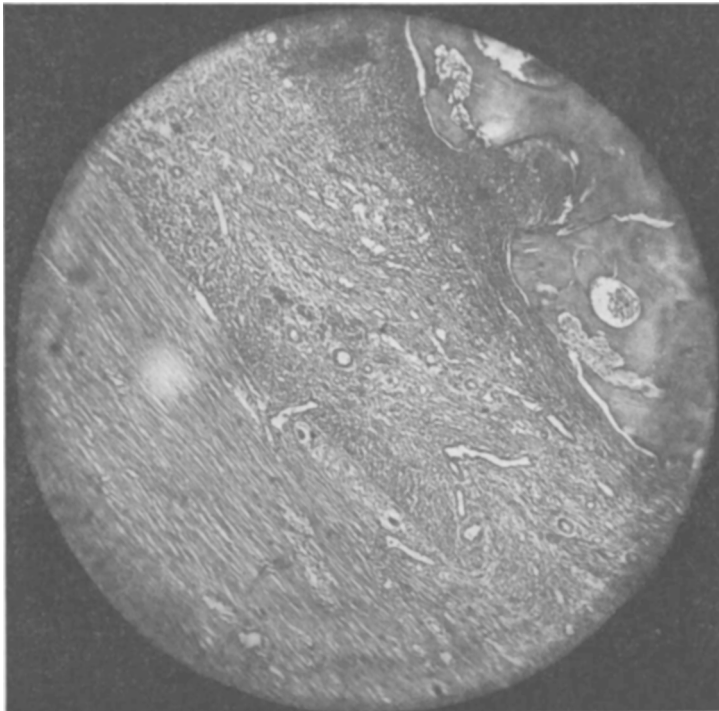


FIG. 1.

Cross section magnification ($\times 40$) of junction of bone and intestinal serosa, 10 days after operation, showing vascular granulation tissue.

‡ Gates Rubber Company, No. 8675.

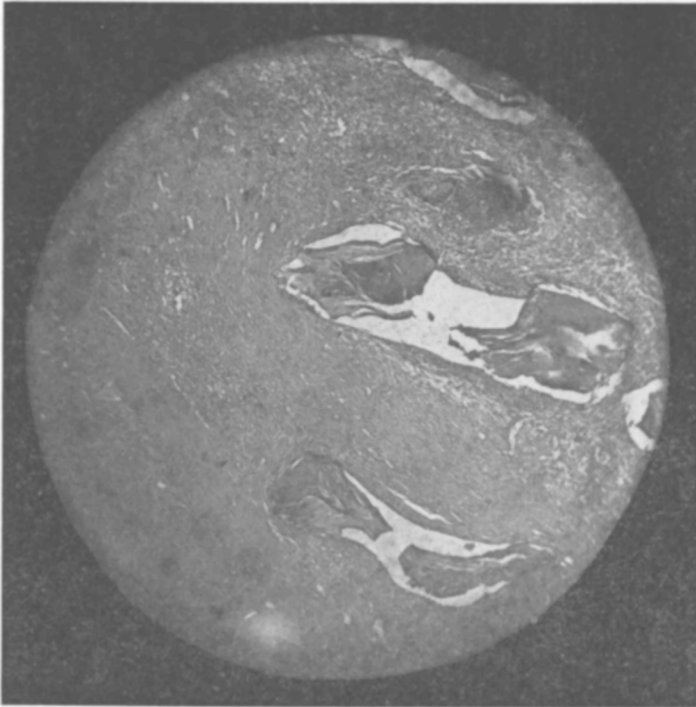


FIG. 2.

Cross section magnification ($\times 25$) of junction of bone and intestinal serosa, one month after operation, with granulation tissue becoming dense and fibrous.

stopper is made at the fistulous openings of these intestinal loops.

About 10 days after operation, experimental absorption or excretion periods are begun. The loop is irrigated daily with tap water, and all materials to be studied are easily introduced by syringes. The ease of working on this type of loop is readily appreciated after one has used the former types of fistulae. As needed, the catheter is closed by a Hoffman clamp, but usually it is left connected to a rubber football bladder that is held beneath the belly by a special metal pan that is strapped to the dog. This closed drainage is a great aid in cleanliness of the animals, and the metal band keeps the dogs from chewing the catheters.

A rubber disc is cemented about the catheter at the skin surface to immobilize it so that over a period of months very little tissue irritation occurs. Experimental absorption studies on these loops will be reported elsewhere.

Thus we present a new operative method of constructing an isolated intestinal loop that allows a convenient, clean, and leak-proof closure of the fistula.