

TABLE I.

Material injected	Amount cc.	Death due primarily to generalized peritonitis	Death from other causes	Survival
24 hr. brain culture of <i>B. welchii</i>				
Subperitoneally	1	0	0	1
Same	2	1	1	1
Same	5	0	1	2
Same	4	3	2	2
24 hr. broth culture of <i>B. coli</i>				
Subperitoneally	4	6	3	6
18 hr. broth culture of <i>B. coli</i> and <i>S. hemolyticus</i>				
Subperitoneally	5	3	2	1
18 hr. broth culture of <i>S. hemolyticus</i>				
Subperitoneally	5	0	1	4
18 hr. broth culture of <i>B. coli</i>				
Intraperitoneally	5	3	1	0
24 hr. broth culture of <i>B. coli</i>				
Intraperitoneally	4	4	0	14
Same	5	3	1	2
24 hr. broth culture of <i>S. hemolyticus</i>				
Intraperitoneally	5	0	1	2
Same	4	0	0	1
24 hr. broth culture <i>B. coli</i> and <i>S. hemolyticus</i>				
Intraperitoneally	5	1	0	3
Totals	—	24	13	39

for a few days before being used. One may draw the conclusion from these experiments that bacteria alone will cause peritonitis in a high percentage of cases providing that the animal's resistance is lowered by suitable means.

7209 P

Studies on Acholic Cachexia. I.* Use of the Dragstedt Cannula in Biliary Studies.

ARTHUR D. BISSELL AND EDMUND ANDREWS.

From the Department of Surgery, The University of Chicago.

Collection of bile from experimental animals has always presented almost insuperable difficulties. Simple intubation of the ducts or the gall bladder has resulted in ascending infection, which has seriously interfered with the results obtained, as the bile then originated in livers more or less damaged by hepatitis. In such preparations leak-

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age and consequent loss of part of the bile nearly always occurs if the experiment is long continued. The Rous¹ type of fistula, in which a long tube is coiled within the abdomen thus putting considerable distance between the bile duct and the skin, has been used extensively in this laboratory with indifferent results. For a few weeks it was often successful, but a very high percentage of cases failed in later months which are the crucial point in these studies.

Dragstedt² recently reported a new type of fistula which he had used extensively for intestinal studies and for short periods in the gall bladder. It consisted in a gold-plated metal cannula, with a metal disc at the inner end. This was sutured into the intestine. The distal end was then capped with a special small spear point which was pushed through the abdominal wall at a little distance from the laparotomy wound. The intervening space (2-4 inches) was then wrapped in omentum. A screw cap at the distal end enabled one to attach a container.

This principle applied to the gall bladder has functioned with remarkable perfection. The cannula must be considerably longer than that used for intestinal work, as the liver moves on respiration. The total length of our cannulas was 5½ inches. The disc at the inner end was made smaller (¾ inch) and somewhat cup-shaped. After the common duct has been ligated, the cannula is simply implanted into the gallbladder through as small a hole as possible and tied in place. Inversion is not necessary, and not advisable.

This preparation has been used on 7 dogs, 4 of which lived between 4½ and 5 months. Approximately 1,000 daily specimens of bile were obtained and studied, without the loss, even in part, of a single specimen. On 2 or 3 occasions the tube would be blocked, as evidenced by a slight jaundice and absence of the expected amount of bile. A few drops of bile would then appear about the tube. Such blockage is easily overcome by probing the tube. The skin wound invariably remained clean without suppuration. The bile remained perfectly clear and contained no increase in cells. Post-mortem examination showed an absence of inflammatory changes in the liver and bile ducts. A football bladder was used to collect the bile. To its nozzle was attached a metal tip which screwed into the cannula. This was sterilized with alcohol when the bag was changed. The latter was carried in a canvas bag slung over the

¹ Rous, P., and McMaster, P. D., A method for permanent sterile drainage of intraabdominal ducts as applied to common duct.

² Dragstedt, L. R., *et al.*, *Surg. Gyn. Obst.*, 1933, **66**, 799.

dog's back. The total absence of bile on the skin appeared to do away with the dog's temptation to bite or lick the fistula, and only one dog needed a collar to prevent his biting the bag.

The achievement of such success is especially remarkable in view of the fact that neither of the authors had ever tried the method before and had had no experience whatever with these cannulas. The fact that one dog had 7 pups without interrupting the experiment is significant.

We have no hesitancy in stating that the Dragstedt cannula offers a practically fool-proof method of obtaining nearly 100% of clean specimens from bile fistula dogs, a record that we have never before been able even to approximate.

7210 P

Studies on Acholic Cachexia. II.* Is Anemia a Factor?

ARTHUR D. BISSELL. (Introduced by Edmund Andrews.)

From the Department of Surgery, The University of Chicago.

The question as to whether the well known anemia accompanying acholic cachexia is a primary factor in the disease or only a manifestation of a late or terminal cachexia in general is an important one. On this feature alone are based many of the current theories as to the origin of cachexia cholipriva. One assumption often made is that prolonged loss of bile will deprive the body of the opportunity of resorption of blood-forming pigments from the gastrointestinal tract. The statement may easily be disproved by a comparative study of the rate of fall of the hemoglobin and the cells in acholic anemia. Such an assumption would surely predicate a more rapid fall of the hemoglobin than in the red count. In previously reported series as well as in our tables it can be seen at once that this is not the case.

The other theory is based on the fact that the anemia is a manifestation of lack of fat soluble vitamin, due to inability to absorb such material in the absence of bile salts from the intestinal tract. The evidence for this is admirably summed up by Takasu.¹

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¹ Takasu, Misao, *Deutsche Zeitschr. f. Chir.*, 1930, **224**, 240.