

FORMATION OF A PERMANENT GALL BLADDER FISTULA IN RABBITS

M. Parszewski, K. Kosmidor,
and Ę. Czaja

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Two Pean's forceps are applied to the gall bladder, a fistula tube is inserted through a hole in the wall between them, and anchored by a purse-string suture. In order to obtain bile, the common bile duct must be ligated during the operation. If the loss of water and electrolytes was compensated, rabbits with the gall bladder fistula were able to survive for up to 1 month.

It is not difficult to form a fistula of the bile duct or gall bladder during an acute experiment. However, such fistulas function only for a comparatively short time, for if bile must be obtained over a long period a permanent fistula must be created. In many investigations pure hepatic bile is required. If the technique proposed by Thamfor [1] is used to produce such a fistula in experiments on rats, hepatic bile can be collected only periodically.

To study the secretory and excretory functions of the liver in experiments on rabbits the authors have developed a method of forming a permanent gall bladder fistula.

Under general ether-oxygen anesthesia the abdomen is opened through a mid-line incision in the epigastrium. The gall bladder lies deep among the lobes of the liver (in the rabbit there are several lobes). Two Pean's artery forceps are applied to the gall bladder and an opening made in the wall between them. A cannula, 2 mm in diameter, with a wide end is introduced into the gall bladder through the hole and fixed with a purse-string suture so that the hole in the bladder wall is simultaneously closed. The common bile duct is then identified where it enters the duodenum and ligated. The duct must be carefully separated from the common hepatic artery, which has a common sheath with the duct. Ligation or injury to the artery invariably causes necrosis of the liver. The common bile duct is ligated 3 mm from the duodenal wall. Pure green hepatic bile flows from the cannula while the abdominal wall is sutured. The common bile duct must be ligated. Experiments show that without this operation no bile flows through the fistula for the pressure in the common bile duct is unable to overcome the resistance of the cannula. If bile can drain freely into the duodenum, it will not escape through the fistula. The method developed by the writers enables the daily pattern of bile excretion to be studied and pure hepatic bile to be obtained.

To enable the animals to survive for a long enough period, certain steps must be taken, especially administration of fluid and electrolytes by the following scheme after the operation. On the day of the operation the rabbit receives by intravenous infusion 30 ml of 20% glucose solution with 1 ml vitamin C, and also physiological saline and polyelectrolyte solution in a dose calculated by the formula $XY + 50$, where X is the volume of bile excreted, Y the daily excretion of urine, and 50 is a constant which corresponds to the volume of fluid excreted by the rabbit through the lungs and skin. On the second day after the operation glucose and vitamin C also are given, mainly by intravenous injection, but some of the glucose is given to the rabbit by mouth.

Feeding with carrot begins on the third day. For the first 4 days after the operation 50,000 units penicillin are injected. Depending on the blood pH, if necessary the physiological saline can be replaced by

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sodium carbonate. By this means the rabbit can survive up to 1 month, and the excretory function of the biliary system can be studied for a corresponding time.

LITERATURE CITED

1. N. R. Thamfor, *Surgery*, 66, 1073 (1969).