

TABLE IV.
Influence of Various Concentrations of Methionine and Thiouracil on the Plasma Proteins of the Rat Fed a Basal Ration Containing 12% Casein.

Dietary regime	No. of animals	Albumin G, %	Globulin G, %	A/G	Hematocrit, %
Control (A)	18	3.10 $\pm$.14	2.89 $\pm$.14	1.10	48
" (R)	14	2.96 $\pm$.22	2.86 $\pm$.16	1.14	48
Thiouracil					
.12 (R)	10	3.20 $\pm$.18	3.73 $\pm$.18	0.86	46
.67 (A)	8	2.97 $\pm$.16	3.74 $\pm$.19	0.68	43
.67 (R)	12	3.00 $\pm$.14	3.48 $\pm$.17	0.67	43
Methionine					
.67 (R)	10	2.86 $\pm$.19	3.69 $\pm$.21	0.78	44
.67 (A)	12	2.81 $\pm$.16	3.77 $\pm$.19	0.74	45
2.4 (R)	8	2.89 $\pm$.22	3.69 $\pm$.18	0.78	47
4.8 (R)	14	3.02 $\pm$.23	3.65 $\pm$.19	0.82	46

thiouracil or methionine to the casein diet. The data presented in Table III demonstrate that methionine increased the nitrogen per gram of tissue of the liver and produced an over-all increase in liver-nitrogen. Thiouracil also increased the total liver nitrogen markedly, but the increase was due to the increased size of the organ rather than to the increased nitrogen per gram of tissue. Both methionine and thiouracil increased the globulin fraction of plasma with little change in albumin and decreased the A/G ratio (Table IV).

Summary. The addition of methionine and of thiouracil to the diet of rats altered the nitrogen balance index in proportion to the level of the compound in the diet. Although both methionine in high concentration and thiouracil caused a decrease in body weight and a reduction in nitrogen balance index, the

compounds increased the total liver nitrogen; however, methionine increased the nitrogen per gram of tissue without affecting the size of the organ while thiouracil increased the size of the organ without affecting the nitrogen per gram of tissue. Both methionine and thiouracil increased the size of the thyroid, while methionine alone increased the size of the kidney. Both compounds increased the total plasma proteins by increasing the plasma globulin. Both methionine and thiouracil decreased creatine excretion; however, the effect of thiouracil is marked in comparison to methionine. These data indicate that the result of feeding methionine or thiouracil is very similar in end result but that the mechanism may not be identical because the results are reached through different pathways.

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17274. Replacement of a Portion of the Common Bile Duct with a Segment of Uterine Horn.

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Attempts at repair are comparatively unsuccessful when the common bile duct is accidentally so injured that an end-to-end anastomosis is not feasible. The present studies were undertaken to ascertain whether a graf-

ted tubular structure with independent blood supply would maintain its viability and carry the bile from the common bile duct to the duodenum. Dogs were selected for the experiments and the uterine horn was used for

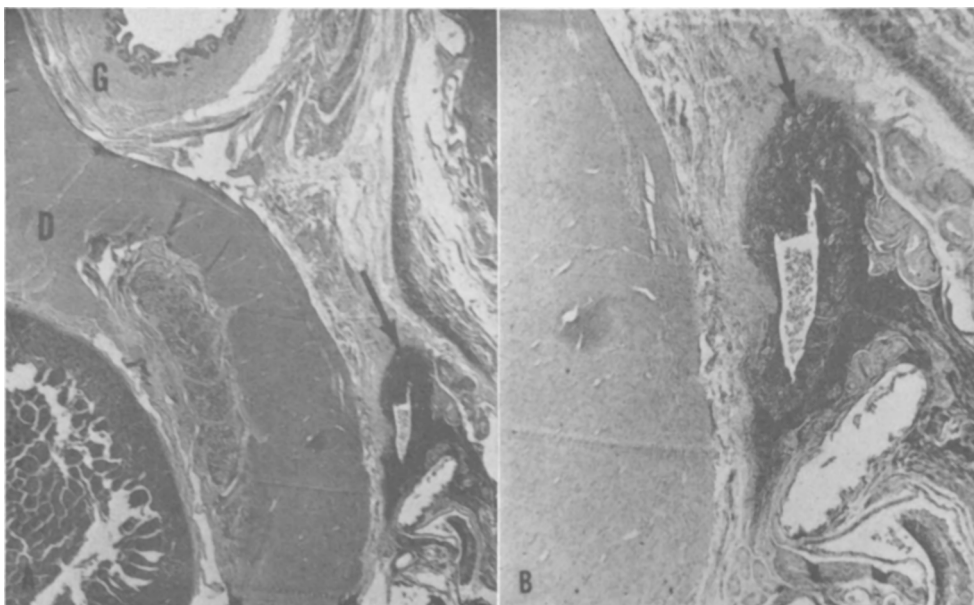


FIG. 1.

Duodenum (D), gallbladder (G), and transplanted portion of the right uterine horn (arrow) are seen from the dog 20 weeks following operation (A left) $\times 12$. Cross section of the uterine horn enlarged (B right) $\times 20$.

grafting.

Method. Under intravenous nembutal anesthesia the abdomen was opened with a mid-line incision, the right uterine horn was clamped, and its proximal end ligated. The uterine artery was also ligated and severed at this level. The "broad ligament" was then freed by ligating its blood vessels along its posterior margin. The proximal 5 cm of the uterine horn was freed from the distal segment by applying a ligature and cutting proximal to it, preserving its blood supply from the ovarian artery. The common bile duct was ligated near its junction with the duodenum and severed distal to the ligature. The cut end of the common bile duct was then telescoped into the proximal end of the uterine horn while the opposite end of the segment was inserted into the duodenal wall through a longitudinal slit made about 2 cm anterior and medial to the choledochoduodenal junction. Both ends of the graft were secured in place by cotton sutures. The abdomen was closed with through and through interrupted cotton sutures.

Of 20 dogs surviving the operation, 12

died in from 3 to 21 days. The remaining 8 dogs were sacrificed between the 4th and the 27th weeks following operation: 2 in the 4th week and one each in the 6th, 14th, 16th, 20th, 24th, and 27th weeks. The abdominal organs of the latter animals were placed in 5% formalin and after fixation were studied grossly and microscopically.

Results. None of the 8 dogs that were killed 4 weeks or later had clay colored stools, or any evidence of jaundice in the sclerae or viscera. In each dog there were fairly dense adhesions about the site of operation involving the liver, stomach, duodenum, great omentum, and loops of small intestine. Numerous blood vessels of somewhat increased caliber from the ovarian artery appeared to supply the graft. The surface of the liver was smooth, glistening, and of the usual color. The gallbladder was distended with bile, and pressure on the viscus yielded bile in the duodenum at the site of implantation of the uterine horn.

The intrahepatic biliary ducts had spacious lumina. The hepatic ducts could not be clearly exposed. The common bile duct continued imperceptibly into the segment of

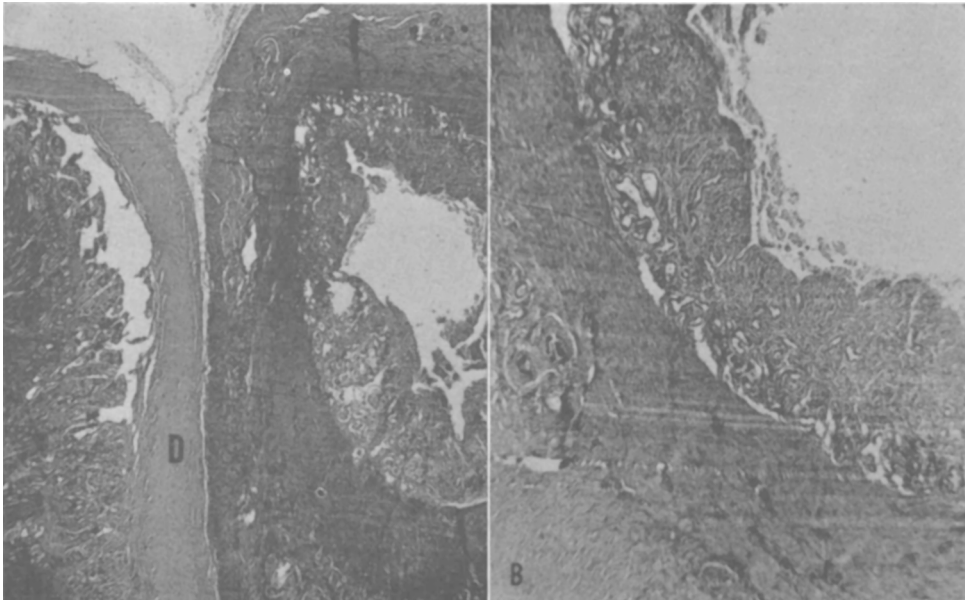


FIG. 2.

Duodenum (D) and transplanted portion of the right uterine horn are seen from the dog 6 weeks following operation (A left) $\times 12$. Cross section of the uterine horn enlarged (B right) $\times 20$.

uterine horn that connected it with the lumen of the duodenum.

After completion of the gross studies, microscopic sections were prepared of the liver, gallbladder, transplanted uterine segment, duodenum, and left uterine horn.

In the liver there were chronic cholangitis and pericholangitis, evidenced by an infiltration with lymphocytes, plasma cells, and large mononuclear cells in the wall of the bile ducts and in the surrounding portal connective tissue. The liver lobules were somewhat diminished in size and in their central portions there was some slight increase of the connective tissue and a decrease in size of the liver cells. Many of the bile capillaries contained inspissated secretion. In the gallbladders of some of the dogs there was slight to moderate chronic cholecystitis with focal and diffuse infiltrations of the tunica propria with chronic inflammatory cells. In all of the animals the implanted segment of the uterine horn carried the bile from the common bile duct to the duodenum. In some instances, the columnar epithelium covering the surface was almost intact. In others, the

epithelium was intact only in the fundi of the glands and a cellular debris covered granulation tissue that partly replaced the bile stained mucosa. Invariably the muscular coats appeared intact (Fig. 1 and 2).

Comment. There is no submucosa in either the common bile duct or the uterine horn of the dog. Of the 2 the uterine horn is the sturdier structure. In the human, also, the common bile duct and the Fallopian tube have no submucosa. Of these the Fallopian tube is usually the more delicate structure. These experiments were conducted, not to suggest that the Fallopian tube be used as a pedicle graft, but rather to ascertain whether a grafted tubular structure with independent blood supply would serve for the passage of bile from the common bile duct to the duodenum. The evidence herein presented proved that this can be accomplished.

Summary. Experiments were conducted to ascertain whether a grafted tubular structure with independent blood supply would serve for the passage of bile from the common bile duct to the duodenum. Dogs were selected for the experiments and the uterine horn was

used for the grafting. Of 20 dogs surviving the operation, 12 died in from 3 to 21 days, and the rest were sacrificed between the 4th and the 27th weeks following the operation. Gross and microscopic studies of the biliary system of the latter 8 dogs disclosed that, in

all, the transplanted segment of the uterine horn connected the common bile duct and the duodenum without causing permanent severe damage to the biliary system.

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17275. Observations on Experimental Aortic Anastomosis.

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(Introduced by J. C. Hinsey.)

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The following report is based on observations made upon 3 dogs that were subjected to end-to-end anastomosis of the thoracic aorta at the age of 6 weeks and then studied approximately one year after operation.

Method of Study. Six young dogs, male and female litter mates, were subjected to division of the aorta and end-to-end anastomosis at the site of division at ages between 6 and 8 weeks. A seventh male dog was op-

erated on in a similar manner at the age of 3 weeks. The operations were performed under intravenous nembutal anesthesia and endotracheal insufflation. The anastomosis was accomplished with a single continuous evert-ing mattress suture of No. 00000 arterial silk attached to an atraumatic needle.

Four of these dogs died 22 to 42 days after operation from intestinal infestation. Autopsy in each case revealed the

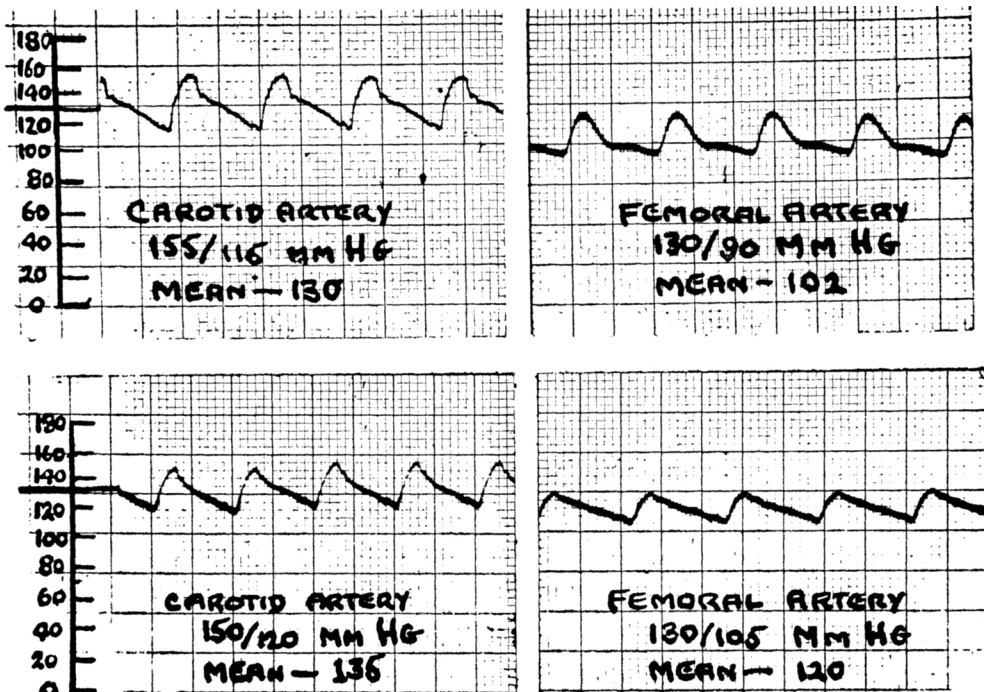


FIG. 1.