

**MASS HOMOTRANSPLANTATION OF ABDOMINAL  
ORGANS IN DOGS \***

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**Block transplantation of all abdominal organs, excluding retroperitoneal viscera, has been carried out in 19 dogs. The objective was to study the behavior of a large denervated homograft in which the lymphatic drainage was completely interrupted. Since the implanted**

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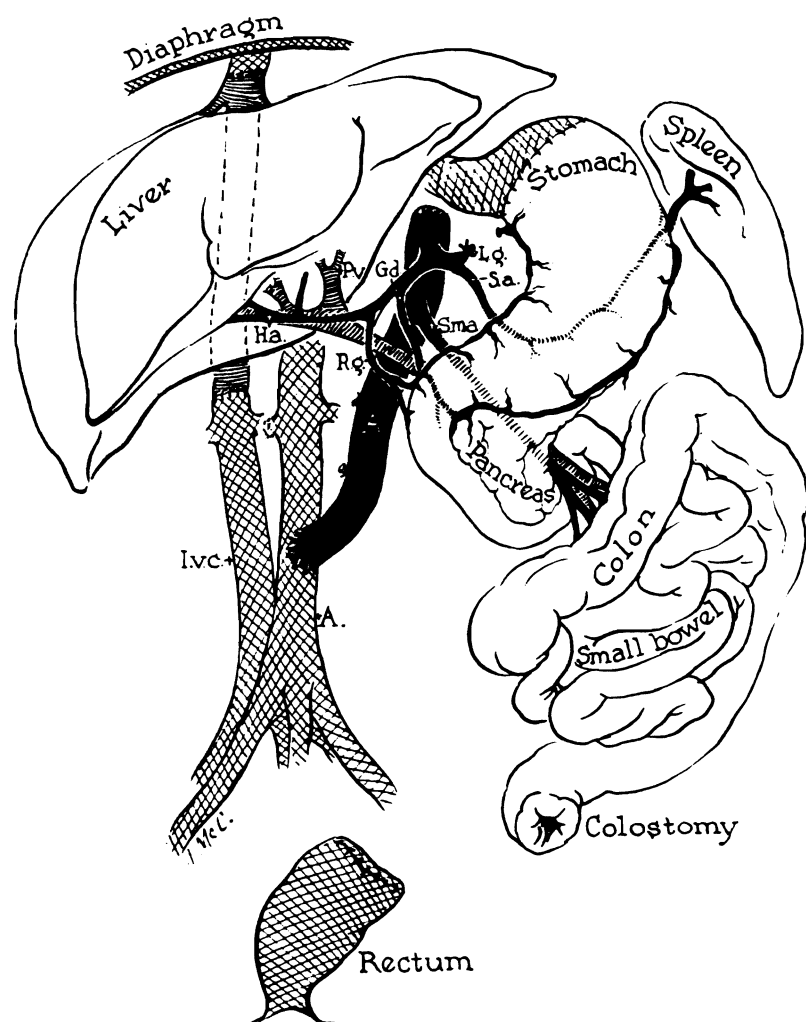
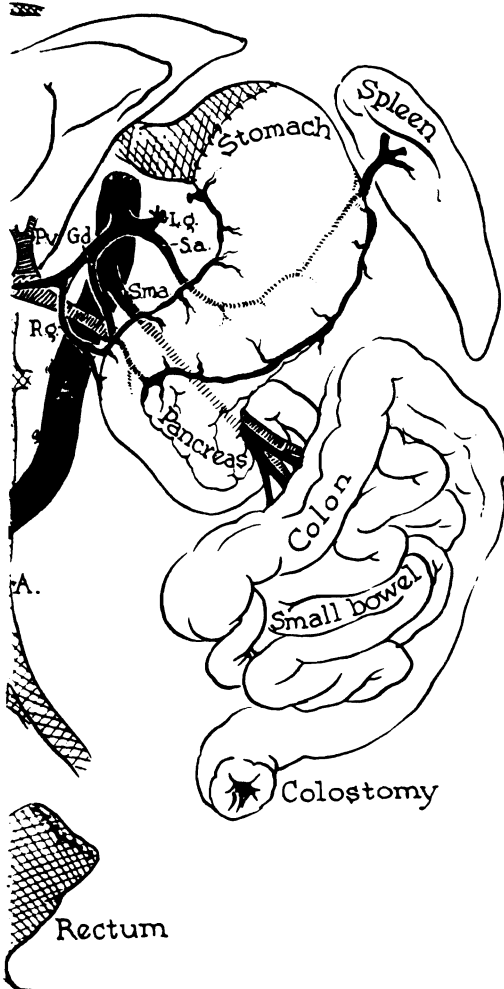


Fig. 1. Appearance of multivisceral homograft after revascularization and restoration of gastrointestinal continuity.

tissue contained over 90% of the body's reticuloendothelial system, it was hoped to learn something of the graft-host rejection phenomena.

METHODS

Sodium pentobarbital anesthesia was used. The donor dog was cooled to 25 to 30° C, and the liver further chilled with trans-portal



Visceral homograft after revascularization and continuity.

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#### METHODS

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infusion of aerated Ringer solution. The specimen, consisting of total stomach, liver, pancreas, spleen, small bowel, colon, and omentum, was then removed to an iced water bath. After removal of the comparable host organs, the donor viscera were implanted in the recipient dog (Fig. 1). Arterialization was simplified by use of the donor aorta, which was removed in continuity with the celiac axis and superior mesenteric artery, and the venous flow was restored with two caval-caval anastomoses. Gastrointestinal continuity was restored with a gastro-gastrotomy and by a distal colo-colostomy or end-colostomy (Fig. 1).

#### RESULTS

The period of anoxia during implantation ranged from 45 to 75 min. In a given experiment, success or failure was evident within the first 12 hr. In all failures, massive sequestration of blood occurred in the transplant with terminal hemorrhagic gastroenteritis. This complication was often aggravated or primarily caused by the occurrence of hepatic outflow block with consequent acute portal hypertension. Even in successful experiments, entrapment of blood was marked, and 2000 or 3000 cc. transfusions were always necessary. Administration of levarterenol for a few hours postoperatively appeared to reduce the necessary volume of blood transfusion.

Maximum survival after operation was 9 days. All dogs developed diarrhea but some were able to eat. Liver function as shown by chemical analysis was excellent, and jaundice developed later than has been observed by us with liver grafts alone. At autopsy, the lymphatic vessels were frequently not distended, and it was thought that drainage occurred through lymphatic-venous anastomoses. In some long-term experiments, cellular destruction in the homograft was marked, and in others the architecture was well preserved. Because of the presence of other late complications, it has not been possible in any experiment to indict immunologic rejection as the cause of death.

#### SUMMARY

A complex of homologous organs including the stomach, spleen, small bowel, colon, pancreas, and omentum has been transplanted in dogs, with maximum survival of 9 days. The behavior of the denervated specimen with its obstructed lymphatic system is described.