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**Value of Omentopexy in Establishing an Adventitious Circulation in the Normal Kidney.\***

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The following preliminary statement is based on studies which have been in progress at intervals for over 3 years. Fourteen normal dogs varying in age from one year and 2 months to animals in their sixth year have been used for experimental purposes. Under morphine-ether anesthesia the abdomen was entered through a left rectus muscle-splitting incision and the left kidney exposed. The kidney was delivered from its bed of perirenal fat, the capsule incised down to the cortical substance over the length of the kidney's outer convex border including the poles. The renal vessels were digitally compressed by an assistant. The cortex was then incised for distances in the respective kidneys varying from 3-8 cm, the incision extending through the cortex and into the medullary substance, but not sufficiently deep to penetrate into the pelvis of the kidney. Into such incisions the omentum was introduced and the cortical incision closed with fine, interrupted chromic cat gut sutures. Those sutures passing through the omentum were lightly tied in order to prevent compression of the omental vessels. The partially deflected capsule of the kidney was then brought up and sutured over the capsular incision. The abdominal incision was closed in the usual manner.

At intervals varying from 15 days to 3 months the animals were again anesthetized and 2 types of procedures followed. The omentum was either tied off from the renal cortex followed by the removal of an elliptically shaped mass of cortical and medullary tissue containing the omental implant or the entire kidney was removed. In the latter event one or more of the omental vessels were immediately injected with India ink. Following both types of procedure the renal tissue was fixed in Zenker's solution and imbedded in paraffin or celloidin. The paraffin impregnated tissue was used to obtain thin sections 3 to 8 micra, while the tissue imbedded in celloidin was employed for thicker sections arranged serially. Sections of both types were stained with hematoxylin and eosin and

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\* Aided by a grant from the fund for scientific research of the American Medical Association.

with Mallory's connective tissue stain. The India ink injected tissue greatly facilitates the study of the vascularization of the kidney by an ingrowth of capillaries from the omental implant.

The histological studies indicate that the earliest changes to develop from such an experimental procedure to consist in a disappearance of the omental fat which is in part replaced by an ingrowth of connective tissue cells and by cells of an endothelial order. The latter type of cell may contain fat droplets. The local cellular response of renal tissue to implantation of omental tissue is not characterized by a predominant small round cell invasion or by an infiltration of polynuclear cells. In such areas of cellular reaction there develops an ingrowth of capillary buds from the omental capillaries which are not confined to the area of the omental implant. Capillaries with an omental connection may be traced in serial sections, such tissue having been injected with India ink, in both a lateral direction into the renal cortical tissue and downward into the renal medulla for a distance beyond the location of the omental implant. In such medullary areas as was the case with the invasion of the cortex by the capillary ingrowth the vascularization takes a course lateral to the downward ingrowth of capillaries from the omental implant so that from such an implant a considerable area of renal tissue receives a blood supply from this adventitious source. In the cortex such capillary invasion has shown no tendency to emphasize its distribution around the glomerular tufts. The capillary network is most marked around the convoluted segments of the nephron. The question as to whether or not such capillary beds are solely dependent upon the ingrowth of such vessels from the omental implant or whether a part of the renal vascularization is due to an anastomosis of such capillaries with preëxisting capillaries of normal origin has not been determined. Associated with the ingrowth of capillary buds from the omental area into the cortical and medullary tissue which, in turn, is related to the duration of the respective experiments, there develops not only a hyperplasia of the cells of the walls of the primary omental vessels but an increase in the thickness of the walls of the capillaries which have initially invaded this tissue.