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3276

Observations on the Pathogenesis of Appendicitis.*

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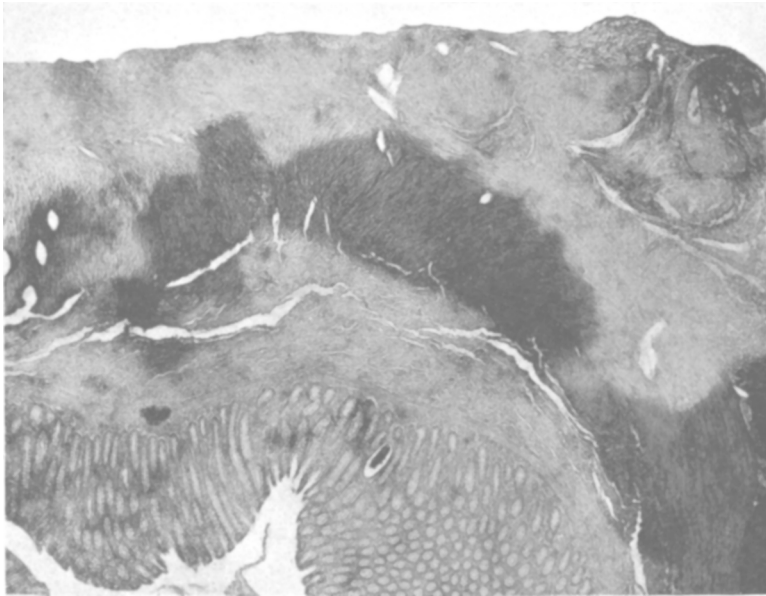
The following experiments were undertaken to study the pathological changes in the caecoappendix which follow interference with its lumen and its blood supply :

TABLE I.
Results Following Ligation of Blood Supply to Caecoappendix.

Exp. No.	Duration of Experiment	Pathological Findings
25	Four days	Areas of infarction in caecoappendix and continuous intestinal loop; microscopically gangrenous inflammation.
31	Ten days	Data incomplete.
51	Fourteen days	Data incomplete.
53	Six days	Adhesions; microscopically, swelling and edema of all coats, hydropic degeneration of muscularis, dilatation of lymph spaces in submucosa and mild hemorrhagic and parenchymatous changes in the mucosa.
56	Four days	As in Exp. No. 53.

Remarks: Excepting experiment No. 25, which shows areas of infarction in caecoappendix and contiguous intestinal loop, there is, grossly, no evidence of serious peritoneal involvement; microscopically this group shows generalized swelling and edema, hydropic degeneration of the muscularis, dilatation of the lymph spaces in the submucosa and mild hemorrhagic and parenchymatous changes in the mucosa. (See Microphotograph of slide No. 56.)

* Submitted as part of requirements in Course of Postgraduate Surgery.



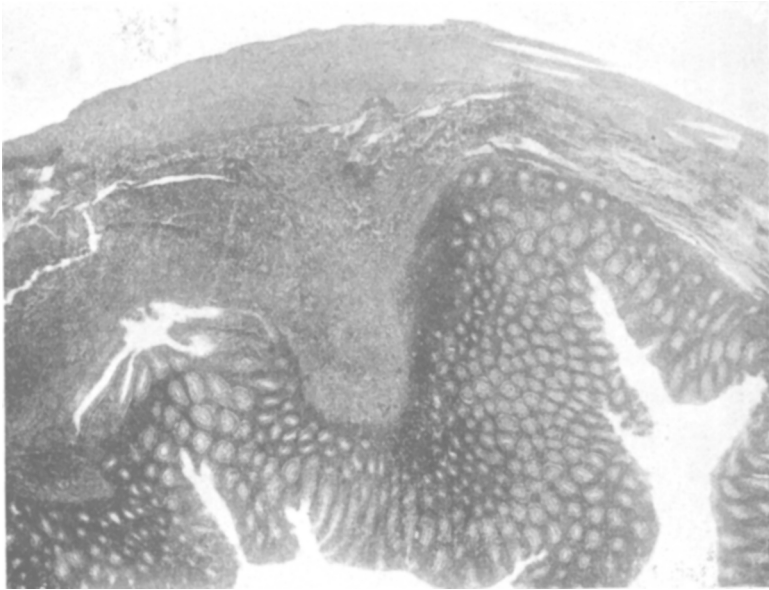
EXPERIMENT No. 56

Shows swelling and edema, hydropic degeneration of muscularis, dilatation of lymph spaces in submucosa and hemorrhagic and parenchymatous changes in the mucosa, following ligation of blood supply to caecoappendix.

TABLE II.
Results Following Obstruction of Lumen of Caecoappendix.

Exp. No.	Duration of Experiment	Pathological Findings
10	120 hours	Perforated appendix and generalized peritonitis.
40	168 hours	Data incomplete.
70	48 hours	Adhesions; hemorrhagic inflammation affecting all coats, particularly that of submucous.
76	28 hours	As in Exp. No. 70.
84	13 hours	As in Exp. No. 70.
90	7 hours	As in Exp. No. 70.

Remarks: Experiment No. 10 shows gangrenous appendicitis and generalized peritonitis; in this instance the ligature cut through the appendicial wall, thus simulating the most extreme consequences of rupture of the vermiform appendix in the human. The gross lesions in the others show local adhesive peritonitis, and microscopically hemorrhagic inflammation affecting all the coats of the caecoappendix. This inflammation is particularly severe in the submucosa. (See Microphotograph of slide No. 84.)



EXPERIMENT No. 84

Shows hemorrhagic inflammation, particularly marked in submucous coat, following obstruction to lumen of caecoappendix.

TABLE III.

Results Following Obstruction of Lumen of Caecoappendix and Ligation of its Blood Supply.

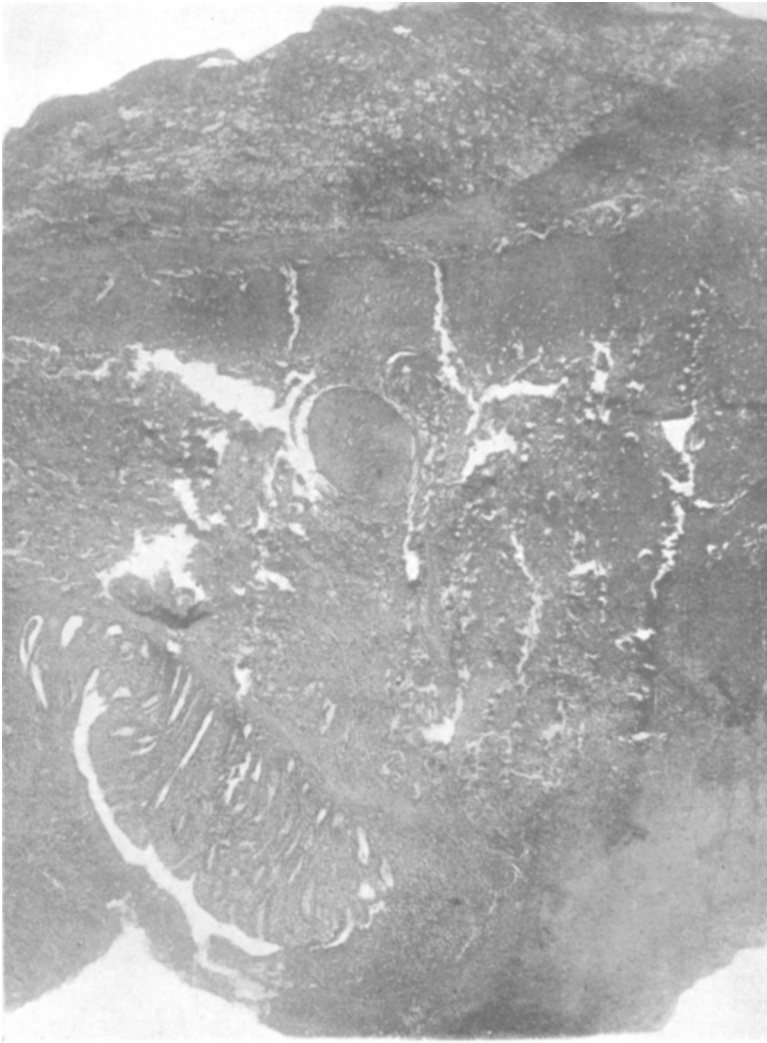
Exp. No.	Duration of Experiment	Pathological Findings
15	Three days	Adhesions; local abscess; phlegmenous and gangrenous appendicitis.
18	Three days	Phlegmenous and gangrenous appendicitis; generalized peritonitis.
20	One day	As in Exp. No. 18.
102	One day	As in Exp. No. 18.
106	One day	As in Exp. No. 18.

Remarks: This group invariably shows gangrenous appendicitis, and, in most instances, generalized peritonitis. (See Microphotograph of slide No. 106.)

CONCLUSIONS.

1. Ligation of the blood supply to the caecoappendix in the dog is followed by local adhesive peritonitis; microscopically the organ shows generalized swelling and edema, hydropic degeneration of the muscularis, dilatation of the lymph spaces in the submucosa and mild hemorrhagic and parenchymatous changes in the mucosa.

2. Ligation of the appendiceal lumen by linen ligature is followed by localized adhesive peritonitis, and hemorrhagic inflam-



EXPERIMENT No. 106

Shows gangrenous inflammation affecting all coats, following obstruction to lumen and blood supply of caecoappendix.

mation of all the coats of the appendix, but affecting chiefly the submucosa.

3. Ligation of the blood supply to the caecoappendix plus obstruction of its lumen are followed by generalized peritonitis and gangrenous appendicitis.