

PRIMARY CARCINOMA AND ENDOTHELIOMA OF THE VERMIFORM APPENDIX.

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IN 1900, through the courtesy of Dr. John B. Deaver, surgeon-in-chief to the German Hospital, I was enabled to report 6 cases of tumor of the vermiform appendix—2 cases of fibromyoma, 2 of primary carcinoma, 1 of primary endothelioma, and 1 presumably of secondary carcinoma.¹ At the time of that report I was able to find in the literature the reports of only 18 additional cases of primary carcinoma of the appendix, and some of these were doubtful, that is, doubtful whether the disease was carcinomatous, and whether the newgrowth was primary in the appendix. Since then, however, considerable interest has been manifested in tumors of the appendix, stimulated in part at least by the accidental finding of many of the carcinomas in cases in which their existence was unsuspected until a microscopic examination of the excised organ had been made, and by the comparative youth of many of the subjects.

In 1905 I was able to collect from the literature 25 additional cases, making together a total of less than 40 undoubted cases of primary carcinoma of the appendix.² Since then several excellent studies of cases observed personally and collected from the literature have been published, of which it suffices perhaps to mention that by Rolleston and Jones,³ who collected 42 undoubted cases, and that by McWilliams,⁴ who has collected 105 cases.

My first report was based upon a macroscopic and microscopic study of 706 appendices removed at operation by Dr. Deaver during 1897, 1898, and 1899. Subsequently to 1900, although I continued to examine the excised appendices more or less cursorily, that is, with the unaided eye, a microscopic examination was made only in those cases in which it was specially requested, or in which the gross appearances suggested lesions of interest. On January 8, 1906 (appendix No. 3097), macroscopic and microscopic examinations of all excised appendices were resumed and have been continued to the present time. During this period 4 additional cases of primary tumor of the appendix have been encountered, which, again through the courtesy of Dr. Deaver, I am enabled to report herewith. The

¹ A Treatise on Appendicitis, by John B. Deaver, second edition (chapter on the Pathology, p. 95), and Univ. Med. Mag., May, 1900.

² A Treatise on Appendicitis, by John B. Deaver, third edition (chapter on the Pathology, p. 143).

³ Primary Malignant Disease of the Vermiform Appendix, AMER. JOUR. MED. SCI., 1906, cxxxii, 951.

⁴ Primary Carcinoma of the Vermiform Appendix, *ibid.*, 1908, cxxxv, 822.

total number of appendices examined up to May 1, 1908, is 4822, of which about 2500² have been examined microscopically. A rough estimate of the incidence of tumors in diseased appendices giving rise to symptoms may be based upon the number examined microscopically: including only the 5 cases of primary carcinoma, the incidence is 0.2 per cent.; including also the 2 cases of primary endothelioma, the incidence is 0.28 per cent.

An effort has been made to trace the subsequent history of the cases previously reported:⁴ Case II, Endothelioma of the Appendix: A woman, aged twenty-four years at the time of operation (March 24, 1898), on February 28, 1908, had had no recurrence, and was perfectly well as far as abdominal conditions were concerned, with the exception of slight constipation. Case III, Carcinoma of the Appendix: A man, aged nineteen years at the time of operation (March 12, 1899), on February 5, 1908, had been in rather poor health since the operation, having sharp pains at times in the right iliac fossa, and the incision being tender at all times; he has had no further operative interference. Cases I and IV could not be traced.

The following is the report of the four additional cases (continuing the original numbering):

CASE V.—S. B., a married woman, aged twenty-three years, was admitted to the German Hospital January 24, 1906. The family history and the previous medical history are irrelevant aside from the fact that in 1901 the patient had an attack of appendicitis, associated with severe pain in the right side and vomiting, that confined her to bed for three weeks. Four weeks prior to admission to the hospital she was suddenly seized with cramp-like pain in the right iliac fossa, associated with nausea and vomiting. She was confined to bed for one day, but tenderness at McBurney's point persisted for three days. On the day of admission to the hospital there was a recurrence of the pain, but otherwise the patient felt well. Constipation had persisted since the original attack. On admission the patient was found to be poorly nourished. There was tenderness in the region of the appendix. The leukocytes were 10,200 to the cubic millimeter. The temperature ranged from 99.4° to 97.4°, and the pulse from 108 to 72. The urine contained no albumin, no sugar, and no casts.

On January 27 Dr. Deaver removed the appendix, finding it kinked on itself and curled about the cecum. The patient made an uneventful recovery, and was discharged cured on February 7, 1906. On February 11, 1908, information was obtained that the patient was in good health, that she had had no symptoms since the operation, in particular that there had been no intestinal disturbances.

The following are the notes of the examination of the appendix

¹ This number is approximate only, but it is probably an underestimate.

² This was kindly undertaken by Dr. A. D. Whiting, assistant surgeon and registrar to the German Hospital.

(No. 3124): The appendix is curled and twisted upon itself, and makes up a mass of tissue 4.6 x 2.5 cm. On section the organ is seen to be obviously the seat of a newgrowth, grayish white in color and somewhat granular, invading all the coats and causing considerable increase in the thickness of the wall. Longitudinally it extends from the tip almost if not quite to the proximal end. The lumen is quite devious in course and almost completely occluded except toward the proximal end, where there is a small area of dilatation filled with softened necrotic material. The mucosa throughout is roughened, apparently considerably ulcerated and necrotic. Microscopically the appendix exhibits the lesions of chronic interstitial appendicitis, with some acute exacerbation; that is, there is considerable increase in the fibrous tissue in the submucosa and the muscularis, much hyaline metamorphosis, atrophy of the muscularis, and more or less perivascular round-cell infiltration. In addition, the mucosa is wanting throughout, the free internal surface consisting of an exuberant proliferation of epithelial cells arranged in nests of varying size and shape, supported by a well-developed connective-tissue stroma, doubtless the remains of the submucosa. For the most part these epithelial cells are the seat of mucoid degeneration; many of them have completely lost their individual identity and appear as more or less necrotic debris. There is a varying degree of epithelial infiltration of the muscularis, extending in some places almost if not quite to the serous coat, in which regions the identity of the individual epithelial cells is much more apparent than in the submucosa.

Diagnosis. Mucoid (colloid) carcinoma of the appendix; chronic interstitial appendicitis with acute exacerbation.

CASE VI.—F. L. B., a single girl, aged seventeen years, was admitted to the German Hospital February 27, 1906. One brother died of carcinoma of the stomach; otherwise the family history and the previous medical history are irrelevant. Eight hours prior to admission to the hospital the patient was seized with acute abdominal pain, at first general in distribution, but gradually becoming localized to the right iliac fossa. On admission she was a well-developed, well-nourished girl. The abdomen was markedly rigid on the right side and very tender over McBurney's point. No mass was palpable. The urine contained no albumin, no sugar, and no casts. The temperature was 99.6°, and the pulse 100.

On February 27 Dr. Deaver removed the appendix, which was found non-adherent; there was no free fluid in the peritoneal cavity. The patient made an uneventful recovery, and was discharged cured on March 12, 1906.

The following are the notes of the examination of the appendix (No. 3181): The specimen consists of an appendix 9.5 cm. long, and from 0.9 to 1.2 cm. in thickness, the distal 6 cm. being the more distended. The serosa is covered with a fibrinoplastic exudate and reveals marked injection of the vessels. On section the distal dilated

portion is found to be separated from the proximal portion by a well-marked constriction, and to be filled with sanguinopurulent material; the wall is very thin, the mucosa much ulcerated and reveals many small submucous hemorrhages. (A newgrowth was not observed until the microscopic examination was undertaken, when it was seen macroscopically as a small infiltration of the submucosa, 2 to 3 mm. in diameter, opposite the attachment of the mesentery, and extending 1.5 cm. from the constriction near the middle of the appendix toward the proximal end.) Microscopically there were the lesions of acute appendicitis of moderate grade: vascular dilatation, oedema, round-cell infiltration, and foci of hemorrhage in the mucosa and submucosa, and loss of considerable of the epithelial covering of the mucosa. The newgrowth consists of narrow columns of cells, usually not more than two cells in width, but ten or more cells in length, infiltrating the spaces of the connective tissue of the submucosa. The collections of cells often taper to a point at their extremities, although in some regions they are ovoid or rounded, and have apparently quite an intimate relationship with the surrounding connective tissue; in some regions a plexiform arrangement, or anastomosing network, of the columns of cells may be made out; in other regions the origin of the cells from the endothelial lining of the lymph channels is obvious in their lining such spaces, which here and there are somewhat dilated, and in their gradual increase in size and thickness. The individual cells vary somewhat in shape, but, as a rule, they are ovoid or elongated, corresponding with the shape and direction of the lymph spaces that they line; toward the extremities of many of the spaces the cells are quite flattened. The nuclei for the most part are ovoid or elongated, stain well, and are rich in chromatin. The supporting connective tissue contains relatively few cells; it is largely homogeneous and evidently the seat of hyaline degeneration.

Diagnosis. Endothelioma of the appendix; acute appendicitis.

CASE VII.—L. B., a single woman, aged twenty-seven years, was admitted to the German Hospital December 30, 1907. The family history and the previous medical history are irrelevant aside from the fact that the patient had typhoid fever at the age of nine years. Two years prior to admission to the hospital she had a severe attack of pain in the right upper abdominal quadrant, with radiation to the right shoulder, a chill, but no vomiting. Subsequently she was jaundiced for two months. The pain has been almost continuous since, and there have been several acute exacerbations. The patient has been markedly constipated, but there have been no other digestive disturbances; nor have there been continued chills, fever, or sweating. On admission the patient was well developed and well nourished. There was some tenderness along the right costal margin and slight rigidity of the upper part of the right rectus muscle. The temperature was 99°, the pulse 52 to 92. The urine contained no

albumin, no sugar, and no casts. The hemoglobin was 78 per cent., the leukocytes 6500, and the coagulation time ten minutes. Examination of the stools revealed no parasites and no eggs; the occult blood test was faintly positive.

On January 4, 1908, Dr. Deaver operated, making an incision through the upper part of the right rectus muscle. The gall-bladder was found normal and to contain a small amount of bile, which was readily discharged through the biliary ducts. The surrounding organs also appeared to be normal. The wound was closed, and a second incision was made over the region of the appendix and the appendix was removed. The patient made an uneventful recovery, and was discharged cured January 18, 1908.

The following are the notes of the examination of the appendix (No. 4594): The appendix is 8 cm. long, and 0.3 cm. thick, except at its distal extremity, where there is a bulbous enlargement 1.3 cm. in thickness and 3 cm. in the length of the organ. The vessels of the serosa are somewhat injected. The lumen is almost completely occluded by swelling of the mucosa, except in the region of the bulbous enlargement, where, although there is increase in thickness of the mucosa and the submucosa, there is also an obvious lumen containing a small amount of turbid fluid. (A newgrowth was not observed on macroscopic examination, but was subsequently found to comprise a small nodule, about 3 mm. in diameter, opposite the attachment of the mesentery, and extending 2 cm. from the tip of the organ.) Microscopically the lesions of chronic interstitial appendicitis with acute exacerbation are apparent; that is, there is considerable connective-tissue hyperplasia with hyaline metamorphosis, vascular dilatation, oedema, round-cell infiltration, foci of hemorrhage, and shedding of the epithelial covering. The newgrowth in the distal end consists of nests of cells of varying size and conformation, supported by a well-developed connective-tissue stroma; the submucosa especially is the seat of the epithelial infiltration, but there is also a moderate infiltration of the muscularis, even to the subserosa, where the nests of cells are usually large. The individual cells are epithelial in type, of moderate size, polyhedral in shape, and have clear vesicular nuclei that stain well.

Diagnosis. Carcinoma of the appendix; chronic interstitial appendicitis with acute exacerbation.

CASE VIII.—M. K., a single woman, aged twenty-eight years, was admitted to the German Hospital January, 1908. The family history and the previous medical history are irrelevant. The present illness began three days before admission to the hospital with severe cramp-like pain in the abdomen, that soon became localized in the right iliac fossa, nausea and vomiting, but no chill. On admission the patient was well developed and well nourished. There was marked tenderness and rigidity on the right side rather high up (about the level of the umbilicus), and a mass was palpable. The

hemoglobin was 88 per cent., and the leukocytes 25,800. The temperature varied up to 103°, and the pulse up to 132. The urine has a specific gravity of 1015 to 1031, revealed a faint trace of albumin, but no sugar and no casts.

On January 11 Dr. Deaver operated. On opening the peritoneum considerable pus was evacuated. The appendix was found acutely inflamed, perforated, and adherent to the colon; it was removed. The patient made an uneventful recovery, and was discharged on the thirtieth day after operation with a granulating wound.

The following are the notes of the examination of the appendix (No. 4609): The appendix is 6 cm. long and from 0.6 to 1.5 cm. in thickness. There is marked injection of the vessels of the serosa. The tip is much dilated—the lumen to 0.8 mm. in diameter, and contains a hard calculus; here the wall is reduced to 3 to 4 mm., the mucosa is rough, ulcerated, and reveals small foci of hemorrhage. Elsewhere the lumen is variously dilated and constricted, the mucosa roughened, and shows foci of hemorrhage. (The newgrowth was not detected macroscopically, and even after it had been found microscopically there was nothing to suggest its presence to the unaided eye.) Microscopically the appendix reveals slightly increased fibrosis of the submucosa and muscularis, and the ordinary phenomena of acute inflammation: vascular dilatation, edema, cellular infiltration, foci of hemorrhage, shedding of the epithelium, etc. The newgrowth is limited to the dilated peripheral extremity of the organ, and is almost if not quite annular. It consists of nests of cells supported by a well-developed connective-tissue stroma, obviously, in part, at least, remains of the submucosa; the mucosa is almost if not quite missing. There is a moderate infiltration also of the muscularis, especially near the subserosa. As a rule, the nests of cells are very large. The individual cells are epithelial in type, of moderate size, polyhedral in shape, and have clear vesicular nuclei that stain well.

Diagnosis. Carcinoma of the appendix; acute ulcerative appendicitis with perforation.

THE SURGICAL ASPECTS OF DUPUYTREN'S CONTRACTION.

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WITH the expansion and better grouping of surgical knowledge, there is a strong tendency to do away with the names of those surgeons who have first described conditions or who have been indubitably associated with them. However wise such a procedure may