

**A case of associated streptococcus infection of the vermiform appendix and Fallopian tube / by Hunter Robb.**

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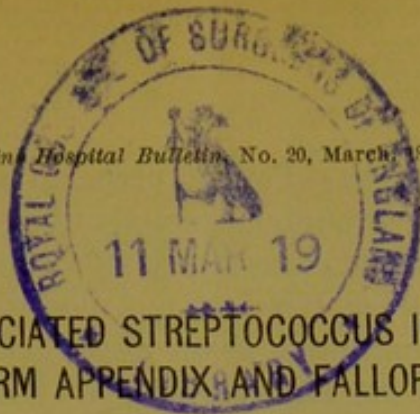
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## A CASE OF ASSOCIATED STREPTOCOCCUS INFECTION OF THE VERMIFORM APPENDIX AND FALLOPIAN TUBE.

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**HISTORY OF CASE.**—N. D., aged 21, black, admitted to the Gynecological Ward of the Johns Hopkins Hospital, Nov. 4th, 1891. Married three years; mother of two children now two and one years of age; two miscarriages at seven and three months. Labors difficult, followed by fever. Menstruated at fifteen; during the past four months, menstrual periods every two weeks, lasting three days. Last period 20th of October, pale in color and slight in amount. Has had profuse leucorrhœa for past two weeks. Bowels regular; no urinary trouble.

Complains of pain in side and back, headache and general weakness. Appetite good; tongue clean; body well nourished; no history of any serious illness.

Examination Nov. 7th, under ether: vaginal outlet moderately relaxed, cervix in the axis of the vagina, enlarged and soft, with a small bilateral laceration. External os patulous, admitting the tip of the index finger. Uterus reclining in the pelvis, enlarged and movable. Irregular tumor mass adherent to the broad ligament on the left side, about the size of a lemon. This adherent mass is semi-fluctuant, and of a doughy consistency; it displaces the uterus to the right. Right ovary high up in the pelvis, enlarged and adherent to the uterus.

*Per rectum*: adherent mass outlined on the left side. The Fallopian tube and ovary on the right side are not distinctly palpated.

Abdominal section for the removal of adherent Fallopian tubes and ovaries was advised.

Urinary analysis, Nov. 5th, 1891, catheterized specimen: clear amber color, sp. gr. 1.024, reaction acid, no albumen, mucous sediment. Moderate number of large epithelial cells, leucocytes free and in groups. Crystals of oxalate of lime. Catheterized specimen examined Nov. 11th; a trace of albumen with nitric acid on boiling. Slight mucous sediment.

*Operation, Nov. 11th.*—Patient prepared as usual; incision in the median line through moderately thick abdominal walls. The Fallopian tube and ovary on left side were adherent to each other, and to the broad ligament and posterior surface of the uterus by dense connective tissue adhesions. The adhesions were so firm that it was impossible to enucleate this mass without rupturing the sac, which allowed several drachms of a purulent fluid to escape into the pelvis. Cultures were immediately taken from this escaping fluid. The tube and ovary were transfixed, incised, and the pedicle cauterized. The right Fallopian tube and ovary were separated from the adhesions which bound them to the pelvic wall. The tube was elongated, thickened and patulous at the fimbriated extremity. The ovary on this side was also enlarged, and studded here and there with inflammatory patches from three to six mm. in diameter. The tube and ovary were transfixed and incised after the broad ligament was quilted by a series of silk ligatures and the pedicle cauterized. Before removing the right tube and ovary, the vermiform appendix was examined and found enlarged and adherent to the upper surface of the ovary. This was separated from the ovary; the lower portion for a distance of 2 cm. was congested, thickened and covered with flakes of lymph. The mesappendix was well developed. After transfixing and incising the mesappendix, 4 cm. of the appendix was ligated by a circular suture to avoid penetrating the lumen of the appendix, which was then burnt off by Paquelin's cautery.

The peritoneal cavity was irrigated with four litres of a sterilized salt solution at a temperature of 112° F., and sponged dry. Owing to the separation of the large adherent surfaces, slight oozing persisted. The peritoneal cavity was closed by uniting the peritoneum with a continuous cat-gut suture, and the musculo-cutaneous surfaces with silk sutures. No drainage. Time of operation, fifty minutes.

The pulse immediately after the operation was full, regular, and strong.

*Cultures and smear preparations made from the right Fallopian tube and vermiform appendix immediately following the operation were pure cultures of the streptococcus pyogenes. Cultures taken during the operation from the pus which came from the left tube were negative.*

*Macroscopical examination of specimens removed.*<sup>1</sup>—They consisted of the Fallopian tubes and ovaries of both sides and a portion of the vermiform appendix.

Right side—Fallopian tube  $10 \times .7 \times 1.2$  cm. Fimbriated end of the tube free; a few adhesions on the superior surface of the tube. 2.5 cm. from the fimbriated extremity there is a projection 5 mm. in diameter and 5 mm. high; this is probably a beginning supernumerary ostium. The tube is soft, red and swollen.

Ovary— $5.5 \times 3 \times 1.5$  cm. Few adhesions. The surface of the ovary is studded with many dropsical follicles, one at its lateral end being 2 cm. in diameter.

Left side—Tube  $7 \times .3 \times 2$  cm. The fimbriated extremity is reddened and open. There are many dense adhesions; tube torn open during operation.

Ovary— $4 \times 2.5 \times 1$  cm. Attached to it are many adhesions. Ovary torn at pedicle.

Vermiform appendix. The appendix is represented by a mass of tissue 9 cm. long and 7 mm. in diameter, with a central lumen. It is covered by tolerably dense adhesions.

A segment of a tape-worm  $15 \times 14$  mm. was forced out of the cut end on pressure. The free extremity of the appendix is covered with flakes of lymph.

*Analysis of temperature chart.*—For six days previous to the operation the temperature was  $99^{\circ}$  F. by the mouth ( $100.3^{\circ}$  F. by the rectum). On the evening of the day of the operation it rose to  $101.7^{\circ}$  F. by the rectum,  $100.2^{\circ}$  F. by the mouth. On the second day it decreased to  $100.8^{\circ}$  F. by the rectum and  $100.3^{\circ}$  F. by the mouth. From this time it gradually but progressively rose to  $105^{\circ}$  F. by the rectum on the third day at 6 P. M. Pulse at this time was 130. At 8 P. M. on the same day the temperature registered  $105.4^{\circ}$  F. by the rectum. On the fourth day at 2 A. M. it registered by the axilla  $105.8^{\circ}$  F., and at 8 P. M. the axillary temperature was  $103^{\circ}$  F., the rectal  $103.9^{\circ}$  F. At midnight of the fourth day it was  $104.4^{\circ}$  F. by the axilla and  $102.4^{\circ}$  F. by the rectum. It then fluctuated between  $103^{\circ}$  F. and  $104^{\circ}$  F. by the axilla. The axilla temperatures that are recorded were registered after the thermometer had been in the axilla for twenty minutes.

The pulse varied from 120 to 140, most of the time being

<sup>1</sup>The description of the specimens was made by Dr. J. Whitridge Williams.

below 135. The morning of the fifth day it suddenly increased to 140 and remained between this and 130 until 10 A. M., when it again rose to 150 and afterwards to 180, when she died at 4 P. M.

She was stimulated by hypodermics of strychnia and digitalis; stimulants were also administered by the mouth and rectum.

Her bowels were fairly well opened by salts and oil enemata on the third day.

*Autopsy* made November 15, 1891, at 9 P. M., five hours after death.<sup>1</sup>

*Anatomical diagnosis.*—Intestinal hemorrhage, round ulcer of the duodenum, with erosion of small vein. Operation wound, removal of ovaries and tubes, amputation of appendix, localized peritonitis in pelvis and around stump of appendix; tape-worm in intestines.

All the tissues are very anæmic.

*Body.*—Large, strongly built, well nourished, no œdema, skin smooth, abundant fat in subcutaneous tissue, small amount of blood escapes on section. In anterior abdominal wall in the median line, commencing 4 cm. below navel, is an incision closed by sutures, the whole covered over tightly by a plaster sprinkled with iodoform. Edges of wound adherent. A slight amount of bloody exudation in and around the edges. Subcutaneous tissue and muscle on either side of wound contain a small amount of hemorrhagic infiltration.

On opening the abdominal cavity several loops of small intestines are distended and of a purplish color; the abdominal wound is slightly adherent to tissues beneath. The intestines are generally not adherent, but two or three loops of small intestine are lightly adherent in the pelvis. On separating these adhesions the adherent portions are covered by a slight hemorrhagic fibrinous exudation. The peritoneum is moist. In the pelvis, and partly shut in by adherent loops of intestine, there are about 50 cc. of hemorrhagic purulent fluid. Scattered over the intestine, especially over the most distended portions, there are a few very slight fibrinous flakes. A loop of the ileum is adherent at the end of the cæcum, and shut in by this adherent loop and by its own mesentery and by the peritoneum is a small cavity about as large as the

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<sup>1</sup> From the Pathological Laboratory of the Johns Hopkins Hospital.

end of the thumb, in which the cut end of the vermiform appendix appears ligated and bathed in a slight amount of pus. The cavity contains a small amount of hemorrhagic pus. The tubes and ovaries are removed, their stumps adherent to contiguous tissues. There are small coagula adherent to the wound surfaces. There are fresh adhesions between the uterus and rectum, and in the cavity so formed there is a small amount of soft coagulated blood.

*Diaphragm* on right side at lower border of fourth rib, on left at fifth intercostal space.

*Lungs*.—Both lungs free from adhesions; surfaces pale, bronchi pale, blood-vessels at root of lungs free, lungs œdematous, and scattered through them are small hemorrhagic foci, apparently about bronchi. In both bronchi there are aspirated hemorrhagic stomach contents. On posterior surface of left lung there are a few very small ecchymoses.

*Heart*.—Both layers of pericardium smooth. Heart firmly contracted, pale; valves normal. Thickness of firmly contracted left ventricle, 17 mm.; of right, 4.5 cm. Mitral orifice 8, tricuspid 10.5, aorta 5.5 cm.

*Liver*.—Free from adhesions. Exceedingly pale, of a whitish yellow color; on section little or no blood can be squeezed from it. Barely sinks in water; weight 1700 grams,  $27 \times 20 \times 7$  cm. Its surface covered with a few reddish specks.

*Spleen*.— $10 \times 7 \times 3.5$  cm. Weight 110 grams. Smooth; capsule tolerably tense. On section rather soft. Malpighian bodies increased.

*Kidneys*.—Left somewhat larger; both with pelvis slightly turned to front. Weight of both 330 grams. Fœtal lobulations well marked, especially on left kidney. Capsule easily stripped off. Surface of kidney rather pale; lobules well marked out. On section, of a light pinkish color. Structures normal. Cortex 1 cm. Pyramids extremely pale.

*Adrenal glands and pancreas*, normal. *Uterus* rather large, 8.5 cm. long. In fundus a somewhat hemorrhagic fluid.

*Intestines*.—In the entire large and small intestine there are large quantities of soft coagula, the quantity estimated at about three litres. The mucous membranes of small and large intestines normal. In the stomach there is also a considerable amount of blood. In the duodenum, on the posterior wall 5 mm. from the pylorus, there is a circular, slightly depressed ulcer 18 mm. in diameter, the edges towards the stomach more

elevated and sharper than the remaining portion; surface of ulcer smooth. Muscular striation not visible. Adherent to its base there is a soft clot 6 cm. long. This clot apparently extends from a small eroded vein about 1 mm. in diameter in the base of the ulcer. There is a slight amount of bloody mucous fluid in the trachea. In the small intestines there is a completely formed tapeworm, which extended from the beginning of the jejunum throughout the entire lumen. (*Tænia medio-canellata*.) The microscopic examination of the liver shows a most intense fatty infiltration. Cover-slips at autopsy from the foci of peritonitis give numerous streptococci. These were not found in the peritoneum generally.

*Bacteriological examination.* (The cultures are either roll agar or stab agar.)

1. Roll agar of iliac veins (may have been contaminated) contains about 200 small, grayish-white colonies, resembling streptococcus colonies. Microscopically they are streptococci. In addition, fluid at the bottom of the tube contains some bacilli, some with unstained ends indistinguishable from bacillus coli communis. There are two colonies of a white or slightly yellow color, larger.

2. Slanting agar of heart muscle is sterile.

3. Slanting agar of lung is studded with colonies. The majority are minute and grow like streptococcus colonies. In addition there are about 100 yellow colonies. The former are all streptococci. The latter are typical staphylococcus pyogenes aureus; no other bacteria in fluid at bottom of tube.

4. Slanting agar of spleen sterile.

5. Slanting agar of kidney shows a slight whitish growth of a streptococcus at a point where needle has stabbed agar; none elsewhere. Roll agar from kidney is diffusely washed with a whitish-gray growth. In addition there are at least a dozen small white colonies of streptococcus. Fluid at bottom also shows streptococcus and some coarse bacilli, growing in chains of a dozen or more, much thicker and larger than colon bacilli, and probably representing some contamination.

6. Slanting agar of liver, tube broken and contaminated.

7. Roll agar of bile. One large, peculiar, white, irregularly spread out colony, and three small white colonies about 0.5 mm. in diameter. These are of a coarse irregularly staining bacillus, probably a contamination.

8. Roll agar from exudate in adhesions between loops of small intestines, and uterine stump studded with white colonies of streptococcus. In addition there are about twenty or thirty colonies of staphylococcus pyogenes aureus.

9. Roll agar from peritoneal fluid at a distance from preceding, about a dozen colonies of streptococcus showing that peritoneal infection was chiefly confined to the neighborhood of the stump.

10. Slanting agar from surface of loops-of intestines shows no growth.

*The case is interesting in showing a limitation of streptococcus peritonitis, perhaps due to the absence of the drainage tube.*

#### CONCLUSIONS.

The case is a very unique and interesting one in several aspects, and suggests many important considerations.

*First.* The unusual condition of pyosalpinx of one side with appendicitis, salpingitis and ovaritis of the opposite side, both the right Fallopian tube and vermiform appendix containing the streptococcus pyogenes.

*Second.* The duodenal ulcer as a possible sequela of the cauterization of the pedicles and appendix. The ulcer, though recent, appears to be rather too far advanced to be regarded as due to the operation, and there are no observations which show that gastric or duodenal ulcers follow burns of this character.

*That the death was immediately due to the hemorrhage from the ulcer is clearly shown by the anæmia of all the tissues, the large amount of blood in the intestines, and the eroded vessel in the ulcer.*

*Third.* The presence of the segment of a tape-worm in the intestine and vermiform appendix, which might possibly have acted as a foreign body and had some connection with the appendicitis.

*Fourth.* Although it cannot be definitely stated that the infection extended from the appendix to the tube, the presence of the streptococci in and about the appendix and in the tube on the same side, and its absence in the other tube, speaks for this view.

*Fifth.* It demonstrates the uselessness of a drainage tube in the presence of virulent organisms, which, on the contrary, would diminish the resistance of the tissues and do harm by its presence. In this case it would not have drained, as the greater portion of the purulent fluid was walled off from the peritoneal cavity, the infection being thereby limited, and not of itself producing the fatal issue.



