

TRANSACTIONS

OF THE

PHILADELPHIA ACADEMY OF SURGERY

STATED MEETING HELD MARCH 6, 1933

The President, DR. JOHN SPEESE, in the Chair
CALVIN M. SMYTH, JR., M.D., Recorder

TOTAL GASTRECTOMY FOR CARCINOMA OF THE STOMACH

DR. JOHN B. FLICK reported the case history of a man, aged fifty-five, born in Italy, who was admitted to Jefferson Hospital December 19, 1930, complaining of epigastric distress, vomiting and loss of weight and strength. The symptoms began in July, 1929. At first vomiting occurred several times a week and then daily. The vomitus contained food which he had taken at his last meal. There was never, to his knowledge, any blood in it. He had lost thirty pounds in weight in six months. He had discomfort after meals, but no definite pain. The discomfort was relieved by vomiting. He had always been healthy until the onset of this illness, except for an ischio-rectal abscess which was drained in 1905 and some "heartburn" in 1918 which soon disappeared. He had used alcoholic beverages and tobacco in moderation. On admission the patient appeared somewhat emaciated. His abdomen was scaphoid. The edge of the liver could be felt but there was no mass palpable and there was no tenderness. The blood Wassermann reaction was negative; hæmoglobin, 78 per cent.; red blood-cells, 4,250,000; white blood-cells, 6,000; and blood-pressure 108 systolic and 66 diastolic. Temperature and pulse were normal. The non-protein nitrogen, creatinin and sugar of the blood were within normal limits. The urine was negative. An X-ray examination showed what was thought to be a carcinoma involving the pars media and extending to the pyloric end of the stomach.

December 26, 1930, upon operation, the stomach was found to be small, its walls were thickened and there was marked induration of the pars media and pyloric end. It seemed to be almost completely involved in a carcinoma of the linitis plastica type. There were some enlarged lymph-nodes along both curvatures close to the stomach. There was no gross evidence of involvement of the liver or other viscera. It was obvious that no part of the stomach was sufficiently free of disease to permit of a gastrojejunostomy and a total gastrectomy was, therefore, decided upon. The duodenum was divided between clamps, but fearing that the division had been too close to the pylorus, a second clamp was placed behind the first and an additional section of duodenum removed. The stomach was freed from its omental attachments, taking with it the enlarged lymph-glands, several of which were along the coronary artery. The latter artery was doubly ligated with No. 2 chromic catgut proximal to the enlarged glands and divided. The stomach was then turned up and used as a tractor to expose the abdominal œsophagus. A loop of the jejunum was brought through the mesocolon and approximated to the œsophagus with five interrupted sutures of linen thread. An œsophagojejunostomy was done using two rows of continuous sutures of No. 0 chromic catgut. The stomach was not cut away until the inner suture layer was almost complete. No clamps were used. The jejunum on either

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side of the anastomosis was fastened to the diaphragm to relieve the strain on the anastomosis. The margins of the opening in the mesocolon were sutured to the jejunum with a few interrupted sutures and the abdomen closed. The operation was a long one and the patient was in a state of shock at its termination. He was given normal salt solution by hypodermoclysis, intravenous infusion of glucose and later a transfusion of 240 cubic centimetres of blood. He reacted from the shock, but developed almost complete suppression of urine and died on the third post-operative day.

Forty-eight hours after operation his blood non-protein nitrogen was 60.6 and creatinin 9.44. Before death there was great restlessness, muscular twitchings and his temperature rose to 106.8° F. There was no vomiting nor any indication of peritonitis. Permission for autopsy could not be obtained. The laboratory report upon the specimen removed was: Diffuse carcinoma of the stomach (leather bottle type). Linitis plastica.

ABDOMINAL ACTINOMYCOSIS

DR. JOHN H. GIBBON, JR., by invitation, reported the case history of a Negro male, twenty-four years of age, who was admitted to Pennsylvania Hospital in the service of Dr. Charles F. Mitchell, March 14, 1932. Three days prior to admission he had taken Epsom salts and the following day developed pain in the right lower quadrant of his abdomen. He was nauseated but did not vomit. Physical examination was negative except for marked rigidity and tenderness in the right lower quadrant of the abdomen. His temperature was 99.6° F.; pulse, 84; white blood-cells, 20,400 per cubic centimetre; urine, negative.

Under spinal anæsthesia, the abdomen was opened through a right lower rectus sheath incision. There was no free fluid in the peritoneal cavity. A mass surrounded by omentum was palpated in the region of the cæcum. The appendix was markedly swollen and covered with a fibrinous hæmorrhagic exudate. Examination showed a small perforation at its middle from which pus exuded. The appendix was removed and the stump inverted. The wall of the cæcum was not thickened and appeared normal. Two rubber-covered gauze drains were inserted and the abdomen closed. There was a slight febrile reaction following operation, but the temperature was normal on the seventh day when the drains were removed. He was discharged from the hospital twenty days after operation with a small draining sinus from which protruded exuberent granulation tissue. The blood Wassermann reaction was strongly positive and anti-luetic treatment with mercury and iodides was started prior to his discharge from the hospital. A small superficial ulcer over the lower third of his left tibia was dressed with mercurial ointment. The patient was uncoöperative, and returned at long and irregular intervals for the anti-luetic therapy and the dressing of his wound and ulcer of the leg. He was not seen from May 13 to August 5, when he returned to the hospital because of fever and a marked purulent discharge from his abdominal sinus. He said that his abdominal wound had never healed, and that the discharge had increased during the last two weeks in July. August 7, a superficial fluctuating mass near the old abdominal sinus was incised and pus evacuated. The blood Wassermann reaction was still strongly positive, and mercury and iodides were given.

The continued discharge from the abdominal wound was thought to be due to his untreated luetic infection, but the possibility of actinomycosis was suggested. A smear of the pus from the abdominal wound on August 17

showed many cocci and bacilli, but no ray fungi. There was no growth of the culture in six days.

August 26, another large fluctuating mass above the right iliac crest was widely incised under nitrous-oxygen anæsthesia. The abscess cavity lay between the skin and the abdominal muscles. It was multilocular but the partitions could easily be broken down with the finger. A large quantity of pus and débris was evacuated. No connection with the original sinus of the anterior abdominal wall could be discovered. The original sinus was widely opened and both cavities were packed with iodoform gauze. Actinomycotic granules were now found in the pus at the time of operation and typical ray fungi were seen under the microscope. Microscopical examination of the tissue from the abscess wall showed colonies of actinomyces. (Fig. 1.)

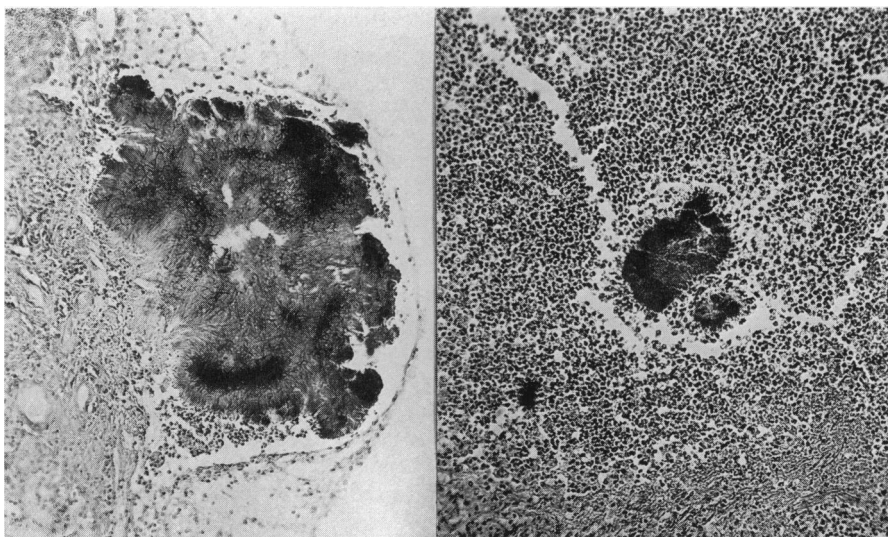


FIG. 1.

FIG. 2.

FIG. 1.—Photomicrograph (x 175) of tissue removed from the wall of the abscess in the right flank, August 26, 1932. The bacterial stain used shows the Gram-positive filaments of the actinomyces in a dense interlacing network in the colony.

FIG. 2.—Photomicrograph (x 175) of tissue at the border of the hepatic abscess. There is a large dense colony of the ray fungus at the centre and two smaller ones nearby. No normal hepatic tissue is shown.

Following operation, the daily dose of potassium iodide was rapidly increased to 140 grains. The iodoform gauze packing was removed on the second post-operative day. Carrel tubes were inserted and the abscess cavities irrigated with one-third strength Lugol's solution every second hour during the day and every third hour at night.

X-ray examination of the chest September 1 showed no involvement of the lungs, ribs or thoracic spine. Repeated urine examinations were negative. The patient was anæmic: Hæmoglobin, 53 per cent.; red blood-cells., 2,890,000; and white blood-cells, 29,700. The differential count was normal with 76 per cent. polymorphonuclear neutrophils. From the time of admission the patient's temperature had varied between 99° and 102° F. As there was no abatement of fever following the last operation it was thought that surgical drainage was inadequate. September 2, under gas-oxygen anæsthesia, an incision was made from the lateral border of the right lower rectus sheath to the lumbar triangle of Petit, connecting the two suppurating abdominal wounds. This necessitated dividing all the abdominal muscles

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attached to the crest of the ileum, thus producing one large, widely opened cavity. The cavity was extended up along the lateral and posterior wall of the cæcum and ascending colon, and down as far as Poupart's ligament. Bleeding from the friable necrotic tissues lining the abscess cavity was controlled by packing with iodoform gauze. A blood transfusion of 500 cubic centimetres was given by the direct method the following morning. Two days after operation the iodoform packing was removed, and the wound loosely filled with gauze. The gauze was changed daily and was saturated with Lugol's solution every second hour during the day and every third hour during the night. Potassium iodide was increased to 180 grains a day.

Two weeks after operation the patient's temperature, which had been normal for six days, began to rise again. An X-ray treatment was given, but was followed by such a severe systemic reaction that it was not repeated. The wound filled in with granulation tissue, but sinuses developed in the posterior portion, and despite continuous irrigation with Lugol's solution through catheters, several more abscess cavities developed in the lumbar region and over the buttocks. These were opened and drained. The patient gradually became more emaciated and weaker and the hectic temperature continued. The anæmia persisted, but did not become more marked. There were never any symptoms of pulmonary involvement. The patient became comatose on January 26, 1933, and died a few hours later.

At autopsy there was some serous effusion in the pericardium and pleural cavities and congestion of the bases of the lungs, but no gross evidence of disease of the thoracic organs. There was a small amount of clear straw-colored fluid in the peritoneal cavity. The peritoneum was smooth and glistening. The omentum was slightly adherent to the cæcum and to the abdominal wall at the site of the appendectomy scar. There were no other intraperitoneal adhesions. The edge of the liver extended just below the costal margin. There was general enlargement of the mesenteric lymph-nodes, but no evident disease of the large or small bowel. The sinus tracts in the right lower quadrant of the abdomen were found to extend into the retroperitoneal tissues about the right kidney, and to involve the right psoas muscle. The vertebral discs and the bodies of the second to the fifth vertebræ, inclusive, showed some softening. The tracts extended over the sacral promontory into the left psoas muscle. The more extensive involvement, however, was on the right side of the spinal column. There were areas of necrosis throughout the right psoas muscle and there was some roughening of the right twelfth rib. Posteriorly, the sinuses followed the fascia planes from beneath the twelfth rib to the lumbar region, where drainage had been instituted.

The liver was the only organ showing gross involvement by the actinomyces. A large abscess was found in the central portion of the liver substance near the gall-bladder and the left lobe. The abscess was eight centimetres in diameter and filled with creamy pus. No sulphur granules were seen and smears showed bacilli but no fungi. There was no growth on culture. Microscopical examination of the abscess wall in the liver showed colonies of the ray fungus. (Fig. 2.) Ray fungi were seen in the lungs on microscopical examination. The mesenteric lymph-nodes showed only the histological changes incident to inflammation.

Doctor Gibbon remarked that actinomycosis is not a rare disease in this country. In 1925, Sanford and Voelker¹ reviewed 670 cases reported in

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the United States. Eighteen per cent. were abdominal. Good,² in 1931, reported sixty-two cases from The Mayo Clinic in which the disease was primary in the abdomen, and in only eight of these cases was the disease arrested. The origin of the infection in the case reported here is not clear. There was no evidence of involvement of the mouth, neck or respiratory tract. The cæcum was apparently normal at the time of the appendectomy. Gross dissection of the appendix, and repeated microscopical examinations, failed to reveal the presence of any actinomyces.

Cure or arrest of the disease lies in early and energetic treatment. The failure in this case may be ascribed to the delay in establishing the diagnosis. Probably the sinuses should have been widely opened as soon as they appeared, but the patient's failure to respond to the extensive and almost mutilating incision of his abdominal wall deterred further surgical efforts. It is difficult to estimate the effect of X-ray and radium therapy upon the disease as they have practically always been used in conjunction with other methods of treatment in the arrested or cured cases which have been reported. Probably in this case intensive X-ray therapy should have been used after the anæmia had been controlled.

BIBLIOGRAPHY

- ¹ Sanford, A. H., and Voelker, M.: Actinomycosis in the United States. Arch. Surg., vol. xi, p. 809, December, 1925.
² Good, L. P.: Actinomycosis of the Abdomen. Arch. Surg., vol. xxii, p. 307, February, 1931.

DR. RICHARD H. MEADE said that for five years he had been following a patient with this disease. He started off with an infection of the jaw which cleared up after extraction of a tooth. Some weeks later he developed pneumonia, then empyema. He was operated upon for empyema and in a few months developed chest-wall and abdominal-wall abscesses, none of which showed the causative agent. He had diabetes in addition. About four months after the empyema was drained, typical sulphur granules were obtained from all wounds. This man had treatment by iodine and X-ray as well as by surgery and after being in the hospital fourteen months returned home with several draining sinuses, apparently to die. Three months after returning home, without any special therapy whatever, all the drainage stopped and he was free from all evidence of disease for twenty-three months. At that time he returned for study with some evidence of lung involvement. He has now continued another year in comparative health and requires no treatment except for the diabetes. We are at a complete loss in this case to give credit to any single form of therapy. Doctor Wangenstein reported a case last year successfully treated by surgery alone and there are several other reports indicating that surgery offers the best outlook, rather than X-ray and iodine.

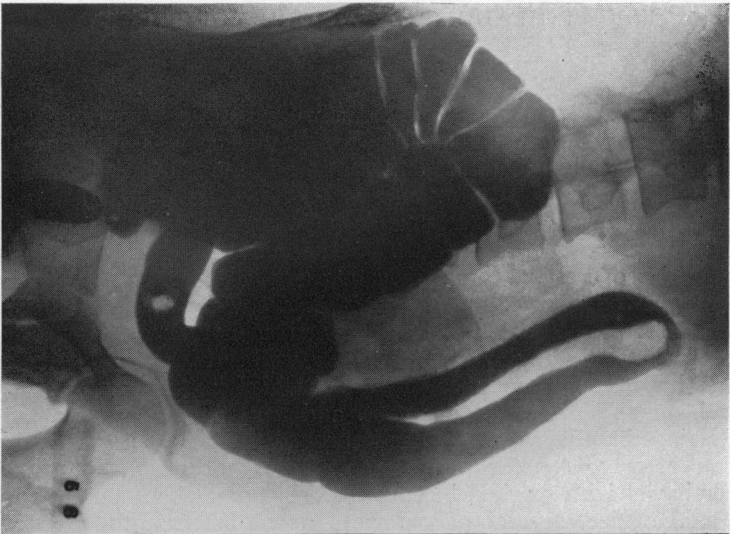


FIG. 3.

FIG. 3.—Barium enema May 8, 1931, showing polyp vacuole and loss of haustration of the large gut from the rectum to the middle of the transverse colon.

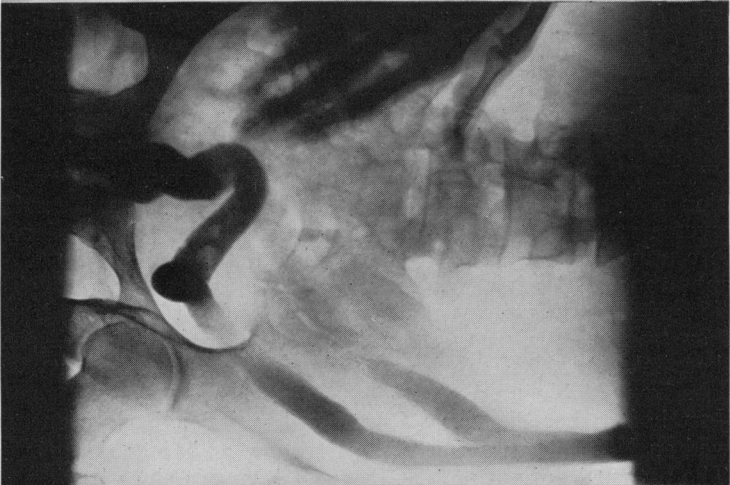


FIG. 4.

FIG. 4.—Barium enema June 19, 1931, one month after transverse colostomy. No change in appearance of bowel. Polyps still noted.

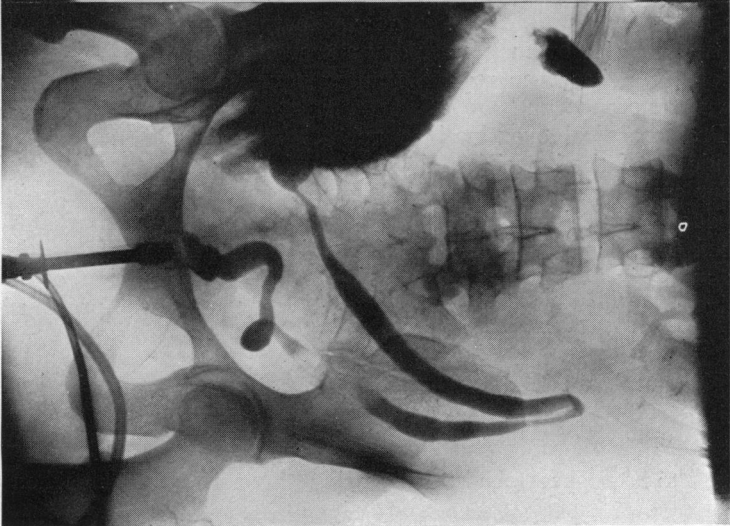


FIG. 5.

FIG. 5.—Barium enema November 7, 1932. No further bowel symptoms, but marked contracture of the bowel lumen may be seen with disappearance of the vacuolization due to the polyp.

ULCERATIVE COLITIS

DR. L. F. FERGUSON presented a woman, thirty years of age, who had an attack of what was called intestinal influenza in 1927 at which time she suffered from a bloody diarrhoea. She was confined to a hospital for a period of six weeks. The bleeding and frequency of movements decreased somewhat but returned in attacks and in January, 1931, her physician recommended extraction of her teeth. She rapidly lost weight and strength following this operation, complained of marked abdominal pains and had such frequent bloody bowel movements that she was unable to leave her home. When first seen April 4, 1931, she had such marked prostration that she was continually dizzy and could barely walk. She was having from ten to fifteen bowel movements per day, all of which contained much pus and blood. Her hæmoglobin was 35 per cent. and her red-cell count about 2,000,000. Following three transfusions she improved markedly. Proctoscopical examination May 4, 1931, showed an extensive ulceration of the rectum and lower bowel with marked bleeding. At a point about ten centimetres from the anal orifice, several polyps were noted between the ulcerations. The lumen of the bowel was about two centimetres in diameter. A barium enema (Fig. 3) showed a loss of haustrations extending to the middle of the transverse colon with areas of polyposis throughout the involved portions. Because of the marked constrictions of the lumen of the gut, the patient was advised to have a colostomy performed. This operation was done May 16, 1931, in the Philadelphia General Hospital in the service of Dr. E. L. Eliason. The abdomen was opened through a lower right rectus incision under spinal anaesthesia. The large gut from the middle of the transverse colon downward was tubular in shape, thick and about two to three centimetres in diameter. Proximal to this point the gut was normal in appearance. A right gridiron incision was then made and the middle portion of the transverse colon delivered to form a loop colostomy. Two further transfusions were given before the patient was discharged from the hospital. At the time of her discharge her red-cell count was 3,620,000 and the hæmoglobin 70 per cent.

Just before her discharge from the hospital a barium enema (Fig. 4) showed an X-ray picture essentially the same as before the operation.

The patient has been seen at frequent intervals since leaving the hospital. She has gained weight and is now able to live a normal life. Usually she has two bowel movements per day and wears a colostomy bag only for protection. She has been receiving autogenous vaccines of hemolytic streptococcus equip and non-hemolytic staphylococcus albus.

Proctoscopical examinations now show an almost complete healing of the ulcers of the bowel but the lumen of the gut is so contracted that only a very small proctoscope can be passed. Because of the extensive polyposis the question was raised as to whether malignant degeneration should be looked for and for this reason a third barium enema examination (Fig. 5) was made in November, 1932. The marked constriction of the bowel is easily noted but the outline of the gut is smooth and the previously observed polyps seem to have largely disappeared.

The speaker added that proctologists and gastroenterologists hailed the work of Bargen as a new epoch in the treatment of chronic ulcerative colitis. This discouraging disease which has resisted therapeutic efforts seemed to have succumbed to rational methods of treatment when a causative

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organism was found by means of which immunizing vaccines or sera could be prepared. Unfortunately, Bargen's work has not been universally duplicated, but the use of autogenous vaccines has proved beneficial in many cases. Their experience in the Proctology Clinic at the University of Pennsylvania Hospital has been that relatively few cases of ulcerative colitis will show the Bargen diplococcus, although his culture media have been used and his technic closely followed. They have, however, been able to isolate many types of streptococci from cultures made directly from the ulcer at proctoscopic examination, and administration of vaccines prepared from these cultures has given excellent results in many of these cases.

Vaccine therapy is of particular value if the patient is seen during the early stages of the disease. In the later stages there are marked inflammatory changes with stricture formation and often inflammatory polyposis. In this stage vaccine or other conservative therapy is rarely successful and the patients continue semi-invalids, often unable to leave their homes because of the necessity for frequent bowel movements. In such cases operative intervention may often enable the patient to live a normal life.

The operations which have been proposed for the treatment of ulcerative colitis may be divided into two groups. The first group, ileostomy and appendicostomy, are often used in the active stage of the disease. Regan and Mensing employ ileostomy as a means of producing physiological rest during the acute stage, with later anastomosis after the disease subsides. Appendicostomy has been used to make possible irrigation of the diseased bowel. The success of these procedures has not been great, and it is certain that conservative therapy has given as good results.

The second type of operation is used in the late stages of the disease, when contracture of the bowel wall is a constant feature. Permanent drainage of the gut above the affected area is the indicated surgical procedure. The site of the drainage must be determined by the extent of the bowel involvement as shown by barium enema. When the entire colon is involved, ileostomy is the indicated operation; when only part of the large gut is diseased, a colostomy proximal to the diseased area should be performed. Colostomy with resection of the involved colon is an extensive operation, rarely indicated to effect a cure.

Doctor Ferguson, in closing, said that he would like to have some opinion expressed as to whether or not colectomy should have been performed in view of the widespread polyposis. The patient was in such poor condition that he did not wish to subject her to such extensive surgery. Is it possible in these cases that drainage of the bowel will suffice?

DR. CALVIN M. SMYTH, JR., said that it is generally conceded that polyposis is the one lesion of the large bowel that is definitely pre-cancerous. In many cases of diffuse polyposis a painstaking microscopical examination will show that malignant degeneration has begun to take place in one or more of

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the polyps. It is conceivable that an operation such as the one described by Doctor Ferguson upon this patient might result in a cure of the colitis, although the speaker wondered just how Doctor Ferguson arrived at the conclusion that the involvement of the colon was limited to such a restricted area. This is not the usual case in ulcerative colitis and it would, therefore, seem that ileostomy, which excludes the entire colon, would be a more logical procedure. It is evident that simple drainage has in a large measure relieved the symptoms attributable to colitis in this patient, but is it possible to state from the X-ray appearance alone that the polyposis has cleared up? The speaker believed that, as a general rule, the interests of the patient in cases of this type are best served by a preliminary ileostomy followed by colectomy and restoration of continuity at a later date. It is, of course, necessary to allow a sufficient interval between the two operations. By thus staging the surgery a poor or indifferent risk may often be converted into a good risk and the patient thereby be given the benefits of complete surgery.

PILONIDAL CYSTS

DR. S. DANA WEEDER read a paper with the above title for which see page 385, vol. 98, September, 1933, ANNALS OF SURGERY.

DR. HUBLEY R. OWEN remarked that the terms pilonidal cyst, sacral dermoid, sacrococcygeal cysts, and piliferous dermoids are somewhat erroneous inasmuch as a true cystic condition is decidedly rare. We find that the same condition, not often it is true, in the anterior raphe or line of fusion elsewhere. A similar condition under the hyoid bone was reported by Massé, in 1887. This patient had the same pathological entity in the sacrococcygeal region. In another patient the cyst was found over the sternum. In one of the speaker's cases the tumor extended as high as the lumbar region.

The term "pilonidal" is derived from the Latin composed of "pilus" for hair and "nidus" for nest or focus. The implication of this term can be only one of two states, that is, it is either a sinus or a cyst having hair as its focus. Neither of these conditions is true always. Lawson Tait and many others consider the condition to be a persistent remains of neurenteric canal. Féré believes it to be caused by failure of two halves of the body to properly unite behind, while others believe it to be due to an invagination or retraction of the skin with a subsequent partial degeneration, and as recently as July, 1931, Stone, of Baltimore, advanced the imaginative theory that it might be traceable to an evolutionary persistence of the Avian preen gland from which the bird obtains oil with its beak pressing down its feathers. Doctor Owen suggested the term raphe inclusions because of the fact that these inclusions occur in the seam of the body or mid-line, not only in the sacral and sacrococcygeal region, but also, as noted above, in the region of the hyoid, the sacrum and lumbar vertebræ. The histories of a large number of cases occurring in three of the large hospitals in Philadelphia

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disclose certain salient facts: (1) That less than 10 per cent. occur in females. In the speaker's series of thirty-one cases there was but one in the female. (2) Practically every individual in the group was of the heavy or obese type—many of them classed as pituitary type. In one case a note had been made of the peculiar sharp demarcation of the hair above and below the level of the sacro-iliac junction. Below the hair was heavy, matted and tangled—almost ape-like, while above it was thin and of fine texture.

Doctor Stone emphasized the fact in 1924 that not one had occurred in a member of the Negro race and in two of the hospitals whose histories were examined the Negro census equaled that and even surpassed the white census. Furthermore, the condition appeared only in members of the Caucasian race. Not one instance was found in a member of the black, red or yellow races. This fact may be a coincidence. It is also true of the histories examined whereas the clinical studies were not always complete, there was no positive Wassermann or Kahn reaction. There are a few interesting questions which might be asked: Why is it the condition does not manifest itself before adolescence and why is it apt to occur in the heavy obese type of person? Why does it occur so much more frequently in the male than in the female? Is it true that the majority of cases follow sedentary occupations? Does the sedentary occupation favor inflammatory change? Surely it is not because of laziness because it might then be more common in the Negro. The Negro appears to be hereditarily free of this lesion yet the white man, accepted as an older evolutionary animal, has this condition far more frequently. Is it because the white man's ability to fuse properly during his foetal life is becoming less or is it due to early species cleavage?

Doctor Owen presented an analysis of his cases as follows:

SUMMARY OF THIRTY-ONE CASES OF DR. H. R. OWEN

Males					30
Females					1
Oldest	45	Duration		18 years	
Youngest	23	Duration		18 months	
Average age					31.1 years

Duration of Symptoms

Average					1.46 years
Shortest					2 days
Longest					18 years

Chief Complaint

Discharge	13 cases	Hair found			7 cases
Pain	8 cases	Sinuses—largest number of sinuses			4
Both	5 cases	Single sinus			14
Cyst of spine	5 cases	Multiple sinuses			6

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<i>Post-Operative Length of Stay in Hospital</i>	<i>Post-Operative Temperature</i>
Longest 27 days	Normal 15 cases
Shortest 3 days	Elevation 16 cases
Average 10.1 days	

Recurrence

Twenty-five cases have been followed for a period of over one year.
 Two of thirty-one cases have had recurrence following reporter's operation.
 Eight cases had been previously operated upon once.
 One had had two previous operations.
 One had had three previous operations.

Type of Operation

Lahey	5 cases
Excision with central drainage of wound.....	6 cases
Excision with packing	20 cases

Anæsthesia

Gas	3 cases
Ether	6 cases
Local	1 case
Gas-ether	9 cases
Spinal	12 cases

Complications

Secondary hæmorrhage	2 cases
Upper respiratory infection.....	1 case
Sacral teratoma undergoing sarco- matous degeneration	1 case

DR. GEORGE P. MULLER said that during the past ten years, in the University Hospital, he had seen thirty-five of these cases; thirty-one were in men and four were in women (11.4 per cent.)—a large percentage of women, according to most writers. One of these was a child of seventeen months. Omitting this patient the average age was twenty-six years. The condition is a very difficult one to treat owing to the long duration of the healing process and the frequency of recurrence. At the present time Doctor Muller is rather partial to the modified Lahey method in which only one lateral cut is made and the original incision sutured up.

DOCTOR WEEDER, in closing, said that as to the terminology, he agreed "pilonidal" cyst was a bad term. As he has tried to show, the lining membranes of these cysts or sinus tracts will vary depending upon the time of inclusion of certain cells derived from the ectoderm. The early inclusions will be of completely potential cells in which case hair, sebum and sweat may accumulate in the cyst or be discharged from the sinus. Later inclusions would include impotential cells in which case stratified epithelium would line the wall or tract and there would be an absence of hair, sebum and sweat. A percentage of both types would have as part of their wall a remnant of the medullary canal which has remained unobliterated, in which case the cells would be a type of embryonal neuro-epithelium. It would seem, then, that a better term would describe first the location of these cysts or sinuses and secondly suggest their origin as being faulty develop-

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mental inclusions and obliteration of the medullary canal. These thoughts suggest the term sacrococcygeal medullary cysts or sinuses.

Most writers declare that the condition is found more commonly in the male than in the female. It happens, however, that in the four cases in which he has excised the coccyx there were three women and one man.

As to the time of appearance he believed this to be influenced by the incidence of injury. So often the patient gives the history of having fallen or injured the end of the spine. This injury seems to set up an inflammatory reaction.

Regarding treatment he has based it upon what appears to be the true etiology. A complete removal of the cyst or sinus wall will bring about a cure. If a percentage have as part of their wall a remnant of the unobliterated portion of the medullary canal or the sacrococcygeal joint, then it will be necessary to remove the coccyx in order to excise all that wall. Probably the type of closure of the wound has nothing to do with the matter of recurrence as wounds should close here as well as elsewhere if there be no pathological process at the base. The type of closure, however, does influence very decidedly the length of time for wound healing and whether or not there will result a painful scar. The double pedicle flap recommended by Lahey has proven to be most successful. Practically all the patients so closed were out of bed by the fourth day and out of the hospital in a week.

The coccyx should be removed in those patients operated on before by bloc dissection which have recurred; those in which the injection of lipiodol shows the sinus tract by X-ray to go into the sacrococcygeal joint; those in which the injection of methylene blue shows discoloration about the joint and those which show some suspicious type of tissue in the region of the sacrococcygeal joint.

CEREBELLAR ABSCESS

DR. HUBLEY R. OWEN presented a boy ten years of age, who was admitted to the Hospital of the Woman's Medical College June 6, 1932, giving the history of having been hit in the head by a baseball on or about June 4, 1932. No symptoms developed until June 14, 1932, when the boy complained of headache, nausea, vomiting and restlessness at night. The provisional diagnosis was possible fractured skull with signs of compression. Both ears have discharged at intervals for the past eight years due to otitis media at the age of two years.

Physical Examination.—Overdeveloped, stolid boy, not acutely ill. *Head.*—Eyes, pupils equal, react to light and accommodate. Ears, left ear impacted cerumen; right ear discharging freely. No mastoid tenderness. *Chest.*—Negative. *Abdomen.*—Negative. *Extremities.*—Babinski absent. Kneejerks diminished. *X-ray of Skull.*—No evidence of skull fracture. Röntgen evidence of convulsional atrophy. Sella is normal. *X-ray of Mastoid.*—Films of the mastoid show the left mastoid to be clear, cell outlines distinct and cells pneumatic. Films of right mastoid show marked clouding of the cells and cell outlines can be faintly recognized in places but there is ap-

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parently considerable destruction of most of the cell outlines. Impression, mastoiditis right side.

Child complained of occasional nausea but constant headache. Headache increased in the afternoon. June 22, 1932, the child was quite sick, crying all day from headache. Examination of eyes by Dr. Mary Buchanan, ophthalmologist, showed "o2 media clear. Discs well defined. The vessels full and discs quite red, although not so red as the rest of the fundus. No hæmorrhage or exudate as far as seen but patient is not coöperative and the details of the periphery are not obtainable through the small pupils. There is nothing suggesting brain lesion or choked discs. Patient follows light, movements are full, and patient seems fully conscious. Cornea clear and pupils equal. Respond promptly to light." Examination by Dr. Winifred Stewart June 23, 1932: "All neurological signs negative. Spinal puncture, pressure 22 when not crying; 40 when crying. Five cubic centimetres spinal fluid removed and sent to laboratory. Vomited all food." Examination June 24, 1932 by Dr. George Wilson: "Child is drowsy and fusses when awakened. He coöperates not too well in examination. No cranial nerve paralysis. Pupils dilated with mydriatic. Performs finger-to-nose test on left side well, on right side with moderate ataxia. The tone of right upper extremity seems less than that of left. Deep reflexes in upper extremities unobtainable. In lowers these are present and a little subnormal. Plantar stimulation on left produces flexion. On right there is occasional extension of great toe which simulates a Babinski. Quite often, however, when right foot is stimulated, there is extension of left big toe. Position sense is normal in all four extremities, although he occasionally miscalled a position on the right side. He recognized objects with both hands, except that once he called a quarter, a key in right hand. Pain sense is normal. Abdominal reflexes could not be obtained. Knee to heel normal. Neck is slightly rigid. Boy cries out when head is flexed. Kernig sign not present. Boy is obese. External genitalia are small."

A tentative diagnosis of cerebellar abscess was made and the boy was operated upon June 25, 1932 under nitrous-oxide oxygen anæsthesia with ether maintenance. He was operated upon by two-stage operation as suggested by Rawling. First, relief of cerebellar pressure; secondly, radical mastoid. Six days later, a semilunar incision was made and a flap turned forward. Incision made through scalp at right inferior region just below the tentorium. Skull, which was about three millimetres thick in this region, was opened with Hudson burr and enlarged by rongeur forceps. Aspirating needle was inserted into right cerebellum and about 10 cubic centimetres of moderately thick greenish pus was aspirated. A hæmostat was plunged into the opening, opened and withdrawn liberating considerable additional pus. Abscess drained with small rubber tube. Culture showed hæmolytic streptococcus. The child made an uneventful recovery from this operation and June 29, 1932, mastoidectomy was performed by Dr. Emily VanLoon.

Necrotic bone and unhealthy granulation tissue were found in the mastoid cells but no frank pus was encountered. Pressure over the antrum with curette repeatedly elicited rhythmic jerky movements of both upper and lower extremities. No break in the continuity of the bone between the middle fossa and the mastoid or between the mastoid and the posterior fossa was encountered. Drain was inserted into the antrum and the skin incision closed with dermal sutures.

The child made an uneventful recovery from the second operation and was discharged in good condition July 25, 1932.

THE PROBLEM OF RECURRENT HERNIA

The case is reported principally because of the confusing nature of the symptoms. The first impression was fracture of the skull with compression from a slow extra or subdural hæmorrhage.

DR. J. S. RODMAN said that he had an opportunity of seeing this boy operated upon by Doctor Owen. It was remarkable that he got well so promptly and by such a comparatively simple surgical procedure. The wound was drained readily through an exposure which ordinarily would not reach a cerebellar abscess. It is difficult to prove the exact location of this abscess but the speaker wondered whether this was an extradural abscess rather than one within a lateral lobe of the cerebellum. Most of these abscesses follow middle-ear disease and a considerable number are cerebellar, but those seen by Doctor Rodman have been approachable only from the post fossa itself. He raised this question as a matter of interest; it cannot be proven and is probably only an academic point as to whether this was within the lobe of the cerebellum or not.

DOCTOR OWEN, in closing, said that the first exploration was made below the tentorium. He did not find pus in the cerebellum at the first exploratory puncture so continued the incision above into the cerebellar pontine angle but as he was unable to find pus in this location, he returned to the cerebellar region, re-explored with an aspirating needle and found the pus as noted in the case history. He was quite sure that the pus was not subdural as there was cerebellar tissue beneath the dura and pus was found rather deeply within the structure of the cerebellum.

THE PROBLEM OF RECURRENT HERNIA

DR. CALVIN M. SMYTH, JR., read a paper with the above title.

DR. HUBLEY R. OWEN said that he had had the opportunity in the past twenty-five years to operate upon a large number of hernias of almost every character. These were operated upon at the Philadelphia General, Jefferson, and the Woman's College Hospitals. Most of these operations were performed on policemen and firemen. It has been possible to conduct an accurate follow-up survey of 350 of these men upon whom he had operated for hernia.

Doctor Taylor, of Johns Hopkins, showed conclusively some years ago that unless the patients were examined by a surgeon at the follow-up clinic no accurate statistics of recurrence could be obtained. Doctor Taylor wrote a postal card to those who could not appear at the follow-up clinic. Of those patients who were re-examined by the surgeon there was a recurrence of 8.4 per cent. whereas in those cases which reported by postal card only 3.4 per cent. stated that they had a recurrence, which proves conclusively that the patient himself is not always cognizant of the presence of the recurrence.

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In the statistics of Erdman in the service of Dr. Eugene Pool the percentage of recurrence in 1,000 cases was 7.5 per cent. Of 665 cases of operation for oblique hernia there was 3.15 per cent. recurrence, while of 318 for direct there was a recurrence of 16.51 per cent. Erdman points out that practically 50 per cent. of all recurrences were observed within six months after operation. This has been Doctor Owens' experience.

Cases for herniorrhaphy should be carefully selected and the older the patient the greater the chance of recurrence. Fifty per cent. of recurrences are those who are operated upon after forty years of age. Recurrence is more apt in the obese. He attempts first to reduce by diet these obese patients. Those who are inclined to have the so-called Pool bulge are apt to have recurrence after operation.

Of course in children the operation is simple. Usually tying off the sac suffices. With oblique hernia in early adult life a Bassini operation will usually suffice but in those cases which have a large oblique hernia or a direct hernia with a poor conjoined tendon he now, after tying off the sac and transplanting the sac after the method of Barker, repairs the floor of the canal by using the transplanted sheath of the rectus muscle after the method of Halsted. He also transplants the fascia of the external oblique beneath the cord, suturing this to Poupart's ligament, not to the thin, frayed, free margin but to the shelving margin. He has seen only one case in which he regretted transplantation of the cord superficially. That case, a recent one, developed atrophy of the testicle, which had to be removed. He had for about three years performed the operation as suggested by Doctor Stettin but has discontinued this procedure.

Following operation in a child it is necessary to keep the child bedridden only for about eight to ten days; in an adult operated upon for a large oblique or a direct hernia he keeps the patient in bed for at least fifteen days and for a bilateral hernia for eighteen to twenty-one days. In the case of policemen and firemen the men are allowed to do light duty after having been discharged from the hospital for one month but are not allowed to return to active duty for a period of three months.

The frequency of recurrence above the internal ring has been mentioned. In order to minimize the danger of recurrence in this location he always places at least one suture to close snugly the internal ring above the cord.