

of some weeks. Tuberculosis is well known to occur after fevers, such as typhoid, probably in such a lowered state of the system, the resisting powers of the individual are lessened, The rapid development of the tubercle in the case under discussion is remarkable, and death was no doubt immediately due to the extensive pleuritis.

As far as the operation is concerned, everything went well, and there was no post-mortem evidence that the patient died of any of the forms of septicæmia which follow excision of the tongue.

At one time it was thought that the ulcer might have been a cancerous one existing in a tuberculous subject, but a careful microscopic examination of the tongue and glands failed to show any evidence of carcinoma, while, on the other hand distinct evidence of tubercle was present.

CASE OF STRANGULATED HERNIA ; OPERATION FOLLOWED BY LAPAROTOMY FOR INTES- TINAL OBSTRUCTION.

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JOHN CARROLL, saloon keeper, æt. 46, three years ago applied for and was granted a pension upon the following grounds. Left inguinal hernia, oblique ; varicose veins of both legs, and heart disease. The hernia was said to have been caused by a strain received in lifting a forage wagon out of a rut during the war, the heart having been weakened at the same time, the varicose veins appearing later. Examination revealed a left oblique inguinal hernia, easily reducible, heart sounds normal, though lacking in force, both legs disfigured by varicose veins but no ulceration. The applicant was advised to apply to the Government for a suitable truss, and to wear it constantly. He did apply for and received a truss, but only wore it for about a week, as it gave him some

discomfort. On May 14, 1888, he rode from Henderson, Ky., to the neighboring town of Dixon, a distance of 30 miles, in an open buggy and over a rough road. The night of the 14th he was attacked with colicky pains which were partially relieved by a hypodermic of morphia and atropia. May 15, he made the journey back to Henderson in the same conveyance and over the same road, arriving at home about 9 p. m. The pains had continued with slight intermission and growing gradually more severe and accompanied by vomiting, notwithstanding a liberal supply of morphine. On the morning of the 16th, I was called to see the patient, and found him with anxious countenance, weak pulse, a disposition to vomit frequently, and obstinate constipation. An examination of the hernial orifices was immediately made, and the hernia spoken of found to be strangulated, the bubonocoele formed by it being tender and swollen; all attempts at reduction proved futile. Taxis was made under chloroform without avail, and the patient was informed that an operation was necessary for his relief. This was readily consented to by the patient, but strongly objected to by his wife, consent being withheld until she could consult with her family and friends. On the morning of the 17th, the patient's condition was much worse, he having passed the night in pain and almost incessant vomiting, his wife having administered to him against my advice, three compound cathartic pills in order to relieve the constipation, this being followed by several large enemas of soapsuds. This treatment but added to the gravity of the case, and urged by myself and three other physicians, a reluctant consent was given to operation. The patient was accordingly placed upon the operating table, the pubes and abdomen were shaved and the parts rendered as perfectly aseptic as was possible by scrubbing and by the use of antiseptics. Assisted by Dr. John Young Brown, the usual operation was made for the relief of strangulated hernia; the sac was opened and a knuckle of gut was found in the canal deeply congested, surrounded by a large mass of adhering omentum. The point of strangulation was at the neck of the sac which was incised freely. In attempting reposition of the gut, it was found adherent to the sac. The adhesions were carefully separated, except at one

point where it was deemed best to excise the portion of the sac attached to the gut and return them together. The omentum was liberated, drawn forward and after deligation with strong catgut was cut off and the stump returned to the abdominal cavity. The sac was closed with catgut, and Czerny's inguinal suture was used in closing the ring; a drainage tube was placed and the external opening closed by silk, the whole being covered by an antiseptic dressing. The patient came from under the anæsthetic well, but vomiting still persisted and he complained of great thirst, temperature 99° pulse 105. Tepid water was given by enema, which greatly relieved thirst. Iced lime-water and champagne in addition to hypodermic of one-third of a grain morphia and one one-hundreth of a grain of atropia were given, but without any permanent relief. Constipation remained obstinate, and there was no passage of gas from the bowel. Patient passed a restless night, and his condition on the morning of the 18th, presented every indication of intestinal obstruction. There were symptoms of collapse, but not marked: pain was severe though intermittent, and was sharply defined over the umbilical region; vomiting was persistent, the vomited matter for the first time being feculent, and there was marked diminution in the quantity of urine passed, temperature 99°, pulse 110. Evidently the operation for the relief of the strangulated gut had failed of its object; there was either paralysis of the released loop or obstruction within the abdominal cavity existed. "There is, I think, a fairly common impression that when a strangulated hernia has been reduced and the patient has recovered from the operation, no further evils will result beyond a possible return of the hernia, and with it a risk of a second strangulation. A piece of bowel, however, that has been strangulated in an external hernia and has been reduced into the abdomen, may be the cause of one of the many forms of intestinal obstruction. I do not allude to results immediately following the reduction of the hernia, but to results that are comparatively remote. Among the former, as is well known, it is not infrequent for the once strangulated loop to remain so entirely paralyzed after reduction as to continue the symptoms of obstruction until death ensues, and that too, without either becoming gan-

grenous or causing peritonitis!"¹ The question to be decided was whether the symptoms of obstruction which persisted after the release of the strangulated gut were due to paralysis of the loop, or was there still an obstruction which had not been relieved by the operation? Drs. S. G. Smith, P. H. Griffin, and John Young Brown were called in consultation, and after due consideration it was decided to make an exploratory laparotomy, and should there be further obstruction from whatever cause to relieve it if possible. Before, however, proceeding to this extreme measure I suggested to Dr. Brown to whom I had been relating the experiments of Dr. Senn with the rectal insufflation of hydrogen gas in the diagnosis of visceral injuries, which I had seen performed at the meeting of the American Medical Association at Cincinnati a few days before that perhaps, by the use of the gas, as directed to be used by Dr. Senn, a positive conclusion might be arrived at as to whether strangulation still existed, or whether the symptoms were due to paralysis of the loop of gut which had been strangulated in the hernia, and which had been released. He readily saw the importance of the suggestion, for in the event strangulation of any part of the intestine existed, it would be impossible to force the gas beyond the point of obstruction by any pressure which would be within the line of safety. On the other hand, should the symptoms of obstruction be due to paralysis, following and consequent upon the previous strangulation, there would be no special difficulty in forcing the gas through the entire intestinal tract, and by the use of a stomach tube, demonstrating beyond the shadow of a doubt the patency of the canal. The gas was at once prepared and passed into a rubber bag with a stop-cock which I formerly used in the treatment of phthisis by Bergeon's method. The bag held three gallons. (By the way, any one having an apparatus which was formerly used for the generation and injection of carbonic acid gas by the once vaunted Bergeon's method, will find it to answer an admirable purpose for the generation and insufflation of hydrogen gas.) A small piece of rubber tubing was passed over the nozzle of the gas bag and in-

¹Intestinal Obstruction. Treves.

to the other end an ordinary hard rubber rectal tube was forced. The tube was inserted into the rectum, and assisted by Dr. Brown the insufflation was begun, the gas being forced out by very gentle pressure. In what seemed a remarkably short time, the peculiar gurgling sound caused by the gas passing the ileo-cæcal valve could be distinctly heard, but only a small quantity had passed through the valve when further ingress of the gas was stopped, the patient at the same time complaining of great pain. The lower part of the abdomen which was slightly tympanitic, became tense and hard with exaggerated tympanites. As much pressure as was thought to be consistent with safety was used, but the gas could not be forced higher up. There could no longer be any doubt that obstruction of some portion of the gut beyond the cæcal valve, most probably of the ileum existed.

The condition of the patient was explained to him, also to his wife and family, and the advisability of immediate operation laid before them. The statement was made to them that without operative relief, death was inevitable, that with it, there was a possible chance for recovery. Mr. C. expressed not only a willingness but was anxious that the operation be done. Again a reluctant consent was given by the wife and family. As soon as the necessary preparations could be made, the patient was again placed upon the operating table. The entire abdomen was shaved, scrubbed and disinfected. Hands, instruments and sponges were scrupulously cleansed and disinfected; the body and extremities were protected from exposure by warm flannels. The incision was made from the umbilicus to the pubes. There can be no question as to the advantage of an incision sufficiently large, not only to insert the hand of the surgeon, but also to inspect the contents of the abdominal cavity. Immediately upon opening the peritoneum, a coil of distended small intestine protruded and was received upon and covered with towels, wrung out in hot bi-chloride solution, by Dr. Brown. Search was at once made for the obstruction, by passing my hand into the abdominal cavity and, following the directions laid down by Treves, the cæcal region was looked after first. This part of the intestine was only moderately distended (the distention, I took it, being

largely due to the hydrogen gas, much of which had, however, escaped from the bowel, per anum.) Passing the hand across to the region of the sigmoid flexure, several large glands—mesenteric—could be felt; the colon was closely attached by adhesions to the abdominal wall. Just within the fold of the sigmoid flexure, a large gland could be felt, and the gut, at this point, was firmly fixed; its lumen was considerably narrowed by the pressure of the gland. The superincumbent coils of intestine were gently pushed aside, and the part brought into view, exposing a loop of ileum much congested, about the size of a duck egg, which had slipped under, and was strangulated by, a band which extended from the site of the gland in the fold of the sigmoid flexure to the edge of the inguinal ring. The gland was caseous and evidently tubercular; in fact, the entire mesentery was studded with tubercular glands from the size of a millet seed to that of a walnut. This band was ligated at both ends of its attachment and divided. The sides of the loop of ileum, which was slightly twisted, were agglutinated so closely that it required very careful manipulation to separate them; the adhesion, however, was recent. A further and careful search was made for other points of obstruction, but none were found. The knuckle of gut which had been strangulated within the inguinal canal, was no longer congested, and looked to be normal. The toilet of the peritoneum was made with great care; warm water, which had been boiled, was used for irrigating the cavity; the protruding intestine was returned without difficulty. The wound was closed and dressed after Gerster's method.¹

As before, the patient came from under the anæsthetic well and, after the administration, hypodermically, of morphia one third grain and atropia one one-hundred-and-fiftieth of a grain, slept for three hours. Shortly after waking, vomiting again occurred and continued with slight intermissions, notwithstanding the most strenuous efforts to overcome it. Pain was not again complained of; the distention gradually diminished, there being frequent passages of gas from the lower bowel,

¹Aseptic and Antiseptic Surgery, Gerster.

accompanied 36 hours after operation by faecal discharge; the pulse grew weaker and weaker, temperature never having reached above 100° F. and on the day death took place was sub-normal, 96.5° . The patient died fifty-two hours after the last operation, seemingly from exhaustion.

This case certainly presents many points of exceeding interest. There cannot, I think, be any question of the correctness of the diagnosis of strangulated hernia. The constriction at the neck of the sac, and the intense congestion of the inclosed gut proved beyond a doubt the existence of strangulation. The coincidence of internal strangulation of a loop of intestine by a band, accompanying a hernial strangulation, is certainly a rare and unusual occurrence, and this point was freely discussed, as were all others, by the physicians who saw the case. My own conclusion was, that a local peritonitis had existed in the vicinity of the mesenteric gland and, from this, a band had developed and had become adherent at the points mentioned. "The little local peritonitis excited in the serous membrane covering the glands, may lead to the adhesion of a free diverticulum, or may encourage the development of bands which may, in turn, prove a cause of intestinal strangulation." Under this band, a loop of intestine had slipped, either prior to, or during the strangulation of the hernia, the probabilities are that it was already beneath the band before strangulation took place in the hernia. The distention of the gut, consequent upon this strangulation, doubtless extended to the loop beneath the band, which became, in turn, distended. Inordinate activity of the peristaltic movements was produced by the congestion which necessarily followed the constriction and which was intensified by the administration of the cathartic and, it is probable that these violent movements materially aided in producing the strangulation.

The experiments made by M. Anger, and quoted by Treves, show conclusively how this may be brought about. "M. Anger, experimenting in another direction, drew a loop of gut out of the abdomen and put a ligature lightly around its two ends. The ligature was loose enough to allow the gut to slide about within it, and to allow the tip of the little finger to be introduced into each end of the bowel. He then made a hole at

the bend of the loop at the part most remote from the ligature, and introduced a tube through which air was blown. As the gut distended, some air escaped but the more swollen it became, the more tightly it was gripped, until when fully distended, it was found to be hermetically sealed; and, what is more interesting, *more gut had been drawn into the loop from the abdomen.*"

It may be that the final cause of the strangulation, was the twisting of the involved loop, which was probably brought about, partly, by the distention and partly by his own movements, assisted by the dragging of the mesentery.

The question of enlarging the hernial opening or of making a median incision, was discussed, and was decided in favor of the latter and, I think, rightly. "In answer to this question it may be said that in all cases it is better for the incision to be made in the middle line, and this applies as well to exploratory as to curative procedures. The incision made in the linea alba is a simple one; no important structures are cut through; no vessels of any magnitude are divided; the abdominal cavity is easily reached; the wound is not a deep one, and after the operation its edges can be easily approximated. If the incision be made over the supposed seat of obstruction, it is probable that the abdominal muscles will have to be cut through; important planes of connective tissue will thus have to be opened up; vessels that may cause troublesome bleeding are apt to be divided; by the time the abdomen is opened the wound will be a deep one and will have to be relatively larger than the median wound, in order to obtain an equally extensive display of the interior of the belly. Moreover, wounds through muscular layers are not so easy to adjust, and in the case of the abdomen are more likely to lead to hernia than is a median wound through a dense fibrous structure.

Even in cases where the obstruction is supposed to depend upon some morbid condition in the loop of gut reduced from an external hernia, it is better, as a rule, to make the cut in the middle line than over the seat of the hernia. A cut into the abdomen through the region of the inguinal canal is apt to

seriously weaken a part already weak, and render very probable a subsequent ventral hernia. It, moreover, greatly limits the surgeon's sphere of action, and may render the operation useless should an error have been made in the diagnosis. Thus in cases supposed to depend upon an external hernia, an incision has been made over the sac; nothing has been found of note, the wound has been closed, and a second cut made in the linea alba. Through a median incision made between the umbilicus and the pubes, all parts of the abdomen can be reached, and all parts of the intestine explored. If the obstruction is not in the situation in which it was expected to be found, it may be searched for elsewhere."¹ For these reasons and others, I decided to make the median incision. No attempt was made to prevent the protrusion of the intestines when the abdomen was opened, for by it more space was gained for discovering and treating the cause of the obstruction, and because I did not believe that the case would be prejudiced by the extrusion of bowel if properly protected in the manner described. "The plan of permitting bowels to protrude has been very generally and very heartily condemned. The condemnation, however, has been in the spirit of the peritoneal surgery of the last generation, rather than of the present. In the face of the actual practical work now successfully carried out, it is idle to argue that extrusion of the bowel properly managed is a source of serious danger. Less damage is likely to be inflicted on bowels by a soft sponge or sponge cloths lightly resting on them, than by a rough hand pushing them about, under great pressure inside the abdomen."²

The rectal insufflation of hydrogen gas, in cases of suspected intestinal obstruction, I regard as a diagnostic procedure of great value. If the gut is clear, there will be no difficulty in forcing the gas through the entire large and small bowel into the stomach, where its presence is soon made known by eructations, and to make assurance doubly sure, a tube can be passed through the œsophagus into the stomach. If there be gas present, it will at once escape and, by touching a lighted

¹Intestinal Obstruction, Treves.

²Abdominal Surgery, Greig Smith, 2d ed.

match to the end of tube, it will ignite. Nothing short of complete strangulation will prevent the passage of the gas. Thus in cases of fecal impaction, the symptoms of which so often resemble obstructions of graver character, the gas could be forced by and around the impaction, affording unmistakable evidence that strangulation did not exist. If the gas could not be made to traverse the entire intestinal tract, distention of the abdomen, with exaggerated tympanites, over a given space would, as undoubtedly, show that obstruction did exist.

A CASE OF SPLENECTOMY FOR LEUCÆMIC ENLARGEMENT.

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MICHAEL Hamerlein, æt. 47 years, was sent to me by Dr. Pettit in September, 1886, was born in Germany, and does not remember anything about his parents, but is sure they did not die of tumors, nor of any malignant disease. He had typhoid fever when 16 years of age; served three years during our war. In 1865 was wounded in the right leg, but made complete recovery. While in the service was sick for some time with chronic diarrhœa, and was "moonblind" for two weeks at one time. During May and June, of 1886, he had chills and fever; during July was in a hospital at Erie, Pa., where his enlarged spleen was for the first time detected. He says he has been sickly for six years, but complained of nothing definite. Present condition, anemic and cachetic, has a sallow appearance, complains only of slight headache, extreme weakness, shortness of breath and of the swelling of his feet and legs when he walks much; says that six months ago he had intense abdominal pain which soon subsided. His pulse is fair in volume but slightly irregular; on palpation,