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A CASE OF GASTROSTOMY FOR CANCER OF THE ŒSOPHAGUS.

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THE operation of gastrostomy for the relief of stricture in this affection owes its origin to the great discomforts attending the treatment by dilatation, the very little benefit to be derived from it, and the aggravation of local complications which attend the spread of the disease from the walls of the œsophagus to the surrounding structures. The surgeon who has the patience and perseverance to carry out the probang treatment is likely to be rewarded for his pains by being regarded as the author of some of the perforations found at the autopsy to extend into the trachea or mediastinum.

Gastrostomy, although adopted at first with considerable enthusiasm, has not had, so far, a very brilliant career, and some surgeons have already begun to raise their voices against it. The chief objection to this operation appears to be the difficulty in so managing the gastric fistula that considerable leakage of the contents of the stomach shall not take place. Most of the reports dwell upon the necessity of making a very minute opening into the stomach, so small that it is necessary to seek for it with a probe when the feeding-tube is to be introduced. Details, as a rule, are not given, so that it is difficult for



one who operates for the first time to obtain the desired information.

The present case is therefore reported mainly for the purpose of describing the difficulties encountered in preventing leakage from the fistula, and the measures which were adopted for overcoming them.

J. A. H——, aged fifty-six, first presented himself at the hospital on October 27, 1886. About seven weeks before, he had first noticed difficulty in swallowing food. This symptom had increased so rapidly that at the date mentioned above he could only swallow liquids with considerable difficulty. He had been steadily losing flesh. An ivory-tipped probang, the size of a No. 8 English sound, was passed, with difficulty, into the stomach. The upper border of the stricture was found to be eight and three-quarters inches from the incisor teeth, and the lower border nine and one-quarter inches. Two days later, a probang equal to a No. 9 $\frac{3}{4}$ English sound was passed. Some relief was obtained by this treatment, and the patient attended as an out-patient, the probang being passed at first three times a week, and later every two weeks. The improvement in swallowing, however, gradually grew less after each sitting, and presently it was found difficult to use the probang, and a No. 23 French bougie was substituted. It finally became impossible to pass any instrument.

The patient at this time was considerably emaciated, but his strength and general condition appeared to be good. He seemed to experience no difficulty in coming from a considerable distance to the hospital. He was, therefore, advised to enter the hospital for gastrostomy. The amount of food taken by him at the date of his entrance, December 27th, was found to be fifty ounces in the twenty-four hours, but this was the result of frequent meals, and persistent efforts on his part to swallow. It probably represented a larger amount than he had been taking for some time before the operation was performed on January 1, 1887. The method selected was that described by Howse in Heath's "Dictionary of Surgery." An incision about two inches in length was made, a finger-

breadth below, and parallel to, the cartilage of the eighth rib. On opening the peritoneum the right lobe of the liver presented ; this was pushed aside and the stomach was found, greatly contracted and drawn up under the left margin of the wound. It was readily recognized by its peculiar color and appearance, and was drawn down without difficulty. A spot was selected about three inches from the pylorus, and one and a half inch from the greater curvature, to be stitched to the abdominal walls. The peculiarity of the method consists in attaching a considerable portion of the surface of the stomach to the peritoneal surface of the lips of the wound by an outer row of quilted sutures, so that the peritoneal surfaces shall be brought together for the space of half an inch in breadth around the margins of the incision. Seven such sutures were applied, each suture being passed through the outer walls of the stomach by means of fine sewing-needles. The two ends of each suture were then threaded into glover's needles, which were passed through the abdominal walls, and the knot was then tied on the surface of the skin. A needle mounted on a handle is recommended for this purpose, but could not be obtained. Ten superficial sutures united the edges of the incision to the peritoneal surface of the stomach. Here also surgical and intestinal needles were used alternately. This necessitates changing the needles also, which lengthens considerably the time of the operation, which on this occasion lasted over an hour. When finished, however, the result was very satisfactory, as a considerable surface of the stomach was securely attached to the abdominal wall. The single row of deep sutures, as recommended by Sir William MacCormac, ought, however, to effect the same result more speedily. The stomach was not opened; a loose stitch was left in its outer walls as a guide. An antiseptic dressing was applied, and held in place by a broad swathe of plaster.

On the following day the patient was quite comfortable, and was supported by enemata of two ounces of beef-tea, and half an ounce of brandy every two hours. Contrary

to the usual experience in these cases he was unable to swallow the smallest quantity of water, and from the time of the operation until his death he was unable to swallow anything. A slight cough, with purulent expectoration, showed itself on this day for the first time, which continued until death.

The wound was dressed on the fourth day, and a slight swelling and redness was noticed between two of the superficial sutures, which were removed, allowing a drop of pus to escape. A pad of cotton saturated with a weak solution of phenyle was substituted for the previous dressing. The stitches were gradually removed, the last being taken away on the ninth day. There was no constitutional disturbance due to the operation, the slight variations of temperature being probably caused by the disease.

The stomach had firmly united by this time to the abdominal walls. On the ninth day, as the patient had several loose operations, the enemata were omitted and the stomach was opened. The operation, which was entirely painless, was performed in the following manner: The spot marked by the guide suture was raised by a pair of forceps, and a fine tenotomy knife was thrust obliquely into the fold thus raised. A fine gum elastic catheter was introduced, and a small quantity of the contents of the stomach sucked up into it. This consisted of mucus stained with bile in patches. There was no hemorrhage. A small quantity of peptonized milk was introduced immediately. The catheter was allowed to remain in the stomach, and was held in place by a "doughnut" pessary and bandage. A gum elastic catheter was used at first, but the rigidity of the instrument caused some enlargement of the opening, and a soft rubber catheter was consequently substituted. An apparatus was designed after the fashion of this extemporized device, and consisted of a belt and rubber bag perforated to allow the passage of the catheter. When in place it acted somewhat like an umbilical hernia truss.

The cough, which was noticed immediately after the

operation, but which had probably existed before, soon became troublesome, as each expulsive effort brought considerable strain to bear upon the fistula. Previous to a cough, in the recumbent position, the abdominal walls were deeply sunken in between the ribs, the cartilages of which were quite prominent; at the moment of coughing they were raised considerably above the level of the ribs, and, if the fistula was allowed to remain open, a quantity of the contents of the stomach would be expelled. The cough was, however, quite loose, and was not spasmodic in character.

The wound healed well, but complete union of the edges of the skin to the edges of the mucous membrane did not take place, a narrow border of granulation tissue separating the two. At the latter part of the month the patient was able to move freely about the ward. By February 1st the opening had become enlarged to about the size of a No. 16 English sound, and considerable difficulty was experienced in keeping it firmly closed; occasionally there was considerable leakage, necessitating a change of underclothing. This was partly due to the great falling in of the abdominal wall, which prevented an accurately adjusted pressure, and partly to the persistent cough.

It became evident now that some valve-like mechanism was necessary to keep the fistula securely closed during the act of coughing. The instrument used in the gastric fistula of dogs is a metal spool composed of separate halves, which can be screwed together so that the two plates can be approximated or separated to correspond with the thickness of the abdominal wall. The stomach being opened at the same time that the incision is made in the abdominal wall, this instrument is put in place, and the edges of the wound are stitched firmly about it. It frequently happens that such incisions fail to heal, owing to the gastric juice which escapes.

Such an instrument cannot, however, be introduced after the fistula is established, as the plates are too broad. With the assistance of Dr. S. J. Mixer, a number of experiments were made with flexible rubber material,

which could be folded and allowed to expand after introduction. A flexible rubber button, cut from a piece of rubber ball, was passed over and firmly secured near the end of a piece of tubing. The button being introduced, a small "doughnut" pessary was slipped over the tube projecting from the fistula, and the button was thus held firmly pressed against the inner margin of the fistula.

An apparatus, of which Fig. 1 is a representation, was then made by the Davidson Rubber Co., and was held in place by a pessary as seen in Fig. 2. The tube was made unnecessarily large, but was found convenient for the administration of semi-solid food. It worked well, and leakage was rare after its use. At one time

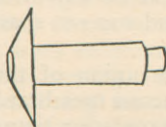


FIG. 1.

it was found necessary to substitute the shield for a bag which could be inflated after introduction, as the edges of one shield had caused ulceration, but the shield was subsequently used successfully until the patient's death.

The various articles of food administered were as follows: Peptonized milk, beef-tea, brandy, eggs, soup, oatmeal, bread. The daily amount administered varied from eighty to ninety ounces, although occasionally a much smaller quantity was given. Oatmeal-mush and bread-pulp were easily forced in with a hard rubber syringe, also broth containing considerable meat was introduced in this way.

Occasional attacks of diarrhœa showed an imperfect digestion of the food. A malassimilation seemed also to exist, as the patient slowly but steadily emaciated and lost strength, and finally died, May 3, 1887, four months after the operation.

The report of the autopsy, by Dr. R. H. Fitz, is as follows: "The œsophageal obstruction was the result of a cancer which had infiltrated the walls for about two inches from the beginning of the œsophagus. The diameter of the tube in the diseased region was contracted to about one-third of an inch. The surface was extensively ulcerated. From the upper portion of the diseased

œsophagus a fistulous tract extended into a small circumscribed pleural cavity behind, and to the inner side of the apex of the right lung. Another fistulous communication



FIG. 2.

was established between the lower portion of the œsophageal ulcer and the trachea. The cancer had invaded the bodies of two of the upper dorsal vertebræ. The

bronchi contained abundant puriform material, and the left lung showed numerous nodules of tuberculous broncho-pneumonia. A part of the anterior wall of the stomach, about two and one half inches from the pylorus, and a part of the left lobe of the liver, were adherent to the superjacent abdominal wall. The stomach was empty, its walls contracted. Pancreas, spleen, liver, kidneys, and bladder were not abnormal, with the exception of marked atrophy of the glandular organs."

No attempt was made in this case to feed through a tube retained in the œsophagus, owing to the narrowness of the stricture.

The experience with a valve-like apparatus for closing the fistula, although not entirely satisfactory in this case, was, nevertheless, sufficiently effective to encourage further trial. It would seem possible to devise an operation which should leave a valvular fold of mucous membrane hanging over the inner opening of the fistula, as existed in the case of Alexis St. Martin. Beaumont thus describes the valve. "The valve mentioned above is formed by a slightly inverted portion of the inner coat of the stomach, fitted exactly to fit the aperture. Its principal and most external attachment is at the upper and posterior edge of the opening. Its free portion hangs pendulous and fills the aperture when the stomach is full, and plays up and down simultaneously with the respiratory muscles when empty."¹

The opening in this case was about two and one-half inches in circumference, and was near the cardiac extremity of the stomach. The situation of course greatly facilitated the retention of food.

I have just succeeded in making a fistula in the stomach of a dog, so protected by a valve of mucous membrane that the food and liquid swallowed do not escape, and am at present engaged in further experiments in this direction.

¹ Experiments and Observations on the Gastric Juice and Physiology of Digestion, by William Beaumont, M.D., 1833.

