AN ACCOUNT OF EIGHT CASES OF "PRESSURE-POUCH" OF THE OESOPHAGUS REMOVED BY OPERATION.

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IN the year 1893, I described the first operation which was performed in this country for the removal of a "pressure-pouch" of the oesophagus.¹ I performed the operation on a gentleman, about 50 years of age, and followed the lines of the operation described by von Bergmann in the only case with which I was acquainted in which a pouch had been removed. A study of the literature of the subject and of the contents of the hospital museums of this town led me to confirm the general belief that the condition is one of the greatest rarity, and to the opinion that I was never likely to have the opportunity of again removing a pressure-pouch.

In 1894, however, I was consulted by a gentleman who was sent to me by Sir Anderson Critchett on account of very typical symptoms of pressure-pouch.

Again, in 1895, an old gentleman was sent to me by Dr. Ewart of Eastbourne, and in November of that year I removed his pouch. He made a good recovery, and remained well when last I heard of him some years later. The condition had not been diagnosed until I saw him, although the symptoms had been in existence for several years. Indeed, so little did the special symptoms of pressure-pouch attract the attention of those who had seen him, that a London specialist had shortened his uvula and applied the galvano-cautery to the back of his throat in order to afford him relief. I was so impressed with this that, when I published the operation in the columns of the BRITISH MEDICAL JOURNAL,² I drew pointed attention to the chief, really the essential, symptoms of pressure-pouch, with the following results, that, in addition to the cases, 6 in number, which I was sure I had seen up to that time, I have since then operated on 6 other cases, and have seen at least 8 other cases, in which there was really no doubt of the correctness of the diagnosis. And, in most of these cases, the diagnosis had been already made when the patient came to consult me, so simple was it when the attention of the medical attendant had been drawn to the very pointed symptoms of pressure-pouch. I will presently restate the symptoms, but first I will shortly tell the story of the operations.

Cases 1 and 11 are already fully published in the BRITISH MEDICAL JOURNAL and the *Transactions* of the Royal Medical and Chirurgical Society.³

CASE III.

In April, 1898, Dr. John Hunter, of Wigtown, sent to me a man, 70 years of age, because he was suffering from symptoms resembling so closely those which I had described in the JOURNAL of the previous January that he felt sure it must be a case of pressure-pouch of the oesophagus. The symptoms were at first stated to have existed only about four years, but, on closer consideration, the patient felt sure that he had had them to some degree for nine or ten years. He was a sturdy old man, and his health had not been notably affected by the difficulty in swallowing.

On April 19th, when Dr. Hunter and Dr. de Havilland Hall were present, I first attempted to pass an instrument into the stomach in order to be sure that there was no stricture of the oesophagus immediately below the pouch. I did not succeed; but feeling confident of the nature of the disease, I cut down on the left side of the neck in the usual manner, and discovered the pouch without difficulty. Again I tried to pass a bougie, but could not do so because it seemed to catch. The pouch was therefore opened, and a bougie was quite easily passed through it into the stomach. The pouch was then cut away; but when I came to close the opening there was great difficulty in closing it as satisfactorily as I had done in the two previous cases. In fact, the operation did not pass off with the same comfort and success as had attended the previous operations, and I was conscious of a sense of disappointment, with some anxiety regarding the future. During the manipulations more damage was done to the surrounding tissues than was desirable. In order to ensure a sufficient supply of food a tube was passed through the wound in the neck into the stomach, because I could not pass it from the mouth.

The patient never did well from the moment of the operation. There was septic inflammation of the deeper parts of the wound. He became acutely maniacal on April 21st and died of exhaustion on the 26th. I was very disappointed and distressed, for I was conscious that for some reason which I did not then understand I failed to carry the operation and management of the case through successfully. In fact, the whole proceeding appeared a blunder from the surgical point of view.

CASE IV.

Rather more than a year elapsed before I again had the opportunity of operating for pressure-pouch. In May, 1899, a doctor in Ringwood,

Hants, brought to me his sister, a maiden lady, aged 57, who for eighteen or nineteen years had suffered from difficulty of taking food. The nature of her symptoms had not been understood until the attention of her brother happened to be attracted by my paper in the BRITISH MEDICAL JOURNAL of the previous year (1898). Comparing Miss D.'s symptoms with those which were described, both the brother and sister felt certain that she must be suffering from a pressure-pouch. Fragments of undigested food were returned many hours, sometimes as long as two or three days, after the food had been taken, and they were quite easily recognized. Viscid fluid and gas frequently gurgled up from the back of the throat, and liquid and solid food could be easily pressed up into the mouth by pressure on the neck. On examination, a bougie was arrested about 9 in. from the teeth, just the distance at which the bougie is arrested in all the cases I have seen. The patient's health had suffered very little from the malady.

It was not until October of that year that the operation was performed in the operating theatre at St. Bartholomew's Hospital. The incision was made, as usual, on the left side of the neck. The pouch was found without difficulty, but neither before nor after finding it could a bougie be passed from the mouth into the stomach. Profiting by the experience of the last case, and examining carefully the anatomical conditions from the opening in the neck, I came to the conclusion that the inability to introduce a bougie depended on the thrusting of the oesophagus out of line by the pouch, which was of larger size than usual, and which probably always contained a considerable quantity of food and mucus. I therefore separated it in every part from the surrounding loose connective tissues quite up to its attachment to the oesophagus, and, drawing it as far upwards as I could, made another attempt to introduce a bougie into the stomach. I succeeded in doing so, but even then only with difficulty. The pouch was removed, and the opening into the oesophagus was satisfactorily closed by several fine silk sutures. No tube was introduced, either from the wound or from the mouth.

During the first two days little or no liquid came through the wound, which was drained by means of a soft indiarubber tube, and the patient seemed to be in a fair way of doing quite well. Then, as had happened in the first and second cases, the stitches gave way and some of the liquid food began to come out through the opening in the neck.

From this time the progress of the case was anything but satisfactory and caused me the greatest anxiety. The patient seemed to grow weaker, her temperature was generally much higher than it should have been, and although there was no appearance of spreading sepsis in the wound, there was no sign of healing. Yet Miss D. took a large quantity of liquid, and even beef jelly and very soft solids of similar consistency. I began to despair of her life, and I am sure it was saved by the sister of Paget Ward; for it happily occurred to her to measure not only the quantity of liquid which the patient swallowed, but that which came through the wound, when she found that the quantities corresponded so nearly that the poor creature was getting nothing down and was sinking from exhaustion. As soon as I learned this I made an attempt to pass a guide from the mouth into the stomach, which seemed to be very preferable to passing it from the wound in the neck, and to my great joy succeeded on the first trial. Over the guide a piece of soft rubber tubing was introduced and the patient was easily fed. Although her convalescence was slow and occupied several weeks, she ultimately made an excellent recovery, and remains quite well at the present time.

CASE V.

In June, 1899, Dr. Milligan, of Manchester, sent to me a patient, 62 years of age, who for the last six or seven years had suffered from symptoms of a pressure-pouch. The diagnosis was already made by Dr. Milligan on the return, long after they had been taken, of small particles of food which were not digested, on gurgling in the throat produced by swallowing, and by pressure on the left side of the neck low down, and on the arrest of a bougie about 8½ in. from the teeth.

When this patient was placed under the influence of an anaesthetic I succeeded, with considerable difficulty and after repeated attempts, in passing a bougie into the stomach. At the same time I passed a long bent probe mounted on a handle into the pouch, and manipulating it could feel the blunt end of the probe in the lower part of the neck on the left side just behind the sterno-mastoid muscle.

Dr. Milligan and Mr. Lockwood were present at the operation, which was performed in a precisely similar manner to the previous operations. The after-progress of the case calls for no special notice. It was uneventful, and the wound was practically well by July 31st, sixteen days after the operation.

CASE VI.

An account of this patient was published by Mr. Wright, of Manchester and Mr. Reginald Smith, of Warrington.⁴ The patient was 45 years of age in December, 1897, and for ten years before that time had suffered difficulty in swallowing. He was a great oboe player, and attributed some at least of his difficulty to the practice of holding air in the throat to maintain a continuous blast. Messrs. Wright and Smith, who saw him in consultation, advised that he should wear a "sort of truss" to press upon and obliterate the sac, which they diagnosed to be a pressure-pouch. His symptoms were typical of the condition.

In 1900, Mr. Reginald Smith sent him to me, and on May 4th of that year I removed his pouch, in the presence of Mr. Smith, Sir Felix Semon, and Mr. Furnivall. Before doing so, a metal sound passed into the pouch from the mouth could be felt in the posterior triangle on the right side of the neck, and the incision was on that account made on the right side. We could not pass any instrument beyond the mouth of the sac into the stomach. The pouch was easily discovered and separated from the surrounding tissues. Its neck was not so well defined as

in most of the other cases, and it appeared to be larger than any I had previously removed, except in Case iv. I raised it up out of the wound, when Sir Felix Semon was able to pass a bougie from the mouth into the stomach, but only with difficulty, for the end of the bougie caught more than once in the margin of the mouth of the pouch. The wound in the back wall of the oesophagus was sewn up with silk as usual, and the wound was drained.

On May 8th food came for the first time through the opening in the neck, and within a few hours the whole of the food taken by the mouth passed out through the wound. A catgut guide was passed without difficulty from the mouth into the stomach, and a soft india-rubber tube was introduced over it, and kept in until May 14th, when the wound in the neck was reduced to the size of a small sinus. On May 24th he returned home.

CASE VII.

In November, 1900, a gentleman 60 years of age, was sent to me by Sir Felix Semon. He came from Jersey, and had been under the care of Dr. Andrew Dunlop. For five or six years he had noticed difficulty in swallowing, which was at first only of such a kind that he thought his "swallow was small." After a while he found occasional difficulty and choking when trying to swallow. And, when he attempted to wash the morsel down, the fluid would sometimes return suddenly through his nose. Later, fragments of recognizable food began to return, not immediately after they had been swallowed, but an hour or two afterwards. But the longest stay of food which he could recollect was only three or four hours. There was also frequent gurgling in the throat, with the spitting up of frothy fluid. He had recently begun to lose weight, and had fallen from 9 st. 12½ lb. to 9 st. 5 lb. in the last four months. The symptoms of pouch must have developed rapidly during the last twelve months, for Sir Felix Semon, who had seen several cases of pressure-pouch, and was perfectly familiar with the symptoms, could not make up his mind on the diagnosis in the year 1899, when he had been first consulted by the patient. Now, however, he had not the least doubt, nor had I, of the nature of the case, and he sent the patient to me for operation.

There was another element in the case which had led to difficulty in the diagnosis. Dr. Dunlop, who took the greatest interest in it, had frequently examined the returned contents of the pouch and had found them, whatever their nature might be, whether animal or vegetable, almost invariably acid in reaction. He thought, therefore, that the food had most probably reached the stomach and had lain there for sufficient period to acquire an acid reaction. When this was related to me, it so happened that I had a man with typical symptoms of pressure-pouch under my care in one of the wards of the hospital. The contents of his pouch were therefore frequently examined, and were found to be almost invariably acid. Dr. Dunlop also made some experiments by placing portions of a mixed meal, which had been carefully masticated and mixed with saliva, in watch-glasses under bell-jars, and exposing them for two or three hours to a temperature of just under 100° F. At the end of that time they exhibited a strong acid reaction.

On November 15th I removed this gentleman's pouch. The operation presented no difficulty or peculiar feature. It was performed on the same lines as previous operations, and in less than a month the patient was able to return to Jersey.

CASE VIII.

The chief interest in this case is that the diagnosis was made without seeing the patient by the sister of the ward in which Case iv had lain. A young woman, on whom I had performed an operation for removal of the appendix, wondered whether I could do anything for her mother. Sister (Paget) asked what was the matter with her mother, and, when she learned the symptoms, came to the just conclusion that they were like those from which Miss D. had suffered. She therefore suggested to the patient that her mother might have a pocket in the gullet, and told me that she thought she had found for me another case of pressure-pouch.

The symptoms had been in existence for about sixteen years, and seem to have commenced with "gurgling in the throat." Four years later, fragments of undigested food began to return; and she was particularly struck with the return, one morning, of a small raisin which she had eaten at lunch the day before. She had been getting much thinner during the last twelve months.

I removed the pouch in the usual manner in August of last year (1902) in the new theatre at St. Bartholomew's Hospital. It was large, and no instrument could be passed beyond it until it had been drawn upwards out of the wound in the neck. As I felt sure the bulk of food which was given to her would pass out through the neck, a soft india-rubber tube was introduced into the stomach from the mouth, and was kept there for about a fortnight. She recovered within three weeks of the operation.

Here, then, are eight cases, operated on in the course of ten years, of an affection of the oesophagus which was regarded, until ten years ago, as one of extreme rarity. And I have notes of eight other cases in which the symptoms were as typical as they were in the eight cases which have been related, and in which there is no reasonable doubt of the diagnosis. In every case, the symptoms were precisely similar to those to which pointed attention was directed in the *BRITISH MEDICAL JOURNAL* in 1898, and I venture to repeat them once again, since the diagnosis of this affection is so simple that no case ought to be overlooked.

1. Return of fragments of undigested food, not immediately after the food has been taken, but many hours or even a day or two afterwards.

2. Gurgling up of gas from the throat, particularly when pressure is made upon the left side of the neck low down. This symptom is peculiarly distressing to the patient. There may also be distinct bulging in this situation when food is taken, but this is not by any means a constant symptom.

3. A bougie is arrested about 9 in. from the teeth. And, if a curved metal instrument is used, the end can often be felt in the posterior triangle of the neck, almost always on the left side.

Other symptoms may be present in individual cases: wasting when the pouch has attained a large size; pressure-symptoms, such as cough; possibility of introducing a full-sized bougie into the stomach in the early stages of the disease. Acidity of the returned food does not in the least contraindicate the presence of a pouch.

With regard to the operation, there can be no doubt, from the cases which have been related, that it is not more dangerous to life than the cure of the disease will justify. Looking back on the cases, I do not believe that I should have lost Case iv had I then had the experience which I have since gained. I have in every instance performed the operation on the lines prescribed by Professor von Bergmann. They are described in the *JOURNAL*⁵ of 1898; and, for the benefit of those who may be called on to operate in similar cases, I would make the following suggestions:

1. In order to be sure that there is no stricture of the oesophagus below the opening of the pouch, a bougie should be passed into the stomach from the mouth at the time of the operation. If this cannot be done before the wound is made in the neck, the pouch should be exposed, separated from the surrounding tissues, and drawn upwards out of the wound. With a little manipulation, a bougie can then be passed over its mouth.

2. If the pouch is of long standing, and if it is of large size, a soft tube should be passed from the mouth into the stomach and retained for so long as is necessary for feeding. If the patient cannot or will not permit this, or vomits up the tube, it must be passed over a guide every time food is taken, otherwise almost the whole of the food will pass out through the wound in the neck. If this cannot be done, a tube should be introduced into the stomach through the wound in the neck and retained there until healing is nearly accomplished.

3. The less the tissues below the pouch are disturbed the better. If they are widely opened up there is liability to septic inflammation spreading down into the posterior mediastinum.

4. No attempt should be made to close the external wound, however carefully the opening of the neck of the pouch has been stitched up. It should be drained by means of a soft drainage tube. On the other hand, it is very desirable to close the opening into the oesophagus; for, although the stitches always give way at the end of three or four days, the surrounding tissues are by this time sufficiently recovered to render spreading septic inflammation behind and below the site of the pouch very much less probable.

The operation appears to result in a speedy, complete, and permanent cure of the disease. I have quite recently seen the patient on whom the first operation was performed in the year 1892, and have heard of most of the other patients from time to time. Two of them wrote me last Christmas, and told me of their well-being. There seems, therefore, no fear of recurrence, provided the pouch has been removed at its attachment to the oesophagus.

There are other questions into which I should like to enter, such as the cause of the affection, the course which it takes, deep-seated pouches, etc. But the consideration of the first of these alone would occupy far too much space of the *JOURNAL*. I shall therefore content myself with stating my belief that these pressure-pouches are due to a congenital predisposition, and that they are acquired upon that predisposition.

Some of the deep-seated pouches which have been recently described are, I feel sure, only pouch-like depressions in the lower part of the oesophagus immediately above the cardiac orifice in persons suffering from "primary" dilatation of the oesophagus. The specimen in St. Thomas's Museum, which is figured (Fig. 4) in Plate V of the 76th volume of the *Medico-Chirurgical Transactions*, is probably a pouch formed in connexion with an unclosed bronchial fissure, and does not belong to the class of true pressure-pouches.

Those persons who are interested in the subject of pressure-pouches will find it admirably and fully treated in the monograph of Dr. Hugo Starck, *Die Divertikel der Speiseröhre*, Leipzig, 1900.

Drawings of a pouch which has been removed, and of a pouch still attached to the junction of the pharynx with the oesophagus, the constant seat of this form of pouch, are contained in the paper in the journal to which allusion has been already made, so that they need not be repeated here.

REFERENCES.

¹ *Med.-Chir. Trans.*, lxxvi, p. 269. ² *BRITISH MEDICAL JOURNAL*, 1898, i, p. 8. ³ *Loc. cit.* ⁴ *BRITISH MEDICAL JOURNAL*, 1898, i, p. 944. ⁵ *Loc. cit.*

THE NATURE OF THE SYMPTOMS IN APPENDICITIS.

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In most of the medical journals at the present time articles on appendicitis are appearing. When the writers deal with the symptoms of this disease a great variety of opinion on the nature of certain signs is shown, and it is obvious there is much confusion of ideas regarding the nature of the symptoms. These contradictory views arise because the writers have not grasped the fact that the sense of localization is absent from the viscera, and that when pain arises from disease of the viscera the pain is referred not to the actual seat of disease, but to an area in the external body wall supplied by sensory nerves, which in the spinal cord have an intimate relationship with the sympathetic nerves from the viscus affected.

If a due appreciation of the manner in which sensory and other phenomena arise in visceral disease be obtained, then a whole series of symptoms can be explained in a satisfactory manner, and much help is afforded in unravelling the symptoms of the disease from those of other diseases that simulate it.

In this study the symptoms are drawn from that form of appendicitis where there have usually been recurrent attacks, and where there has been an accompanying localized peritonitis. In the cases that came to operation there have always been old adhesions between the appendix and caecum, and in a few cases there has been redness of the visceral and parietal peritoneum in the neighbourhood with numerous soft adhesions. The constitutional symptoms and the results of abscess formation are not included in this study.

The manner in which the symptoms arise in visceral disease may be explained by reference to the accompanying diagram (Fig. 1). From the viscus (V) to the spinal cord (SC) a continuous stream of energy passes by the sympathetic nerves (Sy N). In health this stream of energy flows unperceived. In disease of the viscus an increased amount of energy passes, so that when it reaches the spinal cord it affects neighbouring cells. On these cells this increased energy acts as a stimulus, and symptoms are thereby produced according to the function of the nerve cells so stimulated—sensory, motor, secretory, etc. In Fig. 1 the stimulus from the viscera is supposed to affect the spinal cord in the

Fig. 1.

shaded area. Three sets of cells are represented in this shaded area, one connected with a sensory nerve (SN), one connected with a motor nerve (MN), and a third connected with some other viscus (Bl). When the stimulus from the diseased viscus reaches the cells connected with a sensory nerve, the pain is felt in the peripheral distribution of that nerve in the external body wall. When the stimulus affects a motor nerve, contraction of the muscles supplied by that nerve results (the visceromotor reflex). When the stimulus reaches the cells that supply other organs the functions of these organs are stimulated—if secretory, then an increased flow of the secretion; if a hollow muscular organ, then contraction of the organ, or a complicated series of movements may result, as in vomiting.

In appendicitis, the inflammatory condition affects not only the appendix itself, but extends to the peritoneal covering, and a peritonitis of a greater or less extent is set up. It is impossible to separate the symptoms of the one condition from those of the other. From a study of the symptoms of appendicitis, it seems fairly certain that the portion of the cord which is in connexion with the sympathetic nerves supplying the appendix and adjacent peritoneum includes the origins of the eleventh and twelfth dorsal, first and second lumbar nerves. When an attack of appendicitis is very violent, the symptoms may affect nerves higher than the eleventh dorsal, but as a rule the symptoms can be grouped within the field supplied by the eleventh and twelfth dorsal first and second lumbar nerves. The most important nerves that arise from this portion of the cord are the sensory nerves distributed to the abdomen and adjacent portions of the thigh, the motor nerves supplying certain of the muscles of the abdomen and of the thigh, and the motor nerves supplying the bladder.

The law regulating the distribution of pain in visceral disease is dependent on the fact that when stimulation reaches a sensory nerve (SN, Fig. 1) in any part of its course from the periphery to the brain (Br, Fig. 1), the resultant pain is always felt in the region of the peripheral distribution of the sensory nerve. In appendicitis the stimulation reaches the sensory nerves in the shaded area of the spinal cord represented in Fig. 1, which corresponds to the portion of the cord from which the eleventh and twelfth dorsal and first and second lumbar nerves arise.

The shaded area in Fig. 2 represents the field of distribu-

tion of the sensory nerves from the eleventh dorsal to the second lumbar roots. The pain may be felt in but a limited portion of the shaded area in Fig. 2. Thus it may be felt only in the lumbar region or in the iliac region, or below the crest of the ilium or in the thigh. At other times it may spread