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MEDICAL ASPECTS OF SURGICAL DISEASES, OR PREVENTIVE SURGERY *

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Most surgeons must feel daily that they are called on to employ their art as operating technicians at the wrong and late period of the disease. In this sense much of their work is unnecessary surgery. Earlier recognition of the disease, in some cases followed by appropriate treatment, may make surgical intervention unnecessary; such measures belong to preventive surgery.

Most physicians must regret their relation to the late intervention of surgery. In the literature and in conversation one so often reads and hears that surgery should be the last resort, modified sometimes by the statement: but not a late resort. This expression "a last, but not a late resort," sounds well, and I am quite certain that those who employ it mean well and are just as anxious to have surgery an early intervention, although as a "last resort." I fear, however, that the promulgation of the expression that surgery should be a last resort will unconsciously act to make it a late resort.

In view of the daily painful reminders in my operative work that surgery, indeed, is a late and last resort, and much of it unnecessary in this late period and some of it absolutely preventable, it is natural that I should wish to discuss the surgeon's view of the medical aspects of surgical diseases. In the last few years I have been especially attracted by this phase of the subject and have dwelt on it at considerable length in teaching.

The facts are these: At the present time and ever since modern surgical methods were introduced, surgical technic has been far ahead of either surgical or medical diagnosis. No one can question this. A graduate in medicine can become proficient in surgical technic long before he is in diagnosis. Surgeons, therefore, are prepared, in the majority of cases, to offer this improved technic to patients with surgical lesions in the early stage of the disease as well as in later periods. A statistical study of any surgical clinic will demonstrate that all classes of diseases which ultimately come for treatment by operation come, not in the early stage, but at later periods.

Studies of immediate and late results demonstrate that the operative mortality is greater in the late period, the postoperative complications and period of disability greater than when the operation is performed in the early stage. But the contrast is most striking in the study of the late results. This is especially true for malignant tumors.

In June, 1910, in an address before the State Medical Society of Wisconsin, I took for my subject the Medical and Surgical Aspects of Tumors.¹ For this reason I shall dwell but shortly on this subject and chiefly bring out further evidence which has accumulated since that time.

All surgeons will admit that an operation in the earlier period of the disease (when the patient is suffering not at all, or very little, when there is no pitiful cry for relief) is an unpleasant resort. Toward operative intervention there is still in the minds of the majority a mental attitude of fear.

There is always hope that an operation will not be necessary. Hope, fear, unpleasant resort are factors which act against early surgical intervention. But, there are others—ignorance, of the laity and the profession. In addition, the diagnosis of the surgical disease in the period most favorable for the prevention of an operation, or for the best immediate and permanent results of an early operation, is most difficult.

Again and again the statement has been made: The more difficult the diagnosis, the better the prognosis for surgical intervention, and the reverse.

I am inclined to believe that perhaps the general public, especially the younger generation, is being educated more rapidly than the general profession in regard to modern advanced methods of diagnosis which allow the recognition of surgical diseases in this earlier and more favorable period.

But we cannot hope for any better results after surgical intervention unless the methods of diagnosis already employed by the minority are made familiar to, and made use of by, the entire profession. There is a crying need for diagnosticians.

The public seeks first the advice of the general practitioner. He must be a better diagnostician. He must have available for his use the more modern methods helpful for this diagnosis.

Those fortunate enough to be connected with a large hospital have, within easy access, all of these methods—a trained laboratory man to make the Wassermann test, the Widal reactions, and bacteriologic examinations; trained clinical assistants for the examination of urine, sputa and stomach contents, blood-pressure and kidney function; a roentgenologist to make x-ray plates and investigations with the fluoroscope; laboratories equipped to make frozen sections for microscopic examination of doubtful cases; colleagues specializing in different branches who are able and willing to aid one another in the differential diagnosis. In such a hospital there is an expert to make an ophthalmoscopic investigation and to employ with precision such instruments as the laryn-

* Read before the Lehigh Valley Medical Association, Delaware Water Gap, Pa., July 20, 1911.

1. Bloodgood, J. C.: Wisconsin Med. Jour., August, 1910, ix, No. 3.

goscope, esophagoscope, bronchoscope, cystoscope, catheter, etc.

In large cities physicians are able to give their patients the benefit of these methods of diagnosis, but in smaller cities and in the country nothing of this kind is accessible, except for a few places. Some states have established laboratories in connection with the boards of health for making such examinations. In view of the danger of infectious diseases most city governments provide laboratories and experts to make for the general practitioner certain laboratory examinations free of charge, for example, blood-examinations for typhoid and malaria, bacteriologic investigations from cultures and smears from the throat, etc. Now, if the people are willing to pay for this, which is for their benefit, why should they not go further? It is quite impossible for any single practitioner to provide for all of the examinations. It is too expensive either for himself or for his patient.

Now, if we make the statement that surgery should be an earlier intervention and that this can be accomplished only by better methods of diagnosis, we must provide, in some way, for this. It appeals to me that the enlargement of the city health departments to meet such demands and the establishment of laboratories and laboratory experts in districts would meet the need with the least expense to the public.

The fact that surgery is usually the last and a late resort is not by any means always due to the inability of the physician to get these more accurate methods of diagnosis, but to faulty clinical knowledge of ordinary clinical methods.

I wish to emphasize this, because here is an opportunity for a great improvement with, perhaps, the least expense. A better knowledge of the surgical disease can be obtained by reading, and this, combined with a little more careful examination by inspection, by palpation and by taking a more careful clinical history, will allow the physician to reach a pretty accurate conclusion without the aid of the other methods.

But I wish to urge on the practitioner to break away from the older text-book pictures so typical of the various diseases in their late and often hopeless stage, and to attempt, by reading more modern text-books and especially current literature, to get the earlier picture.

Important as these more expert methods of diagnosis are, they are not essential in the large majority of cases to the general practitioner for the recognition of most surgical diseases in their more favorable stage for treatment.

If every individual were required by the state to subject himself or herself to medical examination at certain intervals of time, then we should have to use these laboratory methods which are now employed only by those proficient in their use. The public, however, seeks advice for symptoms, and in the large proportion of cases, if the physician is painstaking and observant, he will be able to come to a pretty fair conclusion from what the patient tells him and from what he can find out himself by simple physical diagnosis. If he cannot come to a conclusion, the methods of diagnosis which he is not prepared to use can be employed in the majority of instances by others for him. The question can be stated in so many ways, but I am very anxious to present it in a light that will be helpful, in a manner that will not create antagonism.

With most surgical lesions the average practitioner has experience with but a few, one or more. So it can-

not be expected of him to make the early diagnosis without help. Large surgical clinics collect great numbers of the different surgical diseases so they should be able from their records to present most accurately the medical aspects. In this country, however, the surgeon in the past has written more frequently on technic than on diagnosis.

It is my view that if the surgeon really desires to get his surgical cases at an earlier and more favorable period, he should first study his own records and present this investigation to his medical colleagues. I fear the evidence will show that, while the surgeon has been crying to be allowed to operate earlier, he has not furnished the evidence to support his demand and he has not given to the clinicians the facts which are obtainable only from his surgical records.

I shall, in the further discussion, give examples to illustrate these general remarks which have preceded as an introduction.

We all recognize that surgery should be an earlier resort. The question is how to do it. I shall attempt to answer this question, as far as I am able from evidence which I have personally collected, based on recorded facts which I believe are truthful.

GASTRIC ULCER AND CANCER

It is my opinion that the accumulated experience favors the view, chiefly emphasized by the Mayos in this country, by Moynihan and Robson in England, and Hartmann in France, that gastric ulcer is the precancerous lesion in 75 per cent. or more of all cases of gastric cancer. The more I personally see of gastric cancer and restudy the histories of the older cases, the more am I inclined to this view. Whether this has been proved with scientific accuracy is, in my opinion, immaterial to the question before us. I am confident that experience shows that the only way to give the surgeon an opportunity to operate on a cancer of the stomach at a favorable period is for the medical profession and the public to look on symptoms of gastric ulcer as the first stage of gastric cancer, and these symptoms should lead at once to medical or surgical treatment which heals or removes the ulcer.

I have restudied most carefully, with the aid of the fourth-year medical class, all the cases of gastric cancer on record in the surgical pathologic laboratory of the Johns Hopkins Hospital and University. Most of these cases come from the clinics of Drs. Halsted and Finney, or from my own. Here in Baltimore, our records show that surgeons meet, on exploring the stomach, at least four cases of cancer to one of ulcer. The records of clinics in which the best results have been obtained in resection of the stomach for cancer show an opposite condition of affairs. This is true of the clinic at Rochester, Minn., of Kocher's clinic and some few others.

Up to the present time, among my colleagues in Baltimore, I know of not one case of resection of the stomach for cancer in which the patient has lived three years or more after the operation. During the last two years we have had some favorable cases. I had two in which the chances of a cure seem unusually good.

Kocher found that all his patients cured of cancer of the stomach had freely movable tumors at the pylorus, producing obstruction; all but one were of the type of adenocarcinoma, and none associated with metastasis. Naturally cancer at the pylorus brings the patient earlier for operation, because it produces stenosis.

There is great difference of opinion among both surgeons and physicians as to what shall be considered the minimum of symptoms which justify the exploration of the stomach. Surgery here is truly a last and late resort.

Pyloric stenosis, as a rule, forces surgical intervention. Otherwise there is a long period of pain, various gastric discomforts before the patient comes for surgical treatment. During this time, of course, it is good luck, not good management, which prevents the development of cancer, if it does not take place.

Eighty per cent. of all the cases of cancer of the stomach which I have studied clinically give a history of definite gastric symptoms of over one year, many of from five to twenty years, the large percentage of them of two and three years. In all of these there was ample opportunity for earlier intervention. In every case the maximum symptoms were present.

Perhaps the profession and the public do not realize that gastric cancer is a very common disease and ranks among the most frequent of all cancers.

In my opinion, we do not need the aid of instruments of precision or expert laboratory methods to ascertain the minimum symptoms which justify exploration. The most neglected available examination by the general practitioner is the passage of the stomach-tube and the estimation of the amount and gross characteristics of the stomach contents. This objective finding, with a few weeks' observation, during which the patient is under a restricted diet, is sufficient to justify a consultation at a hospital where all the other examinations can be made.

Indigestion is such a common complaint, it is so often associated with alcohol, tobacco, overeating, lack of exercise, worry, overwork, and many different mental conditions, that the average practitioner thinks of these only, but ulcer and, later, cancer may develop from these etiologic factors. Most of my cases of ulcer in young adult males have been associated with alcohol.

The medical relief should be rapid in these cases, and all these patients should be carefully watched. I am confident, from the experience of three years at the St. Agnes Hospital, where my medical colleagues have given me an opportunity to explore the stomachs when minimum symptoms were present, that it is not so difficult a problem. Now, if the medical section of the great profession will answer our call and help us to decide when to operate, the surgical section will promise to educate itself to know what is best to do when the abdomen is opened.

I make this statement with great care, but it has been my personal observation, confirmed by the reading of the literature, that physicians who specialize in gastroenterology have learned by their special methods of treatment to make their patients so comfortable that they are very apt, when they get an early cancer in ulcer, to carry it along from the operable period to the inoperable one in comparative comfort. I am certain that less harm will be done by the surgeon who, with good technic, may open the abdomen for exploration a little too frequently than by the physician who, through any means, delays operative intervention in ulcer and cancer.

The surgery of gastric ulcer and cancer, especially ulcer, is by no means settled to-day, but in my opinion the technic is far ahead of the diagnosis. There is but one thing to do for operable gastric cancer—resection. The only question is, how shall the stomach be reanastomosed.

In regard to ulcer of the stomach the opinion that resection should be the operation of choice is growing

in strength. If the adhesions are not too extensive, this operation should have no higher mortality, its immediate results are better, and, I am confident, time will show that the permanent results are far more satisfactory, because the ulcer, the precancerous lesion, is excised.

In the last year I have performed pylorotomy with a Kocher anastomosis in many cases, in which previously I would have been content with gastro-enterostomy or a Finney pyloroplasty. But these are surgical questions.

I trust that as surgeons restudy and publish their clinical observations on gastric cancer with the confirming statement of the frequency of a long history suggesting ulcer, and that as surgeons demonstrate by their reported experience that their mortality is low and their immediate and permanent results increasingly better, the laity and the general profession will attempt to reduce the total number of gastric cancer so that more operations will take place at the stage of ulcer, or in an earlier stage of cancer.

The physician, of course, must first feel convinced that the technic of his surgical colleague is sufficiently good to justify his advice of operative intervention.

CANCER OF THE COLON

Dr. Cody, a recent graduate of the Johns Hopkins University, first studied with me in a critical way the entire experience with cancer of the colon at my laboratory. I have restudied the subject again with Dr. Hebb of Baltimore. This has brought out most valuable information from which we can develop the medical aspects or the minimum symptoms which will allow one to explore the abdomen and resect this relatively benign cancer of the colon. These cases, up to the present time, can be divided into two main groups: In one, the larger fortunately, the patient comes to operation because of acute intestinal obstruction, and if the obstruction is relieved in time, the cause is ascertained, and the patient lives for the secondary resection. Although there is a fairly and unnecessarily large percentage of immediate mortality in this group, yet, among the survivors there are almost 80 per cent. of permanent cures. The individual, therefore, with a cancer of the colon is fortunate to get obstruction, because this will result in early operation.

In the second, smaller, group there are no acute symptoms of obstruction. The development of the clinical course varies somewhat, but all the patients suffer from attacks of abdominal pain of a sufficient degree to excite much more interest on part of the physician.

Then there may be intermittent diarrhea or constipation with or without blood or ribbon stools. There may be attacks of belching, nausea, vomiting and distention; indigestion of various degrees. These symptoms go on, the attacks repeat themselves, the patients are usually treated for neurasthenia or mucous colitis. No x-ray examinations are made. The proctoscope is neglected. The patients usually come for operation because of the appearance of a palpable tumor, or the greater discomfort and distention of the ascites from peritoneal metastasis. In this group, although there has been but little operative mortality from the exploratory laparotomy—a late and last resort—yet, there have been but few cures—less than 5 per cent.—either because the tumor has become adherent and thus inoperable, or because metastasis has taken place. Most of the patients admitted

with acute obstruction give a history of previous symptoms of the same character.

I am confident, from this study, that cancer of the colon can and should be recognized earlier in a larger number of cases without the aid of the accidental acute obstruction. Cancer of the colon is a most favorable type of cancer. Resection of the colon is now a well-established surgical technic with minimum dangers.

If surgeons are given the opportunity to explore the abdomen, because the symptoms suggest cancer of the colon, they must make a very careful x-ray study before operation, because recent experience shows that in the early stage there is not much difference in the symptomatology of cancer of the colon in the different situations. Local pain is not often present. The pain is usually general, like colic.

In addition, there are many benign lesions the symptomatology of which is practically identical with the early stage of cancer. These lesions may even produce acute obstruction. So the surgeon must prepare himself to recognize cancer, for which there is but one operation—resection. If this malignant lesion is excluded he must be familiar with the various benign conditions and their operative treatment, because often the more radical resection is not necessary to accomplish a cure. Some of these benign lesions are: ptosis of the colon, which may be of various types; pericolicitis with kink formation; mesenteritis; diverticulitis; this latter and volvulus are most frequently situated in the sigmoid colon. Then there are the rare inflammatory tumors which produce indurated masses in the wall of the colon, most frequently observed in the region of the appendix and often secondary to, or associated with, appendicitis.

The surgical problems, then, are enlarged when these patients with colonic lesions seek aid in the earlier and most favorable period.

I trust that during the next few years we shall see great strides in the surgery of the stomach and the colon. We have done so much for gall-stones, for appendicitis, for pelvic lesions, for lesions of the kidney, that we should catch up and bring surgery of the stomach and colon to an equal footing. In doing this we will save, by far, a larger number of patients who are suffering with cancer.

It is my opinion that the more rapid development of surgery of appendicitis, strangulated hernia, gall-stones, and pelvic lesions, is due to the fact that the danger of delay was more obvious, because more immediate, while in lesions of the stomach and colon the dangers are more remote. In addition, surgery of the former is less difficult than the latter.

INTESTINAL OBSTRUCTION

I have recently studied some 285 cases of intestinal obstruction of which I have records in the surgical pathologic laboratory. The medical aspects of this abdominal lesion resemble those of acute appendicitis. As stated before, the dangers of appendicitis are abscess and peritonitis. The sequence of events from the initial symptom is rapid. The patient is either dying of peritonitis or intensely ill with abscess, or on the pleasanter road to recovery at the end of three days. Appendicitis of the acute type is a much more common lesion than intestinal obstruction. My records show about one case of intestinal obstruction to ten of appendicitis. Naturally both the practitioner and the surgeon have had greater opportunity to be educated in the earlier diagnosis. In addition, the operative problem in appendicitis is simpler than in intestinal obstruction.

In the study of these cases of intestinal obstruction I can make out marked improvement in the earlier recognition and, of course, the operative mortality only in one group admitted to the surgical clinic. This group is strangulated external hernia, inguinal, femoral or umbilical. It is also true that the number of cases is less each year. This must mean that patients in greater numbers are subjecting themselves to the radical operation for hernia in the earlier period of the reducible stage. Although the number of cases of strangulation is smaller, however, yet these patients have come to the surgical clinic earlier, and gangrene, peritonitis, and death from auto-intoxication are very rarely observed. But the same is not true of other types of intestinal obstruction.

I then compared the cases of intestinal obstruction admitted to the clinic from the outside with those that arose in the hospital. These cases are chiefly postoperative. The difference in the duration of time from the symptom of onset to the operation was in great contrast as was the operative mortality. The surgeon, therefore, in the hospital wards had been trained to recognize intestinal obstruction in the earlier period in which the operative mortality is least.

The chief acute abdominal lesions which the general practitioner may expect are acute appendicitis, acute pelvic inflammatory lesions, intestinal obstruction of the various types, perforation of gastric and duodenal ulcers, acute pancreatitis, gall-bladder colic and acute cholecystitis, renal colic and acute infection of the kidney. Most of these lesions begin with epigastric or general abdominal pain associated with nausea and vomiting, and most patients give a history of previous constipation and indiscretion in diet. The usual diagnosis is acute indigestion; the usual treatment, catharsis. The maximum symptoms are to-day, as a rule, recognized, but in this period the chances of recovery are extremely slim in many of the lesions. Ochsner, of Chicago, well expressed the proper attitude of the physician toward a cathartic in the presence of acute abdominal symptoms. I have heard him make this statement:

For those lesions in which a cathartic is indicated its postponement will do no harm, while for those lesions in which it is contra-indicated, the cathartic may be a factor in the fatal result.

Unfortunately an ill human being has been educated to expect and demand immediate relief of symptoms. Patients should be educated to the proper attitude, which is—diagnosis before treatment. They cry for morphin and usually get it; from their cradles they have been educated to the domestic cathartic. The suggestion of washing out the stomach is abhorred. As a rule there is even objection to an enema.

With symptoms such as abdominal pain, vomiting, one should most carefully observe the respiration and with the gentlest palpation examine for muscle spasm. Tenderness and muscle spasm, thoracic respiration, leukocytosis and obliteration of liver dullness are very early symptoms. A very careful inspection and palpation will as a rule make the physician suspicious in the very early stage of an acute abdominal lesion. Such cases should always be examined again in from two to four hours. In this early and perhaps doubtful stage it will be better for the patient to be sent to the hospital, if convenient, for further observation. Delay for surgical consultation at the home, where the surgery which may become necessary cannot be done, is but loss of precious time.

We all know that perforation of gastric, duodenal and intestinal ulcer should be recognized within four hours and operated on within six. Acute hemorrhagic pancreatitis will, I am sure, show the lowest mortality when the peritoneal bloody exudate containing the toxic ferment is removed by laparotomy within twenty-four hours, or sooner, and the pancreas drained. Operations between this time and the third day have an increasing mortality and after the third day operations are usually unnecessary, because the patient is either dead or recovering.

The story of appendicitis need not be repeated. That the probabilities of recovery without operation from acute cholecystitis, with or without gall-stones, is so large has been an influence to postpone operation when the acute symptoms in the right upper quadrant suggest gall-stones. It is quite impossible to differentiate acute hemorrhagic pancreatitis, perforation of gastric and duodenal ulcer, an inflammation of the appendix situated high up on the right side, or an intestinal obstruction in the upper portion of the jejunum, a case of acute cholecystitis with very marked symptoms.

Differential diagnosis cannot here be discussed in detail, but the symptoms of the acute abdominal lesions are there in the early period, if one will only look and feel for them and not mask them with morphin, and it is unnecessary to make them more pronounced by the administration of a cathartic. Abdominal pain which requires repeated doses of morphin usually indicates something more severe than a stone in the gall-bladder or kidney. It has been my experience that the indication for a second dose of morphin should be looked on as a call for operative exploration.

Intermittent abdominal pain of the type of colic without diarrhea is one of the earliest signs of obstruction. In these early hours the physician rarely palpates for von Wahl's loop through rectum or vagina or from above. The indistinct and rapidly passing wave of peristalsis is seen only by the keen eye of the close observer.

Gastric ulcer with its complication—cancer, and benign lesions of the colon with, perhaps, their secondary results—cancer, represents a group of more or less chronic abdominal troubles, the first warnings of which are often overlooked by the patient and perhaps more often treated but not diagnosed by the physician.

The danger of delay in gall-stones is less serious. The mortality of operation for stone in the common duct is about 9 per cent., for stone in the gall-bladder or cystic duct very much less than 1 per cent. So there is no argument which can combat this evidence against early operation on inflammations and stone in the gall-bladder. Gall-stones and cholecystitis, however, give by no means the typical symptom of gall-bladder colic. In my experience there is a large group of cases in which jaundice and gall-bladder colic are absent. These patients suffer from various kinds and degrees of epigastric pain or colic, or different types of indigestion of a lesser degree. In the last year I remember distinctly two patients whom I sent to the hospital to be admitted to the ward. As usual, they were seen and examined by the resident physician in charge before being admitted to the ward. After the history was taken and the examination made, admission was refused, because it was considered that they were out-patients for the medical clinic and not for the surgical wards. Only when they later presented letters which I had written, did they gain admission. In one of these cases the gall-bladder was

packed with stones, in the other there was a marked chronic cholecystitis with pericolic adhesions.

It is to be understood that this progress depends on the education of the public; that physicians must be better diagnosticians; that the public must aid the profession by enlarging the functions and numbers of the laboratories of the health departments, so that they may aid in this earlier diagnosis, and—most important of all, perhaps—the surgeon must be prepared to make the diagnosis in this earlier period and perform the operation with a minimum mortality, and the assurance of the highest percentage of permanent results.

GRAVES' DISEASE

I wish to call attention to a lesion about which there is much discussion as to when there should be resort to surgical intervention. There are certain symptoms which are called thyrotoxic, or those of hyperthyroidism, which when fully developed produce a well-known and easily recognizable disease called Graves' or Basedow's disease, exophthalmic goiter, or hyperthyroidism. The evidence of surgical experience shows positively that in the more advanced and late stages the mortality of the operation is higher, the postoperative convalescence and disability longer, the chances of recurrence and secondary operation greater, and the possibility of a permanent cure less. Yet, in this later state surgery at the present time is practically the only treatment which offers the patient any chance.

There is no doubt that patients in the early stages may recover after proper medical treatment. In this stage, however, there should be no mortality from surgical intervention, the postoperative convalescence and disability shorter, the assurance of a permanent result greater. There is but one contra-indication of operation in this early stage—the skin scar.

A surgical operation, in any event, should be but a part of a well-planned medical treatment which has for its object mental and physical rest. Why should not surgery interfere in the least dangerous period, even if it interferes now and then unnecessarily?

904 North Charles Street.

A NEW APPARATUS FOR ADMINISTERING AND WARMING GENERAL ANESTHETICS AND NEW METHODS OF ADMINISTRATION

RAYMOND C. COBURN, M.A., M.D.

NEW YORK

I have devised a new apparatus primarily for the administration of nitrous oxid and oxygen, the chief aim being simplicity, utility and portability. I have also perfected two new methods of administration: either by the closed drop method, and the warm vapor method, whereby the vapor of all anesthetics by all methods is warmed to body temperature at the time it is inhaled. Several other original and practical features will appear in the following description:

APPARATUS

A light stand is provided for holding two cylinders each of nitrous oxid and of oxygen. The supporting standard has slip, instead of threaded, connections with the base and the top bearing the cylinders so as to be quickly assembled and dissembled. Small rubber tubing leads from the top of the stand to an 8-liter gas bag,