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## MORTALITY, DISABILITY, AND PERMANENCY OF CURE IN SURGERY\*

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A very ordinary surgeon, by means of selection of cases, aseptic care, and the kindness of nature, may have a low death-rate, and yet benefit his patients but little. The question of mortality is one of the most important in surgery, and yet there is no rule concerning its method of computation. A study of mortality should be based on some definite plan to render reports and statistics of value to others than those who make them.

Hospital reports seldom present to the reader more than a general estimate of the amount of work done by the individual operator, and may, to some extent, add to the respect paid to his opinion by those able to judge. However computed, the mortality-rate served its purpose, as far as the surgeon is concerned, in giving an approximate rate which is liable to a certain amount of fluctuation, due frequently to uncontrollable circumstances. We once performed a consecutive series of 179 abdominal operations of all kinds without a death; in the one hundred and fifty-sixth case the patient operated on died, yet such a statement, unqualified, would be of no value to other surgeons, as there were five deaths in the next twenty cases.

Some operators claim that if the patient dies from the operation it should be counted, but if he survives the operation for a time, although it fails to give relief, and he dies from the disease or complications, it should not be charged to the surgical work. This method allows of a large latitude for the surgeon unconsciously to

favor or to discredit some particular operation, according to his prejudice. A well-known surgeon believes that if an individual dies within fourteen days after an operation from any cause the death should be attributed to the operation, but after that time it is a question to be settled by the judgment of the operator.

In our work we have taken the view of the layman, that if the patient goes into the hospital alive and comes out dead, the death resulted from, or in spite of, the operation, charging as a death from operation every patient who dies in the institution without regard to cause of death or the time elapsing between the operation and the fatal issue, some patients dying as long as three months after from disease or accidental cause, such as apoplexia, pneumonia, nephritis, heart disease, pulmonary embolism, etc.

The greatest reduction in mortality has come through aseptic and antiseptic methods, which have been reduced to such simple principles that they are within reach of all. This has been the means of developing skilled surgeons, who still further reduced the death-rate by an intelligent selection of cases, reduction of operative shock, and careful post-operative care. There is unquestionably a proper time for surgical intervention, and the failure to grasp the opportunity at the favorable moment is the cause of the greater part of the mortality, besides increasing the period of disability and reducing the number of cures. With the growing intelligence of the profession there is much less delay, owing to their advice, than formerly; in fact, there are at present few physicians watching tumors of the breast

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to see if they are malignant before advising removal. This is also true of cancer in other regions, and to-day cancer is classed among curable diseases when operated on early, while still local, and without metastasis. We might also say that only cancers of the stomach are still retained in the medical wards until starvation, stasis, and the failure of nutrient enemata demand surgical intervention at the most unfavorable moment.

The surgeon has not been blameless in inducing the public to delay operations, not directly, but indirectly, by operating on the hopeless cases of cancer in which the inoperable condition could be proved, and in which incomplete operation is followed by more rapid growth. The continued disability and the inevitable death become necessarily associated in the minds of laymen with the operation, deterring others from seeking early surgical relief, and inducing them to look for some religious, irregular medical, or quack method of cure.

#### STATISTICS

In appendicitis the contrast between the mortality in cases operated on at a favorable period and the reverse (including the operations of necessity), has taught even the layman not to trust too much or too often to the kindness of nature. The mortality, therefore, has been reduced to a very low point. During the past year there were operated on in St. Mary's Hospital 516 cases of appendicitis. Of these there were 147 acute cases, with 4 deaths; this includes a number of patients having diffuse peritonitis requiring general abdominal drainage. There were 362 chronic or interval operations and 10 tuberculous cases, with no deaths. This does not include 244 appendectomies made incidental to other abdominal operations, as where more than one procedure is accomplished through a single incision only the major is counted. Five years ago such results could not have been obtained, as we did not have the co-operation of the public. In the stomach operations during this year there were 106 gastro-enterostomies, with 8 deaths, 7½ per cent, most of these deaths being due to advanced cancer, while in 13 pylorotomies and partial gastrectomies there were no deaths, owing to the early stage in which the disease

was attacked. Abdominal hysterectomies gave a death-rate of 5 per cent in 101 cases, an increase of 2 per cent over former years, due to a greater effort to eradicate malignant disease, immediate results being subordinated to permanent. In no class of work did the low mortality of early operation contrast more favorably with the unavoidable death-rate, due to delayed surgery, than in gall-stone disease. In a recent review of the mortality of 1,000 operations up to Dec. 1, 1904, for gall-stone disease by W. J. Mayo and myself, we showed an average death-rate of 5 per cent in the hospital, 960 for benign disease with a mortality of 4.2 per cent. The total list does not include 101 cholecystostomies and 44 cholecystectomies in connection with common-duct operations. There were 673 cases of cholecystostomies, with a mortality of 2.4 per cent. This group includes most of the acute infections. Cholecystectomy was done 186 times with a mortality of 4.3 per cent. This operation was employed for special indications, such as cystic-duct operation, thick-walled gall-bladders, suspicion of malignancy, and cholecystitis without stones. There were 137 operations for stone in the common duct, with a mortality of 11 per cent,—7 per cent from operation and 4 per cent from secondary complications after more than three weeks. Those patients operated on during the quiescent period with little jaundice and slight infection all recovered; four patients with extreme icterus and with subcutaneous hemorrhages all died; four patients with complete obstruction of the common and hepatic ducts which were filled with clear fluid and no bile all died. There were 40 cases of malignant disease, with a mortality of 22.5 per cent. In contrasting these mortalities we must constantly remind ourselves that in simple uncomplicated gall-stone disease the death-rate in 416 cases was less than .5 per cent, and that practically all the complicated cases were at one time in this stage when a safe operation could have been done. Of the cases of malignant disease practically all showed that gall-stones had played the part of a chronic irritant.

Operations in the upper abdomen, involving the stomach, liver, and pancreas, involve a higher mortality than those of the lower abdomen, as it is near the danger zone of active absorption,

and adhesions are more permanent from lessened peristalsis.

The cases of shock we have seen following operations have been due to loss of blood, to handling the small bowel, and to traction on abdominal viscera and large nerves.

Laboratory substitutes for blood were rarely employed, as, while temporary improvement was noted, the operation necessary involved its own risks and disadvantages. The almost unknown chemistry of the living cell secures the best preparation of solutions to fit them to mix with the blood; and to cause the least harm, therefore, when deemed necessary, as in starvation and shock, we use the subcutaneous infusion or the slow rectal salt enema, without pressure, after the method of J. B. Murphy.

#### DISABILITY

For his own convenience, or to save himself a few minutes' time, a surgeon has no right to add to the temporary disability of a patient by making an unnecessarily long incision. An extensive incision must be justified by its increased primary safety or by increased certainty of cure. Practically speaking, each inch of abdominal incision calls for about three or four extra days in bed. The question of detention from business is now receiving considerable attention in this country, so that it creates a most unfavorable impression when, through accident or unpreventable causes, a patient must be retained unusually long in the hospital. In St. Mary's Hospital we have materially reduced the time of detention of patients, as compared with the same operations in the developing days of surgery. Considering only six or eight years ago, we have during this year reduced this time to such an extent that it represents a gain equal to the board, care, nursing, and disability of one person for approximately over thirty years. For instance, in hernias (of which there were 206 during 1904) in the early days these patients were in bed four weeks, and even six years ago, three weeks. This is now reduced to thirteen days in favorable cases. Stomach and gall-bladder cases are confined to bed from twelve to fourteen days; formerly this time was from eighteen to twenty-five days. In 169 stomach operations with recovery this year a saving was made of

about 200 weeks. To almost the same extent a saving of time has been obtained in all classes of operation. During the year in appendicitis work it was most marked. Formerly these operations in non-drainage cases detained patients three weeks; now the patients are up in eight days and home in ten, a saving during the year of about fourteen years. In considering the subject we must not be intimidated by those who retain their cases an excessive length of time, nor be rendered reckless by those who, at the other extreme, urge the mobility of abdominal cases the next day after operation.

The operative incision rarely should be employed for the drainage of abdominal sepsis. One or more separate punctures ought to be made for this purpose at the most favorable situation, and the original incision closed, thereby avoiding hernia liability, and shortening convalescence.

In our practice every effort is made to secure dry wounds. Temporary drainage is employed in incisions through fat structures where the lymph absorbents are often unequal to the task of acute drainage. Other operations which do not remove lymph nodes are not drained unless infected. All operations in which glands are removed are drained. Irrigation is not employed in septic cavities for the removal of fluids derived from the tissues of the body, such as empyema. Irrigation is at times employed for the removal of foreign materials, such as escape from perforation of the stomach or intestine. Severe peritoneal sepsis, such as occurs from a ruptured appendix, if diffuse, is treated by the exaggerated Fowler position (sitting posture) with large drains in the pelvis. The results are remarkably good in this class of cases which was formerly so fatal.

#### PERMANENCY OF CURE

The bugbear of surgery is malignancy; the bulk of mortality, recurrence, and disfigurement is from the cancer. A poor surgeon, as far as operative skill or dexterity is concerned, may be a great surgeon from the standpoint of radical cure. The only way that regular medicine can defeat methods and schools of quackery is to study them, and to prove by results that there are better methods. Efforts at legislation merely

advertise such irregular methods, too often to our disadvantage, by placing those who practice them in the light of being persecuted. The principal progress made in the study of cancer has been recognition of its mode of extension and of the cause of death. Until this was manifest in many instances we could claim but little over the man with the cancer paste except shortened convalescence.

Investigation into that much-neglected portion of anatomy, the lymphatic system, has finally placed the surgery of cancer on a scientific footing. Possibly little reduction has been made in primary mortality, but a great improvement in permanent results has been effected.

In considering the general subject of cancer, it has been our experience that age, as a rule, makes a great difference in the rapidity of the progress of the disease, as well as in the prospect of cure; cancer in the young being early disseminated by the activity of the lymph system, while in the old, with atrophic lymphatics, a long time, the disease may remain essentially inactive and local. Other conditions being the same, each additional decade of life gives improved permanent results. Early operation, with the removal of the glands through which the drainage is effected, gives a high percentage of cure. Today the first thought of the surgeon who makes a diagnosis of cancer is in regard to the adjacent lymphatics. Few cancers destroy life in their original location excepting mechanically; it is principally the secondaries which kill. The great danger, then, is through the lymphatic system in which secondary growths develop and through which the blood stream is invaded. If cancer does not ordinarily cause death in its primary situation the thorough removal of the lymph glands draining the area is of as much importance as removal of the disease itself.

In the alimentary tract the colon is one of the more favorable locations for removal of cancer without recurrence, as the lymphatics of the colon are much less active than those of the small bowel. Fortunately, malignant disease occurs in the proportion of about 17 in the colon to 1 in the small intestine. Approximately about one-half of the deaths from colonic cancer occur from obstruction and perforation before the glands are involved.

A radical change has taken place in the methods of attacking cancers of the rectum, an abdominal incision being first made, and, if the case is inoperable from a curative standpoint by reason of the extension of the original growth or secondaries, a colostomy is performed if there be obstruction. In the curable cases a combined operation is performed from above and below with removal of all the perirectal tissue, fat, glands, and fascia with the rectum.

The primary mortality in cancer of the breast need hardly be considered. Of course, there will be unexpected deaths from pneumonia, apoplexy, pulmonary embolism, or some other unavoidable complication. To the removal of the gland areas belongs the credit for excellent results now obtained. The muscle removal is merely incidental to the thorough operation on the absorbents.

It is difficult to estimate the primary operative mortality of brain injury, as in most cases the operation is partly associated with the injury. Such operations made early are remarkably successful, both in low mortality and in freedom from secondary symptoms (epilepsy, etc.).

The brain, from its functions and anatomic structure, has but limited ability for repair, therefore what is to be accomplished should be accomplished early, before secondary morbid conditions are established. Operations for chronic conditions of the cerebrum are only removed from pessimism by the low mortality and wonderful results in occasional cases.

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#### OLIVE OIL

Dr. H. H. Rutherford, medical department United States army, has given some attention to the therapy of olive oil in chronic dysentery. According to his statements experimentation has shown that olive oil increases the flow of watery bile, which acts as an intestinal antiseptic. In cases of dysentery, where olive oil has been administered, the amount of bile in the feces has been increased; the number of bowel movements have decreased and improved in character; there has been a gradual cessation of the signs of fermentation in the intestinal tract, along with subsidence of pain and tenderness, etc.

G. Parker Dillon, in the same periodical, states it as his opinion that the value of olive oil lies in the fact that it is an easily assimilated food.—*American Medicine*.