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OBSERVATIONS
AND
REFLECTIONS
ON
ABDOMINAL SURGERY

BY
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An address delivered to the Oregon State
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There is a threatening tendency noticeable in the development of the surgical art towards such refined technique that the general practitioner will be left out, because he cannot compete with the surgical specialist in respect to the outfit of most expensive apparatus and prophylactic arrangements, which are deemed necessary to carry out asepsis. The logical consequences of operative asepsis demand that besides the usual sterilizing apparatus and instruments the operator and assistants must be fitted out with linen gowns, caps, beard-bandages, respirators to cover the mouth, aseptic gloves, etc. The operating room is also approaching the ideal of a sterile glass box with air filtering apparatus, hot and cold water flow and electrical machinery for illuminating and cauterizing, etc.

All of these demands no doubt have a tendency towards crowding out the general practitioner and making surgery a monopoly for the wealthy specialist and for those who hold hospital appointments in larger towns and cities. The general practitioner is even to-day unable to successfully compete with the richly endowed State, municipal or private institutions that are located in the great centers. It is apparent therefore that the general practice of medicine will suffer a great hardship, if it is thus made to abandon the most remunerative and also most satisfactory or gratifying department of its usefulness. There is nothing which will so effectually help a

physician in the beginning of his career or that will reestablish the sinking prestige of a physician among his patients as the successful results of surgical work. This is the only department of medicine into which quackery and newspaper advertising has up to date made but small inroads, and if anywhere the competent physician is able to prove his superiority over the scheming quack, it is in the realm of surgery. I desire to open the eyes of the profession, without wishing to tread upon the toes of any particular interests, to the dangers arising to the general practitioner from this development of surgery.

I do not wish to be misunderstood, and hence must say that nothing is more remote from me than to advocate that physicians who have had no adequate training and who have no taste or talent for surgery should undertake to perform all surgical operations. The best interests of the public and of the profession are undoubtedly subserved by sending chronic surgical cases to well equipped institutions where they can have the benefit of the most skillful surgeons. But there are many surgical cases which are not able to stand transportation to distant cities, and many emergency cases which demand prompt interference. A physician must, therefore, contrary to the dogmatic rules of science which indicate that surgery must only be done with all the surroundings and apparatus above mentioned, often take the risk of operating under circumstances which do

not fulfill the demands of science and which are pronounced baneful and indeed are said to contraindicate the undertaking of an operation such for instance as coeliotomy.

In the following I shall attempt to give such rules as in my opinion will help to insure success in cases where the general practitioner is compelled to treat intra-abdominal lesions, such as are produced by acute appendicitis, internal strangulation and obstruction of the bowels, and intestinal perforations.

The first and most important principle upon which are based all our modern surgical manipulations and interference: is the fact that normal repair is prevented by bacteria and their products, the toxins. Hence these must be kept away from a wound. Where there are no pathogenic bacteria or toxins, precautions may be unnecessary and even harmful. The sources from which these death-dealing organisms and their products come are either the body of the patient or some external place, as for instance, the physician himself, his assistants, and what is directly or indirectly connected with them, or finally from the air of the apartment in which the operation is done.

The idea that pathogenic bacteria are ubiquitous is erroneous; they are frequent in large hospitals, rare in country towns, and absent in the wilds of the Rocky Mountains. Culture media spread on broad surfaces and exposed in the mountains by competent bacteriologists for days and weeks failed to show colonies of pyogenic bacteria, and in the vast majority of the plates exposed no colonies of any kind of bacteria could be detected at all. If a healthy boy or a grizzly bear were to sustain a compound fracture of the forearm caused by a fall in the mountains and were not seen by a physician but left to nature for a period of three or four months the wound would most likely be found in

an aseptic condition or perhaps entirely cicatrized.

The most striking example to prove this unorthodox assertion is found in a most interesting paper published about twelve years ago by Prof. Robert P. Harris, of Philadelphia, in *The American Journal of the Medical Sciences*. In that paper the author, who is known as the great statistician of the caesarean operation, has collected twenty-one cases of caesarean section performed on the prairies or in the woods, by the horn of an infuriated bull or a steer, upon women in the last months of pregnancy; of these cases, fourteen women recovered. These cases were collected with great care and after much labor and correspondence. Harris succeeded in getting them fairly well authenticated. You may judge of the amount of labor connected with this research when I tell you that in some cases there was nothing to start on but a newspaper item, and that some occurred in old Mexico, some in India, one in Missouri, one in Russia, and several on the plains in our own territories. Twenty-one were sufficiently well authenticated by letters from reliable sources to be tabulated by Professor Harris and used in his statistics. After reading the remarkable paper of Harris I undertook a further investigation by correspondence and by personal visits to some of the authorities, and although for obvious reasons I will not give details I found that of the fourteen who recovered only six were ever seen by competent physicians, and of those who died all were handled by physicians except those who died of shock immediately after the attack. Contrast, with fourteen recoveries in the woods or fields, the most of them far from hospitals or any kind of medical aid, the statement made by Sir James Y. Simpson in 1850, that not a single case of caesarean section made by a physician or surgeon in Great Britain had recovered. We know that physicians in

Great Britain and Europe previous to the time spoken of by Simpson wore long peruques and ruffled garments with large ruffled sleeves—the more elaborate the surgeon, the more hair and ruffles did he have on—and of course in the absence of any knowledge of infection and its causes and effects we can understand how it was that no woman escaped death who was operated upon by one of our unfortunate colleagues. I have in my possession an old print dated 1663, showing the picture of a shoemaker, knife in hand, making the caesarean section on his own wife. He had been instructed how to cut by the physicians. These physicians in their robes and wigs, the preachers, together with some relatives are represented on the print in the adjoining room anxiously praying while the brave shoemaker cuts open his wife's belly. It is recorded in quaint language in the accompanying text, that by the miraculous aid of God, mother and child recovered. We know that she recovered because the physicians who were daily in contact with disease, did not touch the wound in the woman's body. Permit me to observe that it were good for suffering humanity if physicians of all times, who pray more than they bathe, were kept out of operating rooms.

From the examples cited and the relation of facts we may conclude, *caeteris paribus*, that the country is a better and a safer place to perform a surgical operation than a densely populated place. Other things being equal, a newly-built private house in a city would be a safer place than a hospital or place where patients congregate in large numbers. The greater safety in both cases is predicated upon the probable absence of pathogenic bacteria in the country and in the new house. Infinite care and watchfulness are required to keep a hospital or infirmary free from the sources of infection, and I would prefer to work in a private house if I can have

assistance, trained nurses, and such an armamentarium as I have at the hospital.

We will proceed with the subject now, having decided that the country or private house are suitable places for the successful performance of surgical operations in emergency cases or such cases that cannot safely be removed to a well-equipped operating room.

In preparing a room and a table for an operation the preparation will be done with an eye single to the object of preventing infection. In cases requiring prompt and quick action I think it will be safer not to tear down the curtains and pictures, and it will be better to leave the carpet on the floor. Tearing up things will most likely stir up and liberate germs and dirt that would otherwise be harmless in their innocuous desuetude or quietude.

The preparation of the hands of the operator and his assistants has been the subject of much study and experimentation. After all has been said, the object of the various methods of disinfecting the hands can only be to remove the dirt and the bacteria and not to destroy them. Any method which aims at the destruction of the bacteria will fail in its object. It seems to me to be an impossibility because the skin is more easily destroyed by chemical and physical means than the bacteria which inhabit it. I am also convinced that the too forcible use of a stiff brush does more harm than good. The endermatic parasites are safer when left alone in the deeper layers of the stratum malpighi than when brought to the surface by violent brushing. Every operator knows whether or not his hands have been in contact with infected patients and will consciously or unconsciously estimate the danger of infecting a wound by his own hands in accordance with his knowledge of his own past experience. I have several times refrained from work for one or more days because I

did not consider myself safely clean. Cleanliness in every possible meaning of the term, not referring to the intended destruction of bacteria, but to keeping away from contact with organic fermenting or suppurating and infected areas at all times and avoiding the contact of the hands with any kind of chemical irritants, must be aimed at by the surgeon. Cleanliness in a kind of religious or ethical sense, attainable by means of physical methods, is what I practice and recommend. My assistants often wonder at my aversion to changing dressings, or in any way coming in contact with the lesions of a patient unless absolutely necessary. I often walk from bed to bed, never touching a case with my own hands but leaving the management, under my direction, to an assistant or a nurse. This is an invariable rule when I know that I must perform an operation on an afebrile patient the same morning.

In my opinion the best method of cleansing the hands is the thorough use of a strongly alkaline soap for a period of not less than eight or ten minutes; using one soaping for two minutes, rinsing this off in clear water, and repeating the operation four or five times. After this has been done the hands may be immersed for two or three minutes in a bichloride of mercury solution and dried in alcohol. The bichloride must not be strong enough to irritate the skin of the hands, certainly not stronger than 1 to 1000.

The skin of the patient over and around the place of operation must be treated in the same way. Coming now to the operation itself, I notice that the scope of this paper limits me to general consideration more than to details; and I believe that I can do more good by giving more time to the principles than to details, particularly as time will not permit my going into special cases. In order to become familiar with the details of surgery there is but one method

and that is to serve for a time as an assistant to a master. The most dangerous physician as well as surgeon is the one who draws his information and knowledge from a text-book or two. The man who is turned out of a medical college with little more than a text-book education is in a most pitiable condition. He is compelled to put into practice that which he has only read or heard about, but has never seen and felt. The men who by necessity start out in this way soon feel their helplessness, and by visiting hospitals and getting instruction directly from a master, become fitted for the work. We should strive to have laws enacted compelling all graduates in medicine to take a course of at least one year in a general hospital before they can become legally registered practitioners. Such men would probably be competent to operate in an emergency. After all has been said the text-book is a necessary evil and for the purpose of furnishing information in minor details has a useful place, but whenever I have referred to a text-book for help in a surgical emergency I throw it away in disgust. Text-books are not written by the original thinkers. As a rule the pathfinder has no taste for the almost clerical work of compiling a text-book. For information which is of value, we must all return to first principles, we must interrogate nature, and in surgery that means nothing more than to closely observe our cases, using our senses and such instruments of precision as we can command.

The diagnosis in an abdominal case is the first thing that will come up and I can console you by saying that even after an experience of more than four thousand coeliotomies the diagnosis is often a mere guess. If from the history and objective examination the diagnosis is not clear, but an indication for coeliotomy exists, the indication had better be fulfilled at once than to wait for an autopsy to clear up the diagnosis. A

mere explorative coeliotomy will do no harm in itself and if it leads to a diagnosis may be followed by life-saving work in the cavity. In most cases of obstruction of the intestines, the seat and cause of the obstruction are matters of mere conjecture before the operation and sometimes are troublesome to locate after the belly is open.

From the standpoint of prognosis I wish to call your attention pointedly to the matter of whether or not opium or morphine is indicated in any form of abdominal pain or disease. I do not only mean opium and its derivatives, but I wish to extend my remarks to any and all of the narcotic drugs, but particularly to those which have a tendency to stop the peristaltic action of the intestines. The older men used to treat peritonitis by "putting it in an opium splint." Of course the mortality was terrific, but then some did get well in spite of the treatment. If in any case in which a coeliotomy is contemplated you are informed that the patient has been given opium or morphine and is constipated, you may multiply the ordinary expected mortality by ten. In cases of appendicitis you may safely multiply by six; in other words, the chances of recovery from an attack of appendicitis are six times greater if the patient is treated by means of cathartics and no opiate in any form, than if treated by the old opium method.

The mortality following coeliotomy of any kind on patients who have been treated with opium up to the time of operation is enormously increased. If there is time to give thorough purgation and if the opium is discontinued ten hours before operation the chances of recovery are greatly increased, but are not as good by half as where no opium has previously been given.

I would lay down the rule, that in all cases of abdominal lesions whether accompanied by pain or not in which an operation may be contemplated or be

among the remote probabilities, as for instance in colic, opium or any constipating drug must be avoided. If the pain is excruciating the inhalation of chloroform or ether will be less harmful, but as a rule a large hot pack will be sufficient to make the pain bearable.

Of all departments of surgery, abdominal surgery is perhaps the one which has the most devotees. It has become a specialty, and there are more abdominal surgeons "limited" than there are brain and nerve surgeons.

There are more abdominal surgeons than there are bone and joint surgeons. I know any number of surgeons who would not attempt to do a neurectomy of a branch of the trifacial, and who would not for any consideration remove the tongue or the larynx for cancer and who would not attempt an excision of the elbow joint. But there are some men who will cut open bellies, remove ovaries and tubes, operate for appendicitis, "between the attacks," and perform operations on the gall bladder and for hernia, and will have a low mortality in their coeliotomies. I have noticed however that these same men will not operate on the stomach and will hesitate long before "refusing" to do hysterectomies, and I have also noticed that if they do hysterectomy the result is not as good as in their other work. I can explain the very large number of abdominal surgeons by giving away to you a little secret which has been pretty well kept, up to this time. The truth is that of all the departments of surgical work, none is so easy to learn and so universally successful as the work which the abdominal surgeon (limited) has selected for his specialty. It is a fact that the mortality of appendicectomy done during the quiescent stage, *i. e.*, between the attacks, is less than one per cent. I cannot see why there should be any mortality at all in this operation, never having seen a death under such circumstances.

Why should a healthy man die from whom we remove a practically normal appendix, one that has been diseased and might become troublesome again? The truth is that the peritoneum of all the tissues of the body is the one, which can successfully dispose of more debris, take care of and render innocuous more dirt and bacteria, toxins, etc., than any other. You may conclude then that if you have to operate at all, the abdominal cavity is the place where you can most safely risk your maiden effort, only be sure and select a case of appendicitis in the quiescent stage for the first attempt. Just as easy as is the work of the abdominal surgeon (limited), just so difficult is the work of the surgeon who undertakes to do that surgery in the abdominal cavity which is indicated by malignant and benign tumors, by acute inflammatory and infectious processes and by many obscure lesions such as for instance, adhesions and malformations. To do successful work in this department requires a man who has a good pathological training as well as a perfect mastery of surgical technique.

The incision into the abdomen requires no particular instruction beyond saying to the casual operator who operates in an emergency, make it large enough and make it anywhere over the seat of the trouble. In emergency cases the median line cannot often be chosen and a good rule will be to cut down on the greatest prominence if there be a tumor or a bulging plainly visible or tangible.

Cut down to the peritoneum, then stop and check the hemorrhage from the parietes before opening the cavity. If the parietal peritoneum is normal cut a small opening into it with scissors after picking it up from the underlying intestines. The finger can now be introduced and the diagnosis may be made in some cases. If it is found that the diagnosis cannot be made by the introduction of one or two fingers the wound

in the peritoneum must be enlarged so as to permit the whole hand to be introduced while both edges of the incision are separated by a pair of broad retractors. During this time the patient must be profoundly anesthetized so as to prevent vomiting and prolapsus of the intestines. The diagnosis having been made, the indications must be promptly met, and they are so very numerous and different that I cannot take time to enumerate the possibilities.

If the parietal peritoneum is not normal and is found adherent to the underlying intestines then it should not be incised, but exploratory punctures with either a trocar or a pointed grooved director must then be made. This will lead to the detection of pus in the vast majority of cases. In a few cases the adhesion may be due to some non-suppurative process and the operator must decide whether to extirpate the mass or not. If pus be not found, I would advise an inexperienced operator to desist from further surgical effort and sew up the wound. The patient will be no worse off than before the operation and the diagnosis will be much cleared up. It will be the duty of the physician to tell the patient and her people that the operation could not be completed under the circumstances and that possibly an expert surgeon might still be able to benefit the case by a second much more dangerous operation. It is always advisable for an emergency operator to tell the people that he would much prefer to have an expert surgeon, but will make the attempt to do the best he can under the circumstances. He will thus get the gratitude of the patients and will escape censure in case of failure.

Should the operator find pus, then his course of action will be on the following lines: The finger must be made to do all the work, the pus cavity or track must be followed to its end by blunt work with the finger, the knife and the scissors being put away. The edges of

the wound must be well retracted so that the eye can follow the operating finger. When the bottom of the sup-puration has been found the cause in most cases will be apparent. It will either be the appendix, the tubes, the gall-bladder or some tubercular disease of the intestines, in at least nine out of ten cases. Should it be some other rare trouble with which the general practitioner is not at all acquainted, then further action must be abandoned and the whole exposed pus cavity must be drained. Should the trouble have originated in one of the first named organs the treatment in the majority of cases will be extirpation of the appendix, or tubes, or of the gall-bladder, or again only the drainage by means of gauze packing. Drainage by means of tubes alone should never be practiced by anyone. If a tube seems a desirable drain it must always be surrounded by gauze wicks or strips, but in the vast majority of cases gauze alone will be best. I advocate extirpation of the offending organ whenever possible, but I cannot advise the general practitioner who operates only rarely to attempt the total eradication of an adherent tube or appendix. By thorough drainage many cases will be radically cured, at least will be free from serious trouble for the rest of their lives. In some a radical operation may become necessary later on, but the drainage will at least have given temporary relief and may have saved a life.

We come now to a class of cases, where a patient has an enormously dilated abdomen, is vomiting and passes neither faeces or gas. He is said to have "peritonitis" or "inflammation of the stomach or bowels." The history gives no clew to the cause of the trouble, and the diagnosis has been made impossible or at least much obscured by the constant administration of some opiate. This condition has existed from one to six or more days, the

vomit is getting to smell like feces, the pulse which has been good is getting weak and rapid. About eighty per cent. of these cases are what I call opiated cases of appendicitis, the rest are due to volvulus, invagination or some form of internal strangulation by bands or adhesions or to a small perforation or leak in the hollow intestine. A coeliotomy of any case of tympanitis, with the intestines distended by gas and putrid, is an operation that is fraught with more danger and requires more skill than any other I am acquainted with. The prognosis is bad, the mortality after operation is more than sixty per cent. The technical difficulties are enormous because after the incision has been made the distended intestines will roll out of the belly, and it will be almost impossible to bring them back after the obstruction has been found and relieved. The result is that even in the hands of an expert and under most favorable circumstances in a hospital about fifty per cent. die of shock. If opium were taken away from the general practitioner in abdominal cases and epsom salt and castor oil put in its place, eighty per cent. of these dreadful cases would never even occur.

I am of the opinion that these cases are better treated by washing out the stomach every two or three hours, and by rectal nutrition and total abstinence of food through the mouth. Of course cathartics must be freely given and all other medication stopped.

I have succeeded in saving several cases by making two, and in one case three enterostomies, so that the intestinal tract could be freed from its putrid contents and the fatal autointoxication ended. This operation leaves the patient with two or three intestinal fistulas, or if you like that name better, with several artificial anus. Should the patient survive, these supernumerary openings can be closed at a convenient time and place.

I recommend that in cases of this kind after milder measures have failed to make two artificial openings into the gut, the one in the right iliac fossa into the cœcum, and the other in the left iliac region into any distended loop of small intestine that may present itself in the incision.

The operation is so simple that any physician can perform it with nothing but a knife and a needle and thread. I once saw a man awake from the chloroform upon whom I made enterostomy, and discharged about two gallons of liquid feces, get up from the operating table and declare that he never felt better in his life. His abdomen had been distended so much that he measured fifty-eight inches around the girth. When we placed him upon the operating table his pulse was 140 and he was in a collapse.

In making a fecal fistula, the incision in the abdominal wall need not be over an inch and a half long, and the incision into the gut need not be over one-fourth or three eighths of an inch long. The gut must be fastened to the abdominal wall by means of four stitches carried clear through all the layers of the gut and the abdominal wall. These stitches must not be tied tightly, because they might cut through the weakened wall of the intestine. The after-treatment consists in washing out the canal of the gut but not the wound. A little gauze is placed in the incision and a gauze strip or rubber tube closed by a clamp may be left in the gut. The whole abdomen is then covered by a large hot wet pack, which is kept moist by preventing evaporation. This is done by means of a piece of oil cloth or rubber tissue.

The next subject that will engage our attention is the closure of the wound. After having tried all methods and visited all the surgical clinics of Europe and America, I recommend for expert as well as for the casual emergency op-

erator the old through and through suture. It gives the best results primarily, and is followed by as few hernias as any of the many methods that have been advocated by means of which the belly wall is closed by three or more tiers of sutures closing the layers, singly over each other. I recommend, including merely the very edge, about one-twentieth of an inch of the peritoneal margin on each side, while the muscle and fascia are well grasped by the suture. The stitches can be removed on the fifth day, and there will be no buried sutures left to cause abscesses or sinuses.

In cases where the wound is not closed but is left open for drainage I recommend for expert as well as for amateur, that only gauze drainage be used, never the tube alone; but if the tube is used let it be used together with gauze. If all of the pus, gangrenous tissue, etc. cannot be removed at the operation, means for its escape by drainage must be furnished. The operator must see that the wound is so well drained that a retention of secretions or tissue shall be impossible. The drainage must be free, and the opening must be so arranged that the gauze drain or pack can be changed easily without causing pain to the patient. If you are sure of free drainage, irrigation of the wound is useless, indeed it is very harmful, and I have abandoned it altogether in my work. I never used it even in empyema cavities; it is utterly superfluous if the cavity is well drained. As long as your drainage is sufficient there will be no rise of temperature. The wound may be left alone for days if there is no fever and no pain. Pain in the majority of instances in these cases is due to bad or insufficient drainage, and is absent where you have free outlets for the discharge. The after treatment of coeliotomy cases for the first twenty-four hours consists in total abstinence from food and drink. Great thirst may be relieved by enemata.

Pain must be borne and the patient must be told by the operator after she awakens from the anæsthetic that unless she will lie as still as a stick of wood and bear all the pain without a murmur for twenty-four hours, she will surely die, and that as surely will she make an easy recovery if she remains quiet and does not ask for drink. Under no imaginable circumstances give opium or morphine or any other similar preparation. On the morning of the second day give one-tenth grain calomel every hour or half hour, until there is a discharge of gas or feces per rectum. This may be followed by a mild saline aperient. Liquid food, first in small quantities, is permissible after the second morning. Coeliotomy cases should remain in the recumbent position three weeks or longer in order to minimize the chances of a hernia in the scar. The wearing of an abdominal bandage after getting up is not necessary, but it seems to be comfortable to some patients.

About suture material and dressings I have this to say to the casual operator: Use nothing but silk of different sizes for all purposes—do not use catgut—silk can always be easily sterilized. About gauzes and cotton, in fact all wound-dressings, the general practitioner will do well to use those made by one of the great manufacturers and packed in such a manner that they can-

not become infected or unclean before they reach the physician's hands. I am convinced that the use of these beautifully made articles will give better results to the casual operator than those he can make himself at his residence or office. I have personally tested the goods made by Johnson & Johnson in their magnificent plant at New Brunswick, N. J., and can recommend them as safely sterile and aseptic. No doubt the product of other firms are also reliably sterile, but I can only vouch for those I have tested.

Finally, gentlemen. I would like to suggest that in all smaller towns and villages an operating room and perhaps a few sick rooms be maintained, in which all of the local practitioners, or a consulting physician if one is called in from a distance, can do the necessary operations. Permit me to say again that it seems to me the proper time to call attention to the fact that good and successful work can be done in the country or in a private house or on a farm, and that my object in this paper was to throw out some hints and suggestions which would have a tendency to encourage the country practitioner in his hard and often poorly remunerated efforts in behalf of those who are too poor or too ill to be removed to one of the palatial and expensive institutions in large cities.

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