ABDOMINAL SECTION: ITS VALUE AND RANGE OF APPLICATION, AS A MEANS OF EXPLORATION AND TREATMENT.

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THERE can be no satisfactory therapy without a correct appreciation of the conditions upon which it is based. The art of diagnosis is, then, the most important within the domain of medical and surgical science. It is, likewise, the most difficult department of medicine and surgery. An absolute perfection in its acquirement is not attainable; even a high accomplishment in it demands abilities of the first order. A thorough investigation of disease, as we find it in its many and varied forms, requires a fine cultivation of all the special senses, a clearness of perception, a ready application of needed information, some of which a personal experience only can give, a clear and proper estimate of the import and value of symptoms and signs, together with a careful, patient analysis of the same. As these are qualities of mind possessed by few, it is not surprising that errors in diagnosis are frequently made.

In no class of diseases are there greater difficulties in diagnosis to be encountered, more obscurities to be cleared away, than in certain pelvic and abdominal affections of women.

So many things, dissimilar in character, yet with points of resemblance, so many complications may enter as factors in a given case, that all ordinary methods may utterly fail to clearly and correctly establish an opinion. Certain rules,

properly applied, usually guide us to correct conclusions, but, as exceptions to these rules are far from being uncommon, and as certain complications modify their application, erroneous inferences may easily be drawn.

The differentiation between ascites and an ovarian cyst is ordinarily very easy, but there have been instances, doubtless, in the experience of most, when a degree of uncertainty has remained as to which of the two was present. The shape of the abdomen, the hydrostatic line of dullness, the seat and area of resonance, altered and unchanged by the position of the body, are most valuable aids. Yet, as all know, these are subject to variation in either disease. Not only may the umbilicus fail to project, and the vaginal vault give no fluctuation in ascites, but the abdomen may be somewhat dome-like in shape, and the top of it (patient on the back) dull, and the flank resonant. A thick umbilicus, a pelvic infiltration, or the presence of an outgrowth in this region, may obscure the ordinary manifestations of the former. Very large accumulations of fluid in ascites may push the abdominal walls beyond the reach of the intestines, and dullness be recognized at the highest point, together with little or no alteration in percussion notes on a change of the patient's position; or the intestines may be glued down by adhesions, or a thickened omentum, and, the fluid being kept in front, the same physical phenomena present.

Again, an ovarian cyst, through intestinal perforation, Fallopian communication, or after tapping, may contain gas. A clear note is then detected in front.

Cancerous masses, peritoneal, omental, or mesenteric, attended with ascitic accumulations, are more apt to create this obscurity and doubt. Says a distinguished operator, Lawson Tait, referring to this matter, "More than once I have opened the abdomen to remove an ovarian tumor, and found only masses of peritoneal cancer."

Omental tumors, sarcomatous or otherwise, when large and reaching within the pelvis, with peritoneal fluids imprisoned in places, may simulate very much indeed multi-

locular cysts of the ovary, from the fact that they lie in front of the abdomen, may be adherent to the uterus or ovary, and, while there is resonance above, there is fluctuation below. Imitating ovarian cysts very closely in some of their physical signs is "encysted dropsy of the peritoneum," due to peritonitis, simple or tubercular.

Movable kidneys, more commonly met with in women, may be mistaken for ovarian cysts, if small, and *vice versa*. More often, extensive degeneration of the kidney, especially cystic, echinococcus of this organ, hydro-nephrotic sacs, present features of still greater resemblance to ovarian cysts of the multilocular form. Neither the position of the tumor, the relation to the intestines, the presence or kind of the functional disturbance of either kidney or ovary, is evidence upon which a complete dependence can be placed. A kidney tumor may lie in the median line, extend to within the pelvic cavity, and become adherent among its viscera. Just as ovarian tumors may have the intestines lie in front of them, more often renal tumors may have the intestines behind them. They may likewise be as movable as ovarian growths.

The difficulties in the differentiation between an ovarian cyst and a uterine fibro-cyst are, at times, very great.

Extra-uterine pregnancy of the abdominal variety, of long duration, we have seen simulate very closely a multilocular ovarian growth, and lead to doubt which abdominal section alone removed.

So this list might be much extended, to illustrate how easily errors are committed; how very difficult, I might say impossible, it is sometimes, by the greatest care and most precise knowledge, to be absolutely sure.

It should not be inferred from these citations that errors in diagnosis of pelvic and abdominal diseases are more frequent than in the affections of any other part of the body. Unequivocally they are not. Abdominal and pelvic diagnoses are susceptible of being, and have been, pushed further in extent, and to degree of perfection, than any other. It is not possible, and probably never will be, to explore the

cavities of the head or chest as we do the abdomen and pelvis. Well has Spencer Wells said: "The diagnosis of ovarian tumors, and conditions favorable or otherwise for operation, is already as well established as that of any other form of disease requiring surgical operation." That this great operator made only twenty-four exploratory incisions in five hundred ovariotomies proves the accuracy to which diagnosis has arrived.

Great stress has been placed upon the value of tapping as a diagnostic means. It has been very highly prized by some (Atlee, Wells, Spiegelberg, and others); by others (Tait, and most English operators), it is objected to with equal seriousness and vigor. Some of the latter would never tap. Probably the middle ground, occupied by most gynecologists, is the correct one. But has not the importance of tapping, as a means of diagnosis, been much exaggerated. How valuable it is to outline and locate certain pelvic and abdominal outgrowths, associated with ascites, and how often it clears up the nature of an ovarian cyst, whether parovarian, unilocular, or multilocular, all must appreciate.

On the other hand, what immense damage indiscriminate tapping has done. How many cases of ovarian tumors, fit for operation, promising well, have been spoiled by tapping. Peritoneal inflammation, leading to adhesions, complicating the radical operation; more often, septic poisoning with peritonitis, not unlikely proving fatal; inflammation and degeneration of the sac wall; rapid refilling of the sac, and consequent drain upon the patient; the postponing of the day of the necessary removal of the tumor, the wasting of valuable time—these are some of its evils.

These dangers have been variously estimated by different authorities. Simpson placed the fatality at one in six cases; Peaslee at fifty per cent. mortality for polycysts; Spencer Wells, one of the strongest advocates, at one in sixty cases, but acknowledges that, when practiced prior to ovariotomy, it increased the mortality of that operation as much as two per cent.

Tapping made for the diagnosis of uterine fibroids, omental, peritoneal, and renal tumors, presents dangers in the way of the injuries of important viscera, the wounding of large vessels, the induction of serious hemorrhage, etc.

It seems well settled that tapping, while almost harmless in its immediate results, and possibly beneficial remotely, in par-ovarian and unilocular ovarian cysts, is attended with no inconsiderable danger in all multilocular cysts. Something, of course, depends upon the method employed, the precautions taken, and as to whether the special sac tapped is completely emptied. Nevertheless, it is a procedure of no small risks.

Then what advantage can it be in most cases? The diagnosis is reasonably clear, and remaining uncertainties, if any, can be, need be only cleared up at the radical operation which ought to follow at the earliest opportunity. To place a life in danger merely for the purpose of diagnosis, perhaps unnecessarily, or deprive that life of the only chance for a restoration to health, is a fearful responsibility. Therefore, tapping ought to be omitted, if a diagnosis can be established without it, or some other equally risky procedure.

I do not think, however, that we are warranted in assuming that extreme position maintained by some, viz.: Schilling, who said, "Tapping is a crime;" and Storer, who said, "Never tap;" or that most recent authority, Lawson Tait, who says, "It should be entirely discarded;" for the reason that the amount of real and reliable information obtainable by a physical, chemical, and microscopical examination of fluids withdrawn is sometimes very great, and may be such as can be secured in no other way save by abdominal section. But, judging from accumulated experiences, statistical and otherwise, are we not justified in contending—

1st. That tapping, in a large proportion of cases in which it has usually been practiced, is unnecessary, and superfluous for the purposes of diagnosis.

2d. That it is attended with such risks and dangers in its

immediate and remote effects as to limit its employment to a minimum—only when absolutely necessary.

The rule laid down by Spencer Wells that, "in cases of simple ovarian, or extra-ovarian cysts, it is right to try the effect of one tapping before advising a patient to undergo a more serious risk," promises little, and is capable of doing much harm.

3d. That as the physical peculiarities of the fluids tapped, in point of color, odor, viscidity, and specific gravity, are not characteristic, nor the chemical products definite and unalterable, so the *microscopical evidences* as *interpreted*, and *capable of being interpreted*, by *almost all observers and operators*, are *not positively trustworthy*. In fine, the evidences, physical, chemical, and microscopical, obtainable by tapping, are presumptive, probable, and become strongly corroborative, in connection with certain symptoms and signs. They are not absolutely positive.

In theory, rectal manual exploration would promise much, but in practice it has been attended by such disagreeable, if not disastrous, consequences as tearing of the sphincter, incontinence of feces, laceration of the peritoneum around the rectum, and peritonitis, that it can never be generally utilized.

Moreover, both it and tapping, in some pelvic and abdominal affections, by the very nature and situation of things, can not give us any direct information. *Explorative section* is the only means in our possession to accurately determine certain diseases and conditions of the pelvis and abdomen, and that it should have been utilized so little as a diagnostic means, when others have been extended, doubtless has arisen from the impression that opening of the abdomen was almost surely a fatal procedure, or at least attended with great risks.

It is important to inquire into this question. Of course, the degree of risk will depend largely upon the extent of the section, and the amount of handling or interference done within the abdominal cavity. In reference to the former,

the incision may vary from less than one inch (merely to admit a finger), up to several inches (for the hand), or to or above the umbilicus. Accurate and thorough diagnosis may be made by the smallest incisions, and the largest may be demanded before the field of disease is surveyed. Besides, in calculating the prognosis of abdominal section, we must consider the general state of the patient, as well as the local conditions for which it is practiced.

Tait speaks of incisions only large enough to admit a finger, to draw off ascitic fluid and explore the cavity, ascertaining whether a tumor is malignant or not, as nothing more than tappings, having no more risk. This, probably, is true, if the general health is fair. But this little operation, in this class of patients, with feeble general health and little vitality, may prove fatal.

There is no small amount of statistical matter in reference to these points.

Dr. F. Bird stated before the Medico-chirurgical Society, November 12, 1850 (Peaslee), that he had made abdominal sections in between forty and fifty cases, without any injurious consequences ensuing. If adhesions were found, the abdomen was closed; if none, the tumor was removed.

Of Washington L. Atlee's two hundred and twenty-two collected cases, in twenty-five explorative incisions merely were made, all recovering.

Kœberlé has stated that three fourths of the cases recover.

Of some twenty-four patients subjected by Spencer Wells to exploratory incisions, necessary to perfect diagnosis, seventeen recovered, or were relieved; in seven cases death followed in from three to ten days; in two, recovery was complete and permanent; the remaining number having gone on very much as if they had been only tapped (p. 458–460).

Dr. C. C. Lee (*New York Medical Journal*, September 29, 1883) said he had witnessed five cases during the preceding winter, in which the operation, involving laparotomy, had been abandoned, for one reason or another, after abdom-

inal section had been made, and the contents of the cavity explored. All cases recovered.

My own personal experience of abdominal section for pure exploration is limited to five cases. Incisions varied from one half inch to four inches, all being made for obscurities in diagnosis. Malignant disease was suspected, and in all the cases it was confirmed.

In the first, the patient was fifty years or more of age. An ovarian tumor, probably malignant, with ascites, was diagnosticated. Incision was four inches. After drawing off the ascitic fluid, a malignant tumor of the mesentery, oblong in shape, in close apposition to a simple ovarian cyst (size of fetal head), was detected. Tapping could not have cleared up this case. Death followed in three days, from exhaustion.

In the second, there was malignant disease of the peritoneum, with ascites. Incision was small. Patient lived about one month.

In the third, there was diagnosed a solid, or semi-solid, tumor of the left ovary, with ascites. Patient was tapped with a view to clear up the diagnosis. A bucketful of fluid withdrawn; the attachment, but not the nature of the tumor, was seemingly confirmed. In some three weeks afterward, exploratory section was commenced, with the expectation of removing the tumor if it should be found to be non-malignant. The general health had been fair, nutrition excellent, and there was nothing to lead to a suspicion of malignant disease within the abdomen, except the presence of the ascitic fluid, and this was clear and not bloody. Incision four inches. The tumor was found to be ovarian and malignant, and minute tubercular particles were scattered over the omentum and intestines. Cavity of the peritoneum was sponged out. No unpleasant symptoms followed. Patient improved in health for several months, the ascitic accumulations reforming very slowly.

She is still living, though very feeble and emaciated, now some sixteen months since the operation.

In the fourth, the case of a lady over fifty, with rapidly failing health, there was suspected malignant disease of the omentum or peritoneum. The physical signs were such as might be expected with a full peritoneal cavity, and short mesentery with intestines held backward. A very small incision evacuated the fluid, and admitted a little finger to explore the cavity. Diagnosis confirmed. Patient lived about one week.

The fifth case I saw with my college assistant, Dr. Zinke, and occurred in a boy about five years old. The abdomen was enormously distended, very slight and indistinct fluctuation being detected throughout. Percussion revealed dullness over the lower and right side, an area rapidly extending. The remaining surfaces were more or less resonant. Considering the size of the enlargement, the general health was fair. The little boy ran around the house, complaining of but little pain, though it was perceptible he was rapidly losing flesh and strength. It was strongly urged to introduce an aspirator-needle for diagnosis, but this proposition was withdrawn, and an exploratory incision, large enough to admit the smallest finger, made. A few tea-spoonfuls of ascitic fluid ran out, and a cancerous tumor, of the size of a fetal head, was found. Death followed in seven days. Post-mortem revealed its attachment to the mesentery in the ileo-cecal region. Tapping or aspiration could have given no accurate information, and might have been fatal.

While all these five sections were made for diagnostic purposes, there was a faint hope, especially in the first and third instances, of finding conditions admissible of a radical operation. Preparations were made accordingly, but with the understanding that the abdomen was to be closed if unfavorable ones were encountered. Death was inevitable in all, save the third, in from a few weeks to a few months.

All experience tends to show that the risk of pure abdominal section for diagnosis, except in such instances as have been referred to, is less than might be expected. Patients with internal cancer have little vitality, and a small

amount of shock is liable to shorten life, if not prove fatal.

As a general proposition, abdominal section is not dangerous in most cases in which it appears justifiable. In many cases with multilocular ovarian cysts, it is less than tapping. In fact, it does away with some of the dangers of tapping, arising from the entrance of the cystic fluid into the peritoneal cavity.

Just so soon, however, as section is followed by much interference, with either the tumor, or the pelvic and abdominal viscera, and especially if the incision for diagnosis is carried to the point of a so-called incomplete operation, does the danger rapidly rise and the mortality increase. In a group of cases, the mortality will be heavier than in completed operations. Hemorrhage, peritonitis, and septicemia are each more likely to occur. Tait well remarks: "The surgeon should most carefully consider what he is about to do before he turns an exploratory incision into an incomplete operation."

Baker Brown mentions eight cases with seven deaths.

Spencer Wells had fifty-two exploratory incisions and incomplete operations with his first five hundred ovariotomies, with nineteen deaths; and thirty-three in his second five hundred, with fourteen deaths; or, eighty-five with one thousand ovariotomies, and thirty-three deaths.

In twenty-eight cases of pure incomplete operations, death was hastened in from eleven to twelve cases in from one to eleven days.

In a certain sense every abdominal section is diagnostic. No man can exactly foresee the conditions to be confronted. Tumors prove to be of a different nature, size, location, and surroundings from what had been anticipated. Supposed innocency proves to be malignancy, and conversely. Every section opens up a new field; no two are alike. In the language of the most experienced ovariotomists: "It is no reproach to a surgeon if, acknowledging doubt, he endeavors to clear up that doubt by commencing his operation with

an exploratory incision." Many sections are needed to make any one proficient in this field of investigation and treatment. The chief reason why, taking the country throughout, ovariotomy and laparotomy for pelvic and abdominal outgrowths have been attended with such unfortunate results is, that, instead of limiting such operations to a comparative few, any one who has dared to operate for anything has considered himself competent to make them.

Generally speaking, it may be stated that, in all seriously doubtful and obscure cases of abdominal and pelvic disease, after other methods of exploration have failed, and when there are severe and threatening symptoms, with urgent indications for relief, the abdomen may or should be opened.

Lawson Tait has now adopted the principle of always opening the abdomen when he finds patients in danger with abdominal symptoms. With health destroyed and life threatened, when there is evidently not malignant disease, but the diagnosis otherwise obscure and treatment uncertain, when something must be done, unless the patient is abandoned to her fate, abdominal section is indicated to determine what exists and what can be done.

As it should not be resorted to for diagnostic purposes until surgical interference of some kind is demanded, preparation for that step should always be taken. This rule, a good one, presents the only difficulty, however, in determining just when such a time arises. The danger is in postponement. If there is anything now well settled in abdominal surgery, it is that much is to be gained and but little lost by an early interference. This is true, not only in ovariotomy, but in many cases of hitherto neglected extra-uterine pregnancy, some of fibroid tumors, etc. Delays find our patients weaker, with diminished vitality, increased complications, and larger tumors. Not unfrequently the golden opportunity is allowed to slip by unimproved. *Early interference* is the *order of the day.*

Abdominal section made, the length of the incision, at first small, enlarged as needed, regulated to the requirements

of the case, and all bleeding having ceased, the operator surveys the whole abdominal and pelvic field to perfect his diagnosis. This should be done, if possible, in all cases, before further surgical steps are taken. The size, situation, attachments of the growth, its kind, nature, so far as practicable, now are to be determined. Can it be removed? Will removal sacrifice life? If removed, will it return? Is removal worth the while? In not a few instances is the correct answering of these questions of paramount importance to the patient's life. Malignancy of formation would, as a rule, contra-indicate any attempts at removal, (*a*) because of the danger, and (*b*) the surety of return.

Again, any attempts, proportioned to their degree, short of completion, are extremely hazardous. Care should be taken not to produce injuries which compel the completion of some uncalled for or unnecessary operation. Life is not to be jeopardized without some chances for a radical cure. Most fatal, also, are those cases in which attempts are made to do what some inability can not complete. Having determined that the case is a fit one for operation, the same is to be pushed until finished.

Diagnosis confirmed, perfected, conditions either favorable or unfavorable are found for the completion of the operation. What has been gained? What may be lost? A clear diagnosis is always a matter of great satisfaction to a physician, and often equally so to friends and patient. Doubt always creates dissatisfaction, uneasiness, and distrust. To be sure, we may have subjected one to a risk which will shorten life, and may soon prove fatal. Very fortunately, as have been shown, fatal issues are largely confined to those already doomed by virtue of their disease. Risks need amount to but little in those within the reach of surgical relief. We are not warranted in shortening the life even of an incurable, but we are warranted in resorting to necessary means to determine whether that life has a curable or incurable affection, and what can be done for her salvation.

Much, then, will be gained, and very little really lost.

I have already indicated, though imperfectly, some of the forms of disease in which diagnostic doubts are most likely to arise, and to which the above-mentioned principles may be made applicable. These diseases may be enumerated as follows:

1. *Ovarian Tumors.*—Seldom, indeed, if ever, is exploratory incision needed for diagnosis in pure, uncomplicated ovarian cysts. Physical signs, carefully sought for and analyzed, are sufficient. Tapping is largely unnecessary, and if ever practiced should be with the understanding that ovariotomy follows immediately, or so soon as the first threatening symptoms manifest themselves.

But ovarian tumors are not always uncomplicated. We find them associated with pregnancy, ascites, peritonitis, intra-abdominal malignant tumors, etc., and they are simulated by peritoneal cancers, encysted peritonitis, mesenteric, omental, and nephritic cysts, and certain subperitoneal uterine fibro-cysts.

Here the history, symptoms, and physical signs, are often unsatisfactory. Tapping may clear up the diagnosis, but it is doubtful whether it should not largely be superseded by abdominal section, at which time advantage is taken of the opportunity for the purpose of surgical treatment.

2. *Certain Interstitial* and *Extra-uterine Fibroids* produce persistent hemorrhage, grow to large dimensions, interfere by pressure with surrounding parts. Life is threatened, and the course of the patient is inevitably downward. The fact that a large proportion of such fibroids cease to grow, after having reached a certain point, and can be tolerated with a fair degree of health the remainder of life, creates the embarrassment as to when is the proper time to no longer depend upon nature, hygiene, and medication. The time does come in a certain proportion of these cases, when, if anything radical is to be done, it ought to be done at once.

Abdominal section enables the surgeon not only to clear up certain unsettled points of diagnosis, but to determine and select which of two procedures, oöphorectomy or hysterec-

tomy, promises the best results. If the tumor is not too large, the ovaries not too far displaced backwardly, or drawn out, choice is given the former; while with very large tumors, non-accessible ovaries, comparatively few adhesions, and conditions favorable for the securing of a fair pedicle, the latter is to be preferred.

3. Certain cases of *Acute* and *Chronic Peritonitis*.—Life has been endangered by the direct shock of the inflammation; it is now jeopardized by its results. The peritoneal cavity is filled with serum, exudations of lymph, rapidly becoming purulent and putrid, and the patient is about to succumb to a new factor in the morbid action, viz.: septicemia. If the cavity can be opened, cleansed, and drained, as we would manage an abscess, we place our patient in a most favorable position for recovery.

4. *Intestinal Obstructions*.—Certain of these cases, arising from various causes, as agglutination of the ovarian stump to the intestine, intestines to themselves, twisted intestine, peritonitis, are almost certainly fatal unless the obstruction can be overcome. Just how soon and how far it is permissible and advisable to interfere by section and manipulation is a very important question. If search is made for a considerable length of time, life is endangered by this alone; yet, if not done, the real obstruction may escape detection. How often an autopsy reveals an obstruction which might have been relieved by a timely intervention?

5. *Chronic Pelvic Abscess*.—A very large proportion of these cases, arising from cellulitis, peritonitis, ovaritis, or hematocele, are, sooner or later, recovered from by the efforts of nature, aided by rest, medication, and artificial evacuation, followed by drainage through the vagina. The objections to tapping these abscesses, whether by aspiration or otherwise, either from below, or through the abdominal wall, are:

1. Danger of wounding the intestines or other viscera.

2. Starting of acute inflammation of the tissues, especially peritonitis.

3. Inability to obtain the purulent accumulation, although symptoms and signs point unmistakeably to its presence, and although it is positively present.

4. Imperfect emptying of the pus sac, consequent refilling of the same, and burrowing of the pus.

If the abscess is situated low, or points downward, and there is a reasonable certainty of evacuation from below by tapping, this is doubtless the best step. But, many times, much uncertainty must remain as to the exact seat, quantity, and even actual presence of pus. Its accumulation never takes place to that degree within the pelvis known in empyema, and the physical evidences, partly on this account, and partly by reason of the surroundings, are not so well defined.

Again, a pelvic abscess, from neglect or otherwise, has discharged itself, though imperfectly, through a long, tortuous, and narrow fistulous tract. The re-accumulation of pus goes on, although constantly discharging, while the patient, harassed by pain, fever, and night-sweats, is steadily declining. In either of these two classes of cases, however desperate the general condition may be—one, in which the abscess can not well be reached, or satisfactorily emptied from below; the other, in which it is imperfectly drained—abdominal section, free irrigation, and thorough drainage, hold out the best promise of relief and cure.

6. *Extra-uterine Pregnancy.*—Abdominal section has changed the whole outlook of many of these hitherto unpromising cases. After the fourth month of gestation, when the size of the fetus would forbid dependence upon such means as puncturing of the sac, or electricity especially, to destroy fetal vitality, laparotomy should be practiced early. Before the sac has further ruptured (which it will almost surely do, if it has not already), in the tubal form; and as a primary operation, in the abdominal, on completion of the full term of gestation, if the child is alive; and as a secondary operation, in prolonged gestations, the child dead, before the manifestation of septicemic symptoms, let the abdomen be opened, the fetal sac emptied and drained.

Exploratory sections are, without question, liable to abuse. Indiscriminate use would be disastrous. If practiced, as a sole procedure, with anything like that degree of frequency that Dr. Frederick Bird admitted, viz.: about forty times, in addition to a few ovariotomies, it would be open to grave objections, and would indicate that our ordinary means of diagnosis were either very defective or carelessly employed.

The number of cases which, after patient and intelligent investigation, remain really obscure, and seriously demand this method of exploration, relatively must diminish, under increasing diagnostic experience and skill. Nevertheless, abdominal section, with perfect propriety, increased satisfaction, and, at times, diminished risk, might be made to supersede, more often than it has, some other methods of exploration, especially tapping. And that it may be utilized in the salvation of the life of not a few cases which have been deemed hopeless is no exaggeration of its value.

Nothing ventured, nothing won.

DISCUSSION.

Dr. G. J. Engelmann, of St. Louis.—I dislike to make any remarks upon a paper of such wide range; but with regard to one point, which I believe to be of some importance, I have a word to say, and that is, the exploratory incision, which has been practiced too little as a means of diagnosis in this country. I do not take it to be intended simply as a means of diagnosis, as we should regard bi-manual examination or similar methods; it is the advance-guard, moving upon the enemy with a strong support, prepared to attack if the chances of success are fair. When an exploratory incision is made, we have arrived at a conclusion with a fair degree of certainty, and are prepared to proceed; but we call this first step of the operation, this incision, exploratory, because we are not positive as to the state of the case; if the circumstances are not favorable we do not proceed. It is really the same feeling, more or less, with which every abdominal section is entered upon—un-

less the diagnosis is perfectly clear, that is, if circumstances are not favorable, to close the wound at once.

I do not consider this exploratory incision so dangerous as tapping. In three cases I have performed the operation against my will. I had intended to operate, but found the conditions so unfavorable that I closed the opening at once, thus turning a proposed operation into an exploratory incision. All three were cases of uterine cancer, in which I had intended to remove the uterus by the abdominal method, and need hardly mention that this was some years ago, before the vaginal method had been accepted. They seemed favorable, the uterus only appeared to be affected, the organ was freely movable; but, upon opening the abdominal cavity, the omentum in one instance showed signs of disease, yet not sufficiently to be felt through the abdominal walls, but was adherent to the uterus. In another case several coils of intestines were in a similar condition. In a third case there was a slight cancerous infiltration of the surrounding peritoneum, all conditions not to be recognized by palpation in women with heavy abdominal walls.

It is an exploratory incision, I believe, which we should rely upon in cases which demand an operation, and in which we are not certain with regard to diagnosis. We may enter upon the operation, and cease at the proper moment if the conditions are unfavorable, and it seems that it is becoming the more general opinion that this is a less dangerous undertaking than tapping; the latest experience proves that it is a more safe, and certainly much more satisfactory method than tapping, which gives us only the contents of the sac without any knowledge of the condition or contents of the abdominal cavity. In this era of antiseptic surgery we need not fear an exploratory incision, provided we are prepared to act in accordance with the conditions revealed—to proceed if possible. I would add that an exploratory incision, to be satisfactory, should be sufficiently large, and that such an incision for *purely diagnostic purposes* is rarely admissible, the possibility of completion of the operation must be given.

Dr. A. Dunlap, of Springfield, Ohio.—I have had no experience with the exploratory incision, because I have not practiced it as a means of diagnosis. It has always seemed to me

that in those cases where I was the least doubtful with regard to the diagnosis, the patients were in such a deplorable condition that an incision of that character, to determine diagnosis and the condition of the parts, would prove fatal. All of my operations have been completed in some way, although some of my patients have died.

Dr. Paul F. Mundé, of New York.—It seems to me that sufficient stress has not been laid upon the subject of exploratory incision in doubtful cases of abdominal disease. We all know of it and read of it, and still I think, perhaps I am wrong, that a majority of laparotomists start with the intention of making a large incision, and after making it are very liable to go on, even if the case is not quite so favorable as was expected. Besides, there is a feeling, among the younger ones especially, that they should not "back out" after they have once begun an operation, perhaps even if they continue it at the risk of the patient. I think that Dr. Palmer has brought a very important matter before us, and that we should do well to remember that an exploratory incision in the majority of instances, a point in which I agree with him most emphatically, is a rather safe procedure, only slightly more dangerous than tapping. We may not only find the condition of things worse than we expected, and so be prevented from going on with a useless operation, but, what is much better for the patient, and perhaps for us, we may find conditions which are much more favorable than we expected. I expect to operate soon in a case of very large myoma, with undoubted adhesions about the diaphragm; I intend here to open the abdomen sufficiently to get my hand in, so that I may ascertain the extent of the adhesions, and not until I have satisfied myself that the removal of the tumor is safe and feasible shall I proceed to do so. I hope, by the exploratory incision, at least to do the patient no more harm than I should by tapping in a case of ovarian tumor.

With regard to the exploratory incision in pelvic abscess, I should hardly call the incision exploratory in these cases, because I do not make an abdominal incision except where the abscess points distinctly through the abdominal wall. I then first aspirate, and, obtaining pus, make a long incision. In this operation I think there is no special danger. I have wounded

several arteries in making such an incision, but have ligated them, and the patients have recovered promptly.

Dr. H. P. C. Wilson, of Baltimore.—After all it seems to me that every laparotomy is an exploratory incision, for I believe that it is rare when an operator opens the abdominal cavity that he finds exactly what he expected to find. I never know what is there until I have made my incision. I am one of those who do not think that exploratory incisions are any more dangerous than tapping. I have lost patients after tapping, but fewer from exploratory incisions. Not two weeks before I left home I made an exploratory incision, where it was impossible to make a diagnosis in any other way, as it seemed to me. I may say that it was a case of amniotic dropsy. The existence of pregnancy at the fifth month had been established beyond doubt; the patient had general anasarca, the abdominal distension was so great that I could not tell whether it was due to ascites, cystic disease of the ovary, or amniotic dropsy. The patient had not lain down for over a month, and was supposed to be dying when I entered the hospital. I opened the abdomen, and found this immense tumor, so that, when I passed my hand in to explore, my arm was carried in above the elbow. I found that the uterine wall was no thicker than that of an ordinary ovarian cyst. I closed my incision, passed my finger through the os uteri and brought on labor, and the patient was delivered of twins the same night. Her pulse never rose above 100, nor her temperature above 99° F., and she went home well in two weeks. I repeat, no man, until he has opened the abdominal cavity, can certainly tell what he will find. Every incision through the abdominal walls, then, is an exploratory incision.

Dr. R. B. Maury, of Memphis.—My experience is limited to two cases in which abdominal section was made as an exploratory incision. In one, the diagnosis had been multilocular ovarian cyst. There seemed to be no doubt concerning it, and the diagnosis was concurred in by three other gentlemen. After the incision was made, it was found impossible to dislodge a piece of intestine which lay in front of the tumor. It was then discovered, on further incision, that the tumor was not ovarian, but a fibro-cystic growth lying between the layers of

the mesentery, which could not be removed. The incision was closed, and the patient lived twelve months after the operation.

The second case was one of a large myoma, which nearly filled the abdominal and pelvic cavities, and the question was, Could the ovaries be removed? On making an incision and exploring the cavity, it was found that the ovaries were so blended with the tumor that it was impossible to perform any operation. That patient also recovered from the incision, but died soon after from a diarrhea induced by imprudent eating.

Dr. A. Reeves Jackson, of Chicago.—Dr. Palmer's paper embraces a very much wider range than this discussion has taken. The latter seems to have been confined to the question of making a choice between exploratory incision and tapping as a means of diagnosis only. Very little has been alluded to, so far, with regard to the main point, and that is, with reference to the application of abdominal section as a therapeutic measure, and especially with reference to the treatment of pelvic abscess. The latter seems to be an extremely bold method of treatment, and I would like to ascertain whether any of the Fellows have had any experience in abdominal section for this purpose. I have not had any such experience, but I hope that some others have, and that we may hear from them.

Dr. Dunlap.—I have had one case of that kind, which had been diagnosticated as malignant disease, also impacted colon. It occurred in the person of a physician, and he was also of impression that it was impacted colon. The patient had been sick four months when he visited me. My diagnosis was psoas abscess distending the abdomen very considerably, and I made a big incision a little to the right of the median line. Fortunately the sac was adherent to the abdominal walls, and I penetrated into the abscess and removed half a gallon or more of fluid at once. Complete recovery followed the operation, and the physician is now practicing in Cincinnati.

Dr. John Scott, of San Francisco.—I have had two cases of pelvic abscess which I have operated upon through the abdomen. The first was due to puerperal inflammation affecting the left lateral ligament. The left knee was drawn up to the abdomen, it was impossible to extend it, the limits of the swelling were well defined, and there was no difficulty in mak-

ing the diagnosis. I called the staff of the California Woman's Hospital in consultation, and proposed to open the abscess through the abdominal walls. At that time but little had been done in abdominal section for the cure of abscess, and the majority of the staff ruled against me. I postponed the operation for several weeks, the patient grew worse, had continued vomiting, diarrhea, and symptoms of septicemia. I then had another consultation, and I said, "The patient will die under these circumstances, and why should we not give her the chances of an operation?" Consent was obtained, and I made an incision and evacuated the abscess. While evacuating it, I found that the bowel had been opened. At the time I felt that if the operation had been performed three weeks previously the opening into the intestine would not have taken place. Within twenty-four hours the patient was comfortable, the vomiting and diarrhea ceased, the opening into the bowel eventually closed, and she made an uninterrupted recovery.

The second case was not so satisfactory. The pelvic abscess, which formed very slowly, showed very obscure symptoms, no distinct rigors, only fluctuating temperature with sweating, but I became convinced that an abscess had formed, and I opened it through the vagina, evacuating a considerable quantity of pus, and expected to give the patient considerable relief, but was disappointed, for on the following day the pulse and temperature rose, three or four days after a severe rigor occurred, and, feeling certain that there was pent-up matter somewhere, I resorted to abdominal incision. After I had opened the abdomen, I found that it was a case of salpingitis, involving the right Fallopian tube. It was originally a case of salpingitis, and the cellulitis was secondary. The parts were densely massed by adhesions. I removed about two ounces of thick, vile-smelling pus, and all I could do was to wash out the cavity and put in a drainage tube, but the patient died on the second day. I felt then that, had I originally incised the abdominal wall, I could probably have saved the patient's life.

Dr. Palmer, in conclusion, said he had offered this paper that it might bring out the full experiences of the members as to the frequency with which abdominal incisions had been made, the attending mortality, and the class of cases in which

it had been practiced. He regretted the discussion had not been fuller. He felt confident that abdominal section had not been utilized to the extent its value warranted; that its mortality was very slight, except when practiced in cases of intra-abdominal cancers. His own experience of five pure exploratory incisions, cancerous diseases being encountered in all, with a mortality of four in from three to thirty days, tended to prove this point, and it accorded with the experiences of others.

Not only did abdominal incision teach us necessary points in the diagnosis of certain cases, which could be obtained in no other way, but it afforded us a special opportunity for surgical treatment. As we were sometimes unfavorably disappointed in meeting with conditions worse than we had anticipated, just so we might meet with such as were better and more amenable to treatment than had been expected. Cases, which before section might have been deemed hopeless, might be found to be within the reach of surgical interference. Occasionally, an abdominal section, practiced for diagnosis, proved beneficial as a therapeutic means, ascitic collections reforming very slowly, or not at all, and tumors being checked in their growth.

Dr. Engelmann.—In the cases to which I referred, those of cancerous subjects, the union by first intention was as perfect as in any other. I should hardly think that exploratory incision in such subjects was more dangerous than in the non-cancerous, as it can only be possible when the disease has not progressed far.

Dr. Palmer.—I based the statement which I made upon my own experience in five cases, four of which terminated fatally within from three to thirty days.