

he regarded the history of the case, and if the woman was a "bleeder" he immediately removed the decidua membranes. He never allowed a placenta to be retained. He had never seen a placental forceps that was of the slightest value. The finger was the best dilator, and the best instrument to remove the membranes.

DR. GREEN, of Kentucky, pursued the immediate course, and gave the history of a case in which he removed the retained membranes in an abortion at four months.

DR. SINCLAIR, of Boston, thought the secundines ought to be removed at the earliest possible moment, and agreed with the author of the paper and with Dr. Chadwick, that manual dilation of the cervix is the best method. When the os is contracted, the fibres will usually yield to the finger in from six to eight minutes.

DR. CARROLL, of Texas, was in favor of the immediate removal of the membranes, and thought that the retention of decidua shreds, or a small clot of blood, may cause alarming hæmorrhage. He would not hesitate to use a metallic dilator, but thought the finger a better instrument.

DR. WATHEN closed the discussion by saying that he advised the use of his modification of Leonard's dilator only in extreme cases in which the finger had been employed without effect.

INTRAPERITONEAL ADHESIONS IN RELATION TO TAIT'S OPERATION.¹

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The following lines are in no way intended to make war on Tait's operation; such a course would be folly on my part. But where there is so much uncertainty as regards diagnosis, treatment, and the *modus medendi* of these operations, any light thrown on the subject from whatever source should be considered worthy of attention. No doubt, when the ovaries or tubes, or both, are so diseased as to preclude all hope of recovery, their removal is indicated. But reading every day the remarkable successes of these operations, even where the uterine appendages are not diseased or at least not materially changed, and that exploratory laparatomies result in surprising improvement, we must therefore search for something more tangible, and more in accord with pathological principles, than the questionable mental impression upon the hysterical woman.

The objective point in this paper is the importance of adhesions inside of the peritoneal cavity. It would be but an old story to call attention to those gross adhesions, those which may glue together any two or more of the intra and extra peritoneal tissues and organs. "The most frequent change is due to a chronic adhesive inflammation (perimetritis, perioophoritis, etc.) Loose or firm pseudo-membranes are stretched out between the posterior aspect of the

uterus and the anterior surface of the rectum, or the sides of the true pelvis. Others glue the tubes and ovaries to the rectum and pelvis or uterus, and in this way the tubes often become bent, or closed, the ovaries become displaced, and often thus become imbedded in pseudo-membranes, and only with the greatest difficulty can they be found," etc. (Orth, *Pathol. Anat. Diagnostic*, 1876.) Of course, any operator understands this, and has seen such cases. In calling attention to those gross adhesions, before coming to the leading point; it is not to offer anything new, but to give a word of caution against such adhesions which, if overlooked, might induce the operator to remove the uterine appendages in cases where there is no need for their removal. I will cite here a case reported by Mr. Tait himself, in the *Med. Times and Gaz.*, July, 1884: "Pains in pelvis since birth of last child. Fluctuating tumor felt in Douglas' sac. Tubal tumor suspected, which tumor turned out to be an accumulation of pus. Laparotomy: an intestinal loop firmly fixed to pelvis. It was freed with complete recovery." I myself observed the following case: F. K. Puella publica, æt. 48, suffered for many years, addicted to morphine, weight about 250 pounds; evening exacerbations 101. Purulent discharges from womb; painful spot as large as two hands in left epigastrium, on percussion over which there was indistinct dullness. Defecation extremely painful, and the bowels could only be moved by strong purgatives. This indeed was the main trouble. Palpation over the parametrical spaces gives a dull and undefined elastic touch. Diagnosis: Pyosalpinx. Operation: Only small area of uterus visible; all around it firm adhesions to the abdominal walls. The left tube, which was then opened by a rectangular incision, was found filled with pus; in the bottom there was an opening large enough to admit the finger, which communicated with the bowels. This fistula was closed and a drainage-tube inserted into the tubal sac. The patient here manifesting symptoms of exhaustion, the operation was terminated. She died in about 12 hours. Post-mortem examination showed the same condition in the other tube. But in addition, all the abdominal and pelvic viscera, the womb, tubes, ovaries, bowels, etc., were found agglutinated to such an extent that it had to be excised entire, when it was found that the intestine was adherent to the tubes in no less than five different places. Although there was a double pyosalpinx, the adhesions of the intestine were the cause of the main sufferings.

Another case which I saw in Dr. Cupples' practice, of San Antonio, is unique in many respects. A German woman, æt. 23, married three years, began to suffer four months after marriage with severe pains in abdomen; she had dysmenorrhœa, the result of a gonorrhœa contracted from her husband. Her menses became more and more scant, until finally the function wholly ceased, when she became a confirmed invalid, being for the most part confined to her bed. She was much emaciated, suffered greatly with painful defecations and obstinate constipation, the bowels moving only with active purgatives. A manual examination revealed very painful abdomen, espe-

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cially in left hypogastrium; womb retroflexed, firmly attached and immovable; cervix atrophied and sacrotuberine ligaments so swollen and thickened as to resemble a rectal stricture.

Laparotomy was performed. A coil of intestine crossed the fundus uteri, and adhered to it. It was detached with some force. Other coils were attached to both sides of the uterus, but were so firmly adherent that after considerable manipulations it was decided to terminate the operation, as farther efforts to sever the adhesions would greatly have endangered the patient's life. Much to our surprise, she made an uninterrupted recovery. All pains disappeared, her bowels became regular, menstruation became normal, and she is now doing her own household work, and fulfilling all the duties of a married woman.

I have selected these cases which might be greatly increased from the daily medical literature, to illustrate the fact that adhesions, especially those involving the intestine, are in many cases the real cause of the trouble, and that they are liable to induce the operator to perform Tait's operation. A limited peritonitis, caused by the introduction of obnoxious or virulent elements through the tubes, may at any point lead to adhesions which might be very slight, yet interfere sufficiently with the functions of the different organs to justify the thought of the operation, and not only bowels, but also ovaries and tubes may easily be disturbed in their action by frail and seemingly insignificant threads. The conclusion to be drawn is obvious. In making Tait's operation, the closest attention should be paid to searching for the above named changes, as it might even happen, that those bands be broken up without attracting the notice of the operator. When the appendages are found healthy or but slightly changed, we should make a thorough examination of every organ, each for itself, which might enable us to find a solution of the mystery in detecting adhesions somewhere where we might have expected them the least.

But the object of this paper goes farther; it is to call attention also to the adhesions inside of the peritoneal cavity, *above the pelvic organs*, and especially between omentum and parietal and visceral peritoneum. A peritonitis once set up, is liable to deposit its poison anywhere within the sac, and to cause circumscribed adhesive inflammation anywhere. This fact, which is well known to the pathologist, has been somewhat neglected by the gynecologist. A woman has an inflammation after dysmenorrhœa or in childbed, not severe enough to claim the dignity of peritonitis. Nevertheless it is such, and after a while, when she has been pronounced well, she will complain of pain in the abdomen, either all over or only in a limited spot, most generally in the left epigastrium. The bowels become flatulent, which may form the main complaint. These symptoms grow in intensity until we are induced to make Tait's operation, when we are surprised to find the uterine appendages normal. Sometimes massage, which we know can cure adhesive inflammation, will give relief.

Looking over our authorities, we find many ingenious explanations for the pain in the epigastrium; by nervous anastomosis, etc., but in reality it is nothing

more than a chronic adhesive inflammation. The flatulence of the bowels is also easily explained by the participation of a smaller or larger portion of their peritoneal covering. By percussion in some cases we can map out the area of circumscribed adhesive peritonitis. It will give a slight dullness, even assume the appearance of a tumor. We can further understand that the peritoneal coverings of liver, spleen and stomach become involved, and in looking through Tait's list of laparotomies, we can readily see that the marvelous cures of liver and spleen affections are the result of unavoidably breaking up adhesions in the attempt to examine those organs. A case, the history of which I will give below, taught me that in some forms of latent peritonitis are strings of lymphatic nature which run between the different surfaces of the peritoneum, and which filaments, I am satisfied, shrink up after death, but during life are the vehicles of lymph or other plastic and irritative material. These lymphatic strings might be the first stage of the adhesive peritonitis, glueing together different structures and surfaces, or they might persist in this form and give rise to many of the most common complications enumerated before.

The history of this case upon which I based my deductions is as follows: A Bohemian woman, married eight years, has had two children, the last three years ago, since which time she has been an invalid. Menstrual function has not been resumed since. Constant pain over the entire abdomen, especially in left side. On examination, womb was found simply atrophied—nothing else. Laparotomy; about two tablespoonfuls of dark serum; uterus very small, ovaries normal, tubes seemingly healthy (afterwards found closed and mucous membrane thickened). Ovaries and tubes were removed, as Tait's operation was intended. Still, however, having my mind on the mentioned peritoneal adhesions, I stated to my friends Drs. Cupples, Tyner, Watts and Kingsley, who very kindly assisted me, that I would search farther up in the peritoneal sac. I introduced my hand under the omentum and swept it over the whole anterior surface of the bowels, repeating this manœuvre three or four times, and each time my hand was *covered with a large number of transparent filaments, resembling cobwebs*. The abdomen was then closed, and the woman made an uninterrupted recovery.

The case which first attracted my attention in this matter, and from which my opinion was formed, occurred in Dr. Cupples' practice, a few weeks previous to the one just reported.

A lady, 55 years of age, presented the usual abdominal symptoms. The so-called ovarian regions were very painful on pressure, and there was a spot above the umbilical horizontal, where there were constant throbbing and cutting pains, preventing her from lying on that side. Had passed menopause. Tait's operation. Tubes and ovaries normal, except a few pea-like cysts in the latter, as formed so often. The hand of the operator was then made to sweep over the bowels for examination's sake. Patient made a good recovery, and experienced immediate relief from the painful spot in her side. In this instance, I could not believe the removal of the appendages had anything

to do with the speedy cure, and concluded that by the manipulation an adhesive process had been broken up.

It might seem unwarranted to draw from so little personal experience such decided and important deductions. However, as it so often happens in Tait's operation, that we find the tubes and ovaries sound, or not sufficiently diseased to account for the mischief, and that their removal cannot explain the speedy relief which follows, I hope in view of these facts, that my observations will be accepted as worthy of consideration. Should these views become verified by further experience, we will then proceed in about the following way: Laparotomy; minute examination of all the pelvic viscera with special attention to adhesions; breaking them up; insinuating hand upwards with sweeping movements between omentum and bowels, and between omentum and parietal peritoneum. These movements have to be made thoroughly, sweeping over all the surfaces, especially the side and spot where was most complaint. Thus a new operation—freeing the peritoneum throughout its entire area—will have been performed, and I hope, with the fullest benefit. Particularly should this operation be tried in young women, to save, if possible, the functions of generation, which consideration should warrant the risk of a second operation, being so little danger in the first one.

As stated in the outset, my object is not to disparage Tait's operation, but in doubtful cases, when we find the ovaries and tubes healthy, let the unfortunate woman have the benefit of the doubt, and let the operation conform to the conditions which are revealed by it.

MEDICAL PROGRESS.

ANATOMY AND PHYSIOLOGY.

THE CHOLERA-BACILLUS.—(In the JOURNAL of June 13th we gave a *résumé* of MR. WATSON CHEYNE'S methods of cultivating the cholera-bacillus. He shows that there are several stages of growth of the cholera-bacillus.) The existence of the straight stage of the cholera-bacillus is of great importance to bear in mind, as it is probably the form which may of the bacilli assume in the intestinal contents in the early period of cholera, and as it would be impossible to recognise them as cholera-bacilli by the microscope alone, more especially when mixed with other bacteria. Hence, the discrepancy between the microscopic estimate and the estimate by cultivation, with regard to the numbers of these bacilli present in any given case, a discrepancy not remarked by me alone, but by several other observers. Indeed, from the very first, Dr. Koch found it impossible to distinguish by the microscope alone, in a mixture of bacteria, these bacilli from "other very similar forms of intestinal bacilli. If now we examine the specimens which have been in the incubator for a longer time (eight to ten hours) we find fewer small bacilli and a large number of larger distinctly curved forms, more especially at the edge of

the drop; and in many instances, these are in pairs, forming the S-shaped form described by Dr. Koch. And there may also be a few spirillar forms, but I have not seen many in that stage. After this time development becomes less marked, and apparently soon ceases; whether from exhaustion of the nutriment or of the oxygen contained in the cell I cannot say, but I think most probably for the latter reason.

If a cultivation in the nutrient jelly be examined after two or three day's growth, at a temperature of 18° C. to 20° C., most of the forms will be seen to be markedly curved, though considerable variation exists, and some almost straight rods may often be found. From a very early stage of their growth in gelatin, they tend to group themselves together, to form little irregular zoöglæa-masses—the highly refracting particles seen in the cultivations with a low power, and likened by Koch to bits of glass; while in the fluid jelly (for they render the gelatin fluid), there are large numbers swimming about very actively. Now in these zoöglæa-masses, the bacilli are, as a rule, very distinctly curved. In those free in the fluid, the degree of curvature varies very much, some, as I have said, being almost straight. In the fluid, there will also be found S-shaped forms, consisting apparently of two organisms united end to end with the curves in opposite directions. In some cases, the union occurs with the curves in the same direction, as in the numeral 3. Longer spirillum-like forms may also be observed, likewise evidently composed of a row of comma-bacilli. If the cultivation be examined after five or six weeks, definite spirillar forms will be seen (how formed, whether from continued elongation and twisting of a single individual, or from fusion of the individual members of a chain, I cannot say). The spirals are uniform in thickness throughout, and do not show any trace of division.

Examined under a high power, (one twenty-fifth oil immersion lens), bacilli are very often seen, which do not stain equally throughout, but in which there may be two or three circular parts in which the stain is different in intensity from that in the rest of the rod. Examined on a dark ground, many of the rods are seen to be somewhat beaded, as is so often observed in other bacilli. It is not always possible to demonstrate this beaded appearance in every specimen of these bacilli, hence it probably depends partly on the amount of stain taken up, and partly on the stage of growth of the organism. Mr. E. M. Nelson also states that he has observed flagella in many specimens of this organism, generally one at each end.

The amount of curvature is, as far as I can judge, dependent to a great extent on the rapidity of growth of the organism. The more rapidly it grows, the shorter it is, and the less marked is the curvature. The more slowly it grows within certain limits, the more marked is the curvature, and the greater the number of S-shaped and spirillar forms. The most perfect specimen which I have seen, where the curve was marked in all the organisms, was obtained from a very slow and imperfect cultivation in jelly, which had not been neutralised, and which was distinctly acid. And I am told on good authority, though I have not yet had time to repeat the observation for