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THE ORIGIN AND TREATMENT
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THE ORIGIN AND TREATMENT OF PUS ACCUMULATIONS IN THE FEMALE PELVIS.*

Pus accumulations in the female pelvis are more frequent than was at one time supposed. They owe their presence to a number of causative influences. Broadly speaking, pus follows in the wake of inflammatory processes, both of local and remote origin, the inflammatory process of local origin being by far the most common. The pelvic cellular tissue is involved either primarily or secondarily, the process in each instance having its special mode of development and each pursuing its own clinical history. The older classification of pelvic inflammations, under the general term of "parametric," was coined to designate an inflammatory process, composite in its character and general in its involvement of the pelvic tissues.

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Thus the metrium, the cellular and pelvic peritoneal tissues were supposed to be jointly the seat of inflammatory involvement, and the results were of graver significance than those which followed a pure and simple cellulitis. The points of difference between the different seats of the inflammatory action were determined with great difficulty, and the clinician could not always be sure whether the inflammation was parametric, or simply confined to the uterus, its cellular investment, or to the pelvic peritoneum.

In the acute stage of inflammatory action, the indications for treatment were so similar that differential points were not essential. But as the acute process subsided and its results were made manifest, it became less difficult to say whether resolution had been complete, whether adhesions had formed, and whether a pus accumulation was the resultant. This latter result at once defined the location of the inflammatory process in the pelvic cellular tissue, and the indications for treatment were more pronounced.

The old theory of parametric inflammation traced the extension of the process from the uterus to its peritoneal and cellular environments by direct continuity

of tissue along the lymph channels. Thus the inflammation began as a metritis, extended to the cellular tissue, and finally involved the pelvic peritoneum.

Recent clinical and pathological studies have shown the incorrectness of these theories in numerous instances, and we now recognize the fact that pelvic pus accumulations have an entirely different origin in the larger number of cases observed, and a very different clinical and pathological history.

When Noeggerath asserted that latent gonorrhœa in the male established pelvic inflammation in the female through a specific influence, the significance of his observations was not fully appreciated. The progress of clinical study has not only sustained this view, but has extended the idea years before advanced by Bernutz that the one salient feature of pelvic peritonitis is salpingitis. This observer demonstrated by post-mortem investigations, that pelvic peritonitis was most often found in those patients who had died with the clinical history of pelvic cellulitis, the real seat of the inflammatory process having been confined to the pelvic peritoneum, associated with tubal inflammation and tubal pus accumulations.

Of thirteen cases of pelvic peritonitis, in nine, one or both tubes contained pus, in two the contained material was tubercular, and in one the peritonitis was due to cancer of the ovary. The cause of the inflammation he found due, in a large proportion of cases, to gonorrhœa, which had travelled along the uterine mucous membrane until it had reached the tubes, and here it had expended its virulence in provoking pus accumulations.

The observations made by Bernutz as far back as 1862, have been strengthened and confirmed by the clinical experience of Tait, Polk, Wylie and others, and the conclusion has been reached that tubal pus accumulations are the chief pathological conditions found in pelvic inflammations. The train of pathological events follows a most natural history, and can be observed in its successive stages until the pus tube is evolved, and even after it has ruptured into the pelvic cellular tissue and made its escape through its selected outlets. Beginning with a traumatism of the uterine mucous or parenchymatous tissues, the inflammation extends along the epithelial route to the tube, or having its origin in septic or gonorrhœal poison, the same route is followed until tubal

inflammation is induced. The inflammatory action may end here by resolution, or it may go on to develop more disastrous consequences. In not a few cases the septic process passes into the abdominal cavity, where local or general peritonitis results, fatal or non-fatal in character, according to varying conditions.

In those cases in which tubal pus accumulations are observed, adhesive inflammation closes the tube at its outer and inner orifices, and the pus, finding no convenient outlet, swells the tube, until it reaches varying proportions or ruptures at its point of least resistance.

Outlets for the pus are made into the uterus, into the peritoneal cavity, or into the pelvic cellular tissue, and in accordance with the route chosen, presents a subsequent clinical history.

The progress of the inflammatory action may follow an acute or chronic course, and it is not unusual to find indications for treatment in the acute stage passed over unobserved and calling loudly for remedial measures when a chronic condition has been reached.

These conditions are observed under different forms and presenting widely different histories and characteristics. If the patient survives an acute process,

she may apparently recover from the severity of the inflammatory action, yet under these apparently favorable circumstances, the tube may have been damaged, adhesions may have formed, and subsequent outbreaks may occur at any unfavorable moment. The statement has been made upon good authority that in pyosalpinx recovery can only be insured by removal of the tubes (Skene, *Diseases of Women* p. 550.) This statement, of course, has reference to a complete and final result, for it is well-known that women may go around with pus tubes, in fair degree of health, for months and possibly years, though at intervals subject to attacks of pelvic inflammation. In one of the cases which I shall subsequently report, I have reason to believe that the pus tube existed for over four years.

Nothing is so sure as that pyosalpinx may have both an acute and chronic course.

In the clinical study of pus tubes, the question of diagnosis presents numerous difficulties. When the tube assumes a sausage shape and feel, its detection is not so difficult, but when the pus sac has become largely distended and fills the entire pelvis, pressing the uterus, bladder and rectum to the wall, literally

as well as figuratively speaking, fluctuation becomes difficult, if not impossible, the walls of the cyst are thickened from inflammatory lymph deposit, and the pelvis appears as hard and resisting as if the uterus and pelvic organs were fixed with plaster of Paris. This condition may be mistaken as readily for an inflammatory induration and adhesions as for a pus sac. Laparotomy here presents the only correct way of establishing the true condition, as it opens up the only successful method of treatment.

The pathological and clinical history of pelvic cellulitis, strictly so-called, differs essentially from that described under the head of pelvic peritonitis, but with which it has been so often associated. In pelvic cellulitis, the inflammatory process is confined to the loose cellular tissue around the uterus, though it may involve the uterine parenchyma and the peritoneal layer. This cellular tissue is found in loose meshes beneath the reflected peritoneum both in front and behind the uterus, at the junction of the body with the cervix. Inflammatory action is aroused in this region, both by traumatic and septic influences. It follows in the wake of operative procedures upon the cervix, as a result of abortion and child-bearing, where lacerations

occur, and by the introduction of specific contagia from the conditions named.

The extension of the inflammation is direct and through the lymph stream and not as in salpingitis, by continuity of an epithelial membrane. The process does not differ from inflammation of the cellular tissue elsewhere. There is first congestion, followed by an effusion of blood serum, and later on exudation of the higher organized constituents of the blood. The process may stop here, resolution taking place with an absorption of the effused material. Finally sup-puration may occur, with destruction of the cellular tissue, sloughing and pus. The pus accumulation may fill the loose space between the uterus and its peritoneal folds and extend until it has made an outlet through into the peritoneal cavity or into the vagina, bladder, or rectum. Its favorite route is through the vaginal wall, into the anterior or posterior vaginal fornix. Should the outlet be ample, drainage is complete and the pus cavity closes by favorable resolution. Where this result does not occur, the accumulation may persist and threaten life by septic absorption or by less favored outlets for its drainage. The pelvic tissues may become honeycombed

by small abscess cavities, and go on to develop a train of symptoms, both persistent and chronic in character. In the vast majority of cases, pelvic cellulitis is an acute process, which only assumes a chronic type when drainage has been imperfect. It differs in this respect most markedly from tubal pus accumulations, and enables one to differentiate the two diseases by this historic feature.

In the treatment of pus accumulations following a pelvic cellulitis, the indications all point to an early outlet for the fluid. Drainage is the one important method, and this may be secured by aspiration, by free incision through the vagina and in rare cases by opening the abdomen, breaking up the abscess cavities, and free drainage through the wound, or by making a conjoined vaginal outlet.

In those long standing cases where the inflammatory process has covered a large area, where the tissues have been honeycombed with abscess cavities, where cicatricial tissue is extensive, and where pus has made its escape through undesirable routes, such as the bowel, bladder and uterus, laparotomy offers the most practical method of disposing of the inflammatory products. I am clearly

of the opinion that the surgeon should attempt to clean out the entire seat of trouble and invite a closure of the excavation by cleanliness and good drainage. He may in this way remove the debris of a slow inflammatory process and secure a positive cure, where invalidism and ultimate death were in course of progress. In my judgment, this latter method for the termination of pelvic cellulitis is infrequent and we will almost invariably find in these cases of supposed chronic abscess following a cellulitis that a pus tube exists in connection with the trouble, either of primary or secondary origin. A laparotomy alone will determine this point, and this is the procedure *par excellence* for this condition.

It may be pertinently asked, what advantages are offered by a laparotomy? I answer, 1st. It presents the only accurate method of determining the location, extent and nature of the pus accumulation. 2nd. It presents the only method for the complete removal of the pus sac and for thorough cleansing and drainage of the region involved. 3rd. It is, comparatively speaking, a safe procedure when properly instituted. 4th. It offers the most reasonable hope of a complete cure of the patient.

With these arguments in support of a laparotomy, one might hastily conclude that the abdominal section was clearly demanded in the treatment of every case of pelvic abscess due to salpingitis. I certainly would not assume such a position as this. In my opinion, pus tubes can and do get well without laparotomy. The pus accumulation in the tube does not differ from a pus accumulation in other localities when adequate and proper drainage is secured for the escape of the pus. Should an opening remain at the uterine orifice of the tube, pus will seek an outlet by this route, or should a favorable route be chosen along the uterine wall and through the vaginal fornix, a similar result would be reached. Drainage is the one important consideration, and it is this factor which determines the gravity of the pus tube or of any pelvic pus accumulation. It is only in the exceptional case that successful drainage is accomplished without surgical intervention, and it is this fact which makes the indications for a laparotomy more conspicuous. That a laparotomy will sooner or later be demanded in the majority of cases of pus tubes, I think our growing experience goes to prove. The question of greatest practical moment, therefore, arises in deter-

mining when to attempt to remove the pus tubes and when to leave them alone. Just here professional opinion may arrange itself in two opposing ranks, neither of which is actuated by conservatism and matured reflection. One faction may hastily seize the knife and remove every pus tube which is found ; the other faction may undervalue the claims of a laparotomy and allow cases suitable for this procedure to perish without an attempt at a curative measure. Both factions are wrong. The intermediate ground is safely reached if symptoms, clinical history and surroundings are carefully studied and weighed. It is just as sure that we can wait too long before doing a laparotomy, as that we can operate too hastily. In my judgment, these cases require careful study and a conscientious regard for pronounced indications before we jump into them. Unless the inflammatory process is so pronounced and the pus so apparent and its presence so threatening as to demand prompt and decisive action, the surgeon should wait and employ palliative methods of treatment until positive indications arise. These indications are found upon a careful study of the history, symptoms and physical condition of the patient. The history of the case will

present an explanation of the origin of the trouble, in traumatic or septic influences; the symptoms will reveal severe pelvic pain, high and fluctuating temperature, loss of appetite, night sweats, emaciation and general adynamia and cachexia; the physical examination will reveal the area of tenderness on pressure, the character of the local swelling, the presence of the distended tube in many cases, and other positive evidences of pus cavities. When these indications are present, the time for a laparotomy has been reached and should be carefully approached without too great delay, otherwise the pus tube may rupture and routes be chosen for drainage which will complicate the removal of the tube at a later day. Success comes in the management of these cases in seizing the opportunity at the right moment and before the pus tube has established such relations to the surrounding tissues as to make its removal both dangerous and most difficult.

The two cases which I shall now relate will explain this point with more accuracy than descriptive language.

CASE I.—Annie J., æt. 27, married, was admitted into the Good Samaritan Hospital on July 27, 1889, suffering with intra-pelvic abscess of over four months

duration. Her condition at this time was deplorable. She was emaciated to a mere skeleton, was greatly debilitated, with temperature ranging from 101° to 103° , quick and feeble pulse, profuse night sweats, severe pelvic pain, colliquative diarrhœa, cystitis, her stools and urine largely made up of pus. Physical examination revealed a chronic pelvic inflammation and pelvic abscess, which had opened into both rectum and bladder, had burrowed through the abdominal muscles, and was about ready to open through the skin in the median line.

Previous History.—The previous history was involved in obscurity, but the following facts were obtained: She enjoyed excellent health up to the time of marriage, in February last. Shortly after marriage she had a severe vaginitis (gonorrhœal?), which was followed by pelvic inflammation. The disease had continued until the present condition had been reached.

The diagnosis made was salpingitis, of gonorrhœal origin, resulting in pelvic peritonitis and pelvic abscess.

Treatment.—The condition of this patient was so depressed that I seriously hesitated whether I should allow her to die without operative interference, or do

a laparotomy and take the chance of a result. I finally decided to open the abdomen and drain the pelvic cavity. On August 2, she was anæsthetized and a free opening made through the skin into the subcutaneous pus cavity. Pus in large quantities freely discharged through the incision. Introducing the index finger, the pelvic cavity was found honeycombed with pus cavities, walled in by lymph deposits, adhesions and disorganized tissue. Deep down in the pelvis a pus tube was found packed in between the uterus and rectum, distended with pus. It was adherent in every direction, and in attempting to enucleate it its walls gave away and pus was freely discharged into the pelvis. It was removed without much difficulty, though somewhat torn in the attempt.

The rectal opening was in free communication with the abscess cavity, and fecal matter was found in it. The abdomen was thoroughly washed and a drainage tube left in for subsequent cleaning and drainage.

The patient rallied after the operation and on the following morning her temperature had fallen to 99°, her appetite was fair, pain was absent, bowels loose, but general condition favorable.

The pelvic cavity was washed out

carefully, two and often four times within twenty-four hours. Some pus, serum and fecal matter came through the drainage tube at each washing. Her temperature never rose above 99°. She took milk freely, suffered no pain, and had no vomiting. The diarrhoea continued until her death, on the 8th day from asthenia.

Remarks.—The condition of this patient prior to the laparotomy gave little or no encouragement for this procedure. It was a forlorn hope which stimulated me to attempt to do something to relieve suffering, alleviate symptoms and save life. Could this patient have been operated on prior to the rupture of the tube into the rectum and bladder, and before she had been reduced by prolonged suffering and emaciation, her life could have been saved. The abdominal section conferred a marked relief to her and she would, in my judgment, have recovered, if she had had greater recuperative power.

CASE II.—B. S., æt. 27, married, no children, one abortion and one miscarriage. Abortion took place at the age of 16, at which time she was ill for several weeks. Health fair until the age of 19, and good from this age until 22, when she miscarried, which was followed

by pelvic inflammation. Her health has not been good from that time until date of present history. About the middle of August of the present year, she took cold during menstruation, which resulted in a complete suppression, followed by pelvic peritonitis.

When admitted into the Good Samaritan Hospital, on August 27, an examination revealed the following condition: Temperature $103\frac{1}{2}^{\circ}$, pulse 100, respiration 30. Abdomen very tender, swollen and distended. Uterus firmly packed in pelvis and pushed towards the symphysis by a mass of exudation in Douglas's cul-de-sac. There were no appreciable signs of pus.

Diagnosis.—Pelvic peritonitis, most probably of tubal origin.

The treatment employed was rest, hot vaginal douches, hot poultices over abdomen; in other words, the so-called antiphlogistic and palliative treatment for pelvic inflammation. Under this regime the temperature fell to 100, pain grew less severe and general condition improved.

Upon my first examination I was strongly impressed with the necessity of making an abdominal section, but decided to try the method above indicated until more positive indications for a lap-

arotomy were presented. After three weeks of observation and tentative treatment the opportunity arrived which in my judgment demanded the abdominal section. Pain, high temperature and evidences of sepsis returned, the general condition grew worse, and I decided to open the abdomen for a clearer diagnosis, for drainage and for removal of the pus tube, if practicable.

On Sept. 23, the patient was anæsthetized and the abdomen opened in the median line. Evidences of general peritonitis were soon encountered. The omentum and intestine were adherent in numerous points to the abdominal peritoneum, to the uterus, bladder and tubal cyst. The omentum was deeply injected, tumefied and covered with flakes of lymph. The small intestine presented a deep purplish hue, and in places was injected and tumefied. At other points it was bound up in loose, friable adhesions. The uterus was pressed up against the bladder, and impacted in the pelvis between the uterus and rectum was an enormously distended pus tube, over 3 inches in its diameters, adherent at every point to neighboring parts. The adhesions were for the most part easily broken from their attachment and the tube was shelled out of its posi-

tion by repeated efforts. It was ruptured in this effort, and a pint or more of creamy pus was poured out through the abdominal wound. The tube was finally removed, save that portion attached to the uterus, which tore asunder from the tubal wall, leaving an opening at this point in the contour of the tube. The pelvic cavity was thoroughly washed clean after the removal of the tube and loose particles of lymph, omentum and tissue were carefully picked out. The abdominal wound was closed, save at the lower end, in which a glass drainage tube was inserted. The patient was greatly depressed by the operation, but rallied by the next morning. Nausea and vomiting were incessant. She was unable to take food until after the 7th day, and was supported entirely on champagne and Apollinaris and ice water. Milk and beef-tea induced vomiting the moment they were swallowed. The drainage tube was kept washed clean, but nothing but a small quantity of bloody serum escaped from it. It was withdrawn on the 5th day, and a small glass stem substituted for it to keep the abdominal wound open.

Up to the morning of the 6th day, the patient had taken no nourishment except champagne. Her emaciation and weak-

ness were beginning to be alarming. With a view of sustaining her, I ordered an enema of tepid milk. This was injected slowly and carefully, and yet to my horror, on dressing the wound in the afternoon, I found milk with flakes of fecal matter coming through the opening. In plain English, the rectum had given away and a communication established between this viscus and the intra-pelvic cavity from which the pus tube had been removed. With a fecal abscess, the complications of the case were increased and the prognosis took a most gloomy turn. I however washed the wound carefully, kept the patient on liquid diet, and by the third week had the satisfaction of seeing the fecal tract close spontaneously.

The patient made a satisfactory recovery, and was out of her bed by the end of the fifth week. Her temperature after the operation never reached above 100° . It ranged between $98\frac{1}{2}^{\circ}$ and $99\frac{1}{2}^{\circ}$, until her recovery.

Remarks.--The two cases here related teach the importance of an early operation in these conditions.

In Case I, the patient came under my care after the pus had made outlets through the rectum and bladder, and when she had reached such a deplorable

condition as to defeat the advantages of better methods of drainage.

In Case II, I came very near waiting too long before doing the laparotomy. Out of deference to conservative methods of treatment, and in view of her general condition and at that time unfavorable surroundings, I deferred the abdominal section longer than in my judgment was prudent. I came very near losing this patient through delay. Whilst we may err in operating too soon, we may more certainly blunder in waiting too long for more pronounced indications.

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