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Hyperplastic Salpingitis and
its Operative Treatment
by Drainage

BY

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COUNTY, THE GERMAN, AND THE EMERGENCY HOSPITALS, CHICAGO, ILL.

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HYPERPLASTIC SALPINGITIS

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By CHRISTIAN FENGER, M.D.,

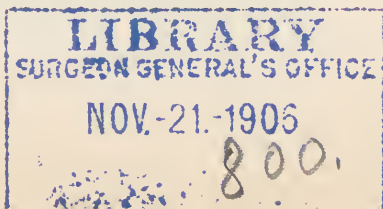
PROFESSOR OF CLINICAL SURGERY IN THE COLLEGE OF PHYSICIANS AND SURGEONS OF CHICAGO, AND IN THE CHICAGO POLICLINIC; SURGEON TO THE COOK COUNTY, THE GERMAN, AND THE EMERGENCY HOSPITALS, CHICAGO, ILL.

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SUPPURATIVE inflammation of the Fallopian tubes was, until the beginning of the last decade, not studied in its details either as to etiology or as to pathological anatomy. The typical pyosalpinx—a closed, dilated tube filled with pus, effecting rupture into the peritoneal cavity, and peritonitis, or extension to the surrounding organs, and local pelvic inflammation, with or without abscess formation—was then regarded as a common form of the disease.

A. Martin first called attention to the fact that in some cases of salpingitis there was no dilated tube filled with pus, but a thickened wall surrounding a normal or narrow lumen in which only a slight amount of secretion was contained. We owe to Martin, to a great extent, (through work by himself and his pupils) the detailed knowledge of to-day of the pathological anatomy of suppurative salpingitis. Kaltenbach, in 1885, described a case of gonorrhoeal salpingitis, with stenosis of the canal and consecutive hypertrophy of the muscularis. The patient had suffered from attacks of excruciating pain preceding menstruation; she would roll on the floor and cry out loud, would scream like a maniac. The right extirpated tube was as thick as a finger, and rigid, the fimbriated end was closed, and the narrow canal contained

¹ Read by title at the International Gynecological Congress, at Brussels, September, 1892.



only a little blood. The thickness of the wall was due to an enormous hypertrophy of the muscular coat. Kaltenbach explained this muscular hyperplasia as a result of overwork of the muscular coat of the tube in trying to evacuate the contents into the uterus through the stenosed portion of the tube. Kaltenbach had expected to find a typical pyosalpinx, and was surprised to find no dilatation of the lumen of the tube.

Orthmann, in an excellent paper on the pathology of the tubes, using the material from A. Martin's private clinics, and A. Martin, in a paper read in Berlin, in 1886, state that thickening of the wall of the tube is commonly found in chronic salpingitis and is due to a diffused granulated infiltration of the whole wall of the tube; rarely to hypertrophy of the muscular coat.

From an anatomical point of view Martin made a distinction between catarrhal, interstitial, and follicular salpingitis.

In endosalpingitis catarrhalis, the mucous membrane is thickened by small-celled infiltration below the undestroyed epithelium.

In interstitial salpingitis, the whole wall is the seat of the infiltration, the tube is hard and stiff, and thick as a lead-pencil or a finger.

In follicular salpingitis, the tube is elongated, tortuous, not dilated, and contains a small amount of mostly serous, often bloody, fluid. The wall of the tube is thickened sometimes to one and a half or two centimetres, is rigid, and does not collapse when the tube is cut across. The thickening of the tube is due to small-celled infiltration and young connective tissue that separates the muscle bundles and contains dilated vessels which are either empty or filled with blood, sometimes to such an extent as to rupture and cause small ecchymoses. In the wall are also to be found small abscesses and cystic spaces. A plastic peritonitis unites the tube with all its surroundings, intestines, uterus, and walls of pelvis, and makes the convolutions of the contorted tube adhere to each other.

so as to form a tubal tumor, as it is often termed. This tumor is from the size of a hen's egg to that of a fist, and consists of the convolutions of the diseased tube united into one mass, in which the canal runs as a labyrinth which is hard to unravel even on a careful post-mortem dissection. The lumen may be locally narrowed so as to admit only a hair and may be surrounded by dilated round spaces.

I will first describe a typical case of this kind, treated in the usual manner by extirpation:

CASE I. *Synopsis*.—Gonorrhœal infection eleven years ago; symptoms of salpingitis over ten years ago, increasing in severity; considerable aggravation for the last year and a half. Extirpation of the left tubal tumor by laparotomy; recovery.

History.—Mrs. A. F. A——, of Chicago, twenty-nine years of age, married, does her own housework. She has been married nine years, has no children, and has had no miscarriages. Menstruation commenced at the age of thirteen and was regular till sixteen, when it disappeared for a time after bathing in the lake. During this time she had diphtheria and was sick in bed for five weeks. At the age of eighteen she was exposed to gonorrhœal infection and a purulent discharge from the vagina followed, which remained for years. An attack of typhoid fever was followed by weakness for one year. After her marriage, at twenty, menstruation became copious and was accompanied by intense pain in the back and hips. One year and a half before her marriage, while lifting a heavy trunk, she felt a sudden pain in the left inguinal region, followed by chills and fever, confining her to bed for two months. After this there would be some pain in the left lower abdomen now and then, sometimes extending over to the right side, and she never since has regained her full health. During the last ten years the pain would occasionally increase so as to force her to stay in bed for some days about once every two months. In the fall of 1890 a more severe at-

tack of pelvic cellulitis came on, with chills and fever, pain, tenderness, swelling of the lower part of the abdomen, and frequent painful micturition. She was in bed for six weeks, but remained disabled from persisting pains, weakness, and nervousness. In May, 1891, a similar attack kept her in bed for two weeks. Her family physician, Dr. Otto, of Chicago, finding a tumor to the left of the uterus, sent her to me for operation in June, 1891.

On examination I found the patient somewhat pale, moderately well nourished, with the organs of the thorax and upper abdomen normal. No fever. There was pain in the pelvis minor, chiefly on the left side, aggravated by walking or being on the feet much, which incapacitated her for domestic work.

Examination of the abdomen revealed tenderness above the symphysis, most pronounced to the left, where a tumor was felt. Vaginal examination showed the uterus displaced somewhat to the right by a tumor the size of an orange; it was even on the surface, hard, not fluctuating anywhere, located in the left broad ligament high up and connected with the left side of the uterus, so as to permit of only slight mobility between them. There had never been any discharge of pus from the rectum, and rectal examination showed no softer points on the posterior surface of the tumor. Puncture by a fine aspirator needle through the vagina brought from high up, about a teaspoonful of pus, and was followed by fever for twenty-four hours.

The diagnosis was pyosalpinx gonorrhœica buried in pelvic exudate, and extirpation, or rather exploratory abdominal section, was advised.

Operation, June 22, 1891, in the Emergency Hospital. —A median incision was made from the symphysis to near the umbilicus, and a transverse division of the rectus muscle was made low down. I found a tumor the size of an orange, covered with omentum, after detachment of which, enucleation was effected with some difficulty by the

fingers. The tumor finally came out as a mass, no pedicle was found, and a number of vessels had to be ligated subsequently. The right ovary and tube were found to

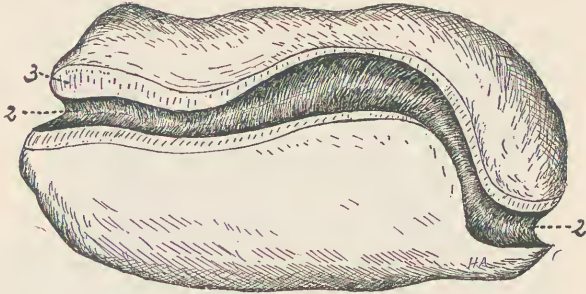


FIG. 1.

be apparently healthy, and were not removed. It was impossible to cover the rather extensive bed from which the tumor was enucleated, with folds of peritoneum from

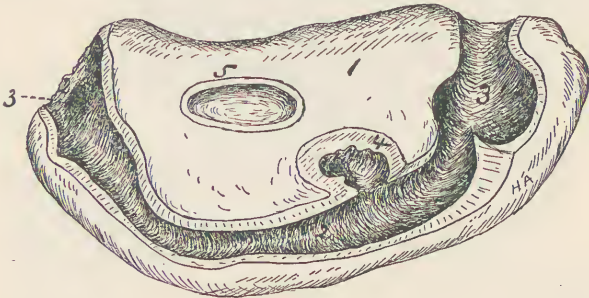


FIG. 2.

the broad ligaments; therefore drainage with iodoform gauze surrounding a glass tube was employed.

For three days after the operation there was slight ele-

vation of temperature to 101.5° F. and some vomiting, but at the end of the third day the symptoms subsided. The day following the operation the patient asked for



FIG. 3.

beer, which she kept down, and she took from one to three pints of beer a day during the first week, while milk, tea, and other liquids were vomited up. The glass drain was removed on the fourth day, and the gauze drain on the twelfth day, and she left the hospital five weeks after the operation.

Her present condition now, one year later, is perfectly

satisfactory, as shown by an examination on August 19, 1892. She gained some twenty pounds in weight in the two months succeeding the operation, and has retained that weight since. Menstruation reappeared in the third month, and has been regular and painless ever since. Sometimes she feels slight pains low down in the pelvis, but these are only transitory. She can be on her feet all day and do her housework, except the washing. Co-

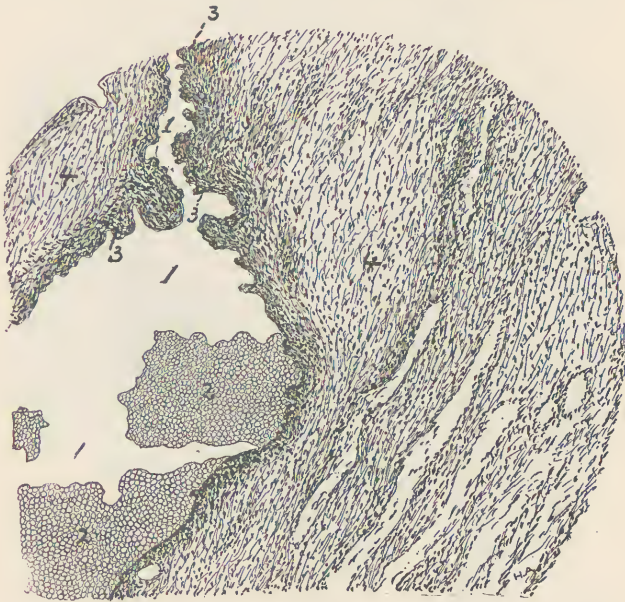


FIG. 4.

habitation is only occasionally accompanied by slight pain, and in general she thinks that her health is better now than it was even before her marriage.

Description of Specimens.—Microscopic appearances,

vide Figs. 1 and 2. The extirpated tube forms a globular tumor the size of an orange, one side convex, the other more flattened. On the convex side and along the borders are seen longitudinal ridges the thickness of a finger,

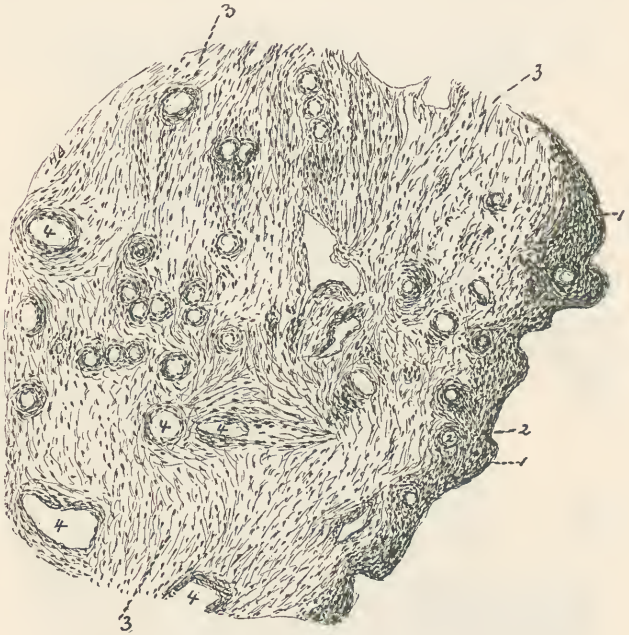


FIG. 5.

forming a bas-relief on the surface, running in curves interwoven with one another. These are the convolutions of the elongated, thickened, and contracted tube, which have been united by connective tissue into one globular tumor. Incision along the top of the ridges shows the thickened wall of the tube, and leads into the open, not much dilated, canal that remains patulous when

opened into longitudinally or divided transversely, on account of the rigid condition of the thickened wall. The canal contains a slight amount, less than a teaspoonful, of pus or muco-pus. The tumor is not of uniform calibre but with round spaces alternating with narrower spaces, especially on the convexity of the curves of the convolutions. The abdominal end of the tube is closed and buried in the mass of the tumor. The ovary I could not find. The uterine portion of the tube is dilated and pre-



FIG. 6.

sents as a round opening on the flat surface of the tumor, where it has been torn across during the enucleation. The thickness of the wall of the tube varies from 3 mm. to 1.5 cm.

Microscopical Examination (Figs. 3, 4, 5, and 6).—The peritoneal portion shows thickened peritoneum in the shape of a layer of old fibrillary connective tissue. Below this, in the subperitoneal tissue, are numerous lymph spaces partly filled with, but all of them surrounded by, a layer of granulation cells or lymphoid cells. This shows a chronic subperitoneal lymphangitis. After this comes a layer of young connective tissue, rich in cells, with thickened vessels and small-celled infiltration in many of the perivascular spaces (chronic periphlebitis). Below this thickened peritoneum and subperitoneal tissue the muscularis is seen. It is not particularly hypertrophic, neither are the muscular bundles separated by layers of young connective tissue to any appreciable extent. In the wall inside of the muscularis is an irregular cavity, *vide* Fig. 2, filled with pus or mucous matter, as seen in the coagulum adherent to its wall. The wall consists of a layer of embryonal tissue with the cells so numerous as to permit almost no stroma to be seen between them. I am uncertain whether this cavity is an abscess in the wall of the tube, or an occluded space of the irregular lateral sinuosities of the lumen, on the mucosa of which the epithelium has been destroyed. Both of these conditions—miliary abscess and occluded spaces—are found in the walls of such tubes (Martin). The submucosa is the next stratum, and consists of a very thick uniform mass of young connective tissue with spindle-shaped cells. It is rich in small and large vessels, the walls of which, arteries as well as veins, are thickened. The vessels are not dilated, but in a number of perivascular spaces are seen groups of leucocytes, showing that inflammation is going on, or at least a formative process tending to increase of the hyperplasia of the wall. The inner and last layer is the mucous membrane, or what is left of it. The epithelium has disappeared and the mucosa appears like a heavy layer of embryonal tissue packed with leucocytes or lymphoid cells. A considerable number of large, thin-walled vessels, probably dilated capillaries, filled or distended with blood, give the tissue

an almost angiomatous appearance. In some places the dilated vessels have ruptured, and islands of extravasated blood are found. Between the dilated and filled vessels numerous empty capillaries are also seen. There is an enormous vascularity in this innermost layer of the tubal wall.

This specimen represents an average form of chronic salpingitis. The whole wall of the tube is thickened in the majority of cases. Orthmann found it to be so in all of his eight cases of "salpingitis purulenta." But he also found it in at least eight of his nine cases of "salpingitis catarrhalis." Looking carefully over the detailed description of Orthmann's nine cases of salpingitis catarrhalis and the following eight cases of salpingitis purulenta, I am unable to see any difference in the anatomy of the diseased tubes, and I do not understand how he differentiates between the two forms. In both classes of cases we find the thickened tube either straight and not elongated, or elongated and convoluted, the convolutions uniting to form a tubal tumor.

A. Freund has probably given the best explanation of the fact that the tube in some cases takes on the straight and in others the convoluted form. In his beautiful investigations of the development of the Fallopian tubes in intra-uterine and after-life he found not infrequently an arrest of development on one or both sides in adult females. He found the tube as follows: A short, narrow, uterine portion, followed by two to four convolutions, which were sometimes spirally contorted so as to form a number of multiple loops, like the old post horn. This is the shape of the tube normally found in the fœtus and newborn child, and when found in the adult signifies that the tube has been arrested at an early stage of development as far as the change in shape is concerned. Freund points out that a tube of this shape is less liable to empty its contents than a normal straight one. This condition consequently predisposes to retention of secretion, and makes the tube, when injected with gonococci

or pus microbes, less apt to pass through an attack of inflammation spontaneously.¹

It is natural to suppose that a tube of the shape described by Freund, when infected, would easily be transformed into a tubal tumor, as was the one described in my case.

N. Savinoff has described a well-marked case of a thickened non-contorted tube. He names the disease "salpingitis chronica productiva vegetans." This name, although somewhat long, is a correct one, but it does not apply to a singular or rare form of salpingitis, as his case does not differ from the common chronic salpingitis as described by Martin, Kaltenbach, Orthmann, Cornil and Terrillon (salpingitis purulenta), Gottschalk, and others. Boldt, in a short and excellent paper on the pathology of the tubes, uses the term interstitial salpingitis, as first proposed by Martin. Orthmann attempts to make a rigid distinction between salpingitis purulenta and pyosalpinx. The pyosalpinx is a dilated tube filled with pus, and requires for its existence closure of the ostium abdominæ or a stenosis somewhere in the canal. He regards pyosalpinx as the first stage of a purulent salpingitis where the mucous membrane is destroyed by pressure and the remainder of the tubal wall thickened. I have extirpated more than once a typical pyosalpinx where the epithelium was well preserved and the wall of the dilated tube little if at all thickened.

It seems to make little if any difference whether the pyosalpinx is due to infection with the gonococcus or with the pus microbe. In Orthmann's eight cases of salpingitis purulenta the origin was found to be gonorrhœa in three cases and puerperal infection in three cases, and there was no particular difference in the pathological anatomy of these tubes.

In the treatment of salpingitis it must be borne in mind that the majority of cases recover under conservative measures—rest, antiphlogosis, and so on. Martin

¹ Freund's tables, Figs. 14 to 18.

states that in his series of 287 cases, over four-fifths recovered without operation. But the minority of obstinate cases that have proved refractory to conservative treatment, require operation.

Abdominal extirpation of the diseased tube, as inaugurated by Lawson Tait, is to-day in the hands of the profession all over the world. The removal of a pyosalpinx or a tubal tumor is sometimes easy, but often difficult, and in some cases absolutely impossible. The difficulty and consequent danger depend mainly upon the relation between the tube and the intestines. Adhesions to the sigmoid flexure or to loops of small intestine may be so extensive as to render it impossible to loosen the intestine without rupture of its wall. Perforation of the pus cavity into the bowel and a communication between them, characterized by periodical evacuation of pus through the rectum, is another danger, and is, in my opinion, so grave as to contraindicate abdominal extirpation. It is probably more often a peritubal abscess than a perforated dilated tube that opens into the bowel.

A peritubal abscess, with the thickened tube adherent to or embedded in its wall, has been removed *in toto* with the diseased tube, in a number of Martin's cases.¹ Martin says that verhängnissvoll, the cases with extensive intestinal adhesions or perforation into the intestine, are severe or difficult. In 3 out of 12 deaths from a series of 61 operations this complication was found. Martin regards the danger of infecting the peritoneal cavity with pus from a tube ruptured during extirpation, as less than the danger from extensive adhesions to the intestines. Leopold, who in 1886 operated on 5 cases, with 3 deaths, met with a case where after the removal of the right appendages he found it impossible to remove those on the left side. He fears, besides the infection from the tube, hemorrhage from the severed adhesions. Martin, at the Congress in Copenhagen, stated that he had met with cases

¹ Orthmann, cases 12, 15, and others.

where extirpation was impossible, and considered the operation more grave than the removal of ovarian tumors.

It is of little practical value to consider the mortality of removal of diseased tubes by laparotomy, because of the above-mentioned difference in the cases.

Westermarck gives a mortality of eight per cent. from 489 operations reported by eight operators. Gusserow had 1 death in 31 cases; Wylie 2 deaths in 14 cases, both of which were in a series of 8 cases of pyosalpinx; Rosthorn 2 deaths in 40 cases—the cause of death in both cases was overlooked injuries to the intestine during the extirpation; Martin had 12 deaths in 61 operations, in 3 of which, as above stated, intestinal complications were present; Boldt 8 deaths in 112 cases; Kümmel 1 death in 10 cases; Pozzi 1 death in 26 cases; Keith no deaths in 33 cases; Leopold 3 deaths in 5 cases.

It is easily seen that the mortality varies with the character of the cases operated upon, and that the most skilful operator will have a higher mortality when he happens to meet the more severe cases, and when removal is effected in spite of the difficulties in the given case. To draw the line where removal should be abandoned as too dangerous, is a clinical problem for which no rule can be laid down.

What can be done or has been done in the cases that have been abandoned as impossible? Martin advises that the opened sac be closed after drainage is established down into the vagina. This method of operating is applicable only to the cases where a pus-containing cavity, dilated tube, or abscess, exists. As above stated, there is no such cavity in many cases. Drainage of the tube through an opening in the vagina is proposed by Mundé as the primary operation to be attempted when the tube is accessible from below. Mundé states as follows: "I have had a number of these cases and by persistence and perseverance have succeeded in curing them, although the drainage-tube had to be worn for a number of months."

This operation is applicable only to cases where a

cavity filled with pus is present. It will be impossible to enter from the vagina the comparatively narrow canal of a tubal tumor in a hyperplastic salpingitis.

Drainage of a non-dilated tube can be obtained from the abdomen with beneficial results, as is shown in the following case:

CASE II. *Synopsis*—Gonorrhœal infection two years ago; nine months ago increase in endometritis; seven months ago pelvic cellulitis terminating in abscess, aspiration through the vagina; three months ago opening of abscess into the bowel; periodical evacuation of pus per anum; abscess inaccessible from the vagina. Laparotomy; no pus found; operation in two tempos; opening and drainage of the non-dilated tube; recovery.

History.—Mrs. A. W——, of Sheboygan, Wis., entered the German Hospital, November 12, 1891. She is twenty-eight years of age, married eight years. No hereditary disease in her family; both parents are alive; she has ten brothers and sisters, all in good health. As a child she had measles and scarlatina, otherwise she was always healthy. Menstruation commenced at the age of fifteen, was always regular. She was married when nineteen years of age, has three healthy children—seven, six, and three years of age. Her husband had gonorrhœa two years ago, and transmitted it to his wife, who suffered from the usual symptoms of an acute attack of the disease. Nine months ago, in February, 1891, there came on an increased purulent discharge from the vagina. It would lessen after menstruation, which continued to be regular as to time and quantity, and was never accompanied by any unusual amount of pain. Seven months ago, in April, 1891, she was taken with chills, fever, and pain in the left hypogastric region, and had to go to bed. Three days later a profuse discharge of pus from the vagina came on, as she states, suddenly, and then the fever decreased somewhat, but the pain and tenderness forced her to stay in bed. After a few weeks the fever again increased, she became emaciated, and the lower part of the abdomen

became swollen and hard. About the end of May, a physician opened an abscess through the vagina, without an anæsthetic, and evacuated over one quart of pus mixed with blood. Toward the end of June she got out of bed and was around for about two weeks. The pain, however, returned and made her go to bed for days at a time off and on. The growth in the lower abdomen had disappeared when the abscess was opened, but when the pain returned she again felt a tumor in the left hypogastrium, smaller at first, but later increasing in size to that of a cocoa-nut. In August, 1891, she began to notice periodical evacuations of pus through the rectum, followed by a decrease in the pain and in the size of the tumor. In September and October she passed most of the time in bed. The abscess would discharge through the bowel two or three times a week. The swelling increased to the size of a child's head and the pain became more intense toward the end of two or three days, then during the night the pain would disappear, the swelling decrease, and in the following evacuation of the bowels a noticeable quantity of pus could always be found. She never noticed any difference in the fever at such times. This condition continued till the time I first saw her.

Present Condition.—She is rather emaciated, the muscles of the extremities being flabby; face pale, pulse 100; temperature, 99° F., in the evening, normal in the morning. Heart and lungs normal. The urine contains no albumen nor sugar. Examination of the abdomen reveals a tumor in the left hypogastric region, which extends from the symphysis pubis upward for three inches, and from the median line four inches outward into the iliac region. The tumor is round, hard, apparently solid, slightly tender on pressure, and has a smooth non-nodulated surface.

Vaginal Examination.—The vaginal portion of the uterus is pushed to the right side, but is at a normal distance from the introitus. On the left side of the vaginal portion, and high up, is felt a hard, immovable mass, fill-

ing the upper portion of the small pelvis. The upper part of the neck and the body of the uterus cannot be felt as distinctly separated from the tumor, and the uterus is immovable in all directions. Bimanual palpation reveals no fluctuation or softer portions of the tumor, and immobility, or only a very indistinct mobility of the whole mass.

Rectal Examination reveals the hard, non-nodulated tumor behind and to the left of the uterus, high up in Douglas's fossa. No signs of a perforation opening can be found between the rectum and the tumor, which is only moderately tender to pressure on its lower surface. Neither ovaries nor tubes can be felt.

Diagnosis.—Pyosalpinx on the left side, and probably an abscess in the left broad ligament communicating with the intestine above the rectum.

Plan of Operating.—I wished to drain the abscess cavity. This was inaccessible from the vagina, as it was situated high up behind the uterus; it could probably be reached from above the symphysis without opening into the peritoneal cavity. If there was a free peritoneal cavity anterior to the abscess, I wanted to open in two tempos. I did not intend to extirpate the tube at this time, on account of the communication with the bowel; but I intended to close the abscess by drainage, and then, if needed, later on, when inflammation had subsided, to remove the offending appendages. I further waited for a day when the abscess cavity might be expected to be distended by pus, in order to make it more easy to find by an aspirator syringe the place of the abscess where the opening should be made.

Operation, November 17, 1891.—First tempo: Laparotomy. Assisted by Drs. Goldspohn and Bernauer. An incision nearly five inches long was made at the left lateral border of the rectus. The free peritoneal cavity was found, and after the introduction of a sponge the parietal peritoneum was stitched to the skin.

Exploration of Tumor.—On its anterior aspect was

found a bluish, transparent, thin-walled cyst, the size of a hen's egg. This was opened, and clear serous fluid evacuated; the thin cyst-wall contained vessels, and was smooth on both the outer and inner surface. A smaller cyst, the size of a hazel-nut, with transparent walls, showed through its wall a whitish precipitate that moved in the clear cyst fluid upon change in the position of the cyst. This was ligated at its base and removed. Thus I reached the surface of the solid tumor, but scarcely a square inch above the larger cyst was accessible. The remainder was covered with adherent loops of intestine as follows: Upward loops of small intestine were firmly adherent to and covered the tumor; down toward the symphysis, the sigmoid flexure was distended over the tumor from side to side, and so short and diffused were the adhesions that the intestine was immovable—almost stretched out over the tumor. The left side of the tumor was, in a similar way, covered with the upper portion of the sigmoid flexure; the remainder of the anterior aspect of the tumor was covered with adherent omentum. By separating this from around the base of the large cyst, a space of two square inches of the surface of the tumor was uncovered. The surface of the tumor was apparently solid, showing no softer places designating abscess wall; it was uneven, and showed convolutions in relief over the surface. The tumor consisted of rather hard and resistant tubal convolutions, the thickness of a finger, grown together into one mass large enough to fill the whole pelvis minor. It was impossible to distinguish the uterus or right tube and ovary in the mass.

Puncture with an aspirator syringe with long needle, in six different directions and places, gave no pus but only blood. As I was unable to find any abscess cavity, I resolved to make another attempt at the second stage of the operation in two tempos, and if no abscess cavity was reached, to open into the cavity of the tube and drain it. Stitching of the peritoneum to the surface of the tumor had to be done by loosening flaps of parietal peritoneum from the

anterior abdominal wall, as the surface of the tube could not be brought readily into contact with it. I use this flap operation whenever a deep-seated surface, as for example, a small or contracted gall-bladder, has to be isolated from the general peritoneal cavity for an opening in two tempos. A surface of two square inches was prepared in this manner by stitching the peritoneal flaps to its periphery. A place on the top of the most central ridge or knuckle was marked out by a silk stitch left long, as the place where I would open into the cavity of the tube. I have found it convenient, in the operation in two stages, whether for periuterine abscess or for opening into a gall-bladder, or any other cavity or organ, to mark out the exact place for the intended incision, or, as I mostly use the opening with Paquelin's cautery-knife, by a silk suture left long. If the excluded space is small, it may be exceedingly difficult to find it at the second stage of the operation, four to eight days later, when, after removal of the iodoform gauze, the whole wound is a uniform red granulating surface, and thus the anatomical landmarks have disappeared, at any rate as far as color of the organs or tissues is concerned. The final steps consisted of union of the superfluous portions of the abdominal wound, packing with iodoform gauze in several places, hiding the guiding suture between them, and the application of an antiseptic dressing.

The operation was entirely unsatisfactory. Enucleation of the tubal tumor was hardly possible with the adherent condition of intestine described above, and was not tried on account of the communication with the intestine.¹ No pus was found, no abscess cavity or dilated tube to drain, but only the knuckles of thickened tubal convolutions were seen. It might have been preferable to do vaginal extirpation or *morcellement* of the uterus (Péan) to evacuate pus from within or around the tube.

¹ Veit: Zeitschrift f. Geb. u. Gynecol., Bd. xvi., Heft 2, p. 318, Ueber Durchbruch von Pyosalpinx nach aussen.

Opening into the pyosalpinx on the seventh day, November 24th.—The patient was anæsthetized and the gauze removed from the wound. The wall of the emptied cyst formed a red granulating mass the thickness of a finger, above which was the guide suture on top of the ridge of the convolution of the tube running from the right and upward down to the left. Exploration with the syringe and long needle did not bring out pus. Incision with the Paquelin cautery-knife, three-fourths to one inch long, was made at the place of the guide suture in the direction of the tubal convolution. At a depth of six or eight millimetres was found a narrow cavity from which came a few drops of odorless, yellowish, thick mucus. A probe inserted into the opening passed upward and to the right two inches in a narrow tract, and a similar distance in the opposite direction down toward the symphysis pubis. A small rubber drainage-tube, four millimetres in diameter, was the largest that could pass, even after dilatation with a long forceps. Two drains were inserted two inches in each direction into the tube. Dry antiseptic dressing was placed over a packing of iodoform gauze.

Remarks.—I intended to drain the tube in the hope of closing the communication with the bowel; but on opening the tube, it was found that it did not communicate with the intestinal tract, as the contents were odorless. A peri-tubal abscess cavity could not be opened, because it was not found.

The after-treatment consisted only in changing the dressings and washing the wound; no washing-out through the drains was done, as they entered no cavity.

In January, after a gradual improvement locally and in general health, the patient began to sit up. The wound closed about the middle of January, 1892, eight weeks after the operation.

February 12, 1892.—The abdominal wound is closed, except a fine fistulous opening at the upper border, from which a little pus comes out once in a while. Pressure

on the abdomen causes no pain whatever, and no tumor or swelling can be reached even by deep pressure on and below the promontorium. Vaginal exploration shows the uterus somewhat movable up and down, and the cervix and body can be felt to be somewhat enlarged when held between the fingers of the two hands during bimanual exploration. Rectal exploration reveals some adhesions posteriorly, but the uterus can be moved more than one-half inch. The left utero-sacral ligament is shorter and more rigid than the right, and the left half of the posterior cul-de-sac is shorter and more rigid. On account of rigidity and adhesions the ovaries and tubes cannot be felt distinctly; but I can get the fingers of the right hand above the symphysis, and the fingers of the left hand in the rectum and vagina, near enough together to insure that there can be no abscess or considerable tumor between them.

February 18th.—She has gained fourteen pounds in weight, walks around all day without pain and has regained her strength. The appetite is good. For the last two months there has been no evacuation of pus from the rectum and no peritoneal swelling at the seat of the tube.

Abdominal examination shows that the tumor has disappeared, so that the hand above the symphysis can pass deep down into the small pelvis without feeling any hardness or tumor.

Vaginal Examination.—The vaginal portion is in nearly normal position; the uterus is movable one inch; the right broad ligament movable and normal; the left broad ligament is thicker and less movable, and high up there is felt a nodular, hard tumor, the tube the size of a walnut; it is painless on pressure and on moving the uterus.

The patient left for her home with the advice to have the appendages removed if any symptoms in the future should call for surgical interference.

August 15th.—She is as yet in perfect health.

Conclusions.—In conclusion I will state that it is not my intention to propose drainage of an infected Fallopian tube as a substitute for its removal. When Mundé proposes to drain the Fallopian tube from the vagina as a conservative measure, to avoid the more dangerous operation of laparotomy, it is doubtful whether his cases prove that drainage of the Fallopian tube is effective or not, as it is impossible by opening through the vagina to see or know whether the tube or a peritubal abscess has been opened into. But it is possible that in some of the cases the cavity of the tube was drained; which would tend to prove that this measure is effective in abating the salpingitis as well as the surrounding pelvic inflammation. To drain a tube with the view of restoring its activity or usefulness is a measure for the advocacy of which no data as yet exist. But the case mentioned above, together with Mundé's experience, makes it probable that drainage of an infected tube may be effective in bringing the inflammation to an end. In cases of impossible or difficult extirpation, and when the tube or a peritubal cavity communicates with the intestinal canal, which latter condition is regarded by T. Veit as an absolute contra-indication for removal, I believe that drainage of the tube, if the latter be not accessible from the vagina, should be resorted to by abdominal section.

The operation in two tempos for such cases is also advocated by Winter as exceedingly safe; no pus need enter the peritoneal cavity; the tubal convolutions can be distinctly seen, and the place for opening into the tube may be marked out by a guide suture. When drainage of the tube has brought about cessation of the para-salpingitis, and closure of the abscess communicating with the bowel, and the uterus is again movable, we have more favorable conditions for extirpation of the offending tube, when this operation becomes necessary.

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