

CHAPTER XV.

NATURAL COURSE AND TERMINATIONS OF OVARIAN TUMORS.

THE terminations of ovarian cystic tumors are various; but the progress is generally towards a fatal issue. This chapter on the history of ovarian tumors, by showing the dangers ahead, will give more accurate indications for treatment.

1. Ovarian cystic tumors tend to go on growing until the distension is too great to be borne. The cyst pressing in all directions, and not able to extend backwards or much into the pelvis, stretches the abdominal walls in front, and the diaphragm above, driving the intestines backwards and even encroaching upon the cavity of the chest. The circulation is impeded by the pressure upon the aorta and vena cava. The functions of the viscera, abdominal and thoracic, are impeded by pressure. The viscera undergo a degree of shrinking or atrophy. Nutrition, respiration, and circulation being imperfect, in the end *exhaustion* ensues.

In cases of long standing, some amount of compensation is effected by *dilatation of the superficial veins* of the abdomen. Sometimes, but by no means commonly, relief is sought by *serous effusion* in the legs. More or less oedematous thickening of the integuments of the lower abdomen, where the overhanging of the tumor is greatest, is not infrequent. Probably the *effusion into the cyst* itself acts as an accommodating process.

2. Sometimes death occurs rapidly or suddenly from *asphyxia*, owing to the pressure upon the heart and lungs. Mr. R. F. Battye relates a case of this kind in a girl aged 13. (*Obstet. Trans.*, vol. ii.)

3. As Bright says, some state of unexpected *collapse*, for which no reason can be assigned, takes place, and the patient sinks. I have seen several such instances. One occurred at St. Thomas's. A young woman was admitted with a large ovarian cyst which had formed rapidly. Tapping was contemplated, but before it was performed, death took place almost suddenly under symptoms of lung distress. It was conjectured that rupture of the cyst might have taken place; but the cyst was found so universally adherent that there was no spot whence effusion could take place. The diaphragm was driven up so as to confine the heart and lungs within the narrowest space. The lower lobes of the lungs were so compressed that they presented a foliaceous appearance, resembling the atelectasis of new-born infants. I concluded that under the impetus of some excitement or exertion, the heart and lungs were suddenly taxed beyond their feeble powers of adaptation, and that thus asphyxia was induced. In these cases of very large tumors there is not only encroachment upon the space naturally pertaining to the thoracic organs, but the chest walls are nearly fixed. The proper respiratory movements are re-

stricted, so that on any sudden impetus to the circulation or respiration, the balance is destroyed and asphyxia results.

4. The cyst being free from adhesion, and tolerably firm, may *roll over on its axis*. This may happen from the enlargement of the uterus tilting it over, or from over-exertion, when one part of the tumor being more pressed upon than the opposite part, it rolls over. The effect of this axial twisting is to strangulate the pedicle; the bloodvessels cannot return the blood from the tumor, so congestion and bursting of the vessels follow. Hemorrhage into the cyst, leading to sudden distension, produces shock and anæmia sufficient to cause death, without rupture of the cyst and hemorrhage into the peritoneum, which may, however, also happen.

Should the patient escape the more immediate danger of death from shock, hemorrhage, and peritonitis, the strangulation of the tumor is almost sure to lead to *gangrene*.

But when the strangulation takes place very gradually, or when the tumor is not very vascular, atrophy taking place slowly, and the pedicle being constantly stretched, *complete separation has taken place*, the tumor becoming loose; or the tumor may shrink without being detached. The remains of tumors have thus been found in Douglas's pouch as hard, partly cartilaginous substances.

I have related two cases of this axial twisting in St. Thomas's Hospital Reports, 1870. In one case the rotation was caused by the growth of a gravid uterus; gangrene had set in; in the other there was no pregnancy, and the rotation was in all probability caused by severe bodily exertion. Dr. St. John Edwards, of Malta, relates a case (*Lancet*, 1861). The subject had gone through one labor without mishap, notwithstanding the complication with a movable ovarian tumor; in a second pregnancy labor supervened at the seventh month, collapse and death ensued; the tumor was found twisted and strangulated. Knowsley Thornton¹ relates a case similar to one of mine. The cyst rolled over three times on its axis under the rising of the gravid uterus. Gangrene set in. Ovariectomy was performed, but death ensued. Atlee refers to two cases of Dr. Van Buren, of New York, and to one of Dr. Crane. In the latter the twisting occurred during labor, leading to fatal peritonitis five days after labor. Dr. Malins relates (*Lancet*, 1877) a case in which rotation followed on tapping. Dr. Kidd (*Dub. Quart. Journal*, 1870) relates one in a non-pregnant girl. Rokitansky (*Allg. Wiener. Med. Wochenschr.*, 1870) describes many dissections which show: *a.* Atrophy and twisting of a Fallopian tube, through the dragging of its ovary, as by an ovarian fatty cyst or serous cyst, which in its growth may pull, stretch, and rend the attached tube. *b.* Tearing asunder of a tube through the dragging of pseudo-membranous adhesions, as through adhesion of the right tube to the small intestines. *c.* Tearing asunder of a tube or corresponding ovary, as when the tube and ovary adhere in the recto-vaginal space; the tearing being caused by the uterus enlarging in repeated pregnancies. *d.* Axial twisting. Professor Turner also has contributed a valuable memoir "On Separation and Transplantation of

¹ Pathological Transactions, 1876.

the Ovary due to Atrophy of the Broad Ligament and Fallopian Tube." (*Edin. Med. and Surg. Journal*, 1861.) Klob also illustrates these events.

5. It is probable that some cystoids of the ovary undergo a kind of *atrophic involution*, which may be regarded as a spontaneous cure. In old women the ovaries are sometimes found as agglomerates of smaller or larger degenerated cysts, seated in an extremely hard thick stroma. On their inner surface are seen papillary outgrowths, likewise converted into hard knots. Such formation, says Rokitansky, must be regarded as involved shrunken cystoids.

6. Small tumors getting into Douglas's space may push the uterus forward upon the bladder so as even to cause *retention of urine*. In the case of large tumors, the neck of the bladder is sometimes pulled up along with the uterus, so that the control of the sphincter is impaired. Hence enuresis. This trouble is also created at times by the pressure of a large tumor downwards upon the bladder. Bladder distress is even more likely to arise when the tumor is the centre of a mass of adhesions impeding the mobility of the pelvic organs. Cystitis and urinæmia may even be induced, and thus cause death. Or the tumor may so press upon the kidneys and ureters, as in a case told by Wells, that the kidneys may be almost obliterated, and thus produce *urinæmia*.

7. In like manner ovarian tumors may encroach upon the rectum, causing at times *obstruction to the passage of feces*. A fatal case of obstruction of the rectum by an enlarged ovary is related by Dr. Parker (*Ed. Med. Journ.*, 1863).

8. Another mode in which ovarian tumor may cause rapid death is by *ileus*. Vomiting, perhaps of stercoraceous matter, and the other symptoms of intestinal obstruction, come on and carry off the patient. On examination after death no adhesions or other obvious cause of constriction of the intestinal canal are found. It can only be conjectured that, owing to the extremely small space into which the intestines have been squeezed, they get thrown into angular contortions which, when any unusual pressure from without, or distension of a part by flatus or otherwise supervenes, the peristaltic action is disordered, and there occurs a virtual obstruction. In one case Rokitansky found a fatal constriction of the intestines caused by the rotations of the tumor, a dermoid one.

9. In other cases *adhesions to the intestines* have been found, which were sufficient to account for the obstruction.

10. The disappearance of the disease by *spontaneous resorption of the fluid and shrivelling of the cyst*, is not proved. The lining membrane of the cyst has the property of throwing fluid into the cyst with extreme facility, but not in the converse direction. So long as the fluid is confined in the ovarian cyst it is beyond the influence of absorption. So much at least is true as far as sure clinical experience proves. Cases do, however, occur in which considerable accumulations, believed to be in ovarian cysts, disappear more or less completely, either spontaneously or under the use of diuretic and other medicines. There was a woman in St. Thomas's Hospital under the care of Dr. Gervis and myself whose *history* gave support to this hypothesis. She then carried a very large ovarian cyst seemingly single; two years before, she said, she had one

nearly as large, and the swelling disappeared under medicines, water passing freely by the bowels and bladder. I cannot help suspecting that in this and similar cases, the fluid escaped first into the peritoneal cavity by rupture or a small perforation, or else by a fistulous channel directly into the bowel.

11. *Bursting of the tumor and resorption of fluid from peritoneum*.—When the tumor bursts with escape of contents into the peritoneum, the fluid, if limpid, may be taken up into the circulation and discharged rapidly by the excreting organs. Numerous cases are on record of the spontaneous or accidental bursting of ovarian cysts, followed by cure in this way. If the walls are thin, and the tumor tense, under gradual or sudden pressure or violence rupture may take place. The tumor in such cases is probably simple.

In this way cysts have burst under the rapidly accelerated pressure caused by the simultaneous growth of the pregnant uterus, under sudden exertion, under direct violence as of a blow, or under concussion as from a fall. A remarkable case occurred in the temporary St. Thomas's Hospital. A woman under my care was descending in the lift to take the air in the grounds, when the machinery gave way and the lift came down the last few feet with a run. The concussion burst the tumor; large quantities of watery fluid were discharged during the next few days by the bladder, and she completely recovered, the tumor not returning.

The recovery, however, is not always complete. After bursting and absorption of the fluid, the tumor may form again, just as we see after the operation of tapping. Thus W. F. Soltau relates a case (*Medical Times and Gazette*, 1862) in which the cyst burst three times into the peritoneum; the fluid was voided by diuresis. She was also tapped thirty-seven times. She died after the bursting. Disse relates a case (*Monatsschr. für Geburtsk.*, 1860) in which the patient recovered from one bursting, the fluid being discharged by the kidneys. After a few years the tumor burst again. The second rupture of the cyst was verified by autopsy. Obstinate constipation followed the accident, then copious watery discharge by rectum; in two days eighteen quarts were measured. When this ceased, profuse discharge of urine occurred; during five days eight quarts were passed daily. She sank exhausted.

Huguier expressed a doubt whether cases of this kind were really bursting of an ovarian tumor, and suggested that they were more likely examples of simple cysts of inflammatory origin attached to the uterus.

I think we must accept this explanation for some of the cases of presumed cure of ovarian cysts following rupture or simple puncture. But certainly the possibility of some ovarian cysts being so cured seems free from doubt. In the case at St. Thomas's, above referred to as having been caused by the shock of a fall, the ovarian nature of the cyst had been verified by repeated examinations. And the possibility of an ovarian cyst healing after rupture is proved by two specimens in Guy's Hospital Museum, of ovarian cysts, which had burst spontaneously, the rent cicatrizing. The first specimen, No. 2246⁶⁴, is "a large ovarian cyst, which had burst spontaneously, and had become repaired." Within it an inverted portion of the old wall is seen, and a reduplication of the cyst is indistinctly seen in the section. The case was that of Ann B.,

aged 46, under Dr. Addison, in 1836. When first seen, in March, 1834, she stated that she had had children at an early age, and had menstruated regularly since; that five years before she observed a swelling in the right iliac fossa, that the tumor increased, although her health remained good until ten days ago, when she fell, and struck her abdomen. She was seized with violent pain, sickness, and fainting, and then perceived that the swelling, which was before local, had diffused itself over the abdomen. On admission she was suffering from acute peritonitis. She soon perfectly recovered, and again entered into domestic service in 1836, only a small tumor in the left iliac region being distinguishable. She died in August, 1836, and the sac was removed. There were adhesions in various parts of the abdomen; the ovarian cyst occupied the pelvis, and was closely connected to surrounding parts. It contained about two quarts of a reddish thick fluid, and the lining membrane was covered with thick layers of albuminous matter. Upon the front of the tumor was a band, formed by the folding of the walls upon themselves as the cavity shrank. The walls were so firmly united that the reduplication was only clearly seen when a section was made. The rupture had been about eight inches in length. The edges of the rent had not united, but the inferior lip was found floating free within the cavity, whilst the superior lip of the rent was glued over the opening to the cyst below.

The other specimen, No. 2239⁸⁴, is equally decisive. It is "a uterus and a portion of a large cyst from the left ovary. It is of a compound serous kind, and had burst spontaneously during the life of the patient, from which accident she recovered, and survived several months. The cicatrix appears in the portion of cyst preserved. The patient died from malignant disease of the stomach." A third specimen in the same museum, No. 2231⁸⁶, affords evidence to the same point.

In St. Bartholomew's Museum is an illustrative specimen (No. 31.31). It "is a portion of a cyst that arose from the left ovary. It communicates with the ilium by a small aperture, between four and five inches above the ileo-cæcal valve. Some weeks before death, after the discharge of a large quantity of fluid *per anum*, the abdominal tumor had diminished in size, and the dulness to percussion over its region had been replaced by tympanic resonance."

These cases place the possibility of cure of ovarian cystic disease, by rupture or perforation, beyond dispute.

In another class of cases, perhaps more frequent, the patient dies quickly, killed by the shock; or if she rallies from shock, peritonitis sets in, which is most likely to prove fatal. This danger appears to depend in great measure upon the qualities of the fluid effused. If clear and watery the fluid itself may cause little irritation; the peritoneum tolerates it well. If it act injuriously, it is probably chiefly because it is voided suddenly in large quantity, so as to disturb the balance of circulation greatly. It is the shock that is dangerous; the fluid itself is harmless. But where the fluid is gelatinous or puriform it is clearly not favorable for absorption, and it may even possess acrid or irritating properties. Hence there is added to the simple shock, retention in the peritoneum of an irritating fluid. Peritonitis is inevitable; and since the cysts which yield fluid of this nature are commonly multilocular and incurable by

simple tapping, the progress of the tumor is not stopped. If the patient survive the shock and peritonitis, the ovarian disease will pursue its natural course notwithstanding. Mr. Spencer Wells relates a case (*Medical Times and Gazette*, 1861) in which, after ovariectomy, the serum found in the peritoneum must have contained a very active animal poison. He himself suffered from absorption. Sometimes when a cyst bursts, vessels in its walls are torn, and blood to a considerable extent may be effused into the peritoneum along with the ovarian fluid. This complication increases the danger of peritonitis, and adds that of anæmia.

12. *Bleeding from the surface of the cyst or into its interior* may take place without rupture or twisting. In such an event death may be rapid under symptoms resembling those of rupture of an extra-uterine gestation cyst. The patient may bleed to death. In one case Mr. Wells says the blood escaped through the Fallopian tube and uterus from a large cyst in the ovary; or the blood may collect in the recto-uterine pouch, where it may be sequestered as a hæmatocele; or it may remain diffused, and cause fatal peritonitis.

13. The cyst may contract adhesions with the bladder or bowel, and by bursting or ulcerative perforation into one of these viscera, its contents may be discharged. Communication thus established with the exterior is more favorable than rupture into the peritoneum. The bladder and the bowel—the latter especially—are less liable to injury, and can, moreover, readily get rid of the offending matter. In this way even fluid of tenacious or gelatinous nature may be discharged. Thus Ulrich (*Monatsch. f. Geburtsk.*, 1859) relates a case in which a large quantity of thick fatty matter was emptied by the bladder; it was ascertained to be pure elaine; several quarts were passed. For a long time the urine contained pus and fatty matter. The patient recovered, some remains of tumor being still felt. The tumor was probably dermoid.

The London museums contain several interesting examples of ovarian tumors opening into the hollow viscera. At Guy's is a specimen (No. 2228⁸⁵) from a woman, aged 36, under Dr. Gull, in 1861, for Bright's disease. At the same time there existed in the abdomen a remarkable tumor, being a cyst containing fluid and air. On striking it, a loud splash was heard, and at the same time it was resonant on percussion. After death, on opening the tumor, a foetid gas escaped, and at its lower part was a turbid purulent fluid. The intestines were adherent to it, and at the bottom was an opening communicating with the upper part of the rectum.

Dr. Murchison (*Path. Trans.* vol. xviii.) relates the following: E. C., aged 37, for eight years had been liable to general dropsy and attacks of erysipelas of the face. About eighteen months before admission to Middlesex Hospital she first noticed a swelling in the lower part of the abdomen. On admission the abdomen was distended by a tumor rising above the pubes. The urine contained albumen. The patient began to suffer from diarrhœa; the stools contained blood. This continued for sixteen days, during which time there was no diminution in the size of the abdomen. Then the stools contained a quantity of pus, which went on for three days, and in a week all signs of the tumor had disappeared. The patient sank two or three days later. The liver, spleen, and kidneys

were very large. A collapsed cyst, the size of a cocoanut, was seen in the situation of the uterus. This was a cyst of the left ovary, which had emptied itself by an opening the size of a fourpenny piece into the rectum four inches above the anus.

In St. Thomas's Museum is a specimen (FF. 45) of a faecal abscess communicating with an ovarian cyst.

Perforation must be distinguished from bursting. Perforation is a gradual process, and is more likely to occur in the glandular cystomas than in the simple cysts. An opening may be effected direct into the peritoneum, or into a hollow organ. The causes of perforation are: 1. *A wearing-through of the cyst wall by partial pressure* of the growths from within a capillary cystoma. They may then grow on unhindered in the peritoneal space, and, sooner or later, cause fatal peritonitis (see Fig. 79). 2. *Suppuration*, a frequent cause of perforation. In this case the opening is seldom inside the peritoneum; it mostly opens externally or into a neighboring hollow organ. Dr. O. Spiegelberg relates some good illustrative cases (*Arch. f. Gynäkologie*, 1870).

Dr. Bristowe described these perforations (*Path. Trans.*, 1853, vol. v.), having several times seen perforations of ovarian tumors into the peritoneum, precisely resembling those between the cysts themselves, and (vol. xii.) says it is extremely common. Adjoining cysts are constantly opening into one another; and cysts are almost as constantly rupturing into the abdominal cavity. In both cases the steps of the process are identical: first, the outer surface of the wall yields at isolated points, in consequence of the distension due to the accumulating fluid within, and circular or oval depressions of various sizes are produced; secondly, these enlarge in area, and deepen, and finally perforate; thirdly, the contents of the cyst escape, the cysts collapse more or less, atrophy, and ultimately, in consequence of the growth of new cysts in their walls, of the enlargement of neighboring cysts, and of their own shrinking, form irregular crescentic or sinuous folds.

Most commonly these perforations are attended by adhesions which, uniting the cyst with a hollow organ, form a substance through which a fistulous tract is gradually made. In this way the abdominal cavity is protected. I believe that it is through the small perforations occurring that the frequent attacks of peritonitis are produced; and that we may thus look upon the adhesions so commonly found, as the effect and evidence of a conservative process enacted to limit the mischief. No sooner does a minute perforation take place than the opening is glued up by plastic effusion.

But sometimes adhesions do not form in time. Then the perforation allows the contents of the cyst to escape into the peritoneal cavity, and the result may be quickly fatal.

In St. Thomas's Museum (No. FF 32) is an example of spontaneous perforations in an ovarian cyst. The perforations allowed free communications with the abdominal cavity; their edges were well-defined, and bevelled off at the expense of the outer edge. No. FF 33 is an example of the same kind.

Occasionally adhesions form to the diaphragm, and the ulcerative process, continuing in an upward direction, the pleuræ and lung may be attacked.

In the College of Surgeons is a specimen (No. 2623) consisting of a portion of diaphragm, with part of a large ovarian cyst firmly adherent to its peritoneal surface. On the inner surface of the cyst there are numerous smaller cysts and tumors connected with it, and with one another by pedicles and bands of false membrane. A portion of lung adheres to the corresponding pleural surface of the diaphragm. The cyst had been tapped several times, but could not be completely emptied, for it was sacculated. It adhered firmly to most of the abdominal viscera. (*From MSS. of Geo. Langstaff.*)

Sometimes the ulcerative process works from the intestines towards the cyst. Bristowe (*Path. Trans.* vol. xiv.) presented an example. There was extensive ulceration of the mucous membrane of the large intestine. The patient suffered from phthisis. The ovarian cyst had not opened into the bowel, but the intestine ulcerated and opened into the cyst. Faecal abscesses had first formed, one of which had perforated the ovarian cyst.

Ovarian cysts may also discharge through the Fallopian tubes. Richard cites cases of cysts which had involved a considerable portion of a tube, through which their contents could be forced into the uterus. The portion of tube implicated had become increased in length and thickness, and the folds of its mucous membrane were partly effaced. A distinct aperture between cyst and tube was found. In these cases the aperture was no doubt effected by a gradual perforative process.

Apart from bursting, if not from perforation, intercurrent attacks of peritonitis are common in the progress of ovarian tumors. Such an attack may prove fatal, but more commonly recovery takes place, leaving adhesions of tumors to the abdomen and viscera.

14. *Inflammation in the interior of the cysts* also not seldom occurs. It is of a low kind, and suppuration is often the result. This process may be limited to one or more of the cysts, others retaining their pristine condition. There is reasonable presumption that suppuration has taken place inside a cyst, if symptoms of hectic or irritative fever set in after acute pain in the seat of the tumor. This may occur without detected cause, or follow on tapping or other form of injury. The disease may run on rapidly with intense symptoms and general peritonitis to a fatal termination; or it may be localized, and lead to suppuration in the cavities of the tumor. This may go on for some time, with the production of pus; or the contents of the cyst may be converted into any of the foul disgusting fluids, the result of decomposition. The fatal termination, if the cysts be not removed, may be due to diffuse peritonitis, but more commonly to septic or pyæmic fever, the result of absorption, or of admixture more or less direct through the vessels of the cyst, of the putrid fluids or gases with the blood. Dr. Chadwick, of Boston, relates an instructive illustration (1877).

15. *The roof of the vagina may burst*, and allow the ovarian tumor to protrude through it. Berry relates a case referred to in succeeding page. Luschka (*Monatsschr. für Geburtsk.*, 1867) relates a case of rupture of the vagina, and protrusion of an ovarian tumor. Jobert de Lamballe communicated a case in which under labor an ovarian cyst burst out through the vagina (*Académie de Médecine*, 1850). W. L. Dunn relates a case

in which an ovarian tumor coming down before the head in labor accelerated by ergot, tore its way through the vagina. Recovery took place.

16. The tumor may escape by *bursting or perforation of Douglas's sac through the rectum*, and present at the anus. A. W. Stocks (*Brit. Med. Journ.*, 1875) relates a case. The tumor was removed, and the woman recovered.

The *rate of growth or natural duration* of ovarian cysts varies with the kind of tumor, and other circumstances, one of which is the age of the patient. The simple non-malignant cysts generally go on steadily increasing, attaining a size that entails distress of breathing and danger to life, in about two or three years from their first attracting attention. But it is almost certain that the earlier stages of growth may extend over a considerable time before, either by bulk or pressure on the abdominal viscera, the tumor is noticed by the patient. We have, then, an unknown quantity to add to the known; and this circumstance frustrates all attempt to arrive at a precise estimate of the rate of growth or duration. Not seldom there are alternations of increase and of standing still. After remaining passive for a considerable time, a stage of rapid accumulation may set in. Scanzoni believes menstruation stimulates the growth. The partly solid non-malignant tumors may last many years, growing very slowly, thus admitting of gradual adaptation of the compressed organs, and of the system generally, to the inconvenience, before distress becomes intolerable, or a fatal result ensues. I have known distinct evidence of ovarian tumors to extend over twenty and even thirty years. The dermoid cysts especially are of unlimited duration.

The malignant and proliferous forms proceed more rapidly. The history of many of these cases is brief. It is measured by months rather than by years.

In cases of long standing, œdema of the legs is a frequent consequence. It is caused either by pressure on the renal vessels, inducing hyperæmia of the kidneys, by independent or induced Bright's disease, by pressure on the pelvic veins, or by thrombosis in the pelvic and femoral veins. In the latter case the prognosis is bad, as it generally indicates malignant disease spreading into the broad ligaments, and matting the pelvic structures together. If ascites be added, the probability of malignant disease extending to the abdominal glands and other structures is much increased.

The effects of ovarian cystic disease upon the proper ovarian functions are various. We have seen that in many cases ovulation may go on. Even in a diseased ovary a portion may remain unaffected, and suffice to stimulate menstruation. And, although in many cases it is found that both ovaries are invaded, yet it is rare that the proper structure of both is entirely destroyed. In some cases, perhaps exceptional, and only for a time, there is menorrhagiâ. More frequently menstruation becomes scanty, and at last ceases. This undoubtedly is often the consequence of general dyscrasia. That menstruation may go on is *primâ facie* evidence of the possibility of conception. Morgagni said (*Epistola xlvi.*, art. 28) that a woman may conceive if there remain as much of one ovary sound as pertains to one mature vesicle. It is a fact that in many cases pregnancy does take place. It may even go on to the natural term, and delivery take place without accident. I have known examples of several succes-

sive pregnancies thus being accomplished. But the risk is serious. In another class of cases the uterus is unable to pursue its full development, and abortion or premature labor sets in. *During pregnancy* the tumor may be twisted on its axis; it may burst; it may become inflamed and suppurate. *During labor*, again, it may burst. I have seen a fatal result in this way. Or if bursting be avoided, the crushing of the tumor may give rise to hemorrhage, suppuration, or gangrene. There is an extraordinary specimen in St. Bartholomew's Museum (No. 31.34) contributed by Mr. Berry, of Birmingham. It is an ovarian cyst which had protruded through the external parts by rupture of the vagina during labor, and which was afterwards removed by ligatures with success—a singular instance of ablation of an ovarian tumor by this route.

On the other hand, the uterus may rupture from the obstruction to labor caused by an ovarian cyst. (Ogier Ward, *Path. Trans.* vol. v.)

The breasts are often affected. In some cases they become tumid, even yield a little milky fluid, and the areola is darkened. This chiefly happens during the earlier stages of the active tumors. Generally when the disease is of long standing, the breasts become flaccid, and shrivel. This may be an indication that the follicular structure of the ovary has been destroyed.

DIAGNOSIS OF OVARIAN TUMORS.

The *Diagnosis of Ovarian Tumors* involves the analysis of all pelvic and abdominal tumors. The recognition of an ovarian tumor really involves very often the decision between life and death. Whether an operation of a most severe, possibly fatal, nature shall be performed or not, depends upon the diagnosis. And if we do not operate for want of an accurate diagnosis, the patient may equally incur the penalty of death. The pregnant uterus has been tapped or opened in mistake for an ovarian tumor. An ovarian tumor has been often mistaken for pregnancy; and this latter error may subject the patient to an imputation of dishonor, than which death itself will, to some minds, appear more tolerable.

The first point to determine is the presence or absence of *pregnancy*. Peaslee observes that the diagnosis of pregnancy in the early months does not come into practical consideration, since it is only when ovarian tumors have attained the size of the gravid womb at five months or more, that the question of extirpation arises. But there are other reasons for forming a diagnosis at even the earliest stage. A proper weight must be given to the evidence of history. This may or may not be useful; but it not safe to rely upon anything but physical exploration. We must, then, make a systematic search for the objective signs of pregnancy. We must examine the breasts; observe the degree of tension, the veins running to the areolæ, the pigmentation and area of the areolæ, the development of the follicles, the presence or absence of milky secretion. Then, examining the abdomen by careful palpation, we search for uterine and foetal movements; by stethoscope in the groins and over the abdominal tumor we listen for uterine and foetal sounds; by vaginal touch we determine the softness or hardness of the cervix uteri, the patency of the os, its relative position in the pelvis; the presence or absence of what I have