Clinical Lectures
ON
ABDOMINAL COLLAPSE,
OR
SHOCK FROM ABDOMINAL DISEASE.

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LECTURE II.

GENTLEMEN,—At our last meeting we passed in review various conditions of the ovary which might cause shock and collapse. I suggested that there were many other conditions of other organs which might give rise to very similar symptoms, and recommended to you as an instructive exercise in diagnosis, that you should consult your case-books and your memories for instances illustrative of the subject we were studying. To facilitate our inquiry, it will be desirable to follow some method. The most convenient that occurs to me, is to take all the organs contained in the abdomen, or which lie in immediate relation to it, successively, considering the diseases and accidents of each that have been found to cause shock and collapse. The ovaries we have already considered. Let us now take up

The Uterus and Fallopian Tubes.—Perhaps the best known, although still a rare condition, is rupture of the pregnant uterus. The symptoms of rupture of the gravid uterus are carefully described in systematic works on Obstetric Medicine. Shock and collapse from overpowering nervous impression and from anæmia are the first results of the accident; peritonitis follows if the patient survives long enough. I have, however, seen a case in which the uterus gave way under the distension of triplets, a large loop of intestine having protruded through the vulva, and which, nevertheless, ended in recovery. There was marked collapse, lasting for some hours; there was, probably, little hæmorrhage or effusion into the abdominal cavity. Nearly allied to rupture of the substance of the uterus is sudden and violent displacement of the uterus, whether gravid or not; but more especially if the organ be enlarged by pregnancy, or by containing tumours. The following case, which I give from the notes of Mr. Woodman, the resident accoucheur, is of extreme interest:—

Uterine Polypus.—"Eliza C—, aged thirty-six, a tailor's wife, residing at Ratcliff. Has had three children, the last five years ago. Menstruated regularly till about two years since, when the catamenia ceased one period, and she soon after had pains 'like labour' for nearly a month. Has had dragging pains since, and difficulty in passing urine, which sometimes came in gushes, and would sometimes hardly flow at all. She attended as an out-patient under Dr. Barnes, who diagnosed an intra-uterine tumour. On the 19th July, 1861, she slipped down some stairs, when the tumour suddenly became external. She states that she 'flooded a good deal.' When brought to the hospital a few hours after, she was almost pulseless, cold, pale as death, and with chattering teeth. She rallied a little with brandy, hot bottles, &c. There was now no flooding, but the tumour appeared partially strangulated, and smelt offensively. On the 20th, she seemed rather better, but the pulse was small and rapid, the eyes rather dull, the head aching, and the surface of the body cold and ghastly pale. She complained, on the 21st, of the dragging of the tumour giving pain, and of its smell, &c. The stomach was rather irritable. The tumour to be well supported, and creasote lotion to be applied. Dr. Barnes saw her, and ascertained, by a careful examination, that the tumour was stalked, and sprang from inside the uterus, from the anterior lip chiefly, the uterine sound passing freely behind it. The uterus was dragged low down, and the os rather wide open, the stalk of the tumour being an inch and a half in diameter, but not much above an inch long.

On the 22nd, she was very sick; and on this day and the No. 1982.

next she showed some signs of irritative fever. It was then found that the tumour had dragged the uterus still lower, so that a considerable portion, covered of course by everted vagina, was external. Drs. Ramsbotham and Barnes, and Mr. Gowland, saw her, and agreed that her best chance lay in its speedy removal. Chloroform being given, the stalk was first transfixed, ligatured, and the body of the tumour cut off with a scalpel. There was very little hæmorrhage, no vessels requiring ligature. She was sick immediately after; and sickness, with dry, brown tongue, with red tip, restlessness, and feeble, rapid pulse, with cold skin, continued all next day. An effervescent mixture of ammonia with hydrocyanic acid checked the sickness, and she seemed rather better on the 25th. In the evening, however, she again became worse, becoming colder, almost pulseless, and at intervals somewhat delirious. Ordered brandy and laudanum, as she had no sleep the night before.

"26th.—Rather warmer; seems better; is quite conscious. Dr. Barnes had replaced the uterus on the 25th, and ordered creasote lotion to be used as an injection twice a day. There was tolerably free discharge, but no hæmorrhage externally. The ligature had not separated. In the evening, she again became delirious, but also had symptoms of extreme prostration, being icy cold and almost pulseless. She seemed in no pain—only said her head ached. In spite of stimulants and strong beef-tea, freely given, she sank and died at nine P.M. the same evening.

"No post-mortem examination could be obtained, as her friends suddenly appeared in great force, and claimed the body.

"The tumour was very solid, had in parts a fleshy appearance; in others, a dense white fibrous structure. Its weight was between three and four pounds."

In this case the symptoms of collapse were more or less persistent from the date of the accident which brought the tumour outside the vulva. It does not appear to me that the operation for the removal of the tumour had any influence in producing the fatal result. I am disposed to attribute death to the violence done to the structures connected with the uterus. The broad ligaments and adjoining structures were suddenly subjected to forcible stretching; laceration to some extent probably took place, giving rise perhaps to hæmorrhage in the cavity of the abdomen. But whether internal hæmorrhage complicated the case or not, the sudden violence would account for the shock. This form of violent uterine hernia is analogous in some respects to that twisting of ovarian tumours on their axis to which I referred in last lecture.

Something of this kind is seen in cases of retroversion of the pregnant uterus. I have mentioned in a former Lecture,* that although retroversion may be most frequently produced gradually, it may also arise suddenly, under the influence of violent exertion. In either case there will be shock, immediate or persistent, the result of pressure upon the peripheral nerves of the pelvic organs, and upon the large nervous plexuses in the pelvis. The prostration and irritative fever observed in these cases are greatly the result of this local nervous impression.

There is a form of disease of the uterus which can most properly be discussed in connexion with diseases of the Fallopian tubes. Cases are recorded in which air has penetrated through the cavity of the uterus, and, finding its way along the Fallopian tubes, has escaped into the peritoneal cavity. It has also been supposed that air has been sucked in by the open uterine veins after delivery, causing sudden death by its action upon the heart. A very clear case has been reported in which carbonic acid injected into the uterine cavity caused sudden death. These instances may serve to show the possibility of noxious matters finding their way through the uterus into the peritoneum. Latterly there has been accumulated abundant evidence to prove that this accident is not infrequent. Dr. Ed. Martin,† Förster,‡ Vocke,‡ and others describe under the name Salpingitis, and Metro-salpingitis, inflammatory conditions of the Fallopian tubes and uterus which are liable to produce effusion of pus into the peritoneum. I will read you a summary of Vocke's case. A woman twenty-four years old struck her left side two days before delivery. She went on well apparently until the ninth day, when she was suddenly seized, as if from a blow, with acute pain in the region of the left ovary; she screamed out; the pain continued until she died, forty-six hours after the attack. On dissection, several quarts of seropurulent fluid were found in the abdominal cavity; the parietal and visceral peritoneum of the left side was covered with purulent exudation and fibrinous shreds; it was injected dark-red, the injection fading off towards the right side. All the appear-

* THE LANCET, vol. ii. 1859, p. 553.

† Monatschr. f. Geburtsk. 1859. ‡ Ibid. 1860.

ances were most marked close to the abdominal opening of the left tube. The left tube was enlarged, and when squeezed, pus flowed into the abdominal cavity. The mucous membrane of the tube was injected; nowhere obstructed or perforated. The right tube was normal.

There seem now to be sufficient observations to establish the proposition of Martin, that inflammation of the lining membrane of the uterus and tubes, leading to the secretion of pus, and the escape of this pus into the abdominal cavity, may be the cause of fatal peritonitis after labour. The suddenness of the supervention of pain and collapse may distinguish this from the ordinary forms of puerperal peritonitis.

But this affection may happen independently of pregnancy or labour. One of Förster's cases, a virgin, aged thirty-one, died of sudden and rapid peritonitis. A large quantity of pus and serum was found in the abdomen; there were numerous adhesions of the uterus and tubes with the surrounding organs; the left tube was closed by them. Both tubes were filled towards their outer extremities with pus, and were much distended. An ulcerated opening was found at the end of the right tube, through which pus escaped into the abdomen. The uterus was large, and contained much mucus. In another case, a strong girl, aged twenty-six, died of acute peritonitis bespeaking perforation. The uterus was found enlarged, containing discoloured pus; the mucous membrane was thickened and discoloured. There were similar changes in both tubes. The abdominal opening of the left tube was closed by old adhesions; the right was open, and yawned in an unusual manner, so that pus could be easily pressed out of it.

You are aware of the occasional fatal termination of the typhoid or enteric form of fever, by perforation of the intestine. The shock, collapse and peritonitis following upon the escape of the intestinal contents through an ulcerative opening, constitute a condition nearly resembling that which we are considering. The fever and enteric complications will, of course, guide you to the conclusion that the bowel has given way. But this conclusion may be erroneous. Dr. F. Howitz (of Copenhagen)* has related a remarkable case which shows that these symptoms and death may be produced in fever from a different cause, hitherto unsuspected. An unmarried woman was admitted into hospital with typhoid fever; hæmorrhage from the vagina set in; this was supposed to be due to incipient abortion—an event very likely to occur in pregnant women, if seized with any form of fever. In the course of some days the discharge became fetid, lochial, and abundant; vaginal examination showed that there was still a mass adherent to the uterus. Hitherto there were no peritonitic symptoms. One day the discharge from the vagina ceased, and in the evening the abdomen became distended, and very tender; the patient collapsed rapidly, and died within forty-eight hours. It was clear that some sudden irritation of the peritoneum had taken place; it was natural to infer that the small intestine had been perforated. It was found, however, on dissection, that the intestine was entire; in the cavity of the peritoneum was found upwards of a quart of greyish-green, extremely fetid, thin fluid, particularly abundant in the true pelvis. There were some soft adhesions. On the peritoneal covering of the Fallopian tubes soft false membranes were observed; the tubes themselves were thickened and swollen; both from their abdominal and uterine openings a fluid could be squeezed, exactly resembling that found in the cavity of the peritoneum; the canals of the tubes were distended. In the right ovary was a large corpus luteum. The uterus was partly filled with a fluid resembling that in the peritoneum; the whole mucous membrane was changed into a semi-fluid greyish green mass; on the posterior wall was situated a mass which hung down into the orifice of the cervix; it was of an oval form, as large as a pigeon's egg, loose below, and adherent to the uterus above. There was no trace of a fœtus. It must be concluded that the embryo had perished through the blood-dyscrasia caused by the fever; that it passed away broken up from decomposition so as to be unobserved; that the placenta and blood-coagula had undergone a putrefactive decomposition, and partial liquefaction; that for a time the fetid matters had found free exit by the vagina; that suddenly the portion of placenta remaining had fallen down over the orifice of the cervix, occluding it, and preventing the escape of the matters by the vagina; that hence, accumulating in the uterus, these had at length found a passage along the Fallopian tubes into the peritoneum.

This case is deeply instructive. It throws, I believe, some light upon certain cases of abortion terminating fatally with symptoms of peritonitis; and supplies a powerful argument in

support of those who contend that the uterus should be cleared as quickly as possible of the remains of the ovum after abortion.

But the dangers of shock from disease of the Fallopian tubes do not end here. The tubes may be perforated by ulceration; they may be the seat of dropsical cysts, or of collections of pus like the ovaries. And not only the tubes, but the broad ligaments may contain similar cysts, which may burst.

Professor E. Wagner relates the following very interesting case.* A healthy woman, living in good circumstances, the mother of four children, fell ill on an afternoon, without known cause, with slight pain in the abdomen. This increased slightly, and at four the next morning death followed after a brief agony. Dr. Crédé performed the Cæsarean section immediately, and extracted twins; these had been dead some days. On dissection, six ounces of thin reddish fluid was found in the pelvic space of the abdominal cavity. On the anterior and superior surfaces of the uterus was a thin, thready, yellowish-grey, turbid coagulum. There were similar but thicker deposits on the right ovary and tube. The rest of the peritoneum was normal. In the right tube, one inch from the fringe, was a hole, at first taken for a supernumerary ostium abdominale, but found on microscopical examination to be the result of an ulcerative process similar to that of spontaneous ulcers in the jejunum and other parts of the alimentary canal. That the peritonitis was the result of this tubal perforation was clear. Notwithstanding the slowness of the apparent peritonitis, death ensued, shock no doubt playing the most active part.

We have also the case of tubal gestation—a condition in which rupture of the tube is extremely liable to occur, and to prove fatal by shock and anæmia. So sudden and so marked are the collapse and the attendant abdominal pain that the suspicion of poisoning has not unfrequently arisen, and this suspicion will appear the more reasonable when the existence of pregnancy is not known. There are two periods of tubal gestation at which rupture is most likely to occur: first, in the very early stage, within six weeks or three months of conception; secondly, at a far more advanced stage—perhaps months after the normal term of gestation, when, the child being dead, and decomposition or disintegration of the body ensuing, ulcerative openings take place in the cyst. These openings may be made into the bowel or externally, but the cyst may also give way into the peritoneum. In such an event, the question may, I think, be reasonably entertained whether gastrotomy should be performed with a view to removing the offending body.

I have not mentioned ovarian pregnancy, because such a condition has not been proved on rigorous analysis to exist.

Taking the abdominal organs in succession, we can only stop to catalogue abscess and hydatids of the liver, which, bursting, may discharge their contents into the peritoneal sac; similar diseases of the kidneys, followed by similar accidents; perforation by ulceration of the stomach and intestinal canal. Peritonitis, with collapse, may also be caused by powerful external impressions, and by the ingestion of poisons.

Collapse may also arise from various other affections of the intestinal canal. Not to mention strangulated inguinal, femoral, or ventral hernia—conditions which a proper examination would immediately reveal,—we have obstruction of the intestine without hernia, as from intussusception, and ileus. One case of this latter disease I have lately witnessed, which has an interesting bearing upon our inquiry. A patient of the Royal Maternity Charity, the mother of several children, was seized in the last month of pregnancy with vomiting, intense abdominal pain, constipation with collapse, for which she was attended by Dr. Griffith, of Hoxton. The vomiting was never stercoraceous; there was no discoverable hernia. Injections of beef-tea were administered, as she could retain nothing on the stomach. Some feculent matter was brought away by enemata, but there seemed to have been persistent obstruction at some point of the alimentary canal throughout. These symptoms continued for a fortnight, prostration increasing. The child was born on the 9th July, rather suddenly; it was dead, but fresh, and at term. There was no hæmorrhage, but the poor woman sank rapidly, dying about thirteen hours after delivery.

What was the cause of the obstruction? A careful post-mortem inspection was made. No trace of inflammation was found; the intestinal canal, tracked from œsophagus to rectum, revealed no constriction, or intussusception, or inflammation, or band to account for the symptoms. The uterus was fairly contracted, and free from bands or other abnormal appearance externally. When laid open, the seat of the placenta at fundus was marked by adherent grumous clots; the cervix

* Hospitals Tidende, Dec., 1858. Translated by Dr. Moore, Dublin Medical Press, June, 1860.

* Monatsschr. f. Geburtskunde, Dec. 1859.

was thinned at the lower orifice, and deep-black from ecchymosis, although the labour had been easy; the vagina presented the same appearance in a less degree.

Here, again, as in other cases we have considered, the complication with pregnancy might embarrass the diagnosis. Was the perverted function of the intestine in some way owing to the pregnancy? I must leave this important question for future consideration.

The large arteries of the abdomen may be in an aneurismal condition, and sudden rupture may cause collapse and death. I remember seeing many years ago in St. George's Hospital, under the care of Dr. James Arthur Wilson, a case of aneurism of the superior mesenteric artery. The tumour did not burst, but it caused intense jaundice, ending in death by pressing upon and closing the hepatic duct.

Besides these diseases of the abdominal viscera and vessels, collapse may be caused by abscesses of various points of the abdominal walls bursting into the peritoneum. I need only remind you of the occasional discharge of the matter of empyema through an opening in the diaphragm. There is, indeed, hardly any part of the structures enclosing the abdominal cavity that may not be the seat of inflammation, leading to collections of pus, which may find a vent in the peritoneal cavity. The form of abscess most interesting to obstetric practitioners is that resulting from pelvic cellulitis. As the consequence of abortion, of labour, of injury or displacement of the uterus, or other causes, inflammation may be set up in the cellular tissue surrounding the uterus; pus may form, which, instead of finding an exit by an opening in the groin, in the vagina, or in the intestinal canal, as most commonly happens, may burst into the peritoneum.

As an instructive illustration of this catastrophe from another form of abscess, I will read the account of a case which has recently been observed in the obstetric ward. The notes are drawn up by Mr. Woodman.

"*Diseased Spine; Lumbar Abscess; Peritonitis.*—M. A. P—, aged thirty, married, admitted April 9th, 1861, under Dr. Ramsbotham. Pluripara; last child three months ago; did not suckle it; has been residing near the Victoria Docks; had ague and rheumatic fever some years ago; is very pale, feeble, anæmic, and emaciated; says she has never recovered from her last labour, which was lingering, though natural; has menstruated twice since; bowels confined; has slight gonorrhœa. This was soon cured, and she was ordered quinine on the 12th, as she stated that she had had a slight attack like ague, which account was confirmed by the nurse. On the 13th, she had another fit, and on the 14th two more, none of which were seen by me; but on the 15th I was called to see her at eleven A.M., when I found her pale and cold, with the blue lips, nails, &c., and the pinched-up skin characteristic of ague, and shaking so violently as to shake the bed. I ordered her brandy and hot bottles, &c. The cold stage was then followed by heat, and afterwards copious perspiration. She had ten grains of disulphate of quinine, repeating it twice daily for three days. After the first dose she had no return of these fits. Her general health improved apparently from this time. She complained of pain in her left hip.

"On the 24th, as she was still very anæmic, she was ordered quinine mixture, with ten minims of tincture of muriate of iron, three times a day, and appeared steadily to improve till May 3rd, when, on being helped into bed by one of the nurses, she suddenly screamed out, and declared that the nurse 'had broken her back.' She was trembling violently and writhing about when I saw her, evidently in pain, but I thought more frightened than hurt, as she had never complained of her back before. Ordered, thirty minims of tincture of opium, with camphor and ether. This gave her ease, and she slept well. Next day she said she was comfortable.

"On the 8th May (five days afterwards) she complained of her back being tender—for the first time, except the incident just referred to. On examination, I found an abscess beginning to point over the lower dorsal and upper lumbar vertebræ, rather to the left side. It presented as a soft fluctuating tumour, about the size of an orange, but not much elevated. She now complained of abdominal tenderness and great pain in the back. Ordered, a soft bed; and mustard poultices to the abdomen.

"On the 9th, diarrhœa set in profusely, with great prostration. Seen by Mr. Adams, who considered her too ill to move.

"She lingered till the 11th, with all the symptoms of peritonitis with collapse, and died on that day at five P.M.

"*Autopsy.*—The apices of both lungs contained numerous small patches of grey tubercle about the size of a large pin's head. The left pleural cavity was entirely obliterated by old and firm

adhesions. Heart small, mitral valve incompetent, with small finger- and seed-like growths on their free margins, which were evidently *not* recent. Abdomen tympanitic, and contained about a pint of yellow serum. Intestines adherent to each other by, and coated with, abundance of fresh (honeycomb) lymph. On turning them to the right side, an abscess was found on the left, extending from the tenth dorsal vertebra to Poupart's ligament, and containing more than a quart of offensive, thick, shreddy pus. It appeared to have burst into the peritoneal cavity close to the sigmoid flexure, and its further progress to have been checked by adhesive inflammation, leading to its pointing behind externally. The same reason appears to have prevented its descending in the sheath of the psoas muscle, which was thinned out over it to the thinness of paper. The eleventh and twelfth dorsal and first and second lumbar vertebræ were quite carious and roughened, a considerable portion of the bodies and transverse processes being destroyed, but the cord was nowhere exposed. (There was no paralysis during life.) Ovaries and uterus congested. (Death shortly before menstrual period.) Liver large and rather soft. Spleen comparatively large, but not more than about an ounce over average weight. The kidneys seemed healthy."

In this case the history was clear. The abscess connected with diseased vertebræ was detected before it burst into the peritoneum. The possibility of lumbar abscesses bursting into the peritoneal cavity should be borne in mind; it is an argument for opening them by the knife.

Death, more or less sudden, has also occurred in connexion with malignant disease of the peritoneum and abdominal organs. Dr. Todd, who has related cases of this kind, conjectures that cancerous matter may find its way into the circulation, as in pyæmia, and cause fatal prostration by its poisonous action.

Here you will say it is time to conclude, unless we intend to pass in review the whole field of abdominal pathology. We have, indeed, grouped together a great variety of heterogeneous affections; but you will perceive that all are associated by that great clinical link, the common symptom of shock and collapse. I need not remind you that shock and collapse may also arise from disease or injury to the organs contained in the cavities of the cranium and of the chest. To discriminate between cranial or pectoral and abdominal collapse will generally not be difficult. There are almost always present either such signs of local injury or such functional disturbance as will at once indicate in what great cavity the source of the prostrating mischief has arisen. A notable feature in abdominal, as contrasted with cranial collapse, is the persistent clearness of intellect; whilst in pectoral cases, in which the heart or lungs are involved, the circulation and respiration supply distinctive symptoms. The real difficulty lies in the next step, in tracing the mischief to the particular organ or structure principally concerned. The previous history of the case will frequently point to the exact cause. But other cases there will remain in which neither antecedents nor obvious present conditions will help you. These cases will call into exercise all your clinical knowledge. The study of abdominal shock we have now made will prove useful when you are brought into the presence of this serious condition.

ON THE

MODES OF DEATH FROM CHLOROFORM.

By A. ERNEST SANSOM, M.B. LOND., F.C.S.

Of all the physiological questions to which the employment of chloroform has given rise, none has received such contradictory answers—none has elicited such active discussion, as the nature of the death of those in whom the anæsthetic has proved fatal. Faults of inference, or faults of observation, have been imputed to almost all who have investigated the question; and to all intents and purposes the point remains unsettled. Whether is death due to syncope or to apnoea; to paralysis of circulation or of respiration; or may either be the cause of death? My conviction is, that either may be; but that a tolerably definite law is followed, which I shall here endeavour to establish.

Dr. Snow held that in all cases the heart was the first to succumb to the influence of chloroform. Lallemand, Perrin, and Duroy, and the late writers on anæsthetics, declare that