Ectopic Gestation.

Notes on two cases, with special reference to the diagnosis and treatment.

by

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Ectopic Gestation was until recently considered to be a condition of great rarity, but modern abdominal surgery has revealed the fact that pregnancy outside the cavity of the uterus is indeed of frequent occurrence. The condition is essentially dangerous to mother and child.

Its comparative frequency and the seriousness of the risks attending it render its recognition of vital importance, and its treatment of the utmost gravity.

While I was Resident Medical Officer at the General Hospital, Swansea, during the year 1898, I had the opportunity of observing some of the manifestations of early ectopic pregnancy in two cases which were admitted under the care of Dr. Elsworth, Surgeon to the hospital, whom I had the honour of assisting both clinically and at the operating table.
I propose to give the clinical history, offer a short analysis, and review points of special interest in the diagnosis and treatment of each case separately.

Case No. I.

Clinical History.

Bessie Rabey, aged 24, a factory-girl by occupation, residing at 4, Russell Street, Swansea, single, was admitted to the Swansea Hospital on June 18th, 1898, complaining of pain in the lower part of the abdomen, especially in the right iliac region, together with intermittent haemorrhagic discharge from the genital passage.

The pain was first felt on May 1st, 1898. The aberrant discharge dates from the early part of April 1898.

On May 1st, 1898, she was suddenly seized with very severe pain in the lower part of the abdomen, especially the right iliac region, this was accompanied by sickness and vomiting, she felt faint and went to bed. Soon afterwards, she had a discharge from the
genital passage, consisting of blood and blood clot and membranous shreds. It was profuse at first, but soon diminished. It had a dark colour. She was attended by a doctor to whom she showed the discharge. He enjoined absolute rest, and administered Morphia hypodermically. She soon felt better. The pain and the discharge came occasionally. She remained in bed until May 5th. She suffered from occasional pain and slight discharge of blood for four or five days afterwards.

From about May 10th until about May 23rd she had no pain or discharge. She felt quite well.

Towards the last week in May, she had some discharge again, the nature of which was similar to that observed at her usual period. It lasted five days.

After a few days' intermission the discharge reappeared, and lasted about four days. It was then the first week in June.

No pain accompanied the discharge on these last two occasions.

About the beginning of the second week in June,
she again suffered from pain in the lower part of the right side of the abdomen. Since then, it has been there all the time, of a shooting character, with paroxysms of increased severity. She has had no discharge since the first week in June.

It is especially on account of the pain that she sought admission to hospital. She attended the out-patient department on June 17th, and was admitted on June 18th.

She was in perfect health previous to the present illness. Her family history was good. Previous to February 1898 she had had no disturbance whatever in connection with her menstrual function. She began to menstruate when she was 13 years of age. Menstruation was always regular—of the 28-day type. The flow lasted five days, and was of average quantity. Her last normal menstruation occurred in January 1898, about the middle of the month.

She missed the period which she expected in February.

During the last week in March she had a discharge of blood from the genital passage, but
it was "not the same" as that observed at her usual period; it was darker and thicker. The flow lasted for a week, but the quantity was small. She had some pain in the lower part of the abdomen just before the discharge ceased, and during the first day or two of the flow.

During the early part of April, the haemorrhagic discharge reappeared; it continued daily for nearly a fortnight. The quantity was small. During the last fortnight of April she had no discharge.

She considered herself pregnant. She had not been pregnant before. She had had no morning sickness.

The patient was well developed and moderately well nourished. Her face was pale, and her expression pinched and weary. Her temperature was 98°F. The breasts were enlarged and the areola darkened. The abdomen presented no prominence. There was a faint linea nigra. On deep palpation in the right iliac region a small swelling could be felt; this was tender on pressure. Some dulness was elicited on deep percussion over it.

No further examination was made on June 18th.
June 19th. A vaginal examination was made. The orifice easily admitted two fingers. The walls were moist. The cervix was distinctly softened and velvety. The os externum was rounded and looked downwards. Through the right lateral and posterior fornices a prominent mass could be felt. By the bimanual abdomino-vaginal examination, this was found to be fairly regular in outline, situated to the right and behind the uterus, but close to it. It presented a rounded or somewhat oval shape. It was about the size of a goose's egg, and of moderately hard consistence. The uterus was slightly enlarged. The sound was not used. No recto-vaginal examination was made. The ovaries were not palpated.

No physical changes were discovered in any of the other systems. The urine was healthy.

Abortive right tubal gestation was entertained as provisional diagnosis.

It was determined to keep the patient at rest under observation.

During the week following her admission she frequently complained of pain in the right iliac
and hypogastric regions, it was not as severe as before admission.

On June 21st and 24th the temperature rose to 99.4°C.

On June 26th, she had a discharge of dark red blood from the genital passage. She suffered from pain in the whole of the lower part of the abdomen just before and during the discharge.

After consultation, it was decided to perform abdominal section on the following day.

June 27th — The patient, having been prepared for operation, was put under an anaesthetic at 2 p.m. ( Ether, the customary anaesthetic being administered by means of a Glover's Inhaler).

The pelvis was slightly raised. A vertical incision was made in the middle line, below the umbilicus, five inches in length. The peritoneum was opened. The left hand was introduced. A rounded tumour, a little larger than a goose's egg, was found lying partly in the right iliac region, and partly in the Pouch of Douglas and adherent to the peritoneum lining it. It was easily separated from this, and, while the intestines were being kept aside with a flat sponge, the tumour
was brought to the abdominal incision. It was of a bluish-black colour, and had a smooth, polished surface, and a regular outline. It was a cyst of the Fallopian tube. The cyst wall was not tense. The contents were partly solid and partly fluid. It was an abortive pregnancy of the Fallopian tube, within a finger's breadth from the uterus. The ovary was slightly enlarged and was adherent to the tumour. Immediately below the dissected tube, were several minute collections of blood, of various sizes, between the layers of the broad ligament. Leading from the base of the tumour to the right upper angle of the uterus was a thick dense mass of hypertrophied tissue involving the isthmus of the tube and adjacent broad ligament structures. The uterus was slightly enlarged.

A pedicle needle, armed with stout silk, was taken, and the broad ligament with its thick hypertrophied tissue was transfixed; the tumour together with the rest of the Fallopian tube and ovary were tied off by means of a linked double ligature and removed.

The greatest difficulty was experienced in drawing the ligature sufficiently tight, owing to
the density of the tissues.
The stump was examined and considered secure.
It was nearly two inches in diameter.
The left tube and ovary were healthy.
There was a little oozing from broken down adhesions in the Pouch of Douglas.
The abdominal cavity was washed out
with boiled water at a temperature of 110°F. This
was poured in from a large jug. The pelvis
was cleaned thoroughly with sponges. The
stump was again inspected, and found
satisfactory. A drainage tube was placed at
the lower angle of the abdominal incision down
to the Pouch of Douglas.
While the abdominal incision was being sutured,
a large flat sponge was placed between it and
the bowel. Interrupted sutures of silkworm
gut were used. The whole thickness of the
abdominal wall was at once included in
each suture. All the sutures were passed
before any were tied. The ends of each
suture were grasped by a pair of artery
forceps; these were held up, and the
abdominal wall thus raised, while the
sponge was removed, and the sutures tied.
A powder consisting of two parts of Boracic Acid and one of Iodoform was dusted over the part, and a wood-wool dressing was applied, and secured by means of a many-tailed bandage. The operation lasted one hour. She was out of the influence of the anaesthetic in less than a quarter of an hour after the operation was completed.

The tumour removed was a three months pregnancy of the right Fallopian tube, involving the ampulla and the isthmus. The upper and back part of the tube was so thinned that hardly more than peritoneum remained to cover the pregnancy. There was no evidence of rupture having taken place. The thinned covering together with the foetal membranes was divided with a sharp scalpel, and a well-formed foetus was exposed as the dark coloured liquor amnii poured out. The foetus was distinctly shrivelled. There was slight detachment of the placenta. The cut surface of the tumour measured 2½ inches in diameter. It presented the openings of sinuses which led directly to the placenta, which was placed immediately above that surface. Ad natumam the placental
attachment looked downwards, forwards and inwards, the placental sinuses leading into the hypertrophied tissue in the region of the mesosalpinx, and involving not only the ampulla and isthmus of the tube, but also the broad ligament structures which had contributed to the hypertrophy.

The ovary, on section, showed a well-formed corpus luteum of pregnancy. The central clot was well marked.

A photograph of the mass removed was taken several months after the specimen had been in spirit. It represents the tumour as seen from behind. It shows well the thin covering on the upper and back aspect of the pregnancy. The fœtus, umbilical cord and placenta lying within its sac; the enlarged ovary, with its corpus luteum and central clot are all well represented.

A. The thinned gestation sac
B. Fœtus
C. Placenta
D. Umbilical Cord
E. Fallopian tube
F. Ovary with corpus luteum
The patient had a little sickness after the operation, but it soon passed off.

During the evening she several times complained of pain in the abdomen below the umbilicus. June 28th. 10 a.m. She had not slept during the night, but frequently complained of pain in the abdomen. The temperature was normal; the pulse was about 110 per minute.

4 p.m. The abdominal pain had become more severe during the afternoon. The temperature rose to nearly 102° F; the pulse was 144 per minute, and the respiration was hurried.

A quarter Morphia suppository was administered. 8 p.m. She had an anxious expression. The pain was not as severe. The temperature was a little lower; the pulse was not as rapid.

9 p.m. While the nurse was absent for a few seconds, the patient got out of bed, but immediately returned.

12 midnight. She had an anxious expression. Her face was pale but her lips were fairly well coloured. Her temp was 98° F. Her pulse was feeble, intermittent, and of low tension. She had some pain in the lower part of the abdomen. She was perspiring a little.
The abdomen was inspected; the dressings were removed and the drainage tube examined. No blood was discovered. The abdomen was distended. The abdominal wall generally presented a distinct resistance on palpation, but more especially in the right iliac region. The dressings were reapplied.

She had had an occasional discharge of blood from the genital passage since the day of the operation. The urine was drawn off six-hourly. It was normal.

No flatus had been passed since the operation. June 29th. 8 a.m. I was informed that the patient had suddenly become very much worse. I at once saw her. She presented most marked signs of loss of blood. Her lips were blanched, her pupils were dilated, her pulse was fluttering, almost imperceptible.

She was immediately put on the operating table, the abdomen was opened; the abdominal cavity was found full of blood and blood clot; the hand was introduced, the uterus and the bleeding pedicle were grasped.
and brought to the abdominal incision; but in a few seconds more the patient was dead. The pedicle was found to have shrunk with the ligature in situ. There was no peritonitis.

Analysis of the case.

About eleven or twelve weeks previous to May 1st, 1898, fertilization of the ovum took place somewhere between the ovary and the uterus. This occurred a little previous to the time when she expected her period in February. Fertilization having occurred, menstruation was averted. The oosperm travelled down the tube towards the uterus, but, owing to excessive narrowing or bending of the tube, or owing to defective propulsive power of its muscular wall, it became lodged near the junction of the ampulla with the isthmus, and developed there. A placenta was formed, which anchored the foetus to the lower and anterior part of the tube. The tissues in
relation to the placental attachment, viz. the broad ligament structures and the tubal tissue in relation to the meso-osalpinx, together with the tissue between it and the uterus became hypertrophied and vascular, while the upper part of the tube became distended by the growing ovum. Pregnancy was established. The uterus formed a decidua vera. Amenorrhoea was symptom. During March and April she had irregular haemorrhages from the genital passage, with some pain in the lower part of the abdomen at the commencement. The pain was probably the result of increased tension caused by slight subchorionic haemorrhage. The discharge was the result of some separation of the uterine decidua, perhaps also some extravasation from the Fallopian tube. On May 1st, a sudden rather large extravasation of blood took place into the foetal membranes. This accounted for the sudden sickening pain. Some detachment of the placenta occurred; the placental circulation was sufficiently interfered with to cause the death of the foetus.
This terminated pregnancy. Some blood opened up the layers of the broad ligament close to the mesoosalpinx. The discharge from the uterus was at first blood, derived from separation of the uterine decidua, as well as perhaps from the tube, then blood with shreds of decidua itself.

It may be that with slight subchorionic extravasation, some blood trickled from the tube into the uterus, and so stimulated the uterus to contract, or the uterus was acted upon reflexly and caused to contract, and so produce a little detachment of the uterine decidua with consequent slight hemorrhage, but when great subchorionic extravasation occurred and death of the foetus took place, the uterus cast its decidua.

The acute symptoms passed away, and the patient rallied.

The pregnancy ceased, but the tumour did not become quiescent. It remained a constant source of irritation, giving rise to chronic thickening of the tissues in the immediate neighbourhood, and to peritoneal adhesions. This was associated with pain,
for the relief of which the patient sought admission to hospital.

On June 27th, abdominal section was performed, an abortive three-months pregnancy of the right Fallopian tube was found. This had large vascular, fleshy attachments—derived from the broad ligament structures and tubal tissue in relation to the mesosalpinx, which were greatly hypertrophied and which had afterwards undergone chronic inflammatory thickening.

These proved difficult to constric.

A linked double ligature was applied, and the attachments were, to all appearance, made secure; but the ligature had in its grasp a great mass of retractile tissue, and the part furthest from it, viz. the central part retracted from its grasp. The ligature remained in contact with the part to which it was applied, but the tissue collapsed within it. There was marked circumferential shrinkage as well as central retraction. The retraction and shrinkage probably commenced soon after the ligature was applied and the tumour removed; and possibly a little
blood trickled into the peritoneal cavity not long after reaction set in.
On June 28th, the day following the operation, the ligature was in all probability quite slack, and considerable bleeding occurred towards the latter end of the day.

Her symptoms were misleading, especially the rise of temperature. Peritonitis was suspected, and the great possibility – intra-peritoneal bleeding – was masked.

At 9 p.m., the patient, during a fit of uncontrollable anxiety and restlessness got up for a few seconds. This resulted in more bleeding, sufficient to lower the temperature, and to bring pallor to her countenance which was noted at midnight by my fellow-resident and myself.

The track of the drainage tube had been sealed out, and the absence of blood there should not have weighed against the possibility of internal bleeding.

The gravity of her condition was not appreciated. The sudden symptoms at 8 a.m. on the following day were sudden only to the observer. They were the evident signs of the culmination of that process which had so steadily, but surely
led to the fatal issue.
All her symptoms—abdominal pain and distension, the rise of temperature, the condition of the pulse, etc., were to be traced to the unaltered haemorrhage into the peritoneal cavity. No peritonitis was found.

Retrospect of the case.—

The history of this case seems almost incredible, and morals may be deduced from a retrospect.

When the patient was first seen by the doctor, the great symptom which she complained of was pain in the right iliac region. This may be caused by various conditions, but when associated with haemorrhage from the genital passage, the physician seeks to find the cause in one of the pelvic organs of generation.

Here I should like to emphasize the importance of "previous history"—the history of the patient, previous to the symptoms which the physician is called to treat. There was the history of sudden absolute amenorrhoea, where menstruation had hitherto been regular. This
would have at once suggested the possibility of pregnancy. Two irregular uterine hemorrhages followed. This (if the presumption of pregnancy were correct) indicated that the pregnancy was abnormal and disturbed. Here I may remark that of all the causes of uterine hemorrhage, the most important condition outside the uterus is ectopic gestation. With the possibility of abnormal pregnancy before the mind, further and closer examination would have been made. But if the history of a missed period only had been got, and the possibility of pregnancy entertained, the key to the cause of her suffering would have been obtained. Enlarged breasts with darkened areola, linea nigra, etc. would have been found if looked for.

The exact nature of discharges from the vagina is too often overlooked, and its value as aid to diagnosis of pelvic conditions underestimated. The nature of the discharge indicated its source, membranous shreds pointed to the uterus. Closer examination would have revealed the shreds to be those of a decidua-in connection with an extra-uterine pregnancy. There was only a decidua vera— a thick membrane, with one side
rough and shaggy, the other smooth and dotted with the mouths of the utricular glands; no trace of amnion or chorionic villi would have been found. There was a decidua of pregnancy, but no trace of foetal or placental structures.

Although a great deal would have been learnt beforehand, the nature of the discharges and the pain in the right iliac region justified a vaginal examination being made. The essential points to be ascertained were, (1) Whether there was a tumour in relation to the Fallopian tube or not? (2) The consistence of the cervix uteri. There was a soft velvety condition of the cervix; it was noted after she was admitted to hospital. It does not always indicate pregnancy, but in this case it was a valuable sign. (3) The presence of specially large pulsating vessels to be felt through the vaginal roof on the same side as the tumour. This is not always found, but when present, it indicates great vascularity of the part in relation to the Fallopian tube, and is an aid to the diagnosis of a gestation sac. (4) The condition of the uterus itself. A slightly enlarged uterus, close to but distinctly separate from the tumour was the condition found in this case.
The two common conditions that may be mistaken for such a tubal pregnancy are (1) Simple Uterine Abortion. (2) Retroflexion of the Gravid Uterus.

1. Simple Uterine Abortion. In simple abortion, the physical signs would be very different. The discharge is copious and there would be the presence of the foetal membranes and chorionic villi would be recognised. In a case of incomplete abortion, the discharge often becomes foetid; this practically never occurs in connection with the discharge associated with ectopic gestation.

2. Retroflexion of the gravid uterus. This is especially a condition liable to be mistaken for tubal pregnancy when the gestation sac is more or less retrouterine and occupies the Pouch of Douglas. Irregular uterine contractility favours the diagnosis of tubal pregnancy, and a careful bimanual examination reveals the uterus in front and a separate tumour behind and to the right. Whereas in retroflexion of the gravid uterus, there is retention of urine which distends the bladder into a large pyriform tumour above the pubes. This disappears with the use of the catheter. A vaginal examination will reveal a tumour depressing the posterior
vaginal fornix. The cervix may be out of reach. The bimanual examination fails to find the fundus uteri behind the pubes, but a careful examination discerns the waves of contraction in the uterine wall, so characteristic of pregnancy. This is significantly absent in extra-uterine pregnancy. Other conditions such as twisted pedicle in connection with a small tumour of the ovary or tube, or a pyosalpinx may give rise to symptoms simulating those observed in this case; but a twisted pedicle tumour is as a rule, distinctly isolated that not much difficulty in diagnosis would present itself; and as regards pyosalpinx, its history would help in diagnosis — there is a history of purulent vaginal discharge and ill-health preceding, whereas in ectopic gestation the previous health is generally good, there is no history of purulent discharge, but irregular uterine hæmorrhages instead.

Supposing right tubal gestation, undergoing some vital change had been entertained as provisional diagnosis by the doctor, who saw the patient on May 1st; what treatment should have been adopted? The point to be at once determined is, Is there
immediate necessity for operation? The question of operating must be determined rather by the urgency of the symptoms than by the nature of the pathological change. In this case symptoms did not call for urgent laparotomy. The treatment was therefore chiefly expectant, noting carefully any symptoms of internal bleeding, and ensuring absolute repose, together with the administration of a full dose of Morphia, and the application of Ice over the seat of pain; this latter, I consider a valuable addition to the treatment. If operative procedure be deemed necessary but not urgent, I consider it better for the patient to wait at least until proper assistance can be obtained and aseptic surgery best carried out, rather than run the risk of immediate operation in the absence of proper equipment.

After acute symptoms have disappeared, the question arises, whether would it be better for the patient to undergo operation for the removal of the tumour within a few days, or to wait for a few weeks or months in order to ascertain if absorption takes place, or the tumour diminish in size and become quiescent?
It seems to me to be good treatment — if the pain and haemorrhage have ceased and the tumour is not increasing — to give for a few weeks or even months an opportunity for natural cure to take place by rest in bed, attention to the action of the bowels, vaginal douching to aid in the diminution of the tumour, and to lessen any tendency to inflammatory or suppurative action.

But another plan of treatment appeals to me as a better procedure; viz., to remove the tumour as soon as the acute symptoms have passed away. It is not on account of the presence of a tumour that operation is preferred, but on account of the risks of leaving it.

Infection of the mass from the bowel, and toxemia or suppuration may occur in consequence, and chronic ill-health follow. The evils connected with a dead foetus within the body may be much greater than those met with as a result of operative procedure for its removal.

This patient allowed nearly two months to elapse after the primary acute symptoms disappeared, but recurrent pain was sufficient to induce her to undergo operation.
If she had made a more prolonged rest in bed after admission to hospital, and had had vaginal douching, with glycerine and ichthyol tampons perhaps, and special attention to the excretory organs, I believe her pain would have disappeared, and no operation would have been performed. Still, on the other hand, there remained the risk of suppuration and other dangerous degenerative changes setting in at any time after she had left her bed. I do not think that abdominal section was necessary, but I am of opinion that the foetus should have been removed by vaginal section. In such a case as this, where the tumour was so distinctly felt by the abdominal-vaginal examination, and was so accessible through the right lateral or posterior fornix, its removal by vaginal section would, I believe, have been easy. The vaginal method of operating seems to simplest for the removal of such a gestation sac as this case presented. The vaginal route has proved most successful in Hysterectomy, there is very little shock, the risk of sepsis is small, and it affords the
best drainage.
Through a small incision in the posterior fornix, the focus could easily have been felt
and removed. The placenta could have
been safely removed then or left to come away
later. Bleeding may be checked by a plug of
iodoform gauze.
If the tumour tube and ovary were removed
as a mass, the vascular structures by the
side of the uterine could be secured by a
large clamp forceps which could be left
for 12 hours or more, the parts drained,
and the vagina drenched frequently with a
non-poisonous antiseptic solution.
With regard to the operative procedure that
was adopted in this case,—I should have
preferred to incision made near the right
iliac region, either an oblique incision
downwards, forwards and inwards, two inches
to the inner side of the anterior superior
iliac spine, or raise a triangular skin
flap there; the muscular fibres could be
separated to a great extent. This would
have afforded immediate access to the
tumour, free manipulation, and the least
possible risk of ventral hernia; the wound being closed by separately suturing peritoneum to peritoneum, muscle to muscle, skin to skin. The pedicle had features which are worthy of note. It was short, thick, fleshy, highly vascular, presenting great resistance to the constricting ligature, and possessing an unknown capacity for shrinkage and retraction. The security of that pedicle was of vital consequence.

The clamp is a great security against hemorrhage, but it is now seldom used in abdominal operations. It may allow discharges to run down to the peritoneal cavity, and it may be a cause of ventral hernia. The cautery is not successful except in the hands of experts.

The ligature was used, the attachments being secured in two portions. Shrinkage occurred and fatal hemorrhage ensued.

If it had been tied in three portions with a linked and circumferential ligature, I do not think it would have been secure from hemorrhage.

Mr. Brook, Senior Surgeon to the hospital, mentioned at the branch meeting of the British Medical Association held at Swansea, in 1895,
a case in which he found conditions similar in effect to those found in this case. He described the pedicle as being like gristle in its resistance to the constricting ligature, but very vascular. A ligature was applied; the pedicle shrank; fatal hæmorrhage ensued.

In such cases I consider that an extra precautionary measure may be of signal value. From experience which I had in connection with a subsequent case, the history of which I give later in my thesis, I formulated a method which I believe would have proved serviceable in dealing with the pedicle. It is the following, viz., after the silk ligature has been applied to the pedicle, before cutting away the tumour, incise circularly through the peritoneal covering some distance beyond the point where the tumour is intended to be cut away; then reflect back the peritoneum to that point. Having removed the tumour, with a curved needle pass a continuous calçet suture tightly through and through the tissues on the distal side of the ligature, commencing on the face of the stump near the centre, and receding nearer and nearer to the periphery in a systematic spiral, after a
method similar to that depicted in the annexed diagram.

Finally, suture the peritoneum over the face of the stump.

The effect of this is threefold:—
1. It unites the central to the peripheral tissues. Retraction of the central tissues is thus avoided or rendered difficult.
2. It places a ligature round small sections of tissue, and thus secures almost every possible blood channel. 
3. It affords almost an absolute barrier to any possible bleeding.

The suturing of the peritoneum over the face of the stump I consider to be of great value. If the ligature be not fully efficient from such causes as were met with in this case, the "internal clot" of blood, which is formed in the blood channel, is prevented from being washed away when reaction sets in, by the peritoneal covering stitched over it; and thus the security against haemorrhage is, I may almost say, established, while the internal clot is forming and permanently sealing the vessel.

From the history of the case after the operation
It is to be observed that rise of temperature is no indication against the possibility of internal bleeding. It is probable that bleeding into the peritoneal cavity can cause rise of temperature, and that only when the bleeding is excessive the temperature becomes subnormal. There was no peritonitis—abdominal pain and distension can be as marked in intraperitoneal bleeding as in acute peritonitis. Bulness may be due to blood or peritoneal effusion.

The visible anaemia, the moist skin, and the condition of the pulse ought to have been sufficient to indicate the gravity of her condition.

With the great possibility of bleeding pedicle, it is important to watch the case sedulously, and if there is any doubt about hæmorrhage taking place, it is best not to hesitate to reopen the abdomen without delay, find the bleeding point and deal with it.
Case No. II.

Clinical History.

Harriet Davies, aged 32, house-wife, residing at Martin's Row, Swansea, was admitted to the Swansea Hospital on June 30th 1898, complaining of pain in the lower part of the right side of the abdomen since three days.

On June 27th 1898, she was suddenly seized with severe pain in the right iliac region; this was accompanied by sickness and vomiting and some diarrhoea; she became almost collapsed. She went to bed, and was attended by her physician. He gave her some medicine. She rallied in a few hours. On June 28th and 29th, she felt better, but the pain in the right iliac region was almost constant, but not very severe. She also suffered from occasional vomiting. On June 30th, about midday she became worse rather suddenly; pain was severe, collapse supervened.

The doctor who attended her advised her to come to hospital. She was admitted at 4 p.m.

She had not suffered from any previous illness. Her menstruation had always been regular, of the 28-day type. The flow lasted four or five days.
The quantity was normal. Her last menstruation occurred in the second week in April 1898. She had had four children. The first was born in September 1888; the last on July 18th 1897. She had had no miscarriages. She had had no trouble with micturition or defecation.

The patient was pale and anaemic, and had an anxious expression. She felt sick and vomited a little glairy milky fluid after admission. Her temperature was 100°F. Her pulse was quick, feeble and intermittent, and of low tension. The breathing was rapid. The abdomen was distended, especially below the umbilicus. There was an ill-defined boggy swelling in the right iliac region, and absolute fluctuation was elicited towards the right flank. There was some tenderness on pressure, and dulness on percussion in the right iliac and right lumbar regions.

Per vaginam.—The orifice was large and the cavity roomy. The os was parous, it looked downwards. The cervix was softened sufficiently to indicate the possibility of pregnancy. There was a distinct swollen condition to be felt through the right lateral fornix, which was absent on the left side.
Nothing further could be elicited by the bimanual examination as the patient presented pressure in the right iliac and hypogastric regions. The urine was drawn off with a catheter. No sugar or albumin was present.

Ruptured Right Tubal Gestation with intra-peritoneal bleeding was the diagnosis entertained. It was determined to perform abdominal section at 4-30 p.m.

Operative interference was, however, delayed until 8-30 p.m. The pallor, the rapidity and smallness of the pulse, and the abdominal distension were then very pronounced.

The patient was put under an anaesthetic—ether being administered by means of a Glover's Inhaler. As the operation of abdominal section was being performed, saline transfusion was also proceeded with.

The abdomen was opened by the medial incision. When the peritoneal cavity was entered, dark venous-looking blood poured out. The left hand was introduced, the uterus was grasped and brought to the abdominal incision. At the junction of the right Fallopian tube with the uterus, on the postero-superior aspect, a raw-
Bleeding surface was discovered, about 1½ inches by 2 inches in area, involving partly the isthmus, partly the interstitial part of the tube, and partly the uterine wall close to the tube. This bleeding surface was a placental site. The peritoneum which originally covered that surface had ruptured, and was to be seen hanging down on the posterior aspect of the tubo-uterine junction. The isthmus of the tube was enlarged, and the adjacent broad ligament structures were hypertrophied.

While the uterus was grasped to control the hæmorrhage, blood and blood-clots were scooped out of the abdominal cavity, especially from the Pouch of Douglas, and amongst them was found the placenta—a discoid mass about 2 inches in diameter, ½ to ¼ inch in thickness, the smooth shining amnion lined the one surface, while the rough villi coated the other. The foetus was not found.

A photograph of the placenta was taken some months after it had been in spirit. The smooth amnion is seen between the two pins—which help to keep it open. The chorionic villi are seen at the margin.

A. Smooth amniotic surface.
B. Shaggy chorionic villous surface.
No time was lost in directing attention to the cardinal step in the operation, viz., to stop the bleeding at the placental site. This indeed proved a difficult matter. There was no pedicle to ligature. It was especially the enlarged uterus that was bleeding from a placental site on its outer surface. Clamping was not practicable, unless the whole uterus or both broad ligaments were clamped. The actual cautery was applied to the bleeding surface. This did not prove effective; the blood still welled up from the sinuses.

At this time the pulse became very feeble and fluttering. Two pints of a 0.75 per cent saline solution were introduced into the basilic vein. A marked improvement in the pulse resulted. As a last resource, all the prominent bleeding points were secured with Spencer Wells' artery forceps and ligatured with calgut. Still a volume of blood oozed from the placental site. This was met by running a locking continuous suture of calgut, through and through the uterine and tubal tissue involved in the bleeding area, commencing near the centre and receding towards the periphery in a spiral
manner, and so securing tissue and vessels together in small sections. Lastly, the peritoneum was sutured over with fine catgut, and the bleeding area was thus sealed.

The right ovary was removed, but it was afterwards lost. Whether it contained a corpus luteum of pregnancy had not been ascertained.

The peritoneal cavity was washed out with boiled water at a temperature of 110°F. The pulse was noted to improve markedly during the process of washing out. A drainage tube was placed at the lower angle of the incision down to the Pouch of Douglas. The abdominal incision was closed with interrupted sutures of silkworm gut. A simple dressing was applied, and secured by a many-tailed bandage.

The operation lasted one hour and twenty minutes. The patient was out of the influence of the anaesthetic in a few minutes after the operation was completed. She was then excessively pale; anaemia was very pronounced. The arms and legs were bandaged, and raised on an inclined plane; hot bottles were applied to the trunk and extremities. The foot of the bed also was raised.
Saline injections with brandy were administered per rectum, every two hours. At 12 midnight the pulse was fairly good, and the patient felt "better." She complained of her legs being tied up. To all appearance, the prognosis seemed favourable; but, between 4-30 and 5 a.m., when I next saw her, she was restless and muttering, she tossed her head about; her pulse was quick and feeble, almost imperceptible at times; and her breathing was rapid and shallow. She rapidly sank, and died at 6-30 a.m., July 1st. The abdomen was afterwards opened; the condition of the sutured part was absolutely unchanged. There was no peritonitis. The left ovary was examined; it contained no corpus luteum of pregnancy.

Analysis of the case.

About 7 or 8 weeks previous to June 27th, 1898, fertilization of the ovum took place somewhere between the ovary and the uterus. This probably occurred a little before the time her menstrual period was expected to occur in May. The oosperm travelled down the tube, and became lodged.
in the isthmus near the interstitial part. Probably the attachment was in relation to that part of the tube furthest from the mesoosalpinx. But it could not provide much tissue for the rooting of the growing ovum, so the tissue at the right upper angle of the uterus became the placental site. The tube became distended by the growing ovum, until peritoneum only remained to cover the pregnancy. On the 27th of June subchorionic hemorrhage added suddenly to the tension of the gestation sac; the covering ruptured at the weakest spot, the fetus escaped, the placenta was detached, blood poured out from the open mouths of the large sinuses exposed.

Between June 27th and June 30th clots may have temporarily checked the bleeding, but, with slight movement, bleeding recurred; or, it may be that on June 27th the fetus and placenta may not have entirely left the tube, but acted as a plug and so prevented the bleeding being very profuse; but on June 30th, the fetus and placenta escaped completely and the blood flowed freely.

On the 30th her condition became alarming. She was brought to hospital; abdominal section was performed; the peritoneal cavity was found full of blood.
The source of the bleeding was discovered— the uterus was bleeding from a placental site which it could not contract upon, or bring an opposing surface to bear upon. The bleeding was essentially uncontrollable except by surgical means; but, to rescue the victim, operative interference was, unfortunately, too long delayed.

After the operation she seemed better for a time. The apparent recuperation was but very temporary, and to be attributed to the saline transfusion; after its effects passed off, all power of recuperation was exhausted, and death rapidly supervened.

**Retrospect of the case.**

When the patient was first seen by the doctor, diagnosis was difficult owing to the absence of vaginal discharge, and of the history of irregular uterine hemorrhage.

Other conditions may give rise to symptoms such as she presented, e.g. (1) Perforation of an ulcer of the stomach or duodenum; but the seat of the pain would be different, and there would be the history of previous stomach trouble, and in
all probability, the patient would be a weak and anemic young person. (2) Acute Appendicitis. In this, there would be a history of previous attacks, constipation, etc. (3) Acute Poisoning. The pain and distress would be greater in poisoning. The history of having taken poison may be obtained, and the poison may be found in the vomited matter. Differential diagnosis is not likely to give rise to trouble in a case of ruptured tubal gestation. The possibility of overlooking the cause, and treating symptoms, is greater than that of making a wrong diagnosis.

Sudden severe pain in the right iliac region, in a married woman during the child-bearing epoch, associated with the history of missed menstruation and the presence of a swelling in the position of the right Fallopian tube were the chief points to aid in the diagnosis of tubal gestation; but, without any signs pointing to the Fallopian tube, the symptoms of internal bleeding were sufficient to call for immediate interference. The treatment should have been to open the abdomen without delay, find the bleeding point, and deal with it so as to make the patient secure from further hemorrhage.

While preparing for the operation, the application
Office to the abdomen, especially to the right iliac region, would have been of great value. When she came to hospital, her symptoms were very pronounced. She suffered from abdominal pain, she was sick and faint, her pulse was rapid and intermittent, and her anaemia was conspicuous. One physical sign, which is rare, is worthy of note, viz., the absolute fluctuation of the blood in the peritoneal cavity, elicited towards the right flank.

But the gravity of her condition was underestimated. Operative interference was delayed for four more hours, during which time the blood poured into the abdominal cavity, and her life ebbed steadily away.

Herein is found the great moral of this case, viz., the importance of realizing the significance of symptoms pointing to internal haemorrhage, and the danger of delaying operative interference in diffuse intra-peritoneal bleeding.

Though late, abdominal section however was performed. I think the mesial incision was best in this case—diffuse intra-peritoneal bleeding being the condition for which the operation was performed. The closing of the incision by the rapid method
of running silk-worm gut sutures through skin, aponèurosis, and peritoneum together was justifiable. It is easy to make and to close the mediastinal incision. Rapidity of procedure was important. The source of the bleeding, viz., a placental site in relation to the subperitoneal tissue of the uterus near its right upper angle, is interesting on account of the rarity of the condition, and instructive on account of the difficulty that was encountered in dealing with the hæmorrhage. But the method adopted was most satisfactory; and I consider it capable of wide application—in a modified or unmodified form—as a means of effecting security from hæmorrhage. The suturing of the peritoneum over the face of the stumps adds to the security, renders it extraperitoneal, and reduces the whole to the original, natural state.