these should be followed persistently. Some adhesions are quite soft and easily separated, others are extremely tough and difficult to get through; the operator must work firmly yet circumspectly or he will get into trouble, especially with tissues like the walls of intestine infiltrated with inflammatory material. In one case I tore a small hole in the cæcum, but it was easily repaired, and no harm ensued. In two other cases—Nos. 1 and 9—the adhesion was so dense that the inner coats of the appendix stripped from the outer in great part, but there was no drawback in this, as the essential portion (the mucous coat) was removed. It seemed likely that the symptoms in Case 3, in which the appendix was not removed, were due to the drag on the transverse colon, and acting on this view I ligatured and divided all the omentum, thus releasing the colon, and the patient obtained complete relief from her symptoms. If pus is found, the sponges placed in the abdomen prevent infection of more distant parts, but it must be mopped up as speedily as possible, and the walls of the cavity in which it lies thoroughly cleansed.

In dealing with the stump of the appendix, if its tissues are not much infiltrated it is easy to make a flap of the peritoneum, which can be stitched so as to cover the stump, but when the parts are a good deal infiltrated this cannot be done, nor is it necessary to insure a satisfactory result. In the majority of my cases I have been content to ligature the appendix close to the cæcum, and after dividing it have applied pure carbolic acid to the little patch of mucous membrane exposed, and finally, at the end of the operation, have tucked the end underneath the cæcum.

If there is much pus present it will be well to drain, the safety of the patient being the first consideration, but as this undoubtedly leaves a great tendency to hernia, it should be resorted to only after careful consideration. I find my own tendency now is to drain less frequently than I formerly did.

However well a patient does, I think he should spend four weeks in bed, in the horizontal position, so as to allow the recently-united tissues to become firm before any strain is put upon them, and in all cases I advise for a time the wearing of a well-fitting belt.

As before mentioned, all my cases have recovered; they have all been completely relieved of their symptoms, and as to hernia, I have satisfied myself, either by personal examination or by inquiries from the medical attendants, that only one patient suffered from hernia where the wound was completely united by sutures. In this case there was an abscess round the appendix, but I closed the wound without drainage. Unfortunately the incision became infected, probably from the abscess, and suppurated, leaving a weak scar, which has since yielded (see Case 18).

Even with an operation which has very little risk and which cures constantly, patients will require an alternative, at all events for a time, until experience of repeated attacks tells them that they had better get rid of the offending organ. The alternative is prolonged rest in the horizontal position, with careful dieting, and such medical treatment as may be required. With prolonged rest undoubtedly a few cases get well, but there is no certainty about this alternative, and rest, even if prolonged for two or three months, may not produce a cure. The patient must have this fairly put before him, or he is apt to resent the care that has been bestowed upon him if, after resting a good many weeks, a period of activity is followed by a further relapse.

As bearing upon this, I may point out that in Cases 6 and 9, in both of whom only a fixed adherent appendix was found, pus and concretion being absent, relapse occurred whilst the patients were still resting in bed.

MR. WALTER A. S. BRIDGEFORD, M.R.C.S., L.R.C.P., of Boulder City, West Australia, has been appointed a magistrate for the East Coolgardie District.

THE medical profession in this country will learn with great regret that Dr. Joseph J. O'Dwyer, of New York, whose name is associated with intubation in laryngeal diphtheria, is dead. He was suffering from tuberculous meningitis, the diagnosis having in the first instance been made by Dr. O'Dwyer himself. He was 55 years of age.

ON THE ULTIMATE FATE OF PLACENTAL TISSUE RETAINED IN UTERO.

By W. E. FOTHERGILL, M.A., B.Sc., M.D.,
Manchester.

IN the BRITISH MEDICAL JOURNAL of May 9th, 1896, I figured and described five microscopic sections of placental tissue which showed that, after the foetal circulation has ceased, no constructive process continues in the foetal elements of the placenta; that the epithelium of the chorionic villi degenerates and disappears, the connective tissue of the villi more slowly losing its identity; that the maternal blood occupying the intervillous spaces first clots and then becomes organised, rendering firm and tough the originally spongy placenta. At that time I was not able to explain fully the processes which occur in placental tissue retained *in utero* after the death or expulsion of the foetus. Since then, however, I have been fortunate in obtaining some good specimens from cases of missed abortion and incomplete abortion, that is to say, some fleshy moles and placental polypi, which have enabled me to clear up the question.

Though uterine moles have often been described from the times of Hippocrates, Aristotle, and Galen onwards, the literature of this subject continued for several centuries to be more amusing than instructive. Morgagni,¹ however, perfectly understood the gross pathology of retained ova, as have most subsequent writers. Scanzoni² says that the thickness of the chorion in a retained ovum is due to the effused blood, more or less organised, which is found between the villi. This, he continues, becomes transformed into connective tissue, which becomes vascular and adheres to the uterine wall. Upon this statement little advance has been made. Though an enormous number of cases of retention of the products of conception has been recorded from a clinical standpoint, more especially during the last few months, the authors seem content with the statement that, upon microscopic examination of their specimens, chorionic villi were found. Budin³ and Breus⁴ both wrote papers on the subject in 1892, which I have already reviewed somewhat critically in the *Manchester Medical Chronicle*, n. s. 6, 1897. Berry Hart,⁵ at the Carlisle meeting in 1896, described two cases, giving microscopic appearances similar to those figured by myself in the BRITISH MEDICAL JOURNAL of May 9th, 1896. Papers by Neumann⁶ and others published during the last year give no further information.

The results of my recent work are as follows: After the foetal circulation ceases, the small foetal blood vessels of the placenta quickly disappear entirely, the larger ones being more slowly obliterated, and leaving for some time a few blood crystals and amorphous granules to mark their position. The foetal connective tissue between the epithelial layers of the amnion and chorion, as also that forming the cores of the villi, is compressed, but is not otherwise altered for a long time.

The foetal epithelium covering the amniotic surface of the placenta remains recognisable for a long time; the cell outlines, however, are lost, and the nuclei become clouded. The foetal epithelium of the chorion covering that membrane itself and the villi which spring from it also loses its cell outlines, and its nuclei soon cease to stain clearly. Meanwhile a great change occurs in the maternal circulation. The space between the uterine wall and the chorion coextensive with the placenta is crossed by numerous villi, while innumerable smaller villi hang freely from the chorion without reaching the surface of the decidua. Into this great intervillous space maternal blood flows from the uterine wall during the life of the foetus, and returns into the maternal vessels after circulating amongst the villi. When the epithelial covering of the villi degenerates after the stoppage of the foetal circulation, the maternal blood in the intervillous space does not long continue to move, but soon forms a firm blood clot embedding the villi. This intervillous blood clot consists so largely of fibrin that it is probable that the degenerated epithelium of the villi acts as a foreign body, layer after layer of fibrin being deposited upon it from the maternal blood until the whole intervillous space is thrombosed. Eden⁷ has shown that this occurs in parts of m-

placenta which lose their foetal blood supply toward the end of normal pregnancy.

Thus a placenta retained *in utero* for a few days after the death of the foetus consists of a mass of villi embedded in maternal blood clot. While this mass is bounded on the foetal aspect by the amnion and chorion, it is bounded on the uterine aspect by the decidua serotina. In the serotina are maternal blood vessels and dilated uterine glands embedded in a delicate connective tissue, many of whose corpuscles are enlarged to form the characteristic and well-known decidual cells. Fig. 1 illustrates the condition of things at this stage.

Fig. 1.—Section showing foetal surface of a placenta retained a few days *in utero*; the intervillous space filled with fibrin; foetal epithelium as yet intact. A, amnion; B, chorion; C, fibrin; D, core of villus; E, epithelium of villus; F, I, epithelium; G, H, connective tissue; K, villus; L, fibrin in intervillous space.

Turning now to the examination of sections of a placenta which has been retained about five months *in utero*: The upper margin of the section shows the amnion and the chorion, their connective tissue layers blended with one another. The epithelium of the amnion is still intact, that of the chorion has largely disappeared. The lower margin of each section shows patches of decidua serotina containing numerous large decidual cells. The intermediate portion of each section contains numerous villi, their stroma compressed, their epithelium either absent or reduced to rows or clusters of nuclei without any cell protoplasm. A large amount of fibrinous material derived from the maternal blood remains visible; but the striking feature of these sections is the presence in the intervillous spaces of layers, rings, and bands of very large cells which surround some villi completely, touch others upon one side, and invade the fibrinous masses.

Fig. 2.—Section showing foetal surface of a placenta retained five months; decidual cells are seen removing the degenerated foetal epithelium from chorion and villus, also organising the fibrin. A, Amnion; B, chorion; C, decidual cells; D, fibrin; E, remains of epithelium; F, villus.

Now the patches of decidua serotina on the maternal margin of these sections are directly continuous with some of the groups of large cells in the intervillous space. It is clear, indeed, that the large cells forming the rings round some villi and touching others are neither more nor less than decidual cells which have spread from the patches of decidua and invaded the blood clot in the intervillous space. The masses of large cells are, in fact, extensions of the decidua from the maternal towards the foetal aspect of the dead placenta.

Next we notice that in those parts of the sections where much degenerated foetal epithelium remains, very few decidual cells are as yet visible, and, *vice versa*, where the intervillous spaces are filled with decidual cells, no foetal epithelium is to be seen. A closer examination shows that the decidual cells destroy both the fibrin and the foetal epithelium, and replace them by a delicate cellular tissue. The connective tissue cores of the villi seem to oppose more resistance to the advancing decidual cells than does the chorionic epithelium, for only in a few parts of the section do the cores of the villi appear eroded and disintegrated by the active cells which surround them.

Two new facts are shown by these sections. It was previously known that in retained placenta (1) the foetal epithelium gradually disappears; and (2) that the blood clot in the intervillous spaces becomes organised after a time. Now, however, we learn (1) that the decidual cells destroy both the degenerated foetal epithelium and the fibrinous masses in the intervillous space; and (2) that these same cells replace the material removed by a delicate connective tissue. In other words, the decidual cells destroy the foetal epithelium, and organise the blood clot; they have a phagocytic action as well as a constructive action.

Fig. 3.—Section showing the uterine surface of a placenta retained five months; decidual cells are seen spreading from the patch of original decidua, removing foetal epithelium from the villi and organising fibrin. A, C, E, villus; B, D, G, fibrin; F, decidual cells; H, patch of decidua serotina.

Thus, while these sections confirm my former statement that the foetal elements of the placenta do not grow after the death of the foetus, they also show that maternal elements remain active under certain circumstances, and tend to convert the retained placenta into a mass of tissue of the nature of decidua. Hartman and Toupet⁸ have applied the term "deciduoma benignum" to a placental polypus thus converted into a mass of connective tissue. In this connection it is interesting to recall that Cazeaux,⁹ Naegele, Osiander, and others believe that complete absorption of a placenta by the uterine mucosa has occasionally occurred. The ectopic placenta after the death of the foetus is invaded by decidual cells from the tubal mucosa, which destroy foetal epithelium and organise intervillous blood clot just as described above.

While the above brief description of the fate of retained placental tissue completes the object of the present article, I may note that the decidual cells behave in exactly the same manner in cases of so-called placental infarction as in cases of retained placenta. This applies both to the pathological placental infarct often described as occurring early in preg-

nancy, and also to the physiological infarction which has been shown by Eden⁷ to occur normally towards the end of pregnancy.

I also hope to show in another communication that the phagocytic action of decidual cells is not exercised under abnormal conditions alone, but that it plays a part in the development of the normal placenta and membranes. For in every placenta those portions of the chorionic villi which become embedded in the decidua undergo the same changes as do the villi of a retained dead ovum. First they lose their foetal blood supply, next large decidual cells of the serotina crowd round them, destroy and remove their epithelium, and form round the remains of the stroma a delicate connective tissue.

Again, those chorionic villi which do not enter into the formation of the placenta leave but few traces on the outer surface of the developed membranes of the ovum. For when the placenta begins to take its shape, changes in the foetal circulation destroy the blood supply of those villi which are not in the placental area. Soon after, the decidua vera unites with the decidua reflexa, and the decidual cells of these structures attack the now non-vascular villi, and help to reduce them to the remnants which represent them upon the developed membranes of the ovum.

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A CASE OF OLD PELVIC ABSCESS AND ACCIDENTAL HÆMORRHAGE IN A PREGNANT WOMAN.

By ROBERT JARDINE, M.D. EDIN., M.R.C.S. ENG.,
F.F.P. & S. GLASG.,

Physician to the Glasgow Maternity Hospital.

CASES of pregnancy complicated by an old pelvic abscess are so rare that I feel justified in publishing the following one, more especially as it was further complicated by accidental hæmorrhage.

Mrs. C., aged 34, 6 para, was admitted to the Glasgow Maternity Hospital on April 20th, 1897. She stated that she had never been a very strong woman, but had never had any serious illness. There had been nothing remarkable about her confinements except that after her third she had had an attack of "inflammation of the womb." After that for six months she had suffered from weakness, pain in the back, and "whites." She gave no history of ever having had any discharge of pus from the vagina, but gave a confused account of having noticed a swelling in the abdomen midway between the umbilicus and pubes about three years ago after her fourth confinement. She stated that for the last month or so she had noticed that this swelling was rapidly increasing in size. Her last menstrual period had been towards the end of March, and it had been scantier than usual. Before that she had been quite regular. Eleven days before admission, after retiring to bed, she was seized with a sudden discharge of blood from the vagina, which lasted about nine hours. It came in a gush without any warning, and was accompanied by a little pain, dull in character, over the lower part of the abdomen, if anything more severe on the right side. She felt feverish and shivered at times, but there was no severe rigor. The blood was dark in colour, with some clots but nothing else. She got up in the morning and did her usual housework. There was no discharge during the day, but on retiring to bed the next night the discharge recurred in smaller amount. Up to the date of admission she had more or less discharge each night, but none during the day.

Condition of Patient on Admission.—She is weak, and very anæmic. There is evident pulsation in the veins of the neck, but no cardiac murmur. There is an abdominal tumour, central in position, measuring about 7½ inches vertically from the pubes, and 9 inches transversely in its widest part. The swelling is freely movable from side to side. It feels soft and elastic. There are no contractions evident; no foetal heart sounds, but a distinct uterine *souffle* is heard. No foetal parts can be felt *per vaginam*; the cervix is thick and soft, and the external os admits the tip of the finger. The internal os is completely closed. The uterus is enlarged, and lying well forward, and feels doughy and soft. In the anterior fornix, at the junction of the body and cervix a distinct groove is felt. This distinct groove was also noticed by Dr. Edgar, the assistant physician, who kindly examined her for me. We thought it was caused by the body of the uterus lying so far forward that it formed an angle with the cervix. At the *post-mortem* examination this was shown to have been the track of the sinus which we had felt. After the examination there was a little dark watery discharge. A douche was given.

The diagnosis presented considerable difficulty. She was evidently

pregnant, but from her menstrual history she had only missed one period¹ and the one before that had been very scanty, so that, going by the history, she could not be more than two months gone. The uterus by its size would indicate at least between six and seven months. I was inclined to think we had to deal with a hydatid mole, but could get no indication of any vesicles having been passed. She was put upon small doses of ergot, strychnine, and iron, and a liberal diet.

Next day there was a slight oozing of serum. The catheter had to be passed. She said she was feeling stronger. Her temperature was practically normal. She did very well until May 3rd, when some dark-coloured blood began to come away. In consultation with my colleague, Dr. Black, I decided to dilate the cervix with Hegar's dilators, and explore the cavity of the uterus. Under chloroform I pulled the cervix down and steadied it with forceps, and dilated until the finger could be introduced. The lower part of the uterine cavity was full of black clot, but no foetus could be reached. As the cervix was still full length I could not reach any distance into the cavity. Some of the clot was washed out, and a small Barnes's bag introduced. A firm binder was put on. The forceps had torn the mucous membrane of the anterior lip of the cervix transversely. The walls of the cervix were intact. The dilatation was done about 1 P.M. At 11.30 P.M. I removed the bag, and found the cervix was shortened considerably. On dilating further with my fingers, I found there was a foetus in its bag of membranes attached to the fundus of the uterus. More than half of the cavity was occupied by blood clot. I ruptured the membranes and drew the foetus down. The amount of liquor amnii was small. Dr. Black then dilated further, and delivered the body of the foetus, breech first. The head came off, but was caught in the fingers and removed. The placenta was detached from the fundus, and removed. It and the membranes seemed healthy, and showed no evidence of hæmorrhage. The uterus was thoroughly washed out, and it contracted firmly. The anterior wall of the cervix was found to have been lacerated. This had evidently happened during the dilatation with the fingers and delivery of the foetus, but we could not understand why it had given way.

A hypodermic of ergotin was given. The patient did not show any signs of collapse. Her temperature was 100° at the time of delivery. It had been 99° and 99.8° the two days previous.

The foetus had been dead a short time, but was not macerated to any great extent. It was fully four months developed.

May 4th. Temperature in the morning was 102°, and in the evening 102.6°. She complained of nothing except feeling feverish. The vagina was washed out, and a good deal of *debris* came away, but the discharge was perfectly sweet. There was no distension. She was frequently fed with milk and beef juice. Her pulse was about 100, and soft. She was given 10 gr. quinine.

May 5th. Patient has not been so well to-day. She has suffered from sickness and retching, which causes pain all over the abdomen. Temperature 101.2° in the morning and 101.4° in the evening. Pulse varying from 100 to 120, and very soft. Large doses of bismuth relieved the stomach symptoms for a few hours, but in the evening she rejected everything. Rectal alimentation was commenced, and a mustard leaf applied over the stomach. Small pieces of ice dipped in brandy were given. A half-grain morphine suppository was inserted. There was no distension of the abdomen. The vomiting ceased during the night, and she was fairly comfortable.

May 6th. She was much weaker to-day, and although she has been freely stimulated the pulse was not improved in strength. The temperature in the morning was 99°, and in the evening 101.4°. The nutrient enemata were continued all day, and she had brandy and egg flip by the mouth. At midnight she had improved a little.

May 7th. She was much weaker, and could not be roused. Temperature 100°. She gradually sank and died at 3.20 P.M.

Post-mortem examination report by Dr. R. M. Buchanan.—The lungs were hyperæmic, and left one slightly adherent. They both showed healed tuberculous lesions at the apex. In the heart there was slight thickening of the aortic cusps, and also along the base of the mitral curtains. Abdomen.—The lower fringe of the omentum lies between the uterus and the bladder. It is hyperæmic and slightly glued to the part, but there is no naked-eye appearance of exudation. In this situation there is a small amount of stringy fibrin associated with a very small amount of an opaque yellow fluid. The liver is very pale, and presents the appearance of fatty degeneration. The spleen is slightly enlarged and dark coloured. The kidneys show the character of cloudy swelling. The stomach and small intestine appear normal. The caput cecum is firmly bound down in the right iliac fossa, and the vermiform appendix lies along its inner aspect in a direction upwards and inwards. When the caput cecum is pulled forward, comparatively empty, is exposed. The cavity extends upwards as far as the crest of the ilium, where it is not limited by a very definite wall, downwards and inwards over the right side of the bladder by means of a series of sinuses. Purulent infiltration of the cellular tissue extends downwards as far as Poupart's ligament and round the right side of the pelvis. The contents of the pelvis are now removed *en masse*; the rectum appears normal; the posterior aspect of cervix and uterus is opened by a median incision. This displays a longitudinal tear in the cervix anteriorly continuous through the whole length and thickness of the wall into an abscess cavity. This cavity appears large enough to admit a hen's egg, and is found to be continuous with the sinuses and cavities above described. The suppurative process has invaded the cervical tissue to some extent, and has passed through it by a short sinus about ½ inch in diameter and ½ inch in length just within the external os anteriorly. It also appears to have perforated the cervix at the upper end of the tear. The internal surface of the uterus is covered with a greyish purulent exudation. No bacteria were found in the blood of the jugular vein on microscopic examination.

The cause of death seems to have been exhaustion, as there was no evidence of septicæmia. The discovery of the abscess was a complete surprise to me, as nothing in the patient's history pointed to its presence. The indefinite history of the swelling in the abdomen did not indicate anything pointing to an abscess in the right iliac fossa, as she distinctly stated that