A contribution to the sectional anatomy of advanced extrauterine gestation / by D. Berry Hart and J.T. Carter.

The Frozen Sectional Anatomy of
Advanced Extrauterine Gestation.

Hart and Carter.

A CONTRIBUTION

TO THE

SECTIONAL ANATOMY OF ADVANCED EXTRAUTERINE GESTATION.

BY

D. BERRY HART, M.D., F.R.C.P.E.,

LECTURER ON MIDWIFERY AND DISEASES OF WOMEN, SURGEONS' HALL, EDINBURGH; ASSISTANT GYNÆCOLOGICAL PHYSICIAN, ROYAL INFIRMARY; ASSISTANT OBSTETRIC PHYSICIAN, ROYAL MATERNITY AND SIMPSON MEMORIAL HOSPITAL, EDINBURGH:

AND

J. T. CARTER, F.R.C.S.E., F.F.P.S.G.,

LECTURER ON ANATOMY, WESTERN MEDICAL SCHOOL, GLASGOW; EXAMINER IN ANATOMY, F.P.S. GLASGOW; FORMERLY DEMONSTRATOR OF ANATOMY, SCHOOL OF MEDICINE, EDINBURGH.

(*Read before the Edinburgh Obstetrical Society, 13th July* 1887.)

PRINTED BY OLIVER AND BOYD, EDINBURGH.

MDCCCLXXXVII.

REPRINTED FROM THE EDINBURGH MEDICAL JOURNAL FOR OCTOBER 1887.

SECTIONAL ANATOMY OF ADVANCED EXTRA-UTERINE GESTATION.

No subject presents more points of interest to the gynæcologist than Extra-uterine Gestation. The remarkable nature of this deviation from normal pregnancy, the difficulty attending its diagnosis, the protean changes it may undergo during its development, as well as the marked risk both to mother and child, render it one of the most important subjects for his investigation. Although many observers have been in the field, and much has been added to our knowledge through their valuable investigations, the number of points on which even elementary information is needed is very great. Of these the most clamant is an anatomical one. We do not know to a demonstration what is the site of advanced gestation and what stages it has passed through prior to this, although some important links in the chain have been found by Dezeimeris, Lawson Tait, Werth, and Fränkel.

The authors have examined frozen sections of two specimens—the one a four and a half months' extrauterine pregnancy *in situ* in the bony pelvis; the other an entire cadaver with advanced abdominal gestation.[1]

One important point is in regard to the method of investigation adopted. Ordinary anatomical dissection of specimens removed from the body in the ordinary way is notoriously defective and unsatisfactory, and has led to several specimens being described erroneously as ovarian when they were really in the broad ligament. The only accurate way to study such is to do so by frozen sections of the entire cadaver, or at any rate of the specimen still in relation to the bony pelvis. We thus see peritoneal relations undisturbed, and can without much displacement examine the entire sections by a method of modified dissection.

The first specimen had advanced to between the fourth and fifth

[1] While this paper is a joint production, the anatomy of the extrauterine pregnancy has been undertaken by Dr Hart, the general and descriptive anatomy by Mr Carter.

month. Dr Hart saw the patient for the first time in the Buchanan Ward of the Royal Infirmary, and found her with a tumour the size of a cocoanut in the site of the right broad ligament, and reaching from the right iliac margin to the region of the recto-vaginal space, which bulged down markedly. The uterus was displaced to the left side, as well as upwards, and was about the size of a two months' pregnancy. From the history of five months' amenorrhœa, and the occasional attacks of fainting and pain during that time, there was no difficulty in coming to the conclusion that we had here to deal with an extrauterine gestation developing between the layers of the broad ligament. Two days after, the patient collapsed markedly, evidently from rupture of the sac and loss of blood. Eight hours afterwards, when she had somewhat rallied, an exploratory abdominal incision was made to see if anything could be done. Blood poured out whenever the peritoneum was opened, and on passing the fingers in, rupture deep down through the posterior lamina of the broad ligament was found, a condition which did not admit of removal of the sac, inasmuch as it had developed down between the rectum and vagina. The incision was therefore closed, and the patient sank in about ten hours.

On post-mortem, which was performed by Dr Bruce, the bony pelvis and contents were removed and frozen, and in this way the relations were preserved—an impossibility if the parts are scooped out from the pelvis in the usual way.

The pelvis when frozen was sawn in the mesial, right sagittal lateral, and left sagittal lateral planes, so as to cut sac and uterus.

The following points are noteworthy :—

In the mesial line the fœtus and placenta are contained in a space bounded above by the laminæ of the broad ligament, and below by the paraproctal tissue and that at the base of the broad ligament. The placenta is attached to the inner aspect of the tube and broad ligament, the fœtus lying below. The vertical measurement is 4·10 cm., the transverse 8·7 cm.

A similar section to the left of the middle line shows the enlarged uterus, and hæmatoma between the peritoneum and the rectum. The rupture had occurred through the posterior lamina, and low down.

The uterus measures 10 cm. vertically, has a well-marked decidua, and the dip of the vesico-uterine pouch is only 5 cm. from the fundus. The left Fallopian tube and ovary are intact. This specimen, therefore, shows that the gestation, primarily Fallopian, had developed between the layers of the broad ligament and into the connective tissue between the peritoneum and rectum. It was thus, prior to its intra-peritoneal rupture, entirely extra-peritoneal (*v.* Plate I., Figs. 1 and 2).

The second specimen was the unopened body of a female, aged 38, small and very emaciated, who was supposed to have gone a little beyond the term of normal pregnancy ; but little information

of any kind could be obtained, as she was destitute, with no friends. The usual appearances of a multiparous pregnancy were present, without any varicosity of the venous system.

On delivery into the dissecting-room the extremities were cut off; and the head and trunk, after a process of freezing by means of ice and salt, were cut into a series of sagittal mesial and lateral slabs, six in all, of about 1½ inches in thickness. These slabs may be for convenience mentioned as 1R, 2R, 3R, and 1L, 2L, 3L, viz., the first slab on the right side, and so on.

In the sagittal mesial section the saw passed almost exactly in the mesial plane of the body. There is nothing particular to remark about the brain and head and neck, the specimen presenting the usual appearances exhibited in sections made in this manner.

In front of the spinal cord and within the dura mater there was found a thin layer of granular-looking substance, which extended as low down as the tenth dorsal vertebra; after examination, it was found to be albuminous in nature.

Thorax.—The mesial section was made through a part of the right lung, which projected a little to the left of the middle line; the aortic arch was cut through, exposing the semilunar valves and the origin of the innominate artery. The sagittal section shows the œsophagus in the upper part of its thoracic portion, and also its cardiac termination at the stomach.

The right auricle is seen, and the right ventricle with its tricuspid valve are cut through, both columnæ carneæ and chordæ tendineæ being well exposed. The left auricle is shown in the mesial section in front of the spinal column as a vertical slit, the greater portion lying more to the left of the plane of section. The left lateral sections also exhibit the left ventricle.

The posterior and diaphragmatic surfaces of the lungs were found to be firmly adherent to the thoracic wall, and the right side of the heart and great vessels were more or less filled with a buffy coagulum of blood, which had to be removed after the parts were hardened in spirit.

The antero-posterior diameter of the thoracic cavity at the lower end of the manubrium sterni is 6·50 cm., and at the upper level of the diaphragm, is 9 cm. These measurements are small, and can be accounted for to a certain extent by the small size of the subject. Dohrn endeavours to show, by a series of chest measurements, that the antero-posterior diameter of the base of the thoracic cavity is diminished during pregnancy. This body cannot, however, be taken into account as in any way tending to prove that such is the case, or to the contrary.

The heart was small, with no fat, and the valves were in a normal condition. The upper portion of the left auricle reached up to the fifth dorsal vertebra, and the lower part of the base of the heart was on a level with the lower margin of the eighth dorsal

vertebra. The thickness of the apex of the left ventricle was 0·4 cm., and although the heart was small, the greatest thickness of the left ventricular wall amounted to 1·5 cm. Taking Peacock as our authority, we find the greatest average thickness of the left ventricle in a normal heart to be 1·26 cm., and at the apex 0·526 cm. Du Crest gives 1·5 cm. in pregnant females as the average thickness, supporting Larcher's view that the ventricular wall has increased during the pregnant period. The heart being small in this case, and the measurements of the left ventricle, at the same time, being above the average, it is probable that there has been an increase in the thickness of its wall. This derives additional interest from the fact that the increased vascularity of parts about the fœtus is principally due, as regards the mother, to increased calibre of the vessels in the extra-peritoneal tissue, and not to a special differentiation of uterine mucous membrane. This increased thickness of the ventricular wall would not be due to any necessity for an increased driving power or an increase in the vascular fluid required for a specialized maternal placenta. The uterus is sympathetically enlarged as well as remarkably elongated in its cervical region. From the os externum to the os internum (*i.e.*, to vesico-uterine dip) is 3 inches, the body being $4\frac{3}{4}$ inches long. It is remarkable that the cervix is elongated, as in prolapsus uteri.

The diaphragm reaches as high as the lower border of the eighth dorsal vertebra, and is higher than those exhibited in Braune's illustrations of sections of pregnant females. The cause of this is due to the greater upward growth of the tumour and the small abdominal distension in an antero-posterior direction. The abdominal wall in front derives great support from the position of the uterus which lies immediately behind it.

The kidneys are enlarged, and the calibre of the ureters and pelvis of the left kidney greatly increased, the ureter being irregularly dilated in its course towards the bladder (hydronephrosis).

The stomach was almost empty, containing only a small quantity of fluid food. In the mesial section its pyloric end was cut through (Fig. 3,1R), being bent backwards and to the right. The duodenum is seen embracing the head of the pancreas opposite the twelfth dorsal and first lumbar vertebræ. The small intestines were matted together and pushed over to the left in the abdominal cavity. The transverse colon, which was distended with gas and contained very little fæcal matter, together with the great omentum, was adherent to the abdominal wall in front. Its under surface was greatly thickened and firmly adherent to the fœtal tumour, Fig. 3,1R. The sigmoid flexure is seen in the left lateral section as a vertical slit.

In describing the gestation sac and its contents we shall try to avoid too minute detail. The first great point to settle is the relations of the peritoneum to the sac, and it will simplify matters

if we state the one broad fact brought out in the sections, viz., that the *gestation is entirely extra-peritoneal, and that fœtus and placenta lie in extra-peritoneal connective tissue.*

The fœtal capsule and its contents, which occupy a great portion of the abdominal cavity, rise up to the upper margin of the second lumbar vertebra and extend well into the right half of the sections, pushing the intestines up and to the left. In front the tumour is separated above from the abdominal wall by the great omentum, while below, its wall is formed by the uterus; behind, it is separated from the posterior abdominal wall by a double layer of peritoneum. The uterus is much enlarged, the upper surface of the fundus being on a level with the upper border of the first sacral vertebra. It was pushed over to the left side, none being found in the right outer lateral section. The peritoneum has been entirely stripped away from its posterior and the upper part of its anterior surfaces; and from the fundus bands of tissue connect it with the upper and inner surface of the fœtal sac. On the left side of the fundus a small fold of peritoneum enclosed the left Fallopian tube and left ovary.

The left Fallopian tube passed obliquely downwards from the left side of the fundus to the left iliac fossa, its fimbriated end being attached to the tumour.

The left ovary was found below the Fallopian tube and left under surface of the capsule, and is seen in the left lateral section 3″ from the median line in the angle between the abdominal wall and left iliac fossa (*v.* Plate III., Fig. 6). It measured $1'' \times 1\frac{3}{8} \times \frac{3}{4}$ in thickness, and was enclosed in the same fold of peritoneum with the Fallopian tube. The ovarian vessels were greatly increased in calibre. The right Fallopian tube and ovary cannot be identified, being taken up with the sac.

Peritoneum.—Owing to the surfaces of the peritoneum being more or less adherent, it required great care to trace its general relation. In the mesial section it will be seen to be reflected from the inner surface of the anterior abdominal wall on to the front of the uterus at the upper level of the pubes; the bladder lies below the lines of reflection, and is deficient of a serous covering. The front of the enlarged uterus is covered for a short distance, and the peritoneum is there reflected on the fœtal capsule. The uterus, for about 4 cm., projects into the cavity of the capsule, this portion of its surface being rough and deficient of any serous investment. The fœtal capsule is seen to be enveloped in front and above, and behind the membrane is reflected on to the rectum at about the level of the fourth sacral vertebra. On the left side the peritoneum passes from the left iliac fossa and covers a small portion of the upper part of the body of the uterus, and from this is reflected on to the capsule, forming a fold in which the left Fallopian tube and ovary are enclosed. The relations of the peritoneum to the other organs do not require any special remark.

On the right side the peritoneum is lifted up. The fœtus has thus developed beneath the peritoneum, elevating the folds of the broad ligament after distending them, and in its upward growth stripping the peritoneum up from the right side of the anterior abdominal wall for a distance of 7⅝ in. above the pelvic brim. Posteriorly the deepest portions of the pouch of Douglas lie at the level of the fourth and fifth sacral vertebræ.

The fœtal capsule and its contents are found to extend into the hypogastric, umbilical, lumbar, and right inguinal regions.

The *Sac* can be studied in all its relations in the sections. Microscopical examination of its walls were made at various points, viz., at its uppermost portion, and also at the anterior abdominal wall below the peritoneal reflection (Plate II., Fig. 4*).

In the former part there was peritoneum and unstriped muscle, showing the Fallopian tube origin; in the latter, connective tissue. The capsule was thus formed by connective tissue, bounded outside by the special structures displaced, viz., either by muscular abdominal wall or by peritoneum.

On the right side of the body a deep dissection was made from the skin, and the cæcum and peritoneum found displaced up.

Further details and drawings on this point will be given when an account of the minute structure of the placenta is published.

The Uterus.—The cervix contained a plug of mucus, and in the flattened cavity of the uterus was found a small amount of disintegrated tissue.

The Fœtus is situated below the placenta and between the uterus in front and the abdominal wall behind. Together with the placenta, it is seen to be enclosed in a distinct capsule.

The placenta consists of an oval-shaped and flattened mass of tissue situated in the abdominal cavity and extra-peritoneally, and lying above the fœtus. Its long axis is directed up and down, and in the mesial section is seen to extend from the upper margin of the second lumbar vertebra to a little below the upper border of the first sacral vertebra. It is attached to the posterior aspect of the anterior abdominal wall and outer surface of peritoneum. Where attached to the anterior abdominal wall, the veins there are enlarged.

The diameter of its long axis is 13·5 cm., and its average antero-posterior measurement is 7·5 cm. Around it is a thin investment of connective tissue, and it is firmly attached at points, especially in front and above, to the surrounding capsule by bands of vascularized tissue. In the right sections a cavity is seen between the capsule and the placenta, which was filled with a mass of grumous blood and gases of decomposition, the position of which corresponds to a well-defined darkening of the skin of the anterior abdominal wall, as if the patient had suffered from a severe blow or fall.

The fœtus weighed 2 lbs. 4 oz. without the umbilical cord. It was fairly well nourished, but decomposition had commenced,

especially at the lower part of the abdomen. Around the body and flexed extremities it measured 13½ inches in circumference, and around its long axis 18¾ inches. The head was covered with hair, and the nails were well developed. The position of the fœtus was peculiar—the face looked directly upwards, the head was bent abruptly backwards, and both thoracic and abdominal cavities were greatly flattened antero-posteriorly. The right arm and fore-arm were bent backwards, and rested along the right side of the head, the wrist and hand being flexed. The left arm was rotated inwards, and rested along the left side of the body, and the hand was flexed in the concavity formed by the extended back of the fœtus. The right thigh was twisted round, and the knee flexed so that the anterior surface of the leg looked backwards, the foot being turned outwards and abducted. The left thigh and left ankle were extended, the knee was flexed, the sole of the foot looking upwards. The general arrangement of the body and limbs will be better understood by shortly stating that the head being sharply bent backwards and the trunk flattened and extended, a concavity was formed behind, in which the extremities were more or less situated. The internal antero-posterior measurement of the thoracic and abdominal cavities had an average measurement of only 3 mm. No examination of the internal organs of the fœtus was possible from the decomposition which had set in, and the saw having passed through the body three times while making the sections. From the umbilicus the cord passed upwards to the placenta between the latter and the posterior surface of the capsule. Development of fœtus corresponded to about the seventh or eighth month.

The consideration of these two sections shows, therefore, a special phase in the development of extrauterine gestation. They demonstrate that a Fallopian tube pregnancy may develop between the layers of the broad ligament, and may continue this extra-peritoneal mode of growth, stripping off the peritoneum from the uterus, bladder, and pelvic floor until it becomes in great part surrounded by a peritoneal capsule derived from these organs. All this is done without any actual intra-peritoneal invasion. The placenta in the advanced gestation case is attached in front to the extra-peritoneal connective tissue, the veins there enlarging and acting like uterine veins.

In this special cadaver, therefore, the gestation began probably in the right Fallopian tube, developed into the layers of the broad ligament, and grew extra-peritoneally, lifting up the peritoneum on the right side of the middle line both anteriorly and posteriorly, and also stripping the posterior uterine wall and upper part of the anterior uterine wall. The extra-peritoneal tissue, with its blood-vessels, is therefore not only capable of forming anastomoses in abdominal aneurism, as Turner and Chiene have shown, but may attempt to carry on the functions of the maternal portion of the placenta.

We have here what may be termed a slow displacement of the placenta. At first it lay in the Fallopian tube, but the growing ovum has slowly pushed it up (a process attended with blood extravasation) from pelvis to abdominal cavity, until at last its upper edge is about 10 inches from its original site. Part of this is due to growth of course. The uterus also has had its cervical portions elongated in the same way to 3 inches.

These sections have an important bearing on the *Classification* of extrauterine gestation. Much has been written, and little really demonstrated, on this point. The Tubal variety is undoubted; the Tubo-ovarian has also been demonstrated; but the Ovarian is a very doubtful form. The Subperitoneo-pelvic or Intra-ligamentous variety of Dezeimeris, Tait, and Werth, is demonstrated in the second specimen, which also shows the ovary thinned out on the posterior lamina of the broad ligament. The presence of the ovarian structure in the cyst wall of an extra-uterine gestation has been brought forward as evidence of its being the Ovarian variety: it more probably shows that it is Sub-peritoneo-pelvic.

The chief interest centres on the anatomical nature of abdominal gestation. The second case shows that this can be extra-peritoneal, a fact never hitherto demonstrated, although strongly contended for by Tait. We do not deny that we may have either a partial extra-peritoneal and intra-peritoneal variety, or an entirely intra-peritoneal variety, but we ask for actual proof of such. If it be urged that a purely intra-peritoneal form must exist because placenta has been found attached to the uterus and intestine, we answer that in the cadaver shown (Plate II.) the placenta has been attached to the portion of uterine wall where the peritoneum is stripped off; or it might have been attached to the other abdominal viscera, but yet carrying a layer of peritoneum before it, be still extra-peritoneal.

We therefore hold that the following varieties have been demonstrated, viz.,—Tubal, Tubo-ovarian, Subperitoneo-pelvic, Sub-peritoneo-abdominal. An Abdominal variety, partly intra-peritoneal and partly extra-peritoneal, is probable; a purely Intra-peritoneal variety has yet to be accurately demonstrated, and the same holds good as to the Ovarian variety.

Hitherto we have always regarded the peritoneal cavity as the site specially chosen by extrauterine gestation for its development, but we must now more closely scrutinize such in the light of this and similar cases.

We defer at present full consideration of the changes on the placenta, but give a brief account of the results so far.

It has often been thought that the moot points in the structure of the placenta might be cleared up by an examination of the placenta in advanced extrauterine gestation. Here, it is argued, we have the peritoneum taking the position of the serotina of the

uterus, and therefore a comparison of the placental structure in normal and abnormal implantation should throw light on, for instance, the origin of the intervillous spaces, whether really maternal and filled with blood. The results in the specimens are as follows:—In a Fallopian-tube pregnancy at the second month, the villi were seen embedded in many and large cells analogous to the decidual cells of normal pregnancy. No sinus system was present, except enlargement of the veins in the muscular coat. The normal Fallopian tube near was also markedly infiltrated with cells, and wherever villi were the columnar epithelium of the mucous membrane had disappeared.

In the advanced gestation the placental structure had been evidently undergoing a destructive process. The villi lie in organized blood-clot, with abundant blood crystals, and are atrophied and irregular in outline. There is nothing comparable to the intervillous system of the normal placenta, nor to the beautiful and large cells found in the serotina near the villi. The growth of the placenta in the advanced extrauterine gestation has evidently been attended with much blood extravasation, and, as a consequence, destruction of the part analogous to the ordinary maternal portion.

The placenta in the 4½ months' gestation is unfortunately not yet hard enough for section.

The following seem to us fair deductions from the specimens we have examined, and we place these before the Fellows, for convenience, in a series of propositions:—

1. Fallopian-tube pregnancy may develop into the broad ligament (Intra-ligamentous, Werth), and continue this development beneath the peritoneum of the pelvic floor (Subperitoneo-pelvic of Dezeimeris).

2. An advanced gestation may be derived from a Fallopian-tube pregnancy which develops as given in 1, and further lifts up the peritoneum until we get—

3. An Abdominal case entirely extra-peritoneal. For this form we suggest the term—Subperitoneo-abdominal.

4. The placental changes in the Subperitoneo-abdominal form are destructive to placental tissue and function, and inimical therefore to vigorous fœtal life.

5. In treatment, one great principle is to interfere where safest for the mother, without regard to fœtal life.

6. The placenta should be left after operation, unless it can be ligatured, as separation causes uncontrollable hæmorrhage. This is the usual reason for leaving it untouched, and one that cannot be gainsaid. The extra-peritoneal position of the placenta, and the great chance of its organizing, as is shown in our specimen, forms another powerful argument for leaving it alone. In operations for advanced gestation the fœtus only should be removed, the cord tied, returned, and the wound closed, unless a septic condition requires drainage.

We are indebted to Dr Bruce for verifying the microscopical structure of the cyst wall, to Dr R. Stewart for his valuable aid in the microscopical part, and to Mr Wm. Keiller, who made careful tracings and drawings of the sections.

DESCRIPTION OF PLATES.

Plate I.

Fig. 1.—Sagittal lateral section (right) of pelvis with extrauterine gestation in right broad ligament.

Fig. 2.—Sagittal mesial section of same pelvis, showing uterus with decidua. This section demonstrates, *inter alia*, that what is termed clinically retro-uterine hæmatocele may be hæmatoma.

Plate II.

Fig. 3.—Sagittal mesial section of cadaver with advanced extrauterine gestation—subperitoneo-abdominal (1R.)

Fig. 4.—Sagittal lateral section of same (2R.)

Plate III.

Fig. 5.—Sagittal lateral (2L) of same.

Fig. 6.—Sagittal lateral (3L) of same.

Fig. 7.—Fränkel's diagram of his case.

Fig. 8.—Schuchardt's diagram of his case.

Bibliography.

Campbell.—*Memoir on Extrauterine Gestation.* Edinburgh, A. & C. Black, 1840. This is an excellent critical treatise.

Chiene.—*Contributions to Surgical and General Pathology.* Edinburgh, E. & S. Livingstone, 1870. From a consideration of four cases of obliterated aorta, Chiene concludes that anastomosis can be satisfactorily carried on by what Sir W. Turner has described as the sub- or extra-peritoneal system of arteries (*v.* Turner, Sir Wm.)

Dezeimeris.—*Jour. des Connaiss. Med. Chir.*, Jan. 1837. We have, unfortunately, not had access to Dezeimeris' memoir. The references to it made by Campbell, Werth, and especially Tait, enable us to gather the scope of his paper, however. Dezeimeris drew attention especially to the "subperitoneo-pelvic form," and our preparations confirm his statements fully. His views on this point have, however, received scant attention, are denied by Campbell, and ignored by all English authors with the exception of Parry and Tait. For this Dezeimeris is partly to blame, as his minute classification of the varieties of extra-uterine gestation laid him open to criticism.

Fränkel.—*Diagnose und operative Behandlung der Extrauterinschwangerschaft*, Volkmann's *Sammlung*, No. 60. Fränkel here records a case where the gestation developed in the left Fallopian tube and broad ligament (*v.* Fig. 7, Plate III.)

Schuchardt.—Virch. *Arch.*, Bd. 89, S. 133.

Parry.—*Extrauterine Pregnancy.* Lewis, London, 1876. This is by far the best systematic treatise in any language.

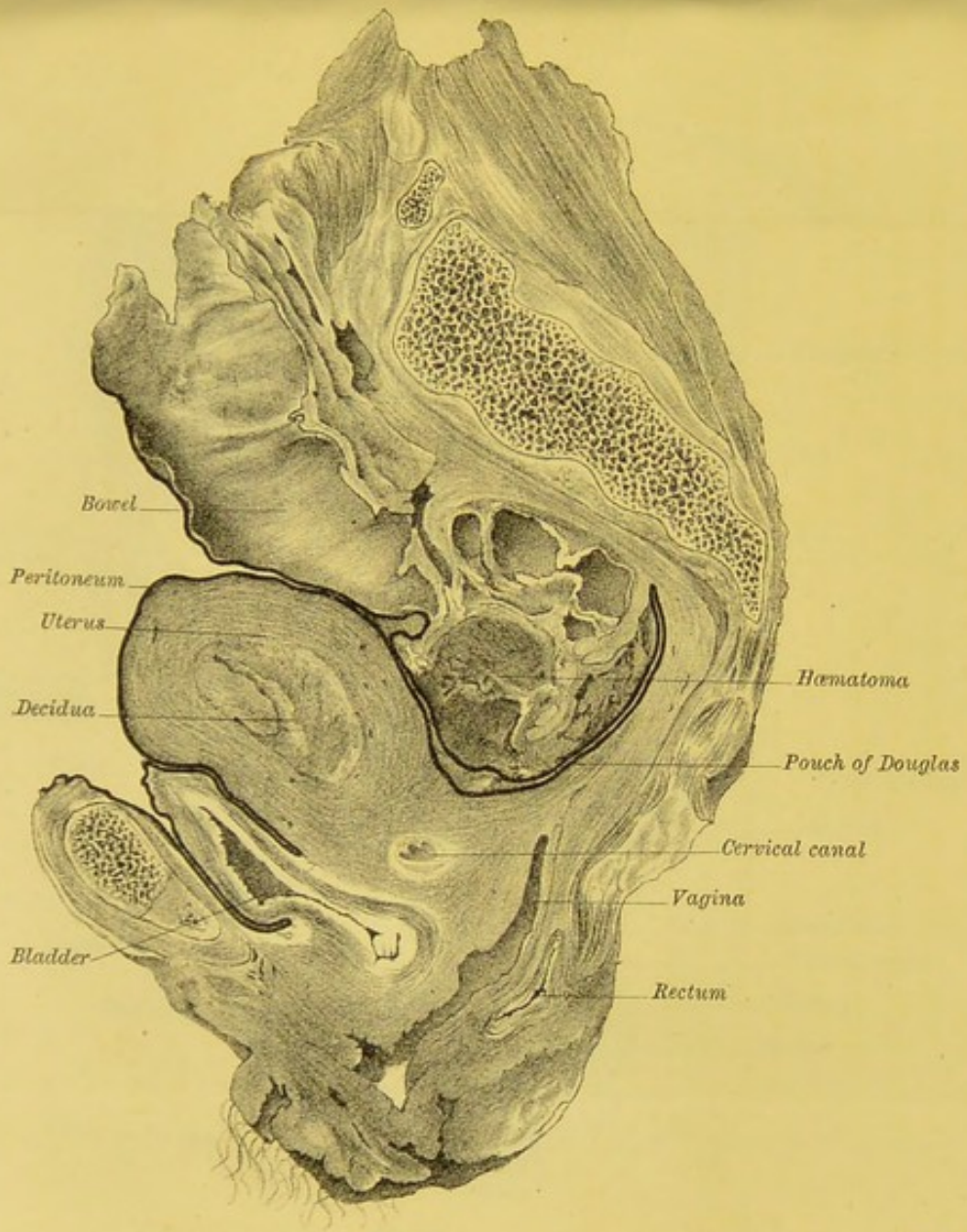

FIG. 2.

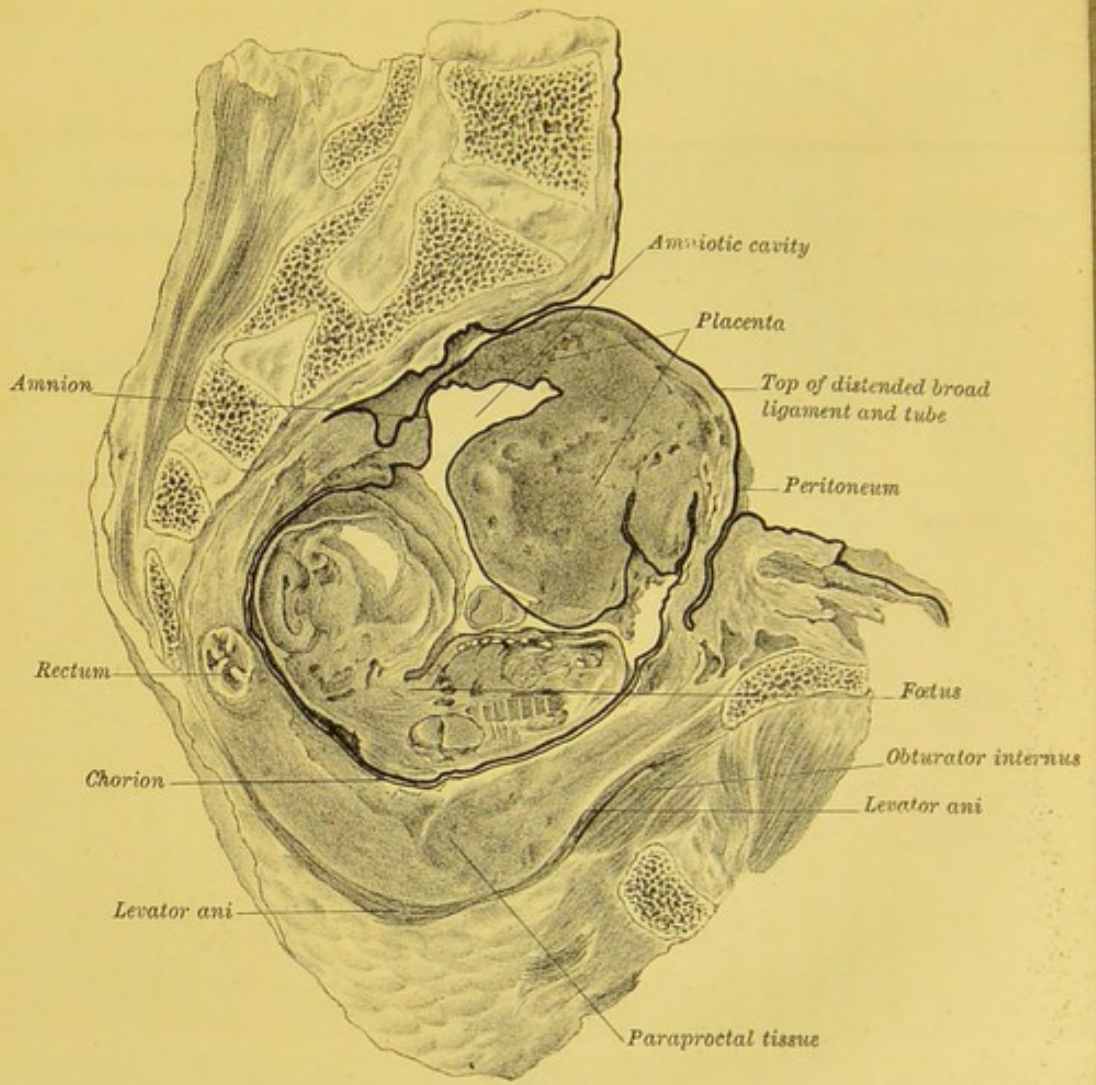

FIG. 1.

PLATE I.

W. & A.K. Johnston, Edinburgh

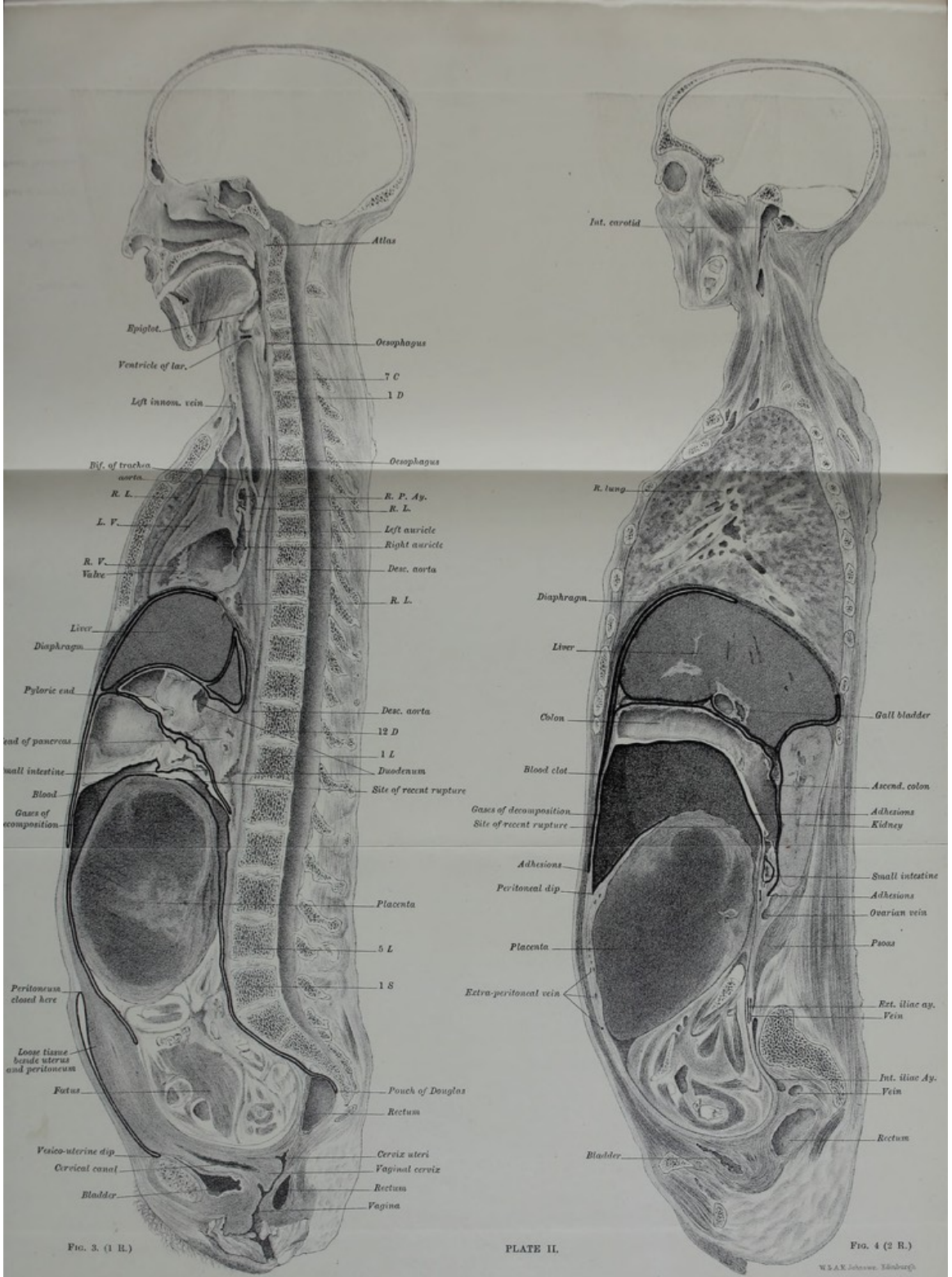

FIG. 3. (1 R.)

PLATE II.

FIG. 4 (2 R.)

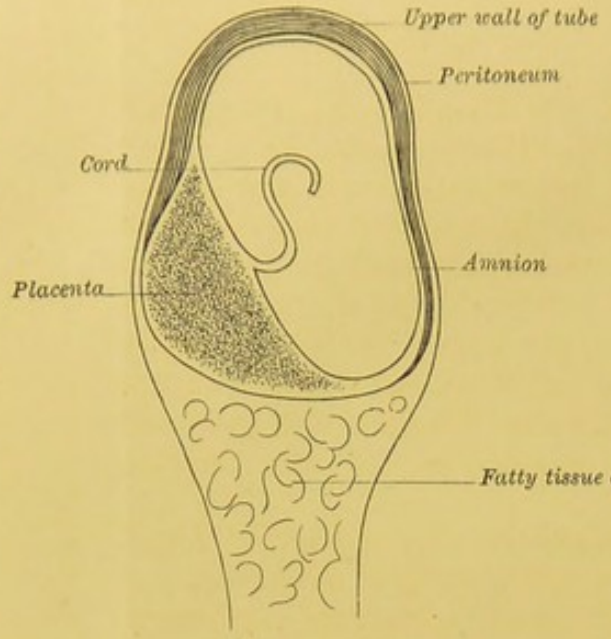

FIG. 7. (DIAGRAMMATIC.)

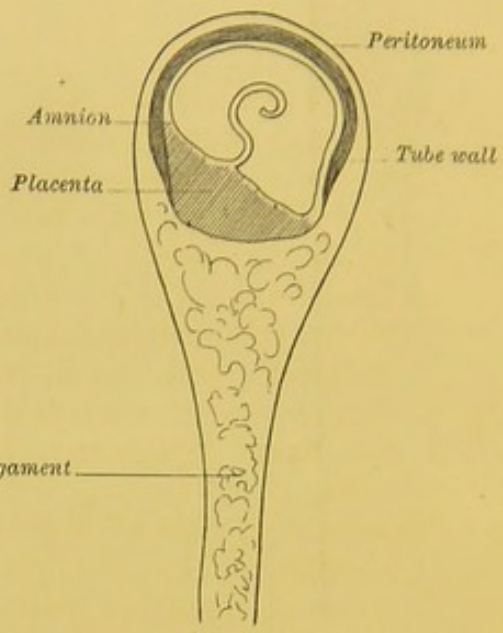

FIG. 8. (DIAGRAMMATIC.)

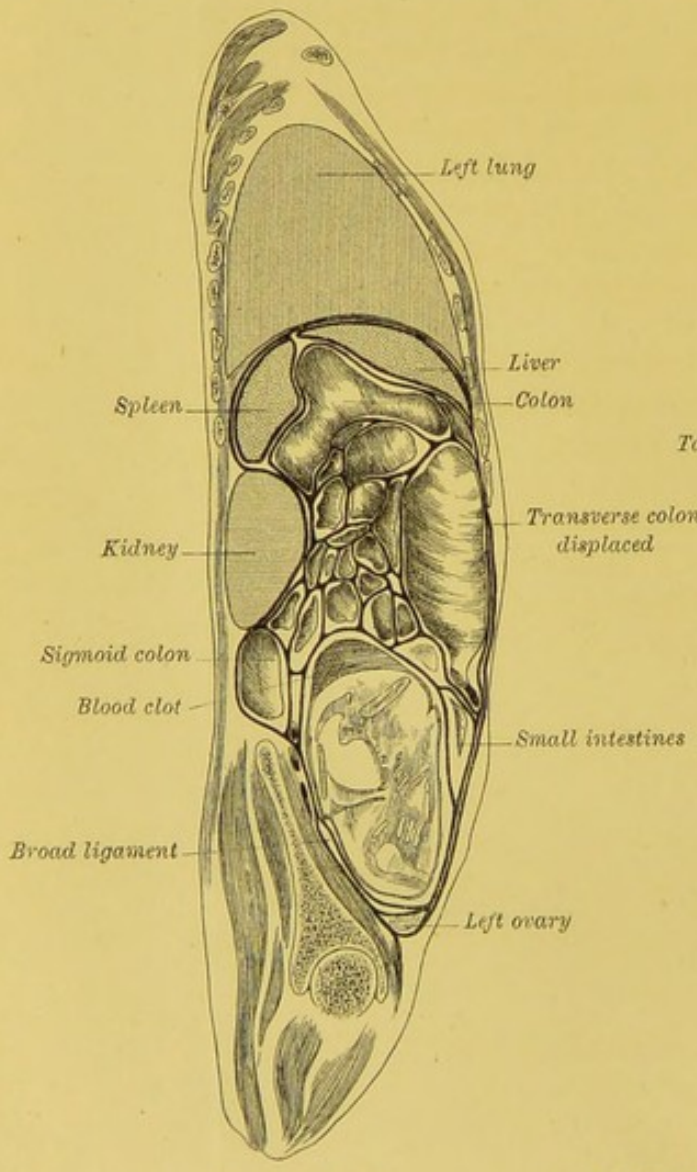

FIG. 6. (3 L.)

PLATE III.

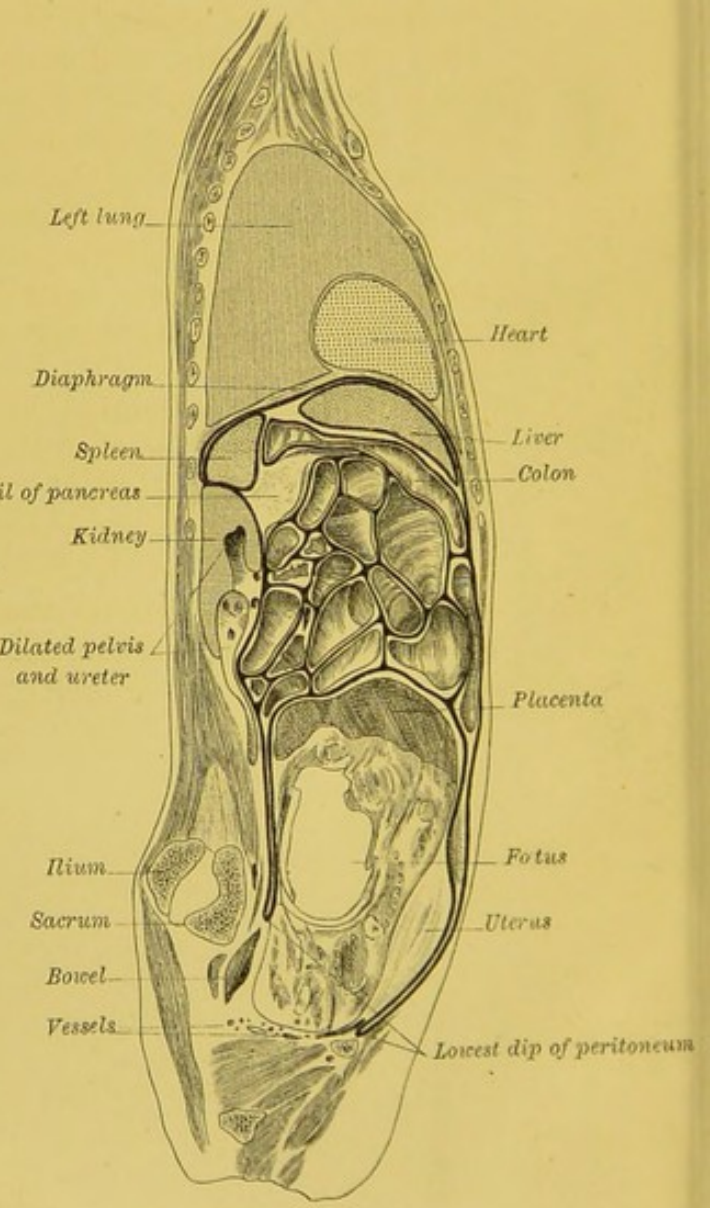

FIG. 5. (2 L.)

W. & A. K. Johnston, Edinburgh

TAIT, LAWSON.—*Diseases of Women.* Williams & Norgate, 1877. *Diseases of the Ovaries,* 4th Edition. Birmingham, 1883. Tait is the only English writer and investigator, with the exception of Parry, who has advocated the view of Dezeimeris as to the development of extrauterine pregnancy in the broad ligament, *i.e.*, the possibility of its developing extra-peritoneally. He believes extrauterine pregnancy to be primarily Fallopian, and that in its further development it may rupture into the peritoneal cavity or develop between the layers of the broad ligament. He is sceptical as to any ovarian form.

TURNBULL.—*A Case of Extrauterine Gestation of the Ventral Kind.* London, 1791. The plates here are very well executed, and make it highly probable that the fœtus was intra-peritoneal, the placenta in the broad ligament, and a condition of the cord analogous to velamentous insertion present.

TURNER.—*On the Existence of a System of Anastomosing Arteries, Brit. and For. Med. Chir. Review,* xxxii., 1863. Sir W. Turner here recognised, as early as 1863, the importance of the subperitoneal fat and areolar tissue, and pointed out that its vessels are of greater extent and importance than supposed. The vessels of the abdominal wall can, for instance, be injected from those of the viscera, and those of one viscus from the vessels of another, the communication taking place through the extra-peritoneal plexus. He urges that this gives an anatomical basis for blood-letting. In the light of the present paper, Turner's investigations are of the greatest importance, and support his view markedly. The plates given in our paper show specially great enlargement of the extra-peritoneal veins.

WERTH.—*Beiträge zur Anatomie und zur operativen Behandlung der Extrauterinschwangerschaft.* Stuttgart, Enke, 1887. This is a valuable contribution to the subject. Werth shows that Dreesen's case, given by Schroeder as an ovarian pregnancy (*Lehrbuch,* Auflage vi., S. 412), is really intraligamentous. In a table he collects sixteen cases of intraligamentous development, giving details as to conditions found on examination.

EDINBURGH : PRINTED BY OLIVER AND BOYD.