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TO WHAT EXTENT IS THE DIAGNOSIS OF PREGNANCY POSSIBLE IN THE EARLY MONTHS?

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TO WHAT EXTENT IS THE DIAGNOSIS OF PREGNANCY POSSIBLE IN THE EARLY MONTHS?

BY CHARLES JEWETT, M.D.

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The subject assigned to me by the Chairman of the Obstetric Committee is the question: To What Extent is the Diagnosis of Pregnancy Possible in the Early Months?

Before reading the paper I will put in circulation a specimen of nulliparous uterus to illustrate one or two points to which I shall refer in the paper: The preparation shows first the difference in shape of the anterior and posterior walls. The anterior nearly flat, the posterior convex—this is an important point in distinguishing between the gravid and non-gravid uterus. Bellying of the anterior wall is a sign of pregnancy.

Another point is the great difference in the lateral diameter of the uterus in the different regional divisions, it being much narrower immediately above the cervix than through the cervix or fundus. As soon as the ovum lodges in the uterus and begins to grow, the uterus expands between the cervix and the fundus.

The specimen also illustrates the greater density of the median band of the body of the uterus in comparison with the lateral bands on both sides of it. The median section is firmer in the non-gravid organ generally than the lateral sections, yet this central portion is the first to soften in pregnancy.

NORMAL PREGNANCY.

I will assume that the period of gestation with which I am expected to deal is limited to the first three months. Since in the nature of things the question is seldom raised during the first menstrual interval, my subject is narrowed down practically to the signs available for the diagnosis of pregnancy during the second and third months.

It is not my purpose in this presence to consider the more commonplace signs in detail, I may, however, be pardoned a few words with reference to the diagnostic value of some of the familiar

evidences of pregnancy. So much stress is laid by most writers upon the difficulties of diagnosis in the early months, that the tendency in practice is to hold the question over till a later period, when its solution is easy. We are told, and rightly too, that histories are unreliable, that many of the earlier signs may result from pathological causes, and that, therefore, we have no sign of pregnancy at this early period that can be considered diagnostic. While this is all true, we do not expect in any line of diagnosis to find conditions so plainly labeled that "he who runs may read." The recognition of early pregnancy, as is true of disease, usually depends, not on any one symptom or group of symptoms, but upon a painstaking analysis of the sum total of evidence in the case. Yet the history alone, if carefully weighed, often establishes a probability so strong that it amounts almost to a certainty. A patient, for example, whose menstrual habit has been regular, who has skipped a menstrual period and has soon after begun to experience the characteristic morning sickness, especially if no morbid cause appears in her history, is almost surely pregnant. Again, all the mammary signs but two may be looked for by the end of the second month. When they can be well made out, their collective evidence in first pregnancies is alone almost conclusive. When found clearly developed in connection with the signs above mentioned, and in the absence of pelvic disease, there is not as much room for doubt as there frequently is in the diagnosis of a pneumonia or a pleurisy.

The most conclusive evidence of pregnancy, however, in the first three months is to be found in the pelvis. Naturally the earliest and the most significant effects of utero-gestation upon the maternal economy are to be looked for in the uterus itself. And it is of these that it is the principal object of this paper to speak. They begin with the fixation of the impregnated ovum, and are for the most part progressive throughout the entire period of gestation. The changes available for our purpose are changes in the size, shape and consistence of the uterus.

Size.—The uterus grows with the growing ovum, and practically at a fixed rate throughout the nine months. It is well known, however, that at the time when the growth first becomes easily perceptible, notably in the second month, the enlargement of the uterus is chiefly in its lateral and antero-posterior diameters. The length at this time is but little increased. This is what would be naturally expected when we remember that in the non-gravid state the anterior and posterior walls lie in contact. The beginning development of the egg has the effect to lift the uterine walls apart

and to round them out, the ordinary length of the cavity being sufficient to accommodate the growth of the first few weeks. In course of the third month the growth begins to be an all-round growth. True, the enlargement of the uterus in the first and second months is not solely the mechanical effect of the growing ovum; it is in part due to the increased physiological activity of the uterine structures.

Shape.—The shape of the gravid uterus is practically that impressed upon it by the globular ovum growing within its cavity. The first change in shape, then, is a bellying of the anterior and posterior walls of the body of the uterus. To the touch the bellying is usually most accessible in front; it is most appreciable in front, for the further reason that the anterior surface of the non-gravid uterus, especially in the nullipara, is flattened, while the posterior surface is somewhat convex. The lateral borders also begin to be rounded out. In the non-gravid uterus, especially of the nullipara, the inferior segment—that part immediately above the cervix—will be found much narrower than the fundus above or the cervix below. Since it is in this part of the uterus that the ovum is lodged, the first effects of the developing ovum upon the shape of the uterus are readily perceived in the lateral as well as the anterior expansion of the corpus uteri. The changes in contour are well developed in course of the second month, and the shape at this time is in notable contrast with that of the healthy nulliparous organ. At the end of the eighth week or soon after, a cross section of the uterine body midway between the isthmus and the fundus is almost a perfect circle.

Consistence.—The uterine structures begin to soften from the date of conception. This softening is naturally most marked at first in that segment of the organ included between the cervix and the fundus, since this part is in most intimate physiological relation with the ovum. It is in most cases easily appreciable at the fourth week, certainly by the sixth, and is well developed at the eighth. But little experience is required to recognize the peculiar compressibility and resiliency of the uterus, which contains a living ovum in the latter part of the second month.

I may mention here a practical point upon which I have been accustomed to rely for the recognition of this sign. In the healthy non-gravid condition the mesial section of the lower segment of the uterine body is notably denser than the lateral sections. The softening which characterizes the gravid uterus is most readily detected in this median section. The median ridge disappears, and not only that but this mesial section of the corpus uteri usually

becomes less dense between the fourth and sixth week than the uterine structures on either side of it. The softening of this portion of the body of the uterus at a point immediately above the cervix, is the essential fact in

HEGAR'S SIGN.

Hegar's sign, which has become familiar to the profession within the last few years, may best be defined as the compressibility of the isthmus uteri. Its location is the inferior segment of the body at a point just above the cervix, and it is especially marked in the mesial section. To be evidence of pregnancy with a living ovum, this compressibility of the tissues must be accompanied with the normal elasticity. While the compressibility of the isthmus is not equally well developed in all cases, it is always present in some degree during the second month, and when well made out is less liable to fallacy than most other signs of this period. It will be better understood in connection with Hegar's method, which will be described below.

Technique of pelvic examination.—Little need be said with reference to the method of examination for the pelvic signs of pregnancy. It is frequently impossible to fix and palpate the uterus satisfactorily with a single finger *intra vaginam*. With two fingers slightly separated the uterus may be readily balanced between them and the external hand, and may be explored with ease. The surrounding structures, too, are thus brought within easier reach.

When the fundus cannot be readily tilted forward within the grasp of the outer hand, as is sometimes the case in posterior misplacements, the lower segment may be explored by pressing the external hand down against the uterus in front and carrying the internal fingers well up into the posterior fornix. Again, by the use of the index finger *per vaginam*, and the second in the rectum, the entire posterior surface of the uterus may be reached and explored, as late as the second month and later.

In extreme cases, when the importance of the question is sufficient to justify it, the examination may be made under an anæsthetic, when it is otherwise impracticable by reason of undue thickness or rigidity of the abdominal walls or other difficulties. Mere muscular rigidity, however, may frequently be overcome by requiring the patient to breathe rapidly, or by gentle manipulation of the abdomen for a few moments, with a view to disarming the reflexes. It may be objected that all this is a troublesome matter, but the best results in practice are seldom reached except by taking pains.

Hegar's method is as follows: The index finger is passed into the rectum and carried just above the utero-sacral ligaments to a point opposite the isthmus uteri. The thumb of the same hand, passed *per vaginam*, rests upon the corresponding point in front of the isthmus. The tissues thus intervening between the thumb and finger may usually, at about the sixth week or a little later, be compressed almost to the thinness of a visiting card. In difficult cases the rectum may first be distended with water to facilitate the introduction of the finger above the third sphincter, or the examination may be made with the aid of an anæsthetic.

This is Hegar's sign as obtained by his method. I have found no great difficulty, however, in most cases, in demonstrating to my satisfaction the compressibility of the lower uterine segment by the usual bimanual exploration. Forcing the uterus well backward and downward with the outer hand, the isthmus may be readily reached with the fingers of the other hand in the posterior vaginal fornix, and the compressibility or density of the lower segment easily appreciated.

The recto-vaginal modification of the bimanual above described serves the same purpose. The seat of Hegar's sign may thus be more easily explored—though perhaps not with the same precision—than by his manipulation. Or again, when the uterus is freely movable, it may be gently drawn down with a volsella held by an assistant, and the isthmus thus brought within the reach of a finger of one hand in the anterior and the corresponding finger of the other in the posterior vaginal cul-de-sac.

Causes of Failure.—In a small proportion of cases the diagnosis is unfortunately beset with insurmountable difficulties. When all available means are utilized, however, failure can arise only from one of two classes of causes:

1. Pathological conditions which mask the pregnancy.
2. Pathological conditions which simulate it.

In the presence of uterine fibromata, for example, the recognition of pregnancy may be quite impossible in the first three months. The same thing may be true, at least in the second month, from other conditions of the uterus which retard the usual changes of density.

Among the morbid conditions which simulate utero-gestation, especially in the second month, are chronic metritis, subinvolution, fluid accumulation in the uterus (hæmatometra or hydrometra), a flexed and hyperæmic uterus, a soft submucous fibroid.

In general, pathological growths are distinguished from gestation by the absence, for the most part, of the signs of pregnancy

and by the presence of the signs of disease; moreover, the rate of growth in pregnancy is unlike that of any other pelvic tumor, and in neoplasms of other organs than the uterus the latter may be differentiated from the tumor by the touch.

Chronic metritis and subinvolution are distinguished by greater density. Fluid accumulations present the characters of a tense cyst. A uterus containing a soft submucous fibroid may usually be easily differentiated from that of gestation by the history. The same is true of a flexed and hyperæmic uterus. The physical signs in the latter case are frequently misleading, especially the softening and thinning at the point of flexion, but there is a notable absence of the normal elasticity of the tissues. It may be remarked here that the gravid uterus of the early months is by some writers described as doughy. This I think is a mistake; resiliency or elasticity is a notable characteristic of the uterus of gestation, so long as the ovum is living.

It will be observed that the morbid conditions which may mislead are not so commonly to be expected in first pregnancies. The diagnosis is less difficult therefore in women pregnant for the first time, and in healthy primiparæ may be positively established in every case by the sixth or eighth week, frequently at a still earlier period.

Ectopic Pregnancy.—The possibility of diagnosis in ectopic pregnancy has been the subject of much acrimonious discussion. Great difference of opinion prevails. One party contends that the diagnosis of extra-uterine pregnancy is practically impossible before rupture; on the other hand a recent writer thinks the condition should be recognized in ninety-five per cent. of cases. The former opinion, which has been stoutly maintained by Mr. Tait and his followers, is sufficiently confuted by the fact that the diagnosis has been made and the gestation cyst removed by abdominal section in a large number of cases before rupture. A little reflection is sufficient to show that the latter estimate is too high.

It is now generally conceded that with very rare exceptions all ectopic pregnancies are primarily tubal. The major part of them are seated in the free portion of the tube. Pregnancy in the free portion of the tube ruptures before the fourteenth week—in many cases during the second month. The signs on which we must rely, therefore, for the diagnosis of pregnancy before rupture, when the pregnancy is ectopic, include only those of the first three months. Usually only a portion of these are available, since the majority of cases rupture some weeks before the end of the third month. Furthermore, the uterine signs of normal gestation are

not all present in ectopic, and those which are found in misplaced pregnancy are not so fully developed as in normal cases at the same stage. Moreover, the occurrence of extra-uterine pregnancy always implies the existence of more or less pelvic disease, and the pathological conditions which have brought about the ectopic fœtation in greater or less degree embarrass the diagnosis. Similar complications are comparatively rare in normal gestation.

Tubo-uterine pregnancy, pregnancy in the intra-mural portion of the tube, is more difficult of recognition than that which takes place in the free part of the tube, and for these reasons: If the ovum lodges at the inner end of the oviduct, close to the cavity of the uterus, the enlargement of the uterus is nearly symmetrical, and before rupture differentiation from ordinary pregnancy is extremely difficult or impossible. If the fruit sac is located in the outer segment of the intra-mural portion of the tube, that is, just within the wall of the uterus, at the cornu, the case is difficult to distinguish from pregnancy in the rudimentary horn of a double uterus. Yet in the latter case the distinction is not important, since the treatment is much the same in both.

It must be granted that in extra-uterine fœtation certain additional signs are engrafted upon those of normal pregnancy, but they are usually more or less masked by the results of pelvic disease. Again, it must not be forgotten that in a large proportion of cases the opportunity for diagnosis never presents before rupture.

After rupture, particularly if much hæmorrhage has taken place, failure to recognize the state of affairs is rarely excusable. With a patient, however, who has suffered habitually from dysmenorrhœal pains and in whom the pelvic organs are misplaced and matted together by adhesions, both the symptoms and physical signs may be extremely misleading even after rupture, especially if the symptoms of internal hæmorrhage and the usual collapse are nearly or wholly wanting.

Résumé.—The diagnosis of pregnancy in the early months rests upon no one sign, but upon the collective evidence of all the signs.

The most reliable evidence of normal gestation in the first three months is to be found in the changes which take place in the uterine tumor.

In the great majority of all cases of normal pregnancy the signs of the second month are sufficient to establish the diagnosis.

In the absence of pelvic disease, pregnancy may be positively predicated in every case of utero-gestation between the eighth and the twelfth week, often at an earlier period.

A ruptured tubal pregnancy, with slight hæmorrhage, may pass unrecognized, usually being followed by recovery.

In ruptured tubal pregnancy, with free hæmorrhage, the clinical picture is unmistakable,

While the diagnosis is more difficult in ectopic than in normal pregnancy, it is possible in a large percentage of cases.