

## EMBRYOLOGY AND OBSTETRICS IN ANCIENT HEBREW LITERATURE.\*

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The origin of life, the development of the human being, the birth of the babe and the growth of the child have always occupied a prominent place in the literature and religions of all primitive peoples, and in none a more important one than in Judaism, which considers the injunction "be fruitful and multiply" (Gen. I, 28) as the first commandment of the Revelation, and the perpetuation of the race as the sacred duty of mankind, and which brands as crime and moral murder any interference with the normal development and growth of the species from its very incipient stage to the time of its birth. It is therefore not surprising to find that embryology and obstetrics receive more attention in the early Hebrew writings, and more particularly in the Talmud and the Madrashim, than any other medical subject.

References to the earliest stages of embryonic development are found as far back as the Bible. In Psalm CXXXIX, 15-16, we read:

My being was not concealed from thee, when I was made in secret, when I was embroidered in the lowest parts of the earth.

My undeveloped substance did thy eyes see; and in thy book were all of them written down—the days which have been formed, while yet not one of them was here.

And in Job X, 10-12, we find the following:

Behold, like milk didst thou pour me out, and like cheese didst thou curdle me. With skin and flesh didst thou clothe me, and with bone and sinews didst thou cover me. Life and kindness didst thou grant me, and thy providence watched over my spirit.

The general Hebrew name for the product of conception is "peri habbeten" or "fruit of the body." The earliest stage in the development of the embryo is termed "golem," a name borrowed from the passage in the Psalm CXXXIX just quoted, and which literally translated means something "formless and rolled up"—an undeveloped substance. In the further development of the embryo various stages are distinguished by the Hebrew sages and are designated by special names. The first stage begins with the "golem" or undeveloped substance and extends through a period of forty-two

days or six weeks. The foetus at the end of this period is known as "shefir merukkam," or embroidered membrane, clearly referring to the developing ovum with its membranes. The physician Samuel, in the second century (?) studied the embryo at this stage; and we are told that the eyes, nose and mouth can now be distinguished, the whole creature resembling a "grasshopper." In the Tractate Niddah 25 a, we read:

The wise men learned, what is a "shefir merukkam"? Its eyes are like unto the two dots of a fly and are separate from each other; its two nostrils are like unto the two points of a fly but merge into each other; its mouth is fine like unto a fine hair; and its hands and feet are still unfashioned.

A second stage is distinguished from the sixth week to the fourth month. The embryo is now called an "ubbar," a passive participle, meaning literally "something borne or carried." It is the ordinary Hebrew word for a "foetus." So is the mother spoken of as "meubbereth," or one "loaded down"—gravid, and the period of gestation is known as "yemay-ha-ibbur," or the days "of being loaded down"—of gravidity. At this stage, we are told, one can recognize the fingers and toes, the hair and the nails, and also the genitalia (Niddah 25 a). The growth of the hair is an important step in the development. We read "the work is not permanent, until the hair hath cropped out" (Niddah 25 b).

With the fourth month, we come to the third stage in the development. The foetus is now no longer "like unto a grasshopper," but looks like a human being, and is now spoken of as "welad," a child. This "welad" or child, on reaching the seventh month, is known as "welad shel kaymo," a "viable welad," or a child that can survive. The Hebrew scholars looked upon a seventh-month baby as capable of surviving. In the eighth month, the Aristotelian notion prevailed, that the chances were not so good as in the seventh.

A fully developed foetus is known as "ben she-kallu chad-doshow," "a child whose months have been completed."

An abortion or miscarriage is known in Hebrew as a "nefel," or something dropped.

In regard to the maturation of the ovum, the ancient Hebrews seem certainly to have recognized that for the develop-

\* Read before the Johns Hopkins Hospital Historical Society December 12, 1910.

ment of the primitive germ there must be a union of male and female elements.

"Three partners," we are told, "contribute to the development of man: the father and mother, and the Holy One, blessed be His name. The father soweth the white and the mother soweth the red; God giveth spirit and life" (Niddah 31). Of the male and female elements, it is the nuclei or "kernels," as the scholars put it, that are the essential parts. (Sabin III—Midrash Rabba. 3 M. 14.)

In regard to the order of development of various parts, the general opinion was that the head first developed, then the body, and other parts; but a few maintained that the center of development is the umbilicus, evidently bearing in mind the attachment of the cord with its nutrient vessels.

The position of the foetus is briefly thus described: "In the first three months, the child is below (that is inside the pelvis); in the second three months it is in the middle (that is between the pubis and umbilicus); and in the last three months it is at the top or at the level of the umbilicus" (Niddah 30). This served well as a rough means of determining the age of the foetus. The position of the child inside the membranes was regarded as perfectly free, that being the function of the amniotic liquid.

"It floateth like a nut-shell on the waters, and moveth hither and thither at every touch" (Mid. R. 3 M. 14).

The child at full term is graphically described as follows, in a passage which has become classical and is often quoted by Hebrew writers:

Rabbi Simlai lectured: the babe in its mother's womb is like unto a rolled up scroll, with folded arms it lieth closely pressed together, its elbows resting on its hips, its heels against its buttocks, its head between its knees. Its mouth is closed; its navel open. It eats its mother's food, and sips its mother's drink; but it doth not excrete for fear of hurting. Now when the time hath come, that which is closed is op'ed, and what was open closeth, behold the child is born. (Niddah 30 b.)

When we now turn to obstetrics proper, we are struck by the wealth of anatomical terms. The following is a list of the terms applied to various parts of the organs of generation:

Uterus = rechem.  
 Mons = kaf tappuach.  
 Vulva = erwah.  
 Rima pudendi = beth ha-sesarim (Niddah 66 b).  
 Vestibulum vaginæ = beth hizon (Niddah 41 b).  
 Orificium urethræ = lul (Niddah 17 b).  
 Hymen = be-thulim.  
 Ostium vaginæ = beth shinnayim.  
 Vagina = beth teref, beth rechem (Niddah 64 a).  
 Septum vesico-vaginale = karka prozdor.  
 Canalis cervicis uteri = mokor (Niddah 41 a).  
 Cavum uteri = cheder, beth herayon.  
 Foetal membranes = shefir.  
 Placenta = shilyoh.  
 Ovary and tube = shelil shel bezim (Bezah 7 a).

The diagnosis of pregnancy was made practically by the same signs as now. The signs of pregnancy are divided into two classes: the positive signs and the presumptive signs. The

positive signs were regarded as coming from the foetus itself, the perception of its movements, the palpation of its parts. The chief presumptive signs were the suppression of menstruation, the appearance of colostrum, changes in the size and consistency of the uterus, and various subjective symptoms. A peculiar gait is spoken of, as characteristic of a possible pregnancy. Some obscure passages in the treatise *Niddah* seem to refer to what may be taken as a molar pregnancy or "hydatidiform mole," and there are certainly references to what may be regarded as extra uterine pregnancies.

The signs of former pregnancies, or of labor recently gone through, are cervical and other tears, and the presence of rests of placenta or membranes.

An intact hymen, though a presumptive evidence of virginity, is not regarded as an absolute proof. Cases are described of coitus with unruptured hymen (Chagiga 15 a).

Menstruation plays such an important rôle in the ritual life of the Jews, that a separate paper could be written on the subject. Here we shall merely mention a few salient points.

The age of puberty is by Jewish law set for the male at the completion of his thirteenth year, for the female at the end of her twelfth year. In the Orient, as is well known, menstruation begins at an earlier age than in the Occident. As signs of puberty were regarded the growth of pubic and axillary hair, development of the breasts, elasticity of the mamilla, pigmentation of the areola and various changes about the genitalia.

The type of menstruation was studied especially in regard to a determination of the time of its approach. The Jew is required by law to separate himself from his wife a day before the approach of her menses, and not to approach her until after she has dipped in the ritual bath or "mikewah" seven days after their cessation. Three types of menstruation were distinguished: In the first type, the periods return at certain definite regular intervals of time; in the second type, the return is not so regular as to time, but is preceded by various premonitory symptoms or signs, such as headache, pains in the abdomen, backache, heaviness in the limbs, premenstrual chills and fever, etc.; in the third type are put all the irregular cases.

Infantilism and under-development, with their consequent amenorrhœa and sterility are treated under a special heading called *Ai-lo-nith*. In connection with amenorrhœa and dysmenorrhœa I may mention their treatment by the employment of a reed or a stem, much like the stem-pessary employed by modern gynecologists not so many years ago.

The duration of normal gestation was given by the Talmudists as 271 days, or 9 months of 30 days each. There may, however, be variations, and a pregnancy of 12 months' duration is cited (Niddah 27 a and Jebamoth 80 b). As a mnemonic the length of pregnancy is expressed by the Hebrew word for pregnancy—HERAYON. In Hebrew, as in Latin, numbers are expressed by the letters of the alphabet and the numerical value of the Hebrew word for pregnancy is 5 + 200 + 10 + 6 + 50 or 271 days.

The course of normal labor seems to have been an easier one among the ancient Hebrews than nowadays. "Ere the midwife cometh in unto them they are delivered" (Exodus I, 19). Severe labor pains were regarded as signs of divine wrath and punishment, and the prophets often employ this figure of speech in their utterances.

Four cases of dystocia or difficult labor are mentioned in the Bible. The first is that of Rebecca giving birth to her twins (Genesis XXV, 24). The second is that of Thamar (Genesis XXXVIII, 27), also giving birth to twins. The third is the birth of Benjamin (Genesis XXXV, 17) in which his mother Rachel succumbed. The fourth is the case of the wife of Phineas (I Samuel, IV, 19) of which we read:

And his daughter-in-law, the wife of Phineas was with child, near to be delivered; and when she heard the tidings concerning that the ark of God had been taken, and that her father-in-law and her husband were dead, she sank down and gave birth; for her pains came suddenly upon her.

Women in labor were attended by midwives, called "meyaloth" or birth helpers, "chachomoth" or wise woman, and "chayoth" or life bringers. Physicians assisting in confinement are not mentioned in the Bible but are referred to in the Talmud.

The birth took place on a special kind of couch or stool—the "mashber." The midwife delivered the child and cut the cord, bathed the infant (Ezekiel XVI, 4), rubbed it with salt and wrapped it in swaddling clothes (Job XXXVIII, 91).

In case of asphyxiation the Talmudists recommend stroking the cord gently towards the infant before cutting it, and in extreme cases trying resuscitation by direct inflation of the infant's lungs (Sabbath, 130 and 150).

Multiple pregnancies are frequently mentioned. Twins were common, and in Egypt we are told the Hebrew women gave birth to sextuplets (Midrash Shemoth, and Rashi Exodus I, 7).

Superfecundation and superfœtation are both mentioned in the Talmud and are of medico-legal importance. The Talmudists held that a superfecundation occurring within forty days after the first conception may lead to normal twins; whereas after forty days one of the twins will thrive at the expense of the other. After the third month superfecundation cannot take place. We read (Berachoth, 60): "From the 40th day until after the 3rd month, one shall pray that there arise no 'sandol' (fœtus papyraceous or compressus); that she may not conceive a second child and so interfere with the development of the first."

With reference to superfœtation the law prohibits the marriage of a widow or a divorced woman who is pregnant until after the birth of the child (Jebamoth, 36 b-42 a; Sota, 26 a).

A word or two as to malformations and monstrosities. Quite a number of malformations and monstrosities are mentioned in the Talmud. We read of a fœtus with a human face and animal body, of a monster with a single eye, of an acephalos, of various malformations of the head, of partial extrusion of viscera, etc. Of special importance are various

forms of hemaphrodites. These give rise to legal complications in cases where certain duties are limited to one sex only. A separate chapter in the Mishna under the title *Androgynes* is devoted to this subject.

Finally, a word in regard to obstetrical operations. Three kinds of operations are mentioned in the Talmud. The first was a destructive one—embryotomy, which consisted in the cutting up of the dead fœtus and extracting it piecemeal. The other two aimed at the saving of both mother and child. One was called "kariyath habbeten" or the cutting open of the abdomen, and was nothing more or less than the classical Cæsarain section. The other operation called "yozay dofan" or delivery through the side, also aimed at the saving of both mother and child, but its exact character is a matter of dispute among Hebrew archæologists.

Before concluding, a word as to the Hebrew ideas on heredity and the recently much agitated so-called new but really old subject of eugenics. Freedom of will is, of course, the foundation of the Jewish as well as of all religions. "All is in the hands of God, except the fear of God," is a famous Hebrew saying. Man makes himself! And yet, the Hebrew sages recognize too well the importance of heredity. The sins of the parents are but too often visited on their children and their children's children unto the third and fourth generation, and that both morally and physically, hence a well-known Talmudic saying (Baba Mezia, 75 a): "Seest thou a wise man, whose son is wise, and whose son's sons have been brought up in the ways of wisdom—from their house wisdom shall not depart."

And that is indeed the natural explanation of the numerous Hebrew laws and customs pertaining to marriage and marital relations. The Jewish law does not shrink from the problems of social hygiene, but takes them up and analyzes and discusses them with exactly the same minuteness and exactness as the laws pertaining to the observance of the Sabbath and holidays, the dietary laws, the agrarian laws, the laws pertaining to the giving of charity. The body is not the sordid instrument of sin to be curbed and subjected, stunted and worn out by penitence and castigation; nay, it is the sacred abode of the spirit, and all its normal physiological functions are regarded as wholesome and intended for good. So is the procreative faculty, when subserving its true purpose—the rearing of a sturdy race of servitors to God. With such an end in view it is a sacred duty.

The Torah or the law thus frees us from the fetters of materialism, yet guards against the barrenness of an ascetic life, and consecrating all our activities to an exalted, noble end, uplifts mankind above mere dust. The ordinances concerning menstruation, the rigid laws enjoining periodic separation and purification in married life have all this end in view—to use the means, only as means, not for themselves, but for the furtherance of higher, nobler ends. No wonder, then, one ancient Hebrew sage styles them as ordinances of such momentous, far-reaching importance, compared with which astronomy and geometry are only "after-courses" in the School of Wisdom.

What the results of such a conduct are is not for me here to proclaim.

That, history has shown; that, history still shows; and that, so long as Jew is loyal to his heritage, history will continue to demonstrate.

Kislev, 5671.  
December, 1910.

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