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SCIENTIFIC BACKGROUND AND VALIDATION OF THE BILLINGS OVULATION METHOD

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SCIENTIFIC BACKGROUND AND VALIDATION OF THE METHOD

Have the charts on pages 43 and 45 of Teaching the Billings Ovulation Method Part 2 beside you and refer to them as you read this paper.

The most important event in the fertile cycle is the occurrence of ovulation. The nest of cells (follicle) develops over a number of days during which the ovum is becoming mature. Ovulation is the release of an egg (ovum) from this nest of cells. If multiple ovulations should occur, all of those ova are released on the same day, within a few hours, certainly within not more than 12 hours altogether.

The fertile woman notices a discharge of mucus from the vagina during the days over which it is possible for her to become pregnant. This discharge comes from the cervix (neck) of the womb (uterus). The mucus symptom is a changing pattern from day to day which enables the woman to recognise the Peak of fertility. Ovulation occurs on the day of this Peak symptom or the next day, rarely on the second day after the Peak.

The cycle is thus divided into two phases, from the beginning of menstruation until the day of the Peak mucus symptom and from the Peak until the beginning of the next menstruation. The first phase is therefore pre-ovulatory and the second phase is post-ovulatory. When the mechanism of ovulation functions normally the interval between ovulation and the next menstruation is 11 to 16 days. This is called the luteal phase. At the beginning of the cycle the woman knows she cannot accurately calculate when the next ovulation will occur.

GUIDELINES

There are four guidelines (Rules) for the avoidance of pregnancy. Three of these Rules apply to the pre-ovulatory phase, (the Early Day Rules) while the other (Peak Rule) is applied from the time of the Peak mucus symptom. The life of the sperm depends upon the activity of the cervix in producing various types of mucus, which also indicates to the woman that she is approaching ovulation. Before reaching this fertile phase of the cycle, the woman identifies a pattern of infertility called the Basic Infertile Pattern, because it corresponds to a low (basic) level of the ovarian hormones oestrogen and progesterone. These guidelines are later explained in full.

HYPOTHALAMIC CONTROL

The ovarian activity is controlled by an area of the brain called the hypothalamus which itself governs the activity of the pituitary gland within the brain. The pituitary gland produces two hormones directly concerned with fertility, the follicle-stimulating hormone (FSH) and luteinising hormone (LH). These complex activities are referred to as the hypothalamic-pituitary-ovarian axis.

Except during the days of possible fertility (the fertile phase) sperm have a very short life in the woman's body. They are immediately damaged by the acidic environment encountered in the vagina, quickly lose their ability to fertilize the ovum and are destroyed by "defence cells" within a few hours. In the presence of the mucus which occurs during the fertile phase, especially close to ovulation and which has "fertile characteristics" which the woman can recognise, the sperm may live and remain healthy for two or three days, rarely for four or five days if the conditions in the woman's body are particularly favourable, as she would recognise.

THE MUCUS AND OVARIAN HORMONE PATTERNS

During the menstruation and for a variable time afterwards, the ovarian hormones oestrogen and progesterone are low. After menstruation the canal of the cervix is closed by a thick, opaque mucus (G-mucus) which prevents the sperm entering the uterus. When the follicles begin to develop the level of oestrogen rises progressively over several days to reach a peak. During this time the cervix is producing other types of mucus of a fluid character, which releases the G-mucus from the cervix and the woman then begins to notice a vaginal discharge.

The woman now observes symptoms and signs of mucus and her observations are of two kinds:

1. In the course of her normal activity, she experiences the sensation of something leaving the vagina, in the same way she would become aware of the beginning of menstruation.
2. If there is enough mucus already present, she can now make a visual observation.

Of these two observations, the sensation experienced by the vulva is the more important and care must be taken to record it as each day passes. The record is made in the evening, using the appropriate symbol which will be taught to her, and if she is literate she should record by one or more words what the vulva feels and what she sees. Up to the time of the beginning of the symptom the vulva usually feels dry. At the beginning of the symptom the mucus may have a sticky consistency, but it progressively becomes wet and then slippery, with a distinctly lubricative character. At the same time the mucus tends to be more transparent and may be observed to form strings, resembling the raw white of egg. The strings diminish or disappear while the slippery sensation persists for another day or so, after which there is an abrupt change so that a feeling of dryness returns with no mucus to be observed, or perhaps a feeling of stickiness with a slight residual mucus discharge.

It is the last day of that slippery sensation produced on the vulva which is the Peak symptom of the mucus pattern and this is ordinarily recognised and confirmed by the change that occurs on the day following the Peak symptom. At the time of the Peak of the mucus symptom the woman will usually observe a degree of soft swelling of the vulva, which may be more marked on the side on which she is ovulating. Another accompanying sign which may be detected is an enlargement of a tender lymph gland in the groin on the side on which she is ovulating. Both of these additional signs are present for only one or two days at the most fertile time which is more reliably recognised always by attention to the mucus pattern

What can now be explained to the woman is the sequence within the mucus pattern, which explains why the sensation experienced by the vulva changes from day to day and why the appearance of the mucus also changes. It is not necessary for the woman to touch the mucus or collect it with tissues to examine it further.

THE FUNCTIONS OF THE CERVIX

Professor Erik Odeblad has, with his studies of the cervix, provided us with explanations of many earlier clinical observations:

It is appropriate to emphasise to the teacher the complexity of the activity of the cervix during the cycle, explaining in detail the wonderful mechanism that exists within a woman's body to facilitate the achievement of a perfect conception. The woman can learn to analyse every detail of her cycle: menstruation; any days of infertility which exist before the commencement of the fertile phase; the fertile phase itself and the Peak of fertility in the cycle when she has the best opportunity of achieving pregnancy; the time of ovulation and therefore the days of infertility following ovulation, with the ability to predict the occurrence of the next menstruation. In the pre-ovulatory phase (the Early Days) before the mucus pattern begins she is infertile because the sperm cannot survive. Allowance is made for the occurrence of ovulation on the Peak day, the

next day or even the second day after the Peak, with a further 24 hours to allow the limit of possible survival time for the ovum, after which she is infertile until the next cycle as it is impossible for her to ovulate again in this cycle.

The G mucus which closes up the cervical canal at the end of menstruation until the beginning of the fertile phase, and again, after ovulation and the disintegration of the ovum, until the next menstruation occurs, has antibiotic properties, protecting the woman's reproductive system from infection. The same G mucus is present during pregnancy for the same reason. It too contains many "defence cells" (leucocytes) which destroy the sperm damaged by the acidic environment of the vagina.

The first P mucus and the L mucus produced by the rising level of oestrogen dislodges the G-mucus, so that now the sperm can enter the uterus. The L mucus has the function of capturing and expelling from the woman's body sperm which are of low quality. As many millions of sperm exist in the ejaculate, it is essential for a biological mechanism of this kind to exist so that any sperm which are in any way abnormal are not allowed to reach the ovum.

As the oestrogen level continues to rise, the S mucus is secreted by other cells in the cervix. This is a slippery mucus which forms channels making it easier for the sperm to swim through into the body of the uterus and out along the fallopian tubes looking for the ovum. Many of the sperm are guided into crypts along the cervix where they rest and are nourished over the next few days during which time cohorts of them may be released to come up in the same way out into the fallopian tubes. Close to ovulation the P mucus is again formed at the upper end of the cervical canal in a small quantity. It too helps to capture any defective sperm and exclude them.

The P mucus also combines with granules from the isthmus, the narrow pathway which connects the upper end of the cervical canal with the body of the uterus. This combination produces a mucolytic enzyme, meaning a substance which can break-up mucus particles which it does, thereby releasing any more of the sperm which have remained locked in the crypts by the L mucus. This enzyme also breaks up any strings in the mucus, explaining why the strings tend to diminish or disappear before the Peak of fertility and ovulation.

Both the S mucus and the P mucus have a slippery, lubricative character and this quality of the mucus observed by the woman is the most accurate and certain indication of high fertility, a point to be emphasised to the woman who has had difficulty in achieving a pregnancy.

Attention is drawn to the continuing rise of oestrogen up to the oestrogen peak which occurs about a day before the Peak of the mucus symptom (peak of fertility). Then there is an abrupt fall of the oestrogen, and just before ovulation the progesterone level begins to rise. These two events, the fall of the oestrogen and the commencing rise of progesterone, combine to alter the mucus pattern: the secretion of the L, S and P mucus ceases while the cervix is closed up again by the G+ mucus, full closure of the cervical canal with G+ mucus being achieved by the end of the third day past the Peak. During those three days some channels from the S mucus remain in the canal so that sperm can still find their way to the ovum and fertilise it, as it is to be remembered that a live ovum may exist even on the third day past the Peak. Ovulation may rarely occur on the second day after the Peak and the ovum has a life less than 24 hours, possibly less than 12 hours as a rule. The full allowance for the possibility of a live ovum on the third day past the Peak is incorporated into the guidelines of the method.

Sometimes the cervix does not respond to the normal hormone (oestrogen) stimulus during the days leading up to ovulation. This may occur as the woman is coming close to menopause. It may follow the use of chemical contraception, the contraceptive pill, implants or injections, all of which damage the cells in the cervix responsible for producing the L mucus, the S mucus and P mucus. Rarely it may result from infections located in the cervix. In some instances, the cervix does respond intermittently or it may be that there is a response which is limited to the presence of the fluid mucus, characteristic of high fertility, to perhaps half a day in the cycle. It is obviously

very important for the woman to be able to recognise this very limited time when she is able to become pregnant, whatever other factors may be contributing to the difficulty in achieving pregnancy.

Pockets of Shaw

On either side of the lower end of the vagina there are small pockets known as “Pockets of Shaw” and here the vagina extracts water from any material which is passing from the vagina, especially under the influence of high levels of progesterone. It is this effect which helps to produce the abrupt change from the slippery, lubricative mucus as the progesterone level rises around the time of ovulation. The fact that the mucus coming from the cervix can be changed in this way is a further indication that the woman should not at any time explore inside the vagina with her finger. She will become confused if she undertakes that kind of self-examination and should be reminded that all the observations of the Billings Ovulation Method® are made outside the vagina, at the vulva and nowhere else at all. It is particularly to be recommended that she makes no effort at all to examine her own cervix as this may damage the cervix and introduce infection.

The Vagina

When ovulation is delayed, oestrogen levels may become slightly elevated stimulating growth of the cells lining the vaginal walls. These cells are shed, disintegrate and cause a discharge.

Menstruation

If the woman does not become pregnant the levels of circulating oestrogen and progesterone both begin to decline around seven days after ovulation and this decline brings on menstruation.

Ovarian Hormone Studies

Professor James B Brown has provided an understanding of the patterns of ovarian hormones in his extensive work of measuring these hormones, using the Ovarian Monitor he developed.

The teacher is encouraged to keep at the back of her mind a recollection of the ovarian hormonal patterns, as this will often help her interpret the record which at first sight appears to be difficult.

The availability of daily measurement of the ovarian hormones oestrogen and progesterone during the cycle will reveal that in some women the rise of oestrogen does not reach the normal range and success may be achieved only after “boosting” ovulation by the use of what are called “fertility drugs”, which should be done only under expert supervision.