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DISCUSS THE FACTORS FACILITATING THE MOVEMENT OF SPERM IN THE FEMALE REPRODUCTIVE TRACT.

Sperm cells are introduced into the female reproductive tract by the penis of the male during sexual intercourse. If sexual intercourse occurs at ovulation time and semen is ejaculated in the vagina, the sperms travel through the vagina and uterus to reach the fallopian tube. Movement of the sperm through uterus is facilitated by the “antiperistaltic contractions” of uterine muscles. Out of about 100million sperm cells, only a few million get to the cervical canal and only a few thousands get to the uterus.

Sperm transport within the female reproductive tract is a cooperative effort between the functional properties of the sperm and seminal fluid and also the cyclic adaptations of the female reproductive tract that facilitate the transport of sperm towards the ovulated egg.

Some of the factors that facilitate sperm motility are;

- 1, Coagulation of the semen through the actions of semogelin by a minute after coitus.
- 2, Availability of fructose; fructose is a nutrient provided by the seminal vesicles, within the semen. Because of their paucity of cytoplasm, sperm cells require an external energy source and the most commonly utilized energy source by the sperm cells is fructose.
- 3, Change in cervical mucus; The cervical entrance is very small and also blocked by cervical mucus. Mostly during the menstrual cycle, cervical mucus is highly sticky and represents an almost impenetrable barrier to sperm penetration. However, around the time of ovulation, the estrogenic environment of the female reproductive system brings about a change in the cervical mucus, causing it to be more watery and easily penetrable.
- 4, Uterine muscular contractions; Some sperm cells are swept into the uterus by Peristaltic contractions of its thick smooth muscle walls.
- 5, pH of the cervix; The pH of the vagina is about 3.5 which is acidic and can cause the death of about 97% of sperm cells. However, the cervical pH is alkaline, with a peak pH during periovulatory period and this environment is much more hospitable to sperm cells than the acidic pH of the vagina.
- 6, Size of interstitial spaces between the mucin micelles; Sperm motility/progression depends of the size of these spaces. The size of the

interstices is usually smaller than the size of the sperm heads; thus, sperm cells must push their way through the mucus as they proceed through the lower female genital tract.

7, Prostatic fluid; Prostatic fluid is a thin, milky and alkaline fluid and it forms about 30% of the total semen. It provides optimum pH for sperm motility. Vaginal secretions in females are highly acidic with a pH of 3.5 to 4.0. so, when semen is ejaculated into the female genital tract at coitus, sperms are non-motile initially. However, the alkaline prostatic secretion, which is present in the semen neutralizes the acidity in vagina and maintains pH of 6.0 to 6.5. The sperms become motile at this point and this enhances the chances of fertilization.

8, Changes in intravaginal pressure; This may suck sperm cells into the cervical wall.

9, Sperm capacitation; Capacitation is the pre-fertilization activation process of sperm which results in the spermatozoa gaining the ability to develop hyperactivated motility, with vigorous non-linear flagellar motion, bind to zona pellucida, undergo the acrosome reaction and proceed eventually to the uterine tube. Capacitation is required for spermatozoa to be able to fertilize an egg and also aids motility.

10, Sperm Thermotaxis and Chemotaxis; Thermotaxis is a movement directed by a temperature gradient. It is an essential mechanism guiding the sperm cells towards a warmer fertilization site. Only capacitated

spermatozoa are thermotactically responsive. Chemotaxis is a process in which sperm cells are attracted by chemical factors that are released by the egg. These two processes facilitates motility of sperm cells.