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Obstetrics & Gynaecology

ANCIENT CONCEPTS IN OBSTETRICS : A HISTORICAL REVIEW

KEY WORDS:

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INTRODUCTION

The golden age of Indian medicine lasted almost 2,000 years, from about 1000 BCE to about AD 1000. The most famous works written at this time were the medical treatises known as the Caraka Sahit in the early part of the second century A.D. and the ūruta Sahitā in 600 B.C. Āyurveda had eight branches (aštānga āyurveda), one of which was Kaumārābhṛtya, covering gynecology, midwifery, and pediatrics. This included the classification of diseases of the female genital tract, including menstrual disturbances.

The original teachers of medical sciences were Kashyapa, Vasishtha, Atri and Bhrigu. The codification of the practices of this school was made by Vagbhata (6th century AD) who documented facets of the other six segments of Āyurveda in his Ashtanga-sangraha. Vedic medicine is documented in the fourth and last Veda, the Ātharva Veda and also the Garbhopanishad (800 BCE). In the postVedic era, the ancient Indian system of medicine was named Āyurveda or the knowledge of life. (1)

The Kahun gynecological papyrus dating 1800 BCE were discovered near Lehun in Egypt and brought into the modern world in 1889 by Flinders Petrie. This manuscript described in detail, the prevailing traditions relating to reproduction, conception and delivery during that civilization. (2)

Midwifery flourished in ancient civilizations, including Egypt, Byzantium, Mesopotamia, and the Mediterranean empires of Greece and Rome.

Hippocratics (460-370 BCE) advocated the urine of men or bulls, tar water, chaste tree (Vitex agnuscastus), pomegranates, cantharides, or castor oil mixture for gynecological maladies, Philista (318-272 B.C) delivered lectures from behind a curtain, to prevent her beauty from distracting her students, and was an midwife of repute in her time.

In 300 B.C., Agnodice studied medicine and midwifery in Hellenistic Alexandria under Hierophilus. She returned to Athens and became a popular midwife. She even disguised herself as a man in order to examine male patients. When she became exceedingly popular with her female clients, she was charged with seducing her patients when Agnodice revealed her true sex in court and was exonerated. In ancient Greece, there was also an opportunity for midwives to be promoted to the status of a doctor-midwife or iatromea after their training. Merit-Ptah (2700 BCE) was the chief physician in Pharaoh's court and has a crater named after her in planet Venus.

The first gynecological text in 63 chapters was written by Metrodora in 200 BCE titled "Concerning the Feminine Diseases of the Womb". Another physician of that era Aspasia (470-428 BCE) was a reputed obstetrician.

Medical schools attached to Egyptian temples in Heliopolis and Sais (732 BCE) admitted female students and women faculty to teach obstetrics and gynecology.

Herophilus (335-280 BCE) wrote a text titled 'Midwifery', which discussed duration and phases of childbirth. Soranus of

Ephesus (98-138 AD) wrote another text titled "On Midwifery and the Diseases of Women" that had descriptions of contraceptive measures, description of the obstetric chair and elucidated podalic version. The word midwife originated from Latin with 'mid' meaning 'with' and 'wyf' meant a 'woman'. Obstetrix was the Latin word for midwife: it is thought to derive from 'obstare' meaning to "stand before", because the attendant stood in front of the woman to receive the baby.

In 500 A.D., the Greek physician Moschio authored a treatise on gynecology that described antenatal care, labour and the management of malpresentation by internal podalic version and breech extraction. In ancient Rome, the usual name for a midwife was obstetrix, while a doctor was called medicus and a female doctor medica (iatrina). (3,4)

MYTHS

Since the Vedic times, menstruation was linked to Indra's slaying of Vritras. For the sin of murdering a brahman, women were condemned to endure a monthly menstrual flow.

Roman philosopher Pliny the Elder was convinced that periods were some kind of magical sorcery. He wrote that people on their periods could kill entire fields of crops, cause bees to leave their hives, and control the weather.

According to a Greek legend, Smyrna (Myrrha) conceived an incestuous passion for her father and, with the complicity of her nurse, shared the bed of her father Cinyras. When he learned that he had been deceived by his daughter, he pursued her with a sword and, being overtaken, she prayed to the gods that she might turn invisible; Out of compassion, the gods turned her into a myrrh tree. Ten months later, the tree supposedly burst open and delivered Adonis.

Women prayed to goddess Artemis during delivery. Though she remained a virgin herself, she was by the side of her mother during the birth of her brother, Apollo, and assumed the role of a midwife. This prompted a ritual wherein the clothes of a woman who died during childbirth were deposited at the temple of Artemis and if the baby lived, the mother would make an offering of thanks by donating some of her clothes to the goddess.

A widely cited myth attributes the word "caesarian" to the birth of Julius Caesar through this procedure. The fact that Caesar's mother Aurelia Cotta lived for decades after his birth dispels this possibility. The etymology of the word "caesarian" was more likely from the Latin word caedere, meaning "to cut". (5)

Female Anatomy

Sushruta described the pelvis as consisting of five bones: trika-asthi (a triangular bone, the sacrum), guda-asthi (anal bone or the coccyx), bhaga (the pubic bone) and nitamba/shroniphalak (the ilium). The ischium was considered as a part of either ilium or pubic bone. The female genital tract was compared to a conch-shell with three involuted turns, with the uterus located at its third turning. (6)

In the 2nd century A.D., Galen stated the female genitalia were an inward turn of the male gonads in every respect. The uterus

was considered a hollow structure divided into seven cells and having two openings. Others considered that it had two chambers, with males being conceived on the right side and females in the left. Some added a third central cell that incubated hermaphrodites.

Herophilus was the first to describe the ovaries and the fallopian tubes and give them appropriate Greek names. Gabrielle Fallopius identified the Fallopian tubes at the end of the 16th century A.D.

In the 17th century, the ovaries got their name, meaning a "place for eggs". Before that, they were known only as female testicles, thought to be vestigial versions of male gonads that produced "female sperm".

Fertilization

Fertilization as described by Sushruta was "Garbhavkranti"-the union of semen and menstrual blood under a favourable conditions. The growth of the embryo was according to the period of gestation. In the first month it was like a resinous exudate; in the second month it became a solid mass; in the third month protrusions of head and four extremities appeared, in the fourth month, the heart developed; in the fifth month, the brain development was complete and, by the seventh month, its limbs were well formed. The vitality of the foetus was considered unsettled till the eighth month, before which its chances of survival was most unlikely.

In 300 B.C., Wen Tze of China also made a record of foetal development. It was jelly-like initially with vasculature developing in the second month, muscles in the fifth, bones in the sixth, form in the seventh, movement in the eighth and agitation in the ninth month.

Diagnosing Pregnancy

In Egypt, during 1350 BCE, women who suspected they were pregnant would urinate on wheat and barley seeds. If the wheat grew, they believed, it meant the woman was having a girl; the barley, a boy; if neither plant sprouted, she was not pregnant at all. A popular method involved examining the vessels of her breasts. A second method involved sitting a woman on a beer and date mash covered floor and using a proportionality equation according to the number of times she vomits. In the Middle Ages, "Piss Prophets" claimed that pregnant women's urine would rust a nail, change the color of a leaf, Hippocrates suggested that pregnancy could be diagnosed by inserting an onion into their vagina overnight. If the person's breath smelled of onions the next morning, they weren't pregnant as the open womb would permit wafting of the onion odour into the mouth. If the person were pregnant, then the womb would be closed, so the odour would not waft up. In the late 15th century, urine left in a basin with a latch or a key for 3-4 hours would leave an impression on the basin if the woman was pregnant. In the 16th-century European "piss prophets" mixed urine with wine and observed the results to confirm pregnancy, Jacques Guillemeau, claimed that a pregnant woman developed deep-set eyes with small pupils, drooping lids and swollen little veins in the corner of the eye by the second month of pregnancy. Pregnancy was diagnosed by symptoms like amenorrhoea and pica or perverted appetite, and by clinical signs, such as enlargement of abdomen and the breast changes. (7)

Antenatal Care

Sushruta described the antenatal management, right from the early months of pregnancy. He put forth certain general rules. A pregnant woman should always be in a pleasant mood, wearing sacred ornaments and white clean garments; be calm and should keep herself busy in worshipping God and the elderly for their blessings. She should not touch any dirty objects; she should avoid bad scenes and should not listen to depressing stories. She should avoid eating dry, odourous, stale or dirty food. A pregnant woman must avoid factors

dangerous to gestation like carrying heavy loads or over exertion. She was advised a diet of soft, oleaginous and nutritious foods. In the eighth month an enema was advised with herbs like bala, badar, atibala, shatapushpa and palal, mixed with milk, oil, buttermilk, salt and ghee. In the ninth month, mineral oil enema was advised and an oily pessary retained in the vagina so as to achieve thorough lubrication. Charaka warned against the use of emetics, purgatives, and procedures like blood-letting during pregnancy. He also described edema in pregnancy.

Expected Date of Delivery

In ancient Greece, women were capable to calculate the pregnancy duration by using a series of calendars, like the Attica calendar (12 months, trimester season, Athenian calendar) and, the Lunisolar calendar. Hippocrates (460-370 BC) considered pregnancy as a nine month process, while Aristotle (384-322 BC) thought it lasted 310 days while Galen (130-216 AD) suggested that it lasted 270 days, or nine months. Sushruta expected delivery to occur in the ninth or the tenth lunar month and refers to post-maturity by stating "sometimes by deranged wind, foetus is retained for more than ten lunar months and may be destroyed." (8)

Abortion

In Atharvaveda, abortion was referred to as "Garbha patan" and attributed to defective semen. Sushruta treated threatened abortion with cold water vaginal douches and a diet of medicated milk and ghee. For excessive vaginal bleeding, a pack of astringent solution was advised.

Sushruta described missed abortion, when he stated that "sometimes wind dries up the foetus, when mother's belly does not enlarge and foetus does not move". For such condition strengthening broths and milk preparations were advised.

Silphium was a giant fennel-like herb bearing a pungent sap. It was so widely used by the ancient Greeks to induce abortion that it even featured on a Cyrenian coin, depicting a woman touching the plant with one hand and pointing to her genitals with the other. The demand for the plant was so great that, by the fourth century, it had gone extinct. Later, the seeds of Queen Anne's Lace was chewed to release ingredients that inhibited fetal and ovarian growth. Another plant used was the pennyroyal, containing an abortifacient pulegone, Abortions were also performed by plunging a dagger into the woman's uterus. (9)

Soranus recommended a douche with cyrenaic juice, diluted wine, leukoion, and white pepper to induce abortion.

Management of Labour

Sushruta has dealt with this most important art of midwifery at great length in the tenth chapter of Sushruta-samhita. Delivery was expected to occur in the ninth or the tenth lunar month. On an auspicious day, the pregnant woman was transferred to "Suthika Griha" or delivery home. When time of delivery approached, four midwives with a genial temperament, who had the confidence of the parturient were summoned. After trimming their fingernails, all had to don clean, white garments and bathe the parturient with warm water after anointing her body with oil. She was then fed sour gruel and made to lie supine with thighs separated and legs flexed and drawn up. When in active labour, the midwives were advised to massage the introitus while the parturient was encouraged to bear down during pains. In the absence of pains, she had to learn to relax. If the labour was prolonged, the smoke of skin of black serpent or some other disagreeable substance was applied to the vagina to induce irritation of genital tract, which would promote expulsive efforts.

Soranus described three main stages of pregnancy:

conception, which regarded keeping the male seed within the womb; pica, which occurred 40 days into pregnancy and included symptoms of nausea and cravings for extraordinary foods. During this phase women were also instructed to exercise and sleep more to build up strength as preparation for the labor process. The final stage of pregnancy was described as the labor and the process of delivery. In preparation for labor, the woman was advised to bathe in wine and sweet-water baths to calm her mind before delivery. Her belly was then rubbed with oils to decrease the appearance of stretch marks, and her genitals were anointed with herbs and injected with softeners such as goose fat. Soranus also recommended the presence of a midwife to be present along with three assistants. The midwife had to bring with her the tools for delivery the midwife was to have certain tools to ensure a safe delivery, including clean olive oil, sea sponges, pieces of wool bandages to cradle the infant, a pillow, strong smelling herbs in case of fainting. The mother would sit on the midwife's stool. Birthing chairs were usually 8 to 10 inches (20.32 centimeters- 25.4 centimeters) off the ground specifically to allow laboring women to brace their feet against the ground to help bearing down. One assistant stood behind the mother and held her back while the laboring woman held the armrests for support. The other two women stood beside the mother allaying her anxieties and gently relaxing and supporting her. The midwife eased the woman's pains with hot-water bottles and "bladders filled with warm oil placed against the woman's sides." She then gently rubbed the cervix to induce labor by dilating the opening for the baby to descend through. The midwife would kneel before the parturient and instruct her on proper breathing techniques and how to bear down properly to allow gravity to help with much of the force. Soranus suggested that the midwife wrap her hands in pieces of cloth or thin papyrus so that the slippery newborn did not slide out of her grasp.

In "primitive" tribes studied by anthropologists in the last century, the labouring woman would be tended to by her mother or a female relative. Prehistoric figures and ancient Egyptian drawings show women giving birth in the sitting or squatting position. Birthing stools and midwives are also mentioned in the Old Testament and fumigation with the fat from a hyena was thought to produce immediate delivery. Herbs and other plants were used heavily in the delivery process, a practice also linked to religious belief. For retained placenta, Susruta advised simple measures like, introducing a finger covered with hair into the patient's throat, to induce vomiting and expulsion or the application of some disgusting substances like smoked pumpkin, mustard, skin of serpent with milk or oil, to the vagina, or rubbing them over abdomen. In case all these measures failed, Sushruta advised manual removal of placenta.

Multiple pregnancies were supposed to occur, when the sperm and the menstrual blood were internally divided by air, while monstrosities were supposed to be the result of the defects in the sperm or the womb or due to the sins of parents. Awareness existed of the other abnormal pregnancies like twins and the compound presentations.

"Mudha-garbha" or obstructed labour was described by Sushruta in great detail. He mentions the causes of obstructed labour as a deformity of foetal head or of the pelvis of mother. The varieties of abnormal presentations tabulated are, "Parigha" or shoulder presentation; "Killa" or breech; "Prathikhara" or compound presentation. In order to overcome such abnormal situations, internal podalic version, breech extraction, Sushruta has also described the destructive operations resembling craniotomy, decapitation and evisceration and such other allied procedures were attempted. Wine was imbibed as an analgesic agent to the parturient prior to any obstetric manoeuvre.

For alleviating labour pains, a drink sprinkled with powdered

sow's dung was administered. In order to reduce after-pains, the patient was given a mixture of roots of long pepper, asafoetida (*hedysarum alghai*), bach (*iris germanica*), atibhisha (*annona squamova*), rassa (*dolichosinesis*) and chaba (*cicer arietinum*). External genitalia were cleaned with a decoction of *clinsa* (*achryanthes aspera*) and *kakuba* (*diospyres melanoxyton*).

Sushruta advised caesarean section in cases where either the foetal head or maternal pelvis were extremely deformed, rendering it impossible for vaginal delivery of a live baby. He also advised post-mortem caesarean section, when a pregnant woman near full-term died suddenly with a live fetus in the womb.

It was not until the 17th century that "accoucheurs" (male midwives) became fashionable in France and later in Britain. (9)

Post Natal/ Puerperal Care

Sushruta was aware of "Makkala" or puerperal sepsis and advised daily bathing during the post natal and a decoction of *bella* (*terminalia bellria*). In cases where sepsis developed, Sushruta advised administration of a mixture of *hasta-pippuli* (*aramacrorhizon*), *chitrika* (*limonia pentagyn*) and *seringaveer* (*querens lancifolia*) administered for 3-4 days and followed by a decoction of rice, barley gruel, cardamom seeds, *byagri* (*ficus indica*), *jawari* and milk for three days. Afterwards rice with broth of wild animals was given for fifteen days.

According to Leviticus 12 (the third book of Moses), a woman who gave birth to a son remained impure for a week, and had to immerse herself in a body of water every day to purify herself. Puerperal bleed lasting 33 days for a male child and 66 days for a female birth was considered pure or *dam tohar* (ritually clean blood). This period was observed considering that the parts of the man were sounder or more solidly constructed, and easier assembled while that of a complex woman structure took twice as long.

A degree of seclusion was applied to post parturient women. In Hinduism, *Sutak* is impurity associated with the birth of a child, lasting eleven days and sometimes as *jaapa* lasting 40 days. In the event of a stillbirth, the period of impurity for both parents was 24 hours. Postpartum confinement is well-documented in China, where the custom is known as "sitting the month". Women are advised to stay indoors for recovery from the trauma of birth with special foods being endorsed to nourish the body and promote breast milk production. In the Guangdong region, mothers are barred from visitors until the baby is 12 days old, marked by a celebration called "Twelve mornings". Women of certain ethnic groups in the South China would resume work right after birth, and have their men practice postpartum confinement instead. Among the Jews, there is a Sana Yemenite custom of women visiting their mother 4 to 6 weeks after childbirth and residing in a special room seated in a decorated triangular box. Korean women spend *samchil-il* (21 days) in confinement after their delivery. In Thailand, new mothers are encouraged to lie in a warm bed near the fire for 30 days, a practice known as *yu fai*.

The first three months after delivery was often considered as the "fourth trimester". These weeks ended with the re-introduction of the mother to the community in the Christian ceremony of the 'churching' of women. In Latin American countries the period extended to 40 days and called *la cuarentena* (quarantine). (10)

Care of The Newborn

Gynaecia was written by Soranus that gives distinctive advice about the care of the newborn baby. His advice about daily care of the baby resembles the routines of the neonatal care of today, When the infant was born, its nose and mouth were

cleaned and cold water was splashed upon its face as a resuscitative measure. Then the umbilical cord was tied with a string, about eight finger breadth (about 6") from the naval and divided. One end of the string was kept long and bound around the infant's neck. (11)

Sushruta stressed the importance of keeping the umbilical stump of quite a sizable length, probably to avoid injury to the vitellointestinal duct!

The newborn Infant was covered with silk cloth and oiled cloth was daily applied to child's head and face. The lying in room was fumigated with scented gums and wood every day. For two days the newborn was not breast fed, considering that milk secretion commenced on the third night after delivery. If the mother's milk was insufficient, a healthy wet-nurse was sought out for the purpose of breast feeding. Diseases of infants like kuumaka (purulent ophthalmia) and parigarbhika (marasmus) were known to Sushruta.

Operative Obstetrics

Evidence suggests that Jews in ancient Rome successfully practiced Caesarian sections on living mothers who were in danger of dying. Evidence of these procedures is found in several collections of ancient Roman rabbis, the most famous of which is called the Mishnah. The Greek god Aesclepius was fabled to have been extracted from his mother's womb through this procedure.

Midwives were the primary persons involved in the childbirth process. They did not record their medical practices in writing like Soranus or Galen. Thus, C-sections could have potentially occurred on a fairly regular basis, and accounts were simply not recorded

Ancient accoucheurs employed an array of obstetric instruments. For vaginal examination, they used yoni vraneksana (vaginal speculum). They had yantra-sataka (lithotomy table), vaginal and uterine irrigators, garbhashanku (foetal traction hook), yugmashanku (obstetric forceps), mandalagrashastra (round-headed decapitation knife), mudrika or perforator, savarimukhashastra (episiotomy scissors) and suji (episiotomy suturing needles). This rich fund of knowledge was handed down through individual guru-shishya. This resulted in subjective variations.

CONCLUSION

The assumption that men were more rational, men dominated the profession of physicians, an occupation requiring rational research, and for which they believed women were not suited. Female slaves or members of the family served as assistants. The closest similarity to that of a nurse during antiquity was a midwife. Midwifery flourished in ancient civilizations, including Egypt, Byzantium, Mesopotamia, and the Mediterranean empires of Greece and Rome.

The role of the midwife was very important during the process of childbirth. They were experienced and later trained in managing normal labour. Men were not allowed to conduct deliveries. Mortality was quite high, in the range of 400 per 1000 in antiquity due lack of sanitation and hygienic awareness, and a dearth of effective drugs.

Progress in obstetrics came after the 15th century. Even then, the physician would be summoned by the midwife realized there were problems in the conduct of labour, very often after the intra uterine death of the baby, as the stethoscope was not invented until the 19th century. At the same time, developments in asepsis and anaesthesia paved the way for the introduction of caesarean sections. Until then women had to face many perils in delivery and crude surgical procedures were acts of desperation, normally done to deliver the baby from the mother who had died, or was dying in labor.

Birth control in antiquity mainly through their knowledge of plants and herbs. Their knowledge was transmitted by herders who observed sterility of their livestock when exposed to certain plants. Knowledge of birth control was also transmitted by word of mouth, mainly originating from knowledgeable midwives. Midwives knew how to identify necessary plants, how to administer them, and most importantly, when to administer them in relation to the last menstruation or coitus.

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