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Contributions of Scholars of the Early Islamic Era to Obstetrics

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Abstract

Islam encouraged the seeking of knowledge. The art of healing was considered to be the most noble of human undertakings. Acquiring medical manuscripts from previous civilizations and translating them into Arabic proceeded at a great pace. This was followed by the appearance of several great scientists and physicians who studied these writings and produced their own, with the addition of significant original contributions to all branches of science and medicine. In this article, I highlight the most interesting contributions to obstetrics of some of the scholars of that era such as al-Majusi, al-Razi, al-Zahrawi, ibn Sina, al-Baladi and ibn Maimon. Notwithstanding the limitations they encountered, and absent the advanced technology we use now, one must admire their conclusions based on astute clinical observations and devotion to the care of their patients as a moral and religious duty.

Introduction

The period from the seventh to the fourteenth centuries is considered the golden age of Islamic civilization. Islam stresses the importance of seeking knowledge[1-7]more enthusiastically in the art of healing. This was inspired by the hadith:

> *God did not send down any disease without also sending down its cure.*[8]

Implied in that hadith is that Muslims are to study diseases and find their cures. This movement started by a determined effort by several scholars and the support of the rulers to acquire all knowledge available at the time. Translations from Greek, Syriac, Sanskrit, Persian, and Egyptian manuscripts proceeded at a high pace in the 8th and 9th centuries CE. Translations of Hippocrates, Aristotle, and Galen books into Arabic became available. These books covered different aspects of science, but medicine attracted special attention.9 Muslim physicians studied the medical knowledge that became available. Prominent scholars wrote their own books using this information but when appropriate, corrected prior theories and concepts, and added their own observations based on actual clinical practice and experimentation. Among these prominent physicians are al-Razi (Rhazes, 841-926 CE), al-Zahrawi (Albucasis, 930-1013 CE), Ali ibn Abbas al-Majusi(Haly Abbas, died 994 CE), ibn Sina (Avicenna, 980-1037 CE), al-Baladi (early 11thc.CE)and ibn Maimon

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(Maimonides1135-1208 CE). Many of them wrote several books each. These books were translated into several languages, including Latin, and were used for teaching in European medical schools up to the 17th century10-14The following are their most important books that were used for this article:

- *Al-Hawi fil Tibb (the comprehensive Book in Medicine)(Liber Continens)* byal-Razi[15]
- *Al-Qanoun Fil-Tibb(Laws in Medicine)* (Canon) byIbn Sina[16]
- *Al-TasrifLiman `ajaz`an al-Ta'leef*(The presentation of medical knowledge for the person who cannot compile it himself), (*Chirurgia)* by al-Zahrawi[17]
- *Tadbir al-Habalawal-atfalwal-sabayawahifzsihhatihim(Management of Pregnant women, their newborns, and Children, and preservation of their health)*by al-Baladi[18]
- *Kamil al-Sina'ah al-Tibbiyyah* or *al-Kitab al-Maliki* (The Royal Book) by Al-Majusi[19]

European historians in general have ignored the original contributions of Muslims to the renaissance. They called the period between Ancient Greek civilization and the Renaissance "The Dark Ages," ignoring the great civilization Muslims built. Some even spread misinformation about medical practices in Islam. An example related to obstetrics reported in my previous article[20] is a statement made in Young's book "Mohammadanism absolutely forbids it (Cesarean section) and directs that any child so born must be slain forthwith, as it is the offspring of the devil".

This absurd statement unfortunately has been quoted by othersdespite the fact that there are illustrations showing theuse of caesarean section in the Islamic world as early as the eleventh century.[11,20,21]

Only recently have historians started to uncover and report the great scientific contributions of Islamic civilization.[21-4]It is the duty of present-day Muslim scientists and physicians to explore their heritage and bring to light the works of those early prominent physicians.

We presented some examples of the contributions of each of these scholars to obstetrics in a previous paper.[25] Here I present the sum of these contributions.

Women as Healthcare Providers

Women were actively involved in the practice of medicine, especially labor and delivery. They were called *dayas* (midwives). They mostly worked under the supervision of male physicians, but many were independent. Ibn Zuhr, known in the West as Avenzoar (1094-1161), was one of the most renowned physicians of Ishbiliyyah (Seville, Andalusia).[12] His daughter and granddaughter were the first known female obstetricians.[12]Darwish and Weber reported that many women healers were able to pursue careers in medical institutions with established positions and established salaries both in Egypt and Ottoman society. They report on the presence of illustrations of a woman performing gynecological surgery and another woman extracting a hydrocephalic dead fetus in the thirteenth century. They also reported the presence of large numbers of female physicians in Ottoman Egypt.[26]

Prenatal care

Ansaripour et al. reported that ibn Sina stressed the importance of healthy lifestyle of both parents (exercise, nutrition, retention of necessary materials and excretion of body waste, psychological balance) to ensure healthy offspring. Ibn Sina also stressed the importance of climate and fresh air, indicating his holistic approach to health and specifically to care during pregnancy.[27]

However, it was al-Baladi who first dealt with prenatal care as a separate entity. He devoted a book to it.[18] He described morning sickness: "pregnant women usually have stomach upsets, nausea and vomiting." He recommended managing itwith the consumption of different food items and with herbals. He discussed craving/pica (*waham*), increased salivation (sialorrhea), swelling of the lower limbs, *striaegravidarum* (stretch marks) and breast engorgement, the most common symptoms and signs of pregnancy.

Al-Baladi described treatments to reduce stretch marks. He prescribed the use of specific ointments and soaking a piece of cloth in certain fluids derived from herbs and wrapping it around the legs to reduce the discomfort of the swelling. He also described methods to take care of breast engorgement during lactation.[18]

Al-Baladi stated that slight vaginal bleeding (threatened miscarriage) at irregular times is not a significant problem, but if it occurs frequently, especially at the time of supposed menstruation, "as if she was not pregnant,"

the bleeding is an indication of weakness of the fetus. He prescribed medications to help in this situation.[18]

Ibn Maimon[28] also discussed some aspects of prenatal care. He described craving for food (pica)and theorized it to be due to "bad juices in the folds of the stomach." He noted that pica subsides at the fourth month because these "bad juices will be spit up by that time through vomiting."

Al-Baladi[18], along with al-Razi[15] and ibn Maimon[28], described shrivelled (retrogressed) breasts as a sign of fetal weakness or impending death. This observation is currently understood to be the result of low levels of prolactin and progesterone, secondary to severe placental insufficiency that can be associated with fetal death.

Al-Baladi[18] gave detailed recommendations for the care of the pregnant woman. Some of these are:

The pregnant woman needs more nutrition but not too much, as this may disturb the stomach and digestion. The increase should be moderate and consist of easily digested food. The increase should be gradual and in successive stages accompanied by an increase in exercise.[18]

Bathing is good as it is pleasurable, helps to reduce the pain, brings comfort and promotes good sleep. It also quietens harmful strong fetal movements. However, the pregnant woman should not spend a long time taking a bath. The bath (room) should be of moderate temperature and should have good ventilation. The water should be sweet, its temperature should be nice, and it should contain perfumes and vapor.[18]

Presumably to avoid getting a common cold, "the pregnant woman should cover her head when there is wind, whether it was too cold or too hot."

She should avoid jumping, carrying heavy loads, stooping down, loud noises and traumatic events which can cause miscarriage.[18]

The pregnant woman should take extra care during the 8th month to avoid preterm delivery.[18]

It is better to avoid sexual activity in the first 2 months and after the sixth month. At the latter time, the fetus is heavy and cannot be trusted to fall during intercourse because of the excessive movements and the fetus is already ready to get out.[18]

We currently repeat Al-Baladi's advice regarding sexual activity to pregnant women with recurrent miscarriages or to those who are at risk of preterm delivery.

Multiple pregnancy

Al-Razi[15]noted "Twins are delivered within a few days of each other at the most. They have been conceived together because as soon as the uterus contains the semen (probably the fertilized egg), it closes. No more semen can enter." This probably refers to the inhibition of ovulation once fertilization occurs, the result of persistence of the corpus luteum with the secretion of increasing levels of progesterone inhibiting FSH and LH secretion.

Al-Zahrawi[17] identified that twins can be born in 2 different sacs (dichorionic diamniotic) or in one sac (monochorionic monoamniotic). He also observed that twins usually survive, triplets rarely do, and quadruplets or higher or dermultifetal pregnancies are always miscarried.[17] Multiple pregnancies were recognized to be one of the fetal causes of difficult labor in ibn Sina's classification.[16]

Fetal Presentation

Al-Razi stated: Fetuses normally present by the head. If it was presenting by the breech it turns into head by the eighth month as the head is the heaviest part of the fetus and will gravitate downwards. … Fetuses delivered before the eighth month commonly present as breech and they usually die. … [T]hey are weak and therefore could not turn in head-first position.[15]

It is true that a higher percentage of preterm deliveries are breech deliveries, but the higher death rate is primarily because of prematurity. It is also true that breech delivery is more stressful to the fetal head especially to the less ossified skull of a preterm fetus.

Al-Razi further stated, "If foot or hand presents, it can cause death of the fetus and mother"[15] He was probably referring to transverse/shoulder presentations with prolapsed arm This malpresentation if uncorrected will lead to obstructed labor, rupture of the uterus and maternal death. He further described the complication of cord around the neck and that it can be a cause for difficult labor and fetal death.[15]

Other scholars[16,18] described some of the fetal mal-presentations, but al-Zahrawi can be credited with a

detailed description of all malpresentations and of methods to effect delivery in each case.[17]

Onset of Labor

Ibn Sina noted that "Initiation of labor occurs when the fetus cannot get enough blood (nutrition) from the placenta."[16] We now know the placenta ages with the advance of gestation and becomes less efficient in gaseous exchange and transfer of nutrients. That is termed placental insufficiency, and it is,as ibn Sina postulated, is implicated in theories of labor onset. Ibn Sina continued, "At that time, the fetal organs are completely developed, and it starts to move towards the exit usually starting at the seventh month and it comes out on the ninth. Delivery occurs when the membranes are torn."[16]

Al-Majusi was the first to describe that uterine contractions are what causes the delivery.[19] Before that, it was thought that contractions are only the indication of onset of labor, but subsequently the fetus swims its way out of the womb and birth canal.[11] Hippocrates likened delivery to the process by which the chicken hatches out of the egg.[29]

Al-Razi noted that "sexual intercourse brings on labor and facilitates delivery."[15]This observation is now explained by the effect of oxytocin release and deposition of seminal prostaglandins in the vagina. Both are oxytocic agents that initiate and potentiate uterine contractions.

Management of Labor

Al-Razi noted that" if labor pains are in the pelvic area, labor will usually be easy, but, if the pain is mostly in the lower back, labor will usually be difficult"[15]. It is true that this latter type of pain is associated with the occipito-posterior position of the fetal head and is associated withprolonged labor.

Al-Razi instructed that" midwives should examine the parturient before embarking on the delivery. Specifically, the cervix needs to be checked to see how much it is dilated,to determine what is the presenting part, and to follow the progress of cervical dilation until it is sufficiently dilated. Then they can ask the parturient to push down the fetus."[15]This is how we manage labor now.

Causes of Difficult Labor (Dystocia)

Ibn Sina[16] classified causes of difficult labor into maternal, fetal, faults in the uterus or placenta, timing of delivery (preterm and post term), or mistakes by the midwife. This is still a valid classification.

Ibn Sina enumerated maternal causes. "The parturient may be weak, malnourished or diseased, too scared, very young or old, obese, restless, or impatient with the labor pains". He also listed some causes that indicate his knowledge of the mechanical aspects of laboring and pelvic anatomy. He understood that tumors of the bladder, rectum or colon, urinary retention and impacted hard fecal matter all can cause obstructed labor.

Ibn Sina listed these fetal causes "female gender, big size, big head, being too small (light) such that it cannot forcibly "fall down", anomaly such as double head, mal-presentation, more than one fetus. Also, a dead fetus cannot help in the process". The latter seems to indicate that he was still convinced with Hippocrates's thesis that the fetus pushes itself out of the birth canal.[29] All these causes, except female gender, are accurate.

Ibn Sina's uterine causes included small size (probably referring to a contracted pelvis), improperly healed cervical ulcers, or tears, and "hemorrhoids' of the uterus. He did not define what the latter is. Could he be referring to what we now call placental abruption, where the edge of the placenta separates from the uterine wall causing vaginal bleeding associated with pain? This could be intermittent and repeated, somewhat similar to the symptoms of hemorrhoids.

Ibn Sina[16] mentioned among placental causes of difficult labor "thick placenta" without identifying what it is. Could he be referring to placenta previa? In this condition the placenta is located in the lower uterine segment and an examining finger will feel "tissue" between itself and the fetal presenting part. He also included "dry uterus" as another placental cause. He is referring to oligohydramnios probably caused by premature rupture of the membranes. He ascribed the difficulty to the fact that 'the birth canal is not slippery."[16]

Ibn Sina considered preterm delivery as a cause of difficult labor. He discussed the outcome of preterm delivery: "Fetuses delivered before the seventh month are too weak to survive. … Fetuses delivered at the eighth month are more prone to die than those delivered at the seventh month, especially female fetuses."[16] This belief

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was stated by Hippocrates[29] and shared by many subsequent scholars such as al-Baladi.[18] They explained this by the fact that delivery is aided by fetal movements, like a chicken emerging from an egg,[29] and, "beginning at the 7th month, the fetus tries to get out and, if "strong" enough, will be born and survive. Those who are born at the eighth month must have been too weak to be delivered and hence the lower chance of survival. If they remain in utero till the ninth month they will 'recover' and become stronger and will survive when born." While we know this is untrue and, in fact, the chance of survival of a preterm newborn increases the longer the pregnancy progresses, it is interesting to note that this mistaken belief still lingers in uneducated lay people until our time.

Ibn Sina[16] specified "faults by the midwife" as a cause of difficult labor. This is very true. For example, improper application of the forceps, by the obstetrician, to the fetal head will result in a failed forceps delivery and both fetal and maternal complications.

Management of Difficult Labor

Al-Razi[15] gave different prescriptions of medicinal herbs with their respective dosages and recommended special kinds of food to "facilitate" labor and delivery. He described different maternal positions to facilitate the delivery of the fetus in certain malpresentations. In difficult vertex delivery, he would have the parturient in the lithotomy position and then insert a catheter in the uterus and infuse certain fluids. If the fetus were still alive, he used fluids with lubricant effects. If the fetus was dead, he used spicy fluids.[15]

Ibn Sina described the management of difficult labor in vertex presentations.[16]He possibly was the first to use an instrument to be applied to the head of a live fetus and then to pull it out (a precursor of the obstetric forceps).Theiry[30]considered ibn Sina a putative inventor of the obstetric forceps. He stated that "ibn Sina in the Canongave the following directions to the midwives for delivery of the impactedfetal head: Apply a sling (fillet) around the child's head and endeavour to extract it. If this fails, the forceps are to be applied and the child extracted by them. If this cannot be accomplished, the child is to be extracted by incision (of its head) as in the case of a dead fetus." He continued, "[I]f the head bone is big, open it up so the inside liquid flows out." He was probably describing hydrocephalus and craniotomy.

The proposition that ibn Sina was the inventor of the forceps has been corroborated by Dunn[31]who reported a quote by Smellie "with regard to the fillet and forceps, they have been alleged to be late inventions; yet we find Avicenna recommending the use of both. The forceps recommended by Avicenna is plainly intended to save the fetus; for he says, if it cannot be extracted by this instrument, the head must be opened, and the same method used which he described in his chapter on the delivery of dead fetuses."[31]

Ibn Sina[16] also described how to deliver a fetus that is coming by *janb* (side) that is transverse presentation. He described the procedure: "first by manipulation (internal podalic version), if unsuccessful, by use of *kalaaliib* (hooks) and, if unsuccessful, by dividing it in pieces (evisceration) as in the delivery of a dead fetus."

Al-Razi described the procedure of internal podalic version in the management of transverse lie.[15] Other scholars discussed the management ofsome of the fetal malpresentations, but it is al-Zahrawi who described in detail, in chapters 75-78 of his book, all types of malpresentations and described manoeuvres to affect delivery under each of these circumstances, such as replacing the hand, internal podalic version, etc.[17]

Al -Zahrawi[17] then stated, "If these manoeuvres are unsuccessful, one would resort to changing the position of the parturient, shaking her, placing her in a special seat, Valsalva manoeuvre." Also, he recommended a whole host of herbs.He would recommend mixing mucilage of fenugreek, oil of fumary, and gum and pounding them in a mortar and then anointing the woman's perineum and making her sit down in warm water reaching to the ribs. Then he would make a suppository of murrh and introduce it in the vagina and after an hour make the woman stand. It would be interesting to investigate the composition of these materials and determine if they have any oxytocic effects.

If all fails, al-Zahrawi[17] will resort to the use of surgical procedures such as cutting the clavicle (cliedotomy), using scissors in cases of shoulder dystocia, craniotomy using a spike shaped scalpel (perforator) or crushing the head using a *mishdakh* (cephalotribe), or evisceration using hooks and scissors when the fetus cannot be delivered otherwise or is already dead.

These instruments were among about 200 instruments illustrated in his book (Figure 1).[17]Most of these instruments were of his own design. In the book were illustrations of the *midfaa* (thruster, craniotomy scissors, cranioclast) (Figure 2), *mishdakh* (crucher, cephalotribe) (Figure 3), *miqass* (scissors) (Figure 4), *sinnarah* (fishing

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rod), hook(crotchet), *mibdaa'* (scalpel) and *kalaalib* (claws).[17]These instruments probably formed the basis of the design for modern obstetric instruments.

It is noteworthy that there is no illustration of obstetric forceps in al-Tasrif. While this may be an omission, it could mean that al-Zahrawi was unaware or did not use an instrument to extract a live fetus. This is noteworthy based on our knowledge that ibn Sina, who was almost a contemporary of al-Zahrawi, described the use of obstetric forceps for the delivery of impacted fetal head.[30,31]

Management of Obstructed Labor

Al-Zahrawi described in detail the management of the different cases of obstructed labor.[17] His detailed description signifies his experience and clinical acumen:

> If the fetal head is large, and it is tightly squeezed in exit, or if there is a collection of fluid in the head (hydrocephalus), you should introduce between your fingers a spike shaped scalpel, a *midfaa'*(perforator) and split the head to let the water out or you should smash it with the instrument called *mishdakh* (crusher, cephalotribe), then you should draw out the bones with forceps. If the head comes out and the fetus is held up at the collar bones (shoulder dystocia), an incision should be made (cliedotomy).If the thorax is impacted, perforate it to let out the humidity in it (hydrothorax), the thorax will then shrink. But if it does not, then you cut off pieces in any manner possible (evisceration). If the lower belly is swollen or dropsical (ascites) then you should make an opening to draw out all the fluid.
>
> If the fetus presents by the feet, then the extraction will be easy, and it will be a simple matter to guide it to the maternal opening. If it is stuck about the thorax or abdomen, then pull on it with a cloth around your hand and cut an opening in the abdomen or thorax to allow the contents to flow out (evisceration).
>
> If the fetus presents laterally (transverse) and it is possible to reposition it (podalic version) apply the manoeuvres for a living fetus, but if this is not possible then the fetus should be cut away piecemeal, then extracted.
>
> If the vagina is closed on account of an abscess, operative procedures should not be done. In these cases, use infusions of grease and humid herbs. The woman should sit in a bath of softening and moisturizing waters.[17]

Extraction of a Dead Fetus

Ibn Sina[16] discussed the management of the fetus that there is no hope of being born alive, "labor lasting for more than 4 days the fetus must be dead". He advised quick delivery, otherwise "the dead fetus will rot (swell) andits extraction will become more difficult." He would use ointments and grab the fetus manipulating it to be extracted. If unsuccessful, he advised attaching hooks and cutting the fetus into pieces (evisceration).[16]

Al-Zahrawi[17] described the operation to extract a dead fetus. His detailed methodical description shows his thoroughness and the effectiveness of his instructions to the midwife:

> You first examine the woman to see if she is healthy or has a disease that may threaten her life. Put the patient in the lithotomy position and hold her down firmly. Then anoint your hand with oil sand, mucilage of mallow sand fenugreek with linseed and moisten the vaginal opening. Gently introduce your hand into the passages and locate the most suitable part of the fetus to fix kooks into according to its presentation. If it is the head, attach the hook to the neck, mouth or beneath the chin, or if you can, reach to beneath the ribs (probably in oblique or transverse lies). If the feet are presenting, fix the hook to the pelvic region. Hold the hook in the right hand and put the curved part between the fingers of the left hand and introduce the hook gently and fix the hook as above. Then opposite it, let her (the midwife) fix another or a third hook so as to give even traction. Then she should pull evenly not just in a straight line but with the fetus moved from side to side so that its exit may be eased. From time to time the tension must be relaxed, and if any part of it be held up, the midwife must oil some of her fingers to introduce them to one side to manipulate the retained part. And if only a part of the fetus comes away, she should shift the hooks to other parts a little higher up and so on until the whole of the fetus comes out.[17]

Delivery of the Placenta

All these early scholars noted the need for complete expulsion of placenta after delivery of the fetus and discussed how to effect that. Al-Zahrawi specifically stated "It is necessary that not a scrap of the afterbirth be left behind in the womb,"[17]astatement to which we today completely ascribe. These scholars usually start by letting the woman sneeze while closing her mouth and nose (Valsalva maneuver). Then they will use vapors of certain herbs introduced in the uterus while the woman is sitting. If this fails, they will resort to its manual removal. Al-Zahrawi stressed the importance of separating the placenta from the uterine wall gently and then pulling it from side to side, avoiding violent pulling that can result in rupture of the uterus or *inqlab al rahim* (uterine inversion), a serious complication that may lead to maternal death.[17]
A very thoughtful description that we follow now to avoid these two very serious complications; rupture or inversion of the uterus.

Al-Zahrawi realized that sometimes removal fails. We now call this adherent placenta or placenta accreta. He was probably the first to describe this condition.[17] In this circumstance, he injects tetrapharmacon ointment in the uterus that will soften and dissolve or cause "putrefaction" of the placenta in a few days. That will loosen it, and it will come out.[17]

Extra- uterine/Abdominal Pregnancy

Al-Zahrawi described a case of abdominal pregnancy. The extra-uterine sac turned into an abscess which started drainage with extrusion of the bones of the dead fetus. With proper treatment (evacuation and dressing) the woman survived in good health for a long time. His description of the case demonstrated his clinical acumen:[17]

> Now I myself once saw a woman who had become pregnant, and the foetus had then died *in utero*; then again, she conceived and the second foetus also died; and after a long while she got a swelling in the umbilicus which grew and eventually it opened and began to produce pus. I was called in to attend to her, and I treated her for a long while, but the wound did not heal up. So, I applied to it certain very strongly drawing ointments, and then a bone came away from the place; then a few days passed, and another bone came out; and I was mightily astonished at this, seeing that the abdomen is a place where there are no bones. I formed the opinion that these were bones from a dead foetus. So, I investigated the place and got out many bones belonging to the head of the foetus. I continued this procedure and got a great number of bones out of her, continued the evacuation and dressing till it healed and the woman being in the best of health.[17]

Fetal and Infant Deformity

Ibn Sina[16] discussed the causes of fetal and infant deformity. He had the insight that some are caused by inherent (genetic) factors. He stated that "some of these agents (that cause the deformity) come into play from the beginning because of a defect in the formative power of the sperm. "Other determinants of deformity "come into force later in life — namely in parturition, during the act of traversing the maternal passages. Others operate after birth (tight binders and wrappings). Others operate in infancy, before the limbs are hard enough to enable the infant to walk".

Conclusion

I would like to conclude by quoting Spink and Lewis[17]

> Attention is specially drawn to the gynecological and obstetrical instruments used by the "Arabian" doctors. It is shown that in this branch at least, the "Arabians" were by no means wholly dependent upon the classical writers. … [T]hey altered and improved, out of recognition, the ideas they received from classical sources.

Spink and Lewis continued:

> The speculum, the forceps, the lever and the crotchet mark in a special way the original Arab genius. It is also shown that the Arabs had developed a clear practical idea of what is normal, of what varieties of abnormality were to be met with, and by no means least, of prognosis, in obstetrical practice.

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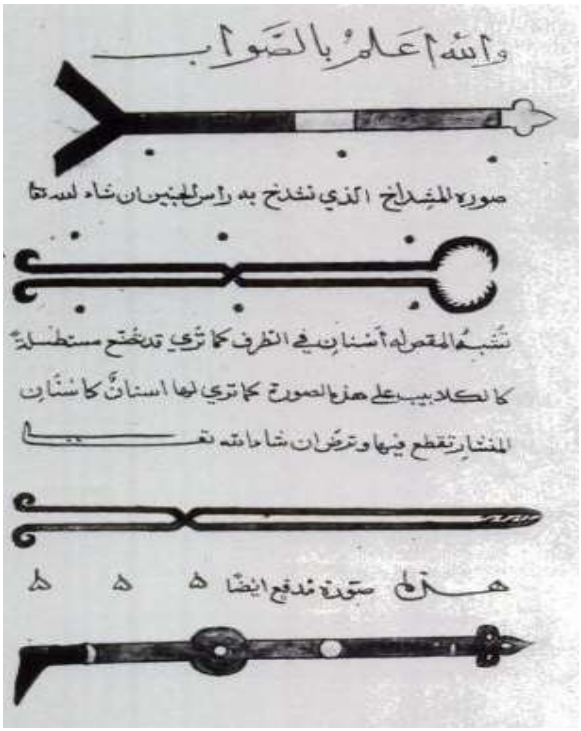

Figure 1.Some of the instruments illustrated in al-Zahrawi's book Al-Tasrif. It is interesting to note that al-Zahrawi's descriptions of the instruments include references to Allah. "Allah knows best" and "If Allah wills". This demonstrates the importance of Islamic faith in his understanding and practice of medicine.

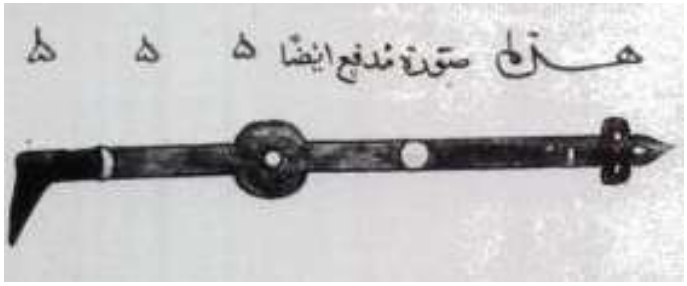

Figure 2.The Midfaa' (thruster or perforator) used in draining fluid from fetal head (hydrocephaly), thorax (hydrothorax) or belly (ascites).

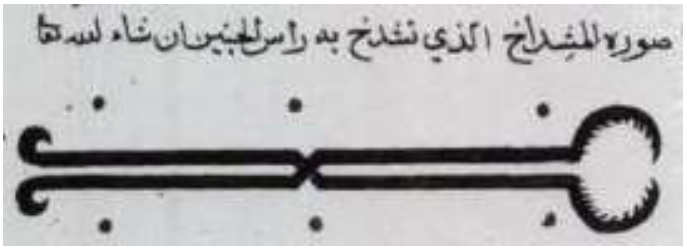

Figure 3. The Mishdach (crusher, cephalotribe) used to crush the festal head when it is impacted in the birth canal.

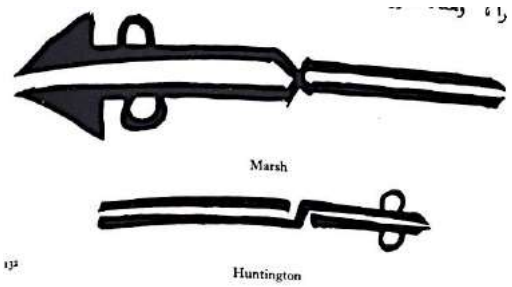

Figure 4. Miqass (scissors) are used in cliedotomy in case of shoulder dystocia and in evisceration in case of dead fetuses.