

Investigation and Emptying Instruments of Arab and Moslem Surgeons¹

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Summary

In this paper, some knowledge are given on Investigation and Emptying Instruments of Arab and Moslem Surgeons. The topics such as vaginoscope, mirror of vagina, non-immersed skull perforator, the probe (a long needle, cannula for paracentesis, lithotripsy instruments, injection instruments, probe for imperforated urethra) are studied and some results are obtained.

Key Words; Arab Surgery, Instruments, History of Medicine.

Instruments of Investigation

1. Vaginoscope:

Arab and Moslem doctors were not acquainted with treating by the speculum or the laparoscopy as known nowadays. All we could find in this respect is the vaginoscope which is an instrument invented and used by Albucasis (937-1025 A. C.) to examine the vagina of women. This instrument was called by Albucasis a speculum because it moves on a screw which is the pivot of its opening and closing. This instrument differs greatly from that designed by Surans" (1).

Albucasis says in chapter 77 (2): "On the forms of instruments necessary for extracting the foetus: speculum for opening the entrance of the womb". After he draws a figure which represents the speculum (fig. 1), he says:

"This is the type of instrument with which books are pressed. It has two screws at either end of two pieces of wood; but this instrument should be more slender than a book press, and should be made of ebony or boxwood. The width of each piece of wood should be about two fingers' breadth and the thickness about one, and the length a span and a half; and in the middle of both pieces of wood, firmly attached,

should be two projections made of the same kind of wood, each half a span long or a little more, and two fingers wide or a little more. It is these two projections that are to be introduced into the vagina so that it is thereby opened when you turn the screws".

Then, he draws a figure of another instrument which is used for the same purposes and says:

"Another instrument, for the same purpose, but smaller and lighter (fig. 2). It is made of ebony or boxwood in the shape of forceps, but at the end it has two projections as you can see; and the length of each is about a span and the breadth two fingers. When you wish to open the womb with this, make the woman sit on a couch with her legs hanging down, parted; then introduce the two projections pressed together into the orifice of the womb while you hold the end of the instrument lower down between her thighs; then open your hand in the same way as you would do with forceps, to the extent to which you wish to open the womb, so as to allow the midwife to do what she desires".

2. Mirror of Vagina:

Traditional and religious strains, to which Moslem women submit, have undoubtedly made it difficult to practice gynecology as much as this occu-

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pation needs in the examination and treatment. This made Arab and Moslem doctors refrain from examining the women by themselves, but they gave their instructions to the midwives to do that under their directions. Midwives used to describe what they felt, and the doctors depended on this description in the diagnosis and treatment.

Rhazes (865-927 A. C.) is considered to be the first one who examined the virgins by touching the contents of the pelvis by the finger through the anus. One of the most amazing ways of examination mentioned by Rhazes, is putting a mirror under the woman to see the state of things as they are. He says: "put the mirror under the woman to see the state of a thing as it is" (3).

3. Non-immersed Skull Perforator:

When speaking about treating skull fractures, Albucasis mentioned what he calls the non-immersed skull perforators. They are of the instruments invented by him, as he had described an instrument which does not pierce the cranial bone through to what is beneath. This instrument consists of a mineral piece wider than the orifice caused by the skull perforator, so it works as a stopper in order not to pierce (the meninges and the brain) (4).

4. The Probe (a Long Needle):

Speaking about the Elephant of the throat (goitre), Albucasis says: "the other resembles the tumour arising from an arterial aneurysm, and it is dangerous to incise it, so on no account must you apply a knife to the latter kind, except any that are small; if you try and explore them with a probe and you find they are like sebaceous cysts and not adherent to any blood-vessel, then immediately cut down upon them as you would a cyst and remove them with whatever capsule may surround them, if they are contained within a capsule; and if not, dissect away the whole" (fig. 3) (4).

In treating the cyst (sebaceous cysts) by surgery, Albucasis refers to the same method. It is the method of treatment that is used nowadays. He says:

"When you come to treat the cyst, you should sound it with the instrument called the explorer (fig. 3) ... take this instrument and press it in at the spot

where the tumour is ... then remove the explorer and see what comes out after it. If a humidity should flow, whatever the colour, make a simple incision, as I said for the other tumours. But, if no humidity come out along the track of the explorer you know at once that it is fatty. Therefore, make a cruciform incision upon it in this shape ... and attach hooks and dissect away the skin ... be careful with the capsule; if you can, get it out whole, together with the cyst" (4).

Instruments of Emptying

1. Cannula for Paracentesis:

Rhazes has thoroughly described paracentesis in the case of ascites, its precautionary measures and some of its complications. He says:

"make the patient stand still ... if he can not do that, do not treat him by paracentesis because only those who are strong enough, should be treated by paracentesis. Be careful not to tear the peritoneum, then excoriate the skin from the peritoneum down the perforation of the skin. Then make a small perforation, thus the peritoneum perforation will be under the skin perforation because in this case when you pull out the cannula, the water will be held back because the skin covers the peritoneum and the two perforations are not opposed to each other. Then introduce a cannula made of copper inside it, which will bring the water out in a sufficient amount, because it is dangerous. When you finish, let him lay down and take care of him until he gets better" (5).

2. Lithotripsy Instruments:

A Rhazes was the first one to describe what is known as lithotripsy. If the calculus is big, Rhazes says:

"watch that the perforation of the skin and flesh is big enough to make the calculus come out easily ... If it is too big, do not make a big perforation because it causes chronic urinary fistula and the wound will never heal up. So, manipulate it until one of its sides comes out, then catch it with this instrument until it begins to break. Do not let it go, then push it and catch it until it breaks down into pieces, then pull it out" (6).

B- Albucasis followed him in describing this method in details as he had an instrument which he used in lithotripsy. Besides, he was the first one to

use a method for the lithotripsy of the urinary passage, he says:

“Now, if the calculus be small and be impacted in the opening of the urinary passage, preventing the exit of the urine ... take a drill of the finest steel ... It should be triangular at the point and sharp, with a wooden handle. Then take a thread and with it bind the penis beneath the calculus to prevent the stone from returning to the bladder. Then introduce the iron of the drill gently into the meatus until the drill reaches the stone itself, and then very very gently revolve the drill upon the stone with your hand, and try to perforate it, till you pierce it through to the other side. Then the urine will at once be released. Then, with your hand outside the penis, squeeze the remains of the stone, and they will crumble and be washed out by the urine and the patient will be cured” (7).

3. Cannula for Imperforated Anus:

Albucasis says about this:

“Infants are quite often born with the anus imperforated, closed by a fine membrane, then the midwife should perforate the membrane with her finger or pierce it with a sharp scalpel, being careful not to touch the muscle. Then wool dipped in oil and wine should be applied ... If you are afraid it may close up, put into the opening a leaden tube for many days, which will be removed when the child wants to evacuate the bowel. Sometimes also the anus is closed by the scarring of a wound or an abscess; then the scarring should be incised, and then dressed by those methods we have mentioned” (7).

4. Probe for Imperforated Urethra:

Albucasis says about the treatment of some children who born with imperforated urethra or have too narrow meatus:

“Sometimes a boy is born from his mother’s womb with the glans penis not perforate. So, at the moment of his birth you should be quick and make a perforation with a fine scalpel ... Then put in the opening a slender leaden sound, tie it and keep it in for three or four days. When he wishes to make water, it will be removed and he will do so ... The case having too narrow a meatus should be treated

with the leaden sound, as we have said, for many days until it is wide enough” (7).

5. Using Catheters and Swabs:

Rhazes is considered to be the first one who used swabs in the surgical operations. He has also described in detail the method of using “catheters through which pus and poisonous excretions pass”. And he is the one who added to them side openings in order not be blocked by blood or pus (8).

Albucasis says:

“if the matter is very urgent with the patient, then you should attempt to bring it out with the instrument called a catheter”, of which this is the figure (fig.4). He adds “it is made of silver, slender and smooth and hollow like the quill of a bird’s feather; as slender as a probe; about a span and a half in length; and with a tiny funnel at the end” (9).

Albucasis emphasizes the importance of using a swab in the infected tumours by saying:

“Then, after you have opened the tumour, you should cleanse the wound and consider if the tumour has only a small opening, or it is one simple incision, employ swabs of lint or cotton wool; but if it is a large tumour with multiple incisions, introduce a swab into each incision so that they meet” (9).

Injection Instruments

1. Albucasis described, for the first time in the history of surgery, a method for irrigating the bladder. He invented for this purpose, the common injector (syringe) used nowadays, if the needle added to this injector, medicines can be introduced to the body by using it. Albucasis says:

“chapter 59: On the manner of irrigating the bladder with a syringe ... this is its figure (fig. 5) ... It is made of silver or ivory, hollow, with a long fine tube, fine as a probe; entirely hollow except for the end, which is solid with three holes in it ... The hollow part containing the plunger is exactly of a size to be closed by it, so that any liquid is drawn up with it when you pull it up; and when you press it down it is driven in a jet ... So, when you wish to inject fluid into the ladder, dip the end of the syringe into the liq-

uid and draw up the piston, for the fluid will be drawn up into the cavity of the syringe. Then introduce the end into the urethra ... Then expel the fluid by means of the piston; the fluid will immediately flow into the bladder” (9).

2. Albucasis is the first one who discovered the bulb syringe. He is the first person to describe a bulb syringe with a leathery piece attached to it and used it for ministering enemas to children (fig. 6) (10).

Instruments for Helping Breathing and Feeding:

1. Tracheotomy:

Tracheotomy is used to save the lives of asphyxiated patients. It is said that the Greek physician Sclipiados (11) (born 124 B. C.) was the first one to use it. Bin Masawayh, on the other hand, is the first Arabic doctor who described it, and Rhazes quoted from him. He says:

“Bin Masawayh says that the neck should be stretched out and the skin should be extended and cut, then stretched by two threads upwards and downwards until the larynx appears. Then a cut is made between two of its cartilage and the membrane that links them and a cut is also made in the middle of this membrane for suturing. When the pain is relieved and the patient’s breathing becomes normal, the wound should be sutured and held for a while, then add to it a yellow powder”(12).

But, there is no evidence that any of them had practiced the operation. Albucasis says that it is not dangerous and it could be carried out. They were followed by Avenzoar (1094-1162). He developed this operation, and his tendency towards the experimental medicine helped him a lot. As he practiced this operation on goat and watched its development and healing up and proved for the first time that the cartilage of the larynx can completely heal up after the healing of the operation wounds. His book (AL-Tayseer) became the main reference in this field (13).

2- Breathing and Feeding Tube:

Another method used for treating asphyxia is by introducing a tube made of gold or silver to the lar-

ynx. This method is still used now to save the asphyxiated patients as well as introducing the anesthetic gases and the oxygen to the patient’s chest. Yet, it is now made of robber or plastic (14).

Avenzoar has also introduced new methods in feeding the patients by using a silver tube be introduced to the pharynx. This can be considered the first description of the stomach tube. He was also the first one who advised to feed the patients through the anus in the case of pharyngostenosis (15).

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