

GRAECO-ROMAN SURGICAL INSTRUMENTS

Vaginal Speculum.

Greek, *διόπτρα* ; Latin, *speculum magnum matricis* (late).

Soranus is the first author who makes mention of the speculum specially made for the vagina. The original Greek of this chapter of Soranus is lost, but we have a Latin translation of it preserved to us by Moschion. The heading of this chapter in Soranus, which was No. xxxiv, was *Περὶ διοπτρισμοῦ*. I shall give part of this chapter from Moschion :

QUA DISCIPLINA ORGANO APERIENDAE SINT MULIERES.

Scio me retro ad inspiciendam altitudinem mulieris frequentius organi mentionem fecisse quod Graecitas dioptran vocat. Et quoniam nisi insinuata fuerit disciplina quatenus hoc ipsud fieri possit, occurrente necessitate obstetrices facere non audent, idcirco placuit nobis ut etiam hoc gynaeciis adderemus, ut ex rebus huic corpori necessariis nihil dimississe videamur. Itaque supinam iactans eam quae inspicere habet, accipies fasciam longam et in media parte eius duobus laqueis factis, ita ut inter se cubitum unum habeant laquei illi, duabus vero manibus mulieris missis, medietatem quae interest cervici eius inducis. Deinde reliqua fasciae sub anquillas missa ad manus alligabis, ita ut patefacti pedes ventri eius cohaereant. Deinde accepto organo et uncto priapisco, quem Graeci loton dicunt, in aliquantum ad prunas

cafacere (debes), deinde sine quassatione priapiscum in-
icere, susum scilicet axe posito, iubere etiam ministro ut
aperiendo organo axem torquere incipiat, ut paulatim
partes ipsae aperiantur. Cum vero post visum organo
tollere volueris, ministro iubere ut iterum axem torqueat
quo organum claudi possit, ita tamen ut cum adhuc in
aliquantum patet sic auferatur, ne universa clusura aliquas
teneat et nocere incipiat.

We have also preserved by Paul a chapter by Archigenes
on abscess of the womb (VI. lxxiii), in which the different
parts of the speculum are again named, and from it also we
learn that there were different sizes of the instrument pro-
portioned to suit different ages. The patient having been
fixed in the lithotomy position in the manner described by
Soranus :

‘The operator is to make the examination with a speculum
(διόπτρα) proportioned to the age of the patient. The person
using the speculum should measure with a probe the depth
of the woman’s vagina, lest the priapiscus of the speculum
(τοῦ τῆς διόπτρας λωτοῦ) being too long it should happen that the
uterus be pressed on. If it be ascertained that the tube is
longer than the woman’s vagina, folded compresses are to be
laid on the labia in order that the speculum may be laid on
them. The priapiscus is to be introduced while the screw
(τὸν κοχλίον) is uppermost. The speculum is to be held by
the operator. The screw is to be turned by the assistant,
so that the blades of the tube (τῶν ἐμπλησμάτων τοῦ λωτοῦ)
being separated, the vagina may be expanded.’

We have little difficulty in recognizing among the instru-
ments found in Pompeii three of the vaginal specula re-
ferred to in these passages. All are excellent specimens
of the instrument maker’s skill. They are in the Naples
Museum. The first discovered (No. 78,030) was found in
the house of the physician at Pompeii. The blades are at
right angles to the instrument (Pl. XLVII), and when
closed form a tube the size of the thumb. On turning the
screw a cross-bar forces the two upper blades outwards, till
sufficient dilation is got for operative purposes. The
diameter of the tube at its maximum of expansion is

0.09 m. The whole instrument is 0.23 m. long. Another instrument on a similar principle but with a quadrivalve priapiscus was discovered in 1882 (Pl. XLIX). It is 0.315 m. long. It is now fixed by oxidation, so that the blades cannot be moved. On turning the screw the lower blades could be drawn downwards, at the same time separating slightly, while the upper blades diverged also (No. 113,264 Naples Mus.). Lately a third, similar to that shown in Pl. XLVII, has been found in Pompeii. Note that the screw in the three-bladed instrument is a left-handed one. That in the four-bladed instrument is right-handed. This causes right-handed motion to open the instrument in either case. There is, however, an instrument similar to these trivalve instruments in the museum at Athens. It differs in having the screw right-handed (Pl. XLVIII). Mr. Bosanquet, late of the British Institute of Archaeology at Athens, was kind enough to procure me a photograph of this instrument, but he tells me that there is no satisfactory account of its provenance and its authenticity is doubtful. It seems possible that it is a copy of one of the Naples specimens by some one who has omitted to observe that the screw in these is left-handed.

Traction Hook for Embryo.

Greek, *ἐμβρυολκός*; Latin, *uncus*.

Celsus has an interesting chapter on the removal of the foetus in difficult labour. He says (VII. xxix):

Tum, si caput proximum est, demitti debet uncus undique laevis, acuminis brevis, qui vel oculo, vel auri, vel ori, interdum etiam fronti recte iniicitur; deinde attractus infantem educit. Neque tamen quolibet is tempore extrahi debet. Nam, si compresso vulvae ore id tentatum est, non emittente eo, infans abrumpitur, et unci acumen in ipsum os vulvae delabitur; sequiturque nervorum distentio, et ingens periculum mortis. Igitur, compressa vulva, conquiescere; hiante, leniter trahere oportet; et per has occasiones paulatim eum educere. Trahere autem dextra manus uncum; sinistra intus posita infantem ipsum, simulque dirigere eum debet.

'Then if the head presents there ought to be inserted a hook, smooth all round, with a short point which is properly fixed in the eye or the ear or the mouth, sometimes even in the forehead, which being drawn on extracts the child. Nor is it to be drawn on without regard to circumstance. For if the attempt is made with an undilated cervix, not getting exit the foetus is broken up, and the point of the hook catches on the cervix and inflammation follows and much danger of death. Therefore, it is necessary with a contracted cervix to wait quietly, with a dilated one to make gentle traction, and during these times to extract it gradually. The right hand ought to make the traction on the hook, the left place inside to draw the child and at the same time to direct it.'

The following passage in Soranus shows that it was customary also to insert a second hook opposite the first and to make traction on both at the same time:

'The best places for the insertion of the hooks are in head presentations, the eyes, the occiput, and the mouth, the clavicles, and the parts about the ribs. In footling cases the pubes, ribs, and clavicles, are the best. Warm oil having been applied as a lubricant the hook is to be held in the right hand; the curvature concealed in the left hand is to be carefully introduced into the uterus, and plunged into some of the places mentioned till it pierce right through to the hollow part beneath. Then a second one is to be put in opposite to it (*καταπέρειν δὲ καὶ ἀντίθετον τούτῳ δεύτερον*), in order that the pulling may be straight and not one-sided' (II. xix).

Aetius (IV. iv. 23) and Paul (VI. lxxiv) copy this.

Hippocrates (ii. 701) bids us break up the head with a cephalotribe in such a way as not to splinter the bones, and remove the bones with bone forceps; or, a traction hook (*τῷ ἐλκυστήρῳ*) being inserted near the clavicle so as to hold, make traction but not much at once, but little by little, withdrawing and again inserting it.

There are three traction hooks from Pompeii in the Naples Museum. One of these is given in Pl. L, fig. 1. They are of steel, with handles of bronze. Hooks on the same principle, and differing in appearance very little

from the Pompeian hooks, are still used by veterinary surgeons.

Decapitator.

Of transverse presentations, Celsus says :

Remedio est cervix praecisa ; ut separatim utraque pars auferatur. Id unco fit, qui, priori similis, in interiore tantum parte per totam aciem exacuitur. Tum id agendum est ut ante caput deinde reliqua pars auferatur.

'The treatment is to divide the neck so that each part may be extracted separately. This is done with a hook which, though similar to the last, is sharpened on its inside only, along its whole border. Then we must endeavour to bring away the head first, and then the rest of the body.'

Decapitation has now given way before Caesarean section ; but the decapitator, little altered since the days of Celsus, still finds a place in surgical instrument catalogues.

Paul and Aetius both mention division at the neck, but do not describe a special instrument. A ring knife for dismembering the foetus has already been discussed among the cutting instruments ; but this seems to be a different variety with a handle, which it is convenient to discuss in proximity to the embryo hook. Pl. L, fig. 2 shows a knife on this principle in the Bibliothèque Nationale.

Cranioclast.

Greek, *πέστρον, έμβρυοθλάστης, θλάστης* ;

The cranioclast is mentioned by Hippocrates (ii. 701).

Σχίσαντα τήν κεφαλήν μαχαιρίῳ συμπλάσαι ἵνα μή θραύσῃ τῷ πείστρω καί τὰ ὀστέα ἔλκειν τῷ ὀστεουλκῷ.

'Opening the head with a scalpel, break it up with the cranioclast in such a way as not to splinter it into fragments, and remove the bones with a bone forceps.'

The nature of the cranioclast is pretty well indicated by this passage, and in Galen's Lexicon we find *πέστρω* defined as τῷ έμβρυοθλάστη καλουμένῳ. I give drawings from Albus of a 'forceps to crush the child's head' (Pl. LI, fig. 3).

Cephalotribe.

Whether or not the instrument last described was used also for the operation of cephalotripsy, or whether there was a special instrument, we cannot say, but it is certain that the operation of crushing the head and delivering the child without removing the bones was practised. In Aetius (IV. iv. 23) cephalotripsy is thus described :

'But if the foetus be doubled on itself and cannot be straightened, if the head is presenting, break up the bones of it without cutting the skin. Then to some part of it fix on a traction hook and make traction, and the legs becoming straightened out we get it away.'

Though there is an essential difference between the operations of cephalotripsy and cranioclasie there is no essential difference between the instruments necessary for carrying out the same, and it is possible that the instrument used may be the same as the last. The cephalotribe figured by Albucasis is not essentially different from his cranioclast (see Pl. LI, fig. 4).

Midwifery Forceps.

Had the Greeks and Romans a forceps for extracting the child alive? Probably not. We have no mention of any such instrument by Soranus or Paul, both accomplished obstetricians, nor can any description of such an instrument be found in the voluminous pseudo-Hippocratic works on women. Adams, in a note to Paul, III. lxxvi, says that though the Roman and Greek writers do not mention the forceps, Avicenna does so, and he says that a forceps was dug up in the house of an obstetrix at Pompeii bearing a considerable resemblance to the modern forceps. The only passage I have met with in the slightest degree supporting the notion that the ancients ever delivered the child alive with instruments is one in the pseudo-Hippocratic treatise *De Superfoetatione*, where we are told that :

'If the woman has a difficult labour, and the child delay long in the passage and be born not easily but with difficulty and with the mechanical aids (*μηχαναίς*) of the physician, such children are of weak vitality, and the umbilical cord should not be cut till they make water or sneeze or cry' (i. 465).

We are not entitled to translate *μηχαναίς* by 'instruments', because it may mean any mechanical aid such as a fillet, or even assistance with the fingers of the accoucheur; but, even granting that it refers to instruments, it might mean no more than, e.g., the embryo hooks already described. With them, terrible as they were, the child must frequently have been born alive, though mutilated. A child would have had a far better chance of being born alive with them than with the murderously toothed forceps of Albucasis (Pl. **XXI**, figs. 3, 4), with which probably no child could have been born alive. As regards the statement that Avicenna knew of the forceps, his directions are that the fillet is to be applied, and, if that fail, the forceps is to be put on and the child extracted with it. If that fail, the child is to be extracted by incision, as in the case of a dead foetus. This passage, says Adams, puts it beyond doubt that the Arabians were acquainted with the method of extracting the child alive with the forceps.

This is, however, not quite correct. A full consideration of Avicenna's words seems to me to lead to the conclusion that he is describing no more than extraction with a craniotomy forceps. If the forceps fail the child is to be extracted by incision, as in the case of a foetus already dead (and decomposed so that the forceps would not hold).

As regards Adams' statement that a forceps like ours was dug up in Pompeii one may ask, 'Where is that forceps now?' It is certainly not in the Naples Museum, where all the finds from Herculaneum and Pompeii have been stored since the excavations were commenced. Adams has probably been misled by some notice of the 'Pompeian forceps' (Pl. **XLIII**), which many consider adapted for removing

the cranial bones when the child's head is broken up in cephalotripsy. It is, however, a sequestrum forceps.

Uterine Curette.

Hippocrates (ed. Van der Linden, vol. ii, p. 394) says :

If the menses form thrombi . . . we must wind the skin of a vulture or a piece of vellum round a curette and curette the os uteri (καὶ περὶ ξύστραν περιειλίξας γυπὸς δέρμα ἢ ὑμένα, διαξύειν τὸ στόμα τῶν μητρώων).

ξύστρα may of course mean the strigil, and some forms of strigil, such as the one shown in Pl. XXV, fig. 1, are not ill adapted for the purpose.

Instrument for destroying foetus in utero.

Greek, ἐμβρυοσφάκτης; Latin, *aeneum spiculum*.

Apart from the destruction of the foetus in criminal abortion, which was so common at Rome in the time of the Empire, we have mention of an instrument for legitimately producing the death of the foetus from humane motives before forced delivery. It is mentioned by Tertullian in his sermon *De Anima*, and the passage is so interesting that I give it in full. It is, moreover, an example of the unexpected places in which information regarding the surgery of the ancients crops up. Tertullian is arguing that the foetus is alive in utero, and does not, as others hold, simply take on life in the act of birth, and to support his conclusions he uses the following argument :

Denique et mortui eduntur quomodo, nisi et vivi? qui autem et mortui, nisi qui prius vivi? Atquin et in ipso adhuc utero infans trucidatur necessaria crudelitate, quum in exitu obliquatus denegat partum; matricida, ni moriturus. Itaque et inter arma medicorum et organon est, quo prius patescere secreta coguntur tortili temperamento, cum anulo cultrato, quo intus membra caeduntur anxio arbitrio, cum hebetate unco, quo totum facinus extrahitur violento puerperio. Est etiam aeneum spiculum, quo iugulatio ipsa dirigitur caeco latrocinio; ἐμβρυοσφάκτην appellant de infanticidii officio, utique viventis infantis peremptorium. Hoc et Hippocrates habuit et Asclepiades et Erasistratus et

maiorum quoque prosector Herophilus et mitior ipse Soranus, certi animal esse conceptum, atque ita miserti infelicissimæ huiusmodi infantia, ut prius occidatur ne viva lanietur.

‘ Finally there are cases of children that are dead when they are born, how so unless they have also lived? For who are dead unless they have previously been alive? And yet, an infant is sometimes by an act of necessary cruelty destroyed when yet in the womb, when owing to an oblique presentation at birth delivery is made impossible and the child would cause the death of the mother unless it were doomed itself to die. And accordingly there is among the appliances of medical men an instrument by which the private parts are dilated with a priapiscus worked by a screw, and also a ring-knife whereby the limbs are cut off in the womb with judicious care, and a blunt hook by which the whole mass is extracted and a violent form of delivery in this way effected. There is also a bronze stylet with which a secret death is inflicted; they call it the *ἐμβρυοσφάκτης* (*foeticide*) from its use in infanticide, as being fatal to a living infant. Hippocrates had this (instrument), Asclepiades and Erasistratus, and of the ancients also Herophilus the anatomist, and Soranus, a man of gentler character. Who, being assured that a living thing had been conceived, mercifully judged that an unfortunate infant of this sort should be destroyed before birth to save it from being mangled alive.’

We have here apparently a different instrument from the embryotome, which we saw was a form of knife. This is a pointed spike-shaped instrument. It must have had much the shape of one of the huge bodkins in the Naples Museum (Pl. LI, fig. 1).

Apparatus for fumigating the Uterus and Vagina.

Fumigation formed an important part of the treatment of all varieties of disease of the uterus and vagina. The notion that the uterus was an animal within the body which could wander about on its own initiative and which was attracted by pleasant smells and repelled by disagreeable smells, was responsible for much of the treatment of gynaecological diseases by the ancients. To make a fumi-

gation, Hippocrates directs us to take a vessel which holds about four gallons (*δύο ἐκτέας*), and fit a lid to it so that no vapour can escape from it. Pierce a hole in the lid, and into this aperture force a reed about a cubit in length so that the vapour cannot escape along the outside of the reed. The cover is then fixed on the vessel with clay. Dig a hole about two feet deep and sufficiently large to receive the vessel, and burn wood until the sides of the hole become very hot. After this remove the wood and larger pieces of charcoal which have most flame, but leave the ashes and cinders. When the vessel is placed in position, and the vapour begins to issue out, if it is too hot wait for some time; if, however, it be of the proper temperature the reed should be introduced into the uterine orifice and the fumigation made. Oribasius, quoting Antyllus (*Coll. X. xix*) varies the treatment somewhat by placing a vessel similarly prepared underneath an obstetrical chair, which had an opening in the seat, allowing a leaden pipe connected with the tube of the fumigating vessel to be passed into the vagina.

A fumigating apparatus of a more portable nature is mentioned by Soranus (xxiii) who tells us that Strato, a pupil of Erasistratus, used to place in a small vessel of silver or bronze, closed by a cover of tin, herbs of various kinds, and, having adjusted a small tube to the vessel, the mouth of the tube was placed in the vagina, and the vessel was then gently heated. Soranus admits that severe burning might follow this practice if unskilfully used.

Pessaries.

Greek, *βάλανος, πεσσόν, πεσσός*; Latin, *pessum, pessus, pessulum*.

Pessaries are frequently mentioned. They are usually bags filled with medicaments and not mechanical supports. However, in ii. 824, Hippocrates says that prolapse of the womb is to be reduced and the half of a pomegranate is to be introduced into the vagina. Soranus says that in pro-

lapse Diocles was accustomed to introduce into the vagina a pomegranate soaked in vinegar. He also says that a large ball of wool may be introduced after reduction, and Aetius, Oribasius, and Paul copy him.

Hippocrates (iii. 331) says that in cases of fistula in ano, after the introduction of a medicated plug of lint, a pessary of horn is to be inserted (*βάλανον ἐνθελὲς κερατίνην*). This would appear to be partly to distend the rectum, but partly also most likely to carry medicament, like the leaden tubes full of medicaments which were inserted into the uterus.

A pessary of bronze was found in Pompeii (Pl. LI, fig. 2), and is described by Ceci. It is hollow and has a plate perforated with holes (evidently for stitching it on a band, to fix it round the body). Heister figures a similar instrument. It is impossible to say whether this specimen was intended for rectal or vaginal use.