Kezmarszky's Decapitating Écraseur.

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At the meeting of the Gynæcological Association of Dresden on Feb. 16 1911, Herr Oberarzt Dr. Richter spoke of the use of the Rhachiotome in cases of neglected transverse position, and in mentioning Kézmarszky's wire-écraseur, said: "The necessity of developing decapitating instruments to a high degree of perfection led to the construction of Kézmarszky's wire-écraseur. The disadvantage of this wire-écraseur consists mainly in the difficulty in applying the instrument, which in certain cases may even be insuperable. Ribemont-Bong, therefore, a few years ago constructed a similar instrument with two sling conductors fitting into one another, by which first a Gigli-saw, and afterwards a surgical chain-saw was passed. In spite of its recommendation by Döderlein, it is evident that this instrument has many disadvantages, and it, too, is difficult to introduce." [*Centralblatt f. Gyn.*, 1911, No. 23.]

As assistant physician in the obstetrical department of the late Prof. J. Elischer, in St. Rokus Hospital, Budapest, I employed Kézmarszky's wire-écraseur in seven successive and unselected cases of neglected transverse position. Three papers written by me have been published, but only in the Hungarian language [*Gyógyászat*, 1902, 1; *Orvosi Hetilap* 1904; *Gynaekologia*, 4; *Budapesti Orvosi Ujság*, 1911; *Szül. és Nőgyógy.*, 2]. For this reason I take the liberty of submitting my experience, together with my modification of the wire snare, to the wider circle of this Journal's readers. I must remark, that, since I left the hospital and took up obstetric practice in Budapest, I am glad to say that no other case of neglected transverse position has occurred in my practice. So, owing to the good training of our midwives, I cannot produce any additional cases in this present paper. Moreover, transverse positions are not very frequent; not even in hospital practice, although the most difficult obstetric cases are brought in from outside. In St. Rokus Hospital, for instance, we had (during my five years of service) the following numbers:—

Year.	Number of Parturients.	Transverse positions Versions.	Neglected transverse positions Decapitations.
1900	1240	?	?
1901	1043	6	2
1902	1238	15	2
1903	1128	12	1
1904	1268	15	5

Seven cases of these neglected transverse positions were operated on by me; the others I did not see. In all of them I could reach the neck, and so only decapitation was done; the trunk never lay so low that I was obliged first to perform evisceration. In one case of delayed transverse position, when the parturient woman had come on foot the greater part of the way from a neighbouring village to our hospital, with the arm of the living foetus projecting, I did abdominal Cæsarean section, as the performance of version, even under anæsthesia, was impossible. Mother and child recovered and left the hospital after 14 days.

The obstetrical records of the seven decapitation cases are as follows:—

CASE I. T.R. [No. 2989], aged 25, 3-para, was admitted to our department on January 8 1901, at 3 o'clock a.m. The two previous deliveries had been normal. She was now at term with a living foetus in the second dorso-posterior position. On admission the os was three fingers' breadth; the membranes unruptured; anterior part: the right arm, wedged in deeply. Measurements: Sp. 25, Cr. 29, Ext. conj. 20 cms. One hour later, at 4 o'clock a.m. the membranes burst, and the anterior arm prolapsed through the almost fully dilated cervix. An attempt at version under anæsthesia failed, for the walls of the uterus grasped the foetus firmly after the escape of the small quantity of liquor amnii. Meanwhile the foetus died. I performed decapitation by means of Kézmárszky's écraseur. Embracing the neck with the thumb and the forefinger of the left hand the wire loop of the instrument was successfully passed from before backwards, and on joining the two ends of the wire loop to the hook of the screw, decapitation was accomplished in less than 5 minutes. The delivery was then concluded in the usual manner; the body was extracted by the projecting arm, and the head was expressed by external pressure and by means of two fingers hooked into the mouth. The infant weighed 3200 gramm. The mother left the hospital on the 8th day.

CASE II. E.E. [No. 7056], aged 32, 4-para, was brought to our department on May 26 1901. The three previous deliveries had been normal. This was a twin-pregnancy. On the 26th of May at 1 o'clock a.m., she had been delivered spontaneously of a living infant at home. In the early morning hours a second bag of membranes ruptured and an arm prolapsed. The general practitioner had the woman brought from her home in the suburbs to our department, where she did not arrive till about noon. The woman was blanched and rolled about restlessly; pulse thready. The uterus was inclined to the left, the fundus 3-4 fingers' breadth below the ribs, where the breech could be palpated, whilst above the pelvic brim and deviated to the right, the head could be felt. The labia majora and minora were œdematous and swollen to the size of a fist. The livid and swollen left hand and lower arm of the foetus, together with the severed and tied cord about 20 cm. in length, projected from the vagina. From the vagina dark blood flowed from time to time and in considerable quantity. Uterine contractions were absent. The case was one of neglected transverse position (second dorso-anterior) with ante-partum bleeding. Subcutaneous injections of physiological saline solution, camphor and ether were administered, and decapitation performed with Kézmárszky's écraseur. The operation was carried out just as in the preceding case; the severing of the

neck required barely two minutes. Weight of the foetus 3000 grm. The separation, as in the first case, was through the cartilage between the 6th and 7th vertebræ with quite a clean section. On delivering the foetus, I removed the placenta at once as they lay completely separated. The walls of the uterus were quite intact, but relaxed and not contracting. Hot uterine irrigation and massage produced some feeble contractions, but the woman sank and died at 1 o'clock. The acute anaemia and in consequence the death of the woman was caused by the untimely separation of the placenta which were normally inserted. That it was neither placenta praevia, nor rupture of the uterus was established by the post mortem examination; the only cause of death was the extreme anaemia.

CASE III. F.S. [No. 15835], aged 22, 2-para, was admitted on May 9 1902. First parturition two years before, normal. Sp. 26, Cr. 29, Exter. conj. 20 cms. Last menstruation at the end of July of the preceding year. The present is a twin-pregnancy with living infants. The first was born spontaneously in the first vertex position; 49 cm. long, a female, weighing 2100 grm.; circumference of head, 33 cm. This delivery was immediately followed by rupture of a second bag and prolapse of the right arm of the second foetus (second dorso-posterior position). An attempt at version under anaesthesia was unsuccessful; meanwhile the placenta became so far detached that they could be felt at the breech of the foetus which was now dead. Therefore decapitation was done with the Kézmárszky écraseur. The introduction of the wire loop round the neck was successfully performed as in the previous cases and decapitation accomplished in 2-3 minutes in spite of the fact that the neck was high and a considerable part of the right shoulder lay in the axis of the pelvic cavity, so that the right scapula was also embraced in the snare and divided with the neck. The body was extracted by traction on the projecting arm; the head was grasped and pulled out by the neck and stump of the shoulder. The infant was a female, and weighed 2100 grm. The placenta were removed by Credé's method. The woman was dismissed with her infant on the 8th day.

CASE IV. D.J. [No. 28656], aged 30, primigravida. She was admitted to the hospital on Oct. 4 1902, at the end of pregnancy with labour already started. Twin-pregnancy with living infants. Sp. 27, Cr. 29, Ext. conj. 19.5 cms. On the same day at noon the membranes ruptured with the os only admitting one finger; a left hand lay in front. An attempt at version by the Braxton-Hicks method failed, as the presence of the other child caused difficulty. In the evening at 7 o'clock the os admitted three fingers; the left hand was pressed to the front of the vulva by strong pains; the corresponding infant lay in the first dorso-posterior position, the cord also prolapsed and was not pulsating. For this reason, decapitation under anaesthesia with Kézmárszky's écraseur was done. The operation and the subsequent extraction of the foetus was accomplished in the typical manner. The female infant weighed 2100 grm. and had a skull circumference of 31 cm. The second foetus also lay in the first dorso-posterior position; it was extracted by version by traction on the left foot; the arms were loosened by Müller's method, and the head delivered by the Smellie-Veit method. The livid and asphyxiated female infant soon commenced to cry after a short application of the usual skin stimulation. Weight 2750 grm., length 51 cm., circumference of head 33 cm. Mother and child left the hospital on the 8th day.

CASE V. R.J. [No. 18904], aged 44, 13-para. First parturition 24 years before, last one 3 years before, all normal. On the 6th of June 1903, at 2 o'clock p.m., the labour began at term at home in a village several hours distant from here. At 6 o'clock p.m. the midwife called for the assistance of a physician, but what had been done we could not learn from the relatives. About midnight the parturient woman was transported by carriage to our department. Blanched and almost unconscious, pulse thready; no outward bleeding: the swollen, livid arm of the foetus presented at the vulva. On abdominal examination the vertex was felt on the right, the trunk on the left, and the relaxed, soft body of the uterus. In the vagina were some large blood-clots. Second dorso-posterior position, and rupture of the uterus. Decapitation with Kézmárszky's *écraseur* was performed without any difficulty whatsoever, in the manner described above; the whole procedure being concluded in 2-3 minutes. The placenta was separated from the left half of the fundus; death occurred in spite of infusion and anaesthetical injections. The infant, a male, weighed 3450 grm. In the posterior right quarter, at the level of the internal os, there was a complete rupture of the uterus 3-4 fingers' breadth wide.

CASE VI. L.T. [No. 34172], aged 33, 4-para. First labour eight years before; all normal. On the 6th of Nov. 1903, the woman came to our department in the 7th-8th month of her fourth pregnancy. Living infant in the first vertex position. Sp. 24, Cr. 27, Ext. conj. 19 cms. Two years before she was treated for polyarthritis in hospital. For two weeks she had suffered from palpitation of the heart, and shortness of breath. The lower extremities and abdomen were very oedematous. The urine showed 0.5 per cent. albumen (Esbach): pulse 116-120, arrhythmic; marked cyanosis and dyspnoea. Diagnosis: *Insuffic. aortae Stenos. ostii venos. sin.* Rest in bed, digitalis, etc. In 5-6 days the heart improved, but in the following weeks repeated attacks of failure of compensation occurred several times; but in spite of them the woman would not consent to labour being induced prematurely. The oedema of the labia increased so that they were swollen to as big as two fists, and on Dec. 21st 1903, scarification had to be done. On the 1st of Jan. 1904, early in the morning, the labour commenced; the foetus lay now in the first dorso-posterior position. At 11 o'clock a.m. the membranes ruptured with the os admitting four fingers; prolapse of the left arm. Violent and frequent pains; deep cyanosis; uncountable pulse. Version was attempted, in light Sudeck-narcosis, with the left hand, but failed, as the uterus grasped the foetus firmly. The cord, compressed between the foetal shoulder and the symphysis, ceased to pulsate. Therefore decapitation with Kézmárszky's *écraseur* was performed; and in order to spare the woman and also to save time, I grasped the neck of the foetus with two fingers of my left hand which was already in the uterus (*i.e.*, not with the hand corresponding with the head). On this occasion an old, much-used and no longer elastic, wire snare was employed, but with it I failed to encircle the neck even after attempts for nearly 10 minutes, as the soft wire bent and turned off and could not be pushed forward in the desired direction. But, when I changed hands and wire, and grasped the neck with the right hand corresponding to the head, the whole operation succeeded, as quickly and simply as in the previous cases. The extracted female foetus weighed 2800 grm. After the delivery the woman woke up with clear consciousness at once. The heart continued uncompensated for some days, in spite of suitable therapeutic measures. From the fourth day on, there was a

nightly rise of temperature with a maximum of 38.5° C., caused, probably, by the necrosis of the œdematous vulval mucous membrane. On the 9th day an attack of suffocation suddenly occurred, to which the woman succumbed in a few minutes. The obduction established the former diagnosis of heart-failure; and, in addition: *Endocardit. chronic. fibrosa, hypertrophia et dilatatio atrii sin. et cordis dextri; thrombosis auriculæ sin. cyanosis et hydrops univers.*

CASE VII. Zs.M. [No. 17784], aged 28, 7-para. First labour nine years ago, last one two years ago; all normal. Labour commenced early in the morning of June 3 1904, at term. In the evening the membranes ruptured but the labour did not proceed. On June 5th, between 4.5 o'clock a.m., an arm prolapsed whereupon the woman was brought to our hospital (by carriage, from the same place as Case v). Arriving here at 11 o'clock in the forenoon the fundus of the uterus was found, with the breech of the foetus, under the ribs on the left side; above the pelvic brim to the right and immediately beneath the abdominal parietes was the vertex. At the vulva lay the left arm of the foetus, swollen, livid, and in places excoriated, and a loop of cord which was pulseless. The left shoulder was firmly wedged into the pelvic cavity. The strongly extended neck was found at the symphysis in the middle line. Temperature 38.2° C., pulse 112. Second dorso-anterior transverse position. Under anæsthesia, decapitation with Kézmárszky's écraseur. Some difficulty was experienced in embracing the neck with the thumb and forefinger of the left hand, partly, because the wedged-in trunk occupied so much room, but chiefly, because the neck, being pressed against the symphysis, hindered the movement of the hypothernar muscles. The extracted foetus was a female and weighed 3000 grm.

It was now discovered that the uterus for three-quarters of its extent was torn from the fornices, and was connected with the vagina only by its posterior left quarter; the laceration was continued into the right parametrium. Slight bleeding; uterus well contracted. Douche and iodoform tampon. This treatment, repeated on the following day, did not lower the rising temperature. Septic peritonitis rapidly developed, and on the 7th of June, at noon, the patient died. At the post mortem, symptoms of fully developed sepsis were found, besides the rupture posteriorly and to the right.

Thus, four women died in these seven decapitation cases. But it is evident from the above descriptions that all of the four women were in such a desperate condition at the time of operation (ii. acute anæmia; v. ruptured uterus, anæmia; vi. heart disease; vii. kolporrhœxia, sepsis) that this result can by no means be attributed to the method of operation, much less does it discredit the instrument used. The instrument never caused any delay in the operation nor the slightest injury to the parturient woman. The injuries and diseases causing death were present before the operation.

The Kézmárszky decapitating écraseur, invented and constructed by the late Prof. Th. v. Kézmárszky, was first employed April 13 1882, at his University Clinique, in a case of neglected second transverse position brought in from outside, with ruptured uterus and diffuse peritonitis. The instrument on the experience of this

case was described, first, by Dr. J. Mann (at that time assistant at the clinical hospital, now director of the Midwives Training School at Szeged) in the *Centralblatt f. Gyn.*, 1882, No. 21. The encircling of the neck was accomplished "surprisingly easily and quickly," and the écraseur effected quickly "the separation of the neck, producing with ease and without danger, a clean cut surface." The male foetus was 53 cm. long, 3500 grm. in weight. The whole operation required about 30 minutes (although evisceration had first to be done).

On the 28th of March 1885, Dr. Szabó (at that time assistant at the clinical hospital and now University professor at Kolozsvár) reported, at a meeting of the Royal Medical Association of Budapest, the second case of decapitation by means of this écraseur (*Orvosi Hetilap*, 1885, No. 16). On this occasion Szabó said that this was the least dangerous procedure for the mother, and he recommended it for general practice as the simplest method of decapitation.

In the year 1888, Dr. R. Temesváry (now University lecturer and primarius) demonstrated the excellence of the Kézmárszky écraseur, at the sixth session of the Verein Deutscher Gynækologen, at Halle (*Verhandlungen* 1888).

Besides these three records in the literature, mention is made of the wire-écraseur in a paper on Decapitation (*Orvosi Hetilap*, 1897, No. 38) by Dr. G. Engel, Professor of the University at Kolozsvár, with these remarks: "The application of the wire-écraseur is difficult, *i.e.*, the passing of the wire round the neck quite apart from the question of skill, requires so much room that if that is sufficient for this purpose version may still be attempted The encircling of the neck with the stiff wire is nearly impossible, or it takes much time. For this reason this instrument is useless for general practice." On the other hand, decapitation of the neck, fixed with the Braun hook, and performed with Siebold's scissors, is commended as "the simplest procedure!" I do not know on what experience Prof. Engel founds this criticism, as he does not mention any case to illustrate it. He appears scarcely to have tested the instrument himself, or to have applied it in the proper manner, for it is inexplicable to me how a person can say that the passing of the wire requires much room, and, on the other hand, under the same conditions, he finds sufficient room for the introduction of Braun-hook plus Siebold's scissors. The experience of many of us proves how invalid this criticism is. I mention this paper only for the sake of completeness and historical accuracy.

The Kézmárszky decapitating écraseur (price 23 Kronen, sold by Garay S. és T. in Budapest, Kossuth L. u.l.) consists of two parts (weight 300 grm.), *i.e.*, a wire loop for cutting the neck, and a screw-apparatus to control the wire. The instrument can be taken to pieces for cleaning. The screw-apparatus is a strong metal tube

35 cm. long, 1.5 cm. in diameter; along the front there is a slit in length 21 cm. and width 3 mm. In the tube there is a screw-thread of the same length to which a hook, 1 cm. high and 2 cm. long, is attached with its point bent towards the lower end of the apparatus. By turning the screw to the right or left, the hook will be moved downwards or upwards along the slit. The screw is worked by a metal handle, 10 cm. long and 1 cm. in diameter, fixed transversely to the lower end of the instrument. A similar but immovable metal handle is attached to the metal tube between the middle and lower thirds of the apparatus, so that it can be held by the left hand while the screw is turned in order to move the wire snare. By turning the screw from right to left the hook is moved to the upper end of the instrument, from left to right it is returned to the lower end. At the far end there is a slot to keep together the ends of the wire. The decapitating wire is a steel piano-string, 52 cm. long; its ends are made into loops of 3 cm. length and 2 cm. width, these two loops will be attached to the hook of the screw-apparatus after the wire has been passed round the neck of the fœtus. (Fig. 1.)

In order to pass the wire round the neck of the fœtus, the hand corresponding to the head is passed into the cavity of the uterus. The neck is embraced by the thumb in front and the forefinger behind, so that the two finger-tips come in contact, and then the straightened wire is grasped about the middle and introduced with its looped end first into the vagina; it is then carried upwards along the anterior surface of the neck till it reaches the forefinger-tip. The forefinger is slipped from above into the loop, which is then pulled down the posterior surface of the neck, and the hand together with the wire-sling withdrawn from the vagina and outside vulva. Then both loops are attached to the hook of the screw apparatus (the hook having been screwed up first to the upper end) and the wire-ends inserted into the slot so that they are kept together. Holding the instrument with the left hand by the upper handle, the lower screw handle is turned by the right hand from left to right so that the hook, to which the loop ends of the wire are attached, moves downwards, pulling with it the wire-sling. As the wire is tightened it cuts through the soft parts of the neck till it slips between two vertebræ of the neck, and severs the vertebral column. The actual performance of this operation is simpler and shorter than this tedious and circumstantial description.

The trunk of the fœtus is then extracted by the prolapsed arm, and the head by the method best suited to the case.

I will not recount the great and manifold disadvantages of other decapitating instruments. They have been discussed often and from many quarters. I would like only to mention that the hook and other decapitating instruments of that kind necessitate strong and prolonged traction on the fœtus whereby the lower uterine segment

is strained in a dangerous manner. The sharp, cutting instruments, on the other hand, are worked in the dark and uncontrolled by the eye, and may cause dangerous injuries to the surgeon as well as to the parturient woman. Küstner's rhachiotome might perhaps be a suitable instrument if it were not so clumsy and complicated to use, besides being sharp and liable to produce injury to the maternal parts.

Kézmárszky's wire-écraseur is simple and easy to operate; it performs its work safely and completely in a few minutes. When the wire is once round the neck we need not leave the hand any longer in the uterine cavity, for the snare embraces only the neck of the foetus and no maternal soft parts can be included; and when we tighten the screw nothing except the neck can be cut. The wire cannot slip off, for it lies in the curve of the neck and being attached by its two ends to the hook on the screw it fits the neck like a ring. The decapitation is accomplished without any traction on the foetus and consequently without any dragging on or stretching of the uterus, for no sawing movements are required. The neck is in contact with the upper end of the instrument during the section, and so neither pressure nor stretching nor dragging is caused by the instrument. Without any pulling and just by holding the apparatus in the right position the head is separated from the trunk in a few minutes by tightening the wire.

I employed the wire-écraseur in all my seven cases, and succeeded with ease and without delay in passing the wire round the neck and cutting through it. And these seven successive cases cannot be regarded as specially simple cases. Cases iii and vii were rather difficult on account of the high position of the neck; in the former the scapula was severed with the neck. Only two of the decapitated foetuses were small, each of them 2100 grm.; the rest were mature with weights of 2800, 3000 and up to 3450 grm.

In introducing the wire it must be slowly and gently passed, and must be so directed by the external hand that the interior loop shall be in constant touch with the thumb. It is quite superfluous and even harmful, though it has been suggested by some obstetricians, to pull down the neck with the Braun-hook so as to bring it into easier reach for passing the wire snare. But when we are able to get the fingers round the neck in order to introduce the hook, we can with equal ease apply the wire. If the neck is pulled down by a hook, the lower segment of the uterus is stretched and endangered, and this is just what we want to avoid by the employment of the écraseur. Different additions to, and modifications of, the wire snare have not proved helpful, such are the curved tubes, string with lead ball attached to the loop, etc.

The sole difficulty in this operation is that of working the wire on to the posterior surface of the neck. In order to meet this I

Fig. i.

Fig. ii.

Fig. iii.

modified the loops of the wire in such a manner that their transverse diameter is not the original 0·5 cm., but 2·0 cm., and their long diameter 3·0 cm, so that it is easier to hook in the forefinger and pull down the wire. In order to facilitate its introduction, I have contrived another modification, viz., a metal ring which is applied to the tip of the thumb. On the flexor surface of this ring there is a slot into which the loop of the wire-sling may be accurately fitted. The application is apparent. This ring is applied to the tip of the thumb of the hand which is to be introduced into the vagina (the ring is fastened by a silk thread tied to the wrist and the loop of the wire snare is fitted into the slot in the ring). (Fig. ii.) The wire is then passed on to the neck of the fœtus with the hand and thus it cannot deviate aside or be removed from the forefinger tip,—which, until now, has been the greatest difficulty to those few persons who have tried the instrument. When the thumb and forefinger are round the neck, the wire snare is pushed upwards by the external hand, and this makes the loop of the wire leave the slot, and it may then be grasped and pulled out by the forefinger with great ease. (Fig. iii.) The ring is removed from the thumb when the hand is withdrawn and the loops attached to the hook. But I always succeeded even without this in introducing the wire snare. I hope that by these two modifications of mine, i.e., the enlargement of the wire-loop for the forefinger, and the ring for the introduction of the wire, I have perfected the decapitating écraseur so that its application will be found easy and safe by everybody.

Especially in cases where rupture of the uterus is threatened or has occurred the decapitating écraseur can be employed without danger. When the wire-loop is once round the neck it is no longer necessary to keep the hand in the uterus, as with other decapitating instruments. The apparatus is held by both hands outside the vulva, and there is no danger of hurt to the maternal parts as the wire embraces only the neck of the fœtus. Decapitation is accomplished in a few minutes, safely and completely, without dragging on the neck of the fœtus, or stretching the lower segment of the uterus. The surface of the section of the neck is smooth, without any bone splinters as the wire snare always cuts between two vertebræ and through the cartilage. Consequently there is no danger of injuries to the soft parts, and there is no need for prolonged or repeated manipulations inside the uterus,—advantages which can be secured only by the application of the wire-écraseur.

In cases of neglected transverse position where the neck is markedly extramedian, and part of the trunk only can be reached in the mid-line of the pelvis, evisceration is performed in the first place by means of Nægele's perforator and strong polypus forceps, or with the help of the fingers. When the empty trunk collapses the neck comes into the middle line where it can be reached easily by the fingers and the wire snare slipped over it.