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The Diagnosis and Electrical Treatment

OF

EARLY EXTRA-UTERINE GESTATION.

BY

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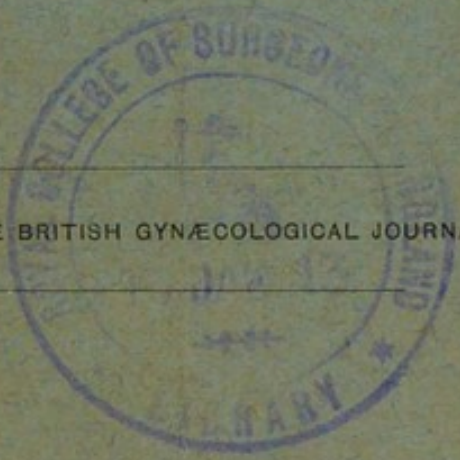

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The Diagnosis and Electrical Treatment of Early Extra-uterine Gestation.

NOW that misplaced pregnancy is receiving considerable attention, I am happy to have the opportunity of saying a few words in support of the electrical treatment of this deathful accident. It is remarkable the apathy with which such a successful mode of dealing with ectopic gestation has been received in Europe. Although first suggested by a Frenchman, and first practically carried out by an Italian, to the Americans is due the credit of having popularised and established, beyond controversy, the efficacy of the electrical treatment of extra-uterine gestation.

Notwithstanding the fact, that it is more than thirty years since electricity was first purposely[1] employed as a fœticide, it received little attention until Dr. J. G. Allen related, in 1872, to the Philadelphia Obstetrical Society, a case in which he succeeded in arresting an ectopic pregnancy by Faradization. Some Americans, including Dr. T. G. Thomas, attribute the whole credit of this mode of treatment to Dr. Allen, but to this he is not entitled. Bachetti was the first to employ it. Dr. Braxton Hicks used it in 1866, and to him is due the kudos of being the first to suggest the adoption of vaginal and abdominal electrodes, instead of puncturing the sac with needles. It is disappointing to think how near Dr. Hicks was to perfecting and establishing the proper plan of treatment. A little more perseverance, and he would have saved his patient's life and secured another splendid addition to his already great reputation. Time will not permit me to speak of the numerous cases published by American gynæcologists in which tubal pregnancy has been arrested by

[1] Dr. David Davis mentions a case in which death of a four months' fœtus was caused by electricity.—*Obstetric Medicine*, 1836, 4th p. 317.

electricity. They may be found in the transactions of the American Gynæcological Society, and in the American *Journal of Obstetrics*. In this country, however, the literature of the subject is so scanty that I may refer to it to show how little we have understood, appreciated, and benefited by the work of our American brethren.

After Dr. Hicks' case the electrical treatment of extra-uterine gestation seems to have slumbered with us until 1883, when Dr. Matthews Duncan, assisted by Dr. Steavenson, used it. The pregnancy had arrived at the fifth month. Dr. Steavenson began well. He used the Faradic current and vaginal and abdominal electrodes, but he allowed the current to pass for only two seconds, and then stopped for intervals of a minute and a half. This did not cause the death of the fœtus, and the reason will be evident when I explain later on the way in which I believe electricity acts as a fœticide. This plan failing, he next tried galvano-puncture. Two needles were introduced, and a current from forty cells was passed for six minutes. The effects of this was, Dr. Duncan says, "tremendous." At the post-mortem, for the woman died a few days after, the fœtus was found with the bones extensively laid bare, the tissue in a great part dissolved and the heart hardly recognisable.

Last year another case was recorded in which the fatal galvano-puncture was employed. Dr. Percy Boulton, advised and assisted by Dr. Steavenson, was the operator. The tubal pregnancy had existed for about two months, and it was a most suitable case for electrical treatment. These gentlemen seemed to think they were acting upon the plan generally adopted by American gynæcologists, but they were mistaken, for no counterpart of such a formidable operation as was then employed can be found in the medical journals of America. Three needles, of improper metal, were inserted, and used with the positive pole of a thirty-cell constant-current battery. This was like using a steam-hammer to drive a tin tack. Experience had already shown that in most cases a moderate Faradic current was sufficient to kill the fœtus in early gestation, and that the employment of such strong means was quite unnecessary. The mother died, and now Dr. Boulton is converted to the use of the Faradic current.[1]

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[1] It is to be regretted that Dr. Apostoli should have advised the use of electro puncture in these cases, but he acknowledges it to be only a suggestion, he has never employed it.—*American Gynæcological Tran.*, vol. 12, p. 305.

I am exceedingly anxious that another eminent gynæcologist should be converted to the use of electricity in these cases, for I fear his uncompromising opposition may delay the use of it in this country. Mr. Lawson Tait has not given as much attention to the pre-rupture stage of ectopic gestation as to the post-rupture period. The brilliant results of the operation for dealing with these cases, when death from laceration and hæmorrhage is imminent, has dazzled and blinded his eyes to the necessity of adopting a plan of treatment which will prevent these fatal ruptures. I would if possible rob him of the professional satisfaction he derives from performing these operations, but above all I wish to remove from his mind the strong feeling of opposition which he has expressed against the electrical treatment of misplaced pregnancy, for I am convinced, from what has been done in America and from my own case, as yet the only successful one in this country, that by electricity we may rescue from almost certain death all those women in whom the accident has been detected early.

Now what are Mr. Tait's objections? The year before last at the Brighton meeting of the British Medical Association, a discussion took place upon some cases of extra-uterine gestation. The report in the Journal says :—"Mr. Tait offered objections of the very strongest kind against the use of the electric current in such cases, because he considered it as one of the most nonsensical proposals which had ever been submitted to a surgical audience." His reasons for this opposition were :—

First: "Out of all his experience he had never yet been called upon to make a diagnosis in tubal pregnancy before the rupture of the tube." Now in this Mr. Tait has had an exceptional experience, for of the twenty-one cases of ectopic gestation mentioned by Dr. T. G. Thomas, sixteen were diagnosed before rupture and only five after.

Second objection: "There were no symptoms in tubal pregnancy until rupture was established." Here is an astounding statement, and one which Mr. Tait over and over again contradicts in his writings. In the *Transactions* of the Obstetrical Society of London, Vol. 15, may be found a paper by him "On the Diagnosis of Extra-uterine Pregnancy." He acknowledges that, when rupture has taken place, 85 per cent. of the cases may be correctly diagnosed, and how? chiefly by the symptoms before rupture; and yet, according to him these do not exist. He says, "The real

clue to the nature of the case was a history of sterility for some considerable time, the arrest of menstruation for weeks or even months, and a sudden access of pain and collapse, with repetitions of these attacks." Mr. Tait has here given a graphic description of the prominent symptom of tubal pregnancy before rupture, and yet he says there are no such symptoms. In a letter to Dr. Harris, of Philadelphia, in which Mr. Tait asks that his strong objection to the treatment of extra-uterine pregnancy by Faradization may be made known in America, he says, "that a correct diagnosis will not be made probably more than once in three times." This admission proves that Mr. Tait's opinions on the subject are in a transition stage, and that we may hope for a further satisfactory development of them. Granting the diagnosis of ectopic gestation to be difficult, why should this difficulty be urged as a reason for discarding electrical treatment? How often would Mr. Tait open the abdomen if he only did so when he was able to make a positive diagnosis?

Third objection: "To apply the electric current to every kind of pelvic lump under the suspicion that it was an extra-uterine pregnancy, would be a most haphazard dangerous proceeding worthy of the strongest condemnation." It has never been proposed that electricity should be applied to every pelvic "lump," but it may be confidently asserted that moderate Faradization would do no harm to any pelvic tumour capable of being mistaken for ectopic gestation. Dr. Garrigues says, "If the diagnosis of extra-uterine pregnancy can be made early with certainty, or if, in doubtful cases, the probability points in that direction, the treatment is electricity." Gynæcologists may, therefore, gaze complacently on this bug-bear of Mr. Tait's, and confidently employ the electric method without fear of disaster.

Fourth objection: "He has heard quite enough of the stories of the subsequent histories of cases where such diagnosis had been made, and where the electric current had been used, to justify him in using the strongest kind of condemnation which he could utter." Mr. Tait leaves us to imagine these histories. I have met with none except the two I have related. But this vigorous protest is interesting, inasmuch as he admits having met with cases "where diagnosis had been made," which answers his

Fifth objection: "He did not know any one who had ever asserted that he had made a diagnosis of tubal pregnancy before rupture had taken place."

The sixth objection is, that "The destruction and death of the child was of no consequence at all: the organ which could not be destroyed by the electric current, but which would go on growing and would go on bleeding when it was torn, was the placenta." Mr. Tait has quite recently repeated this objection in another place. He said "What was the use of destroying the fœtus by electricity, as the placenta continued to grow, and it was not the fœtus that was a source of danger, but the placenta."

Morgagni first pointed out that the maternal portion of the placenta might continue to grow after the death of the fœtus, and this growth, as Spiegelberg has pointed out, depends upon hypertrophy of the decidua and its prolongations. Neither in my own case, nor in any other treated by electricity, have I seen or read of any after growth of the placenta, and I challenge Mr. Tait to quote one published case in which such growth has taken place. I can at the present moment refer to more than forty cases of ectopic pregnancy treated by Faradization, and in every one the report states that the tumour began to get smaller directly after the treatment, and gradually diminished until it became the size of a walnut, or a plum, or disappeared altogether. Not a word about the continued growth of the placenta, which appears such a huge obstacle in the eyes of Mr. Tait. This being the case, we may, I think, decline to share his apprehensions, and conclude that, even if such after growth were possible, it must be exceedingly rare, and certainly not of sufficient importance to deter us from using electricity in these cases.

Finally, Mr. Tait says, "His greatest objection is, that supposing the fœtus has passed through the stage of tubal rupture and remained alive, what right have you to murder that child?"

The answer to this objection is obvious. It is a recognized axiom in obstetric practice that the life of the embryo or fœtus must be sacrificed when it is necessary to do so for the mother's safety; and in spite of his objection this is also Mr. Tait's opinion, for at a meeting of the Royal Medical and Chirurgical Society, he said, "As a rule operative interference should be had recourse to, as soon as the diagnosis of extra-uterine pregnancy has been made, and if the fœtus were living, it would not be wise to wait until it had reached the age of viability." It would seem, therefore, that he does not object to "murder" the child himself at any period of its existence short of viability.

With the exception of a fear, which proved groundless, that electricity might cause contraction and rupture of the cyst, these objections to the electrical treatment of early extra-uterine gestation are the only ones with which I have met. I must leave the Fellows to determine how potent they are, and how desirable it is that they should be allowed to arrest the practice of a simple, safe and efficacious operation, by means of which one of the most serious accidents befalling women is deprived of its terrible power and fatal effects.

I shall now pass on to the more practical part of my paper, and briefly consider the best methods of diagnosing and treating early tubal gestation.

Diagnosis.—At the outset I may say that I have invariably found writers who have least studied the symptoms of early ectopic pregnancy, to be the most emphatic in asserting the difficulty and impossibility of diagnosing it. Dr. Parry wisely remarks, "a more extended clinical experience will probably show that the existence of misplaced gestation can be detected quite easily, if not more easily than normal pregnancy in its early stages." Difficulties do and must always exist, but a comprehensive grasp of the history, and attention to the objective and subjective symptoms of each case will in most instances leave little doubt as to the nature of the abnormal condition under examination. If this be true, it must be remembered that as our means of detecting extra-uterine gestation increase and improve, so also, in proportion, must the responsibilities of the practitioner; for, upon his promptitude and skill in making an early diagnosis, may depend his reputation and the life of his patient. The earlier the diagnosis is made out, and the sooner treatment is commenced, the more satisfactory will the result be.

Laparotomy is an excellent and life-giving operation after rupture has taken place, but one in four, to whom this accident occurs, dies so rapidly from internal hæmorrhage, that medical assistance cannot possibly arrive in time to save the patient. Any practitioner who meets with a case presenting the history and subjective symptoms of ectopic gestation should insist upon an examination, and endeavour to clear up his doubts by making a physical exploration of the pelvic organs.

The history of a case of misplaced gestation is of great importance and should never be overlooked. It will be

found very frequently that there has been a period of varying length, prior to the occurrence of the accident, during which the patient has remained sterile. Sometimes she may never have been pregnant, or she may have given birth to many children. As a rule, however, erratic pregnancy is found to occur most frequently during a prolonged sterile period following a first confinement; and I may here record my belief that the accident is most commonly caused by injuries sustained or disorders produced by first labours. Another important point in the history of these cases is that the patient generally believes herself to have been for some time pregnant, and that there is something unusual about her condition.

Although it has been maintained that ectopic gestation can be discovered when it has existed a fortnight, it is not probable that the medical man will be called upon to diagnose the condition until it has been progressing for at least four weeks. At the end of this time a most characteristic symptom frequently appears, and medical assistance is sought.

Pain.—In the diagnosis of early extra-uterine gestation we have no more reliable guide than the peculiar agonising paroxysms of pain which accompany it. They are unlike any other abdominal pains, but are described as being similar to cramp or colic. They are felt in the hypo-gastric or iliac regions, and they double up the patient, throwing her into a state of extreme prostration, collapse, and cold, clammy perspiration. The characteristic pain may occur at a catamenial period, or after exertion of any kind; and it is supposed to be caused by contraction of the fœtal cyst. If this be true, rupture must be imminent every time it occurs, for unfortunately one violent paroxysm succeeds another, and after only an interval of a few days, the poor victim again suffers tortures which drive her to the very verge of death with their intensity. These pains are best treated by heat, morphia, and chloroform, but the latter must be used with great care, for struggling during its administration, or vomiting after it, might determine rupture of the cyst. The knee-elbow position has in some cases been found to relieve the suffering.

Symptoms of Pregnancy.—If the pain now described be due to ectopic gestation, the ordinary supervening signs of conception will be noticed—the usual gastric disturbances and mammary changes, the cessation or scanty appearance

of the catamenia, the deepening of the vaginal hue, and disorder of the vesical and rectal functions. Ballottement, the absence of the uterine souffle, and contractions of the uterus—valuable as diagnostic signs when the pregnancy is further advanced—are not available during the early period which we are now considering.

Metrorrhagia is an important symptom in extra-uterine pregnancy. It may be continuous or only appear at irregular intervals. Everything which escapes from the vagina should be carefully examined, for decidua may be expelled, and the discovery of this is a significant fact. The membrane may be discharged entire or in minute shreds, but in whatever condition it is cast off, it should be carefully preserved and submitted to microscopic examination.

Pelvic Tumour.—The foregoing symptoms having rendered a vaginal examination absolutely necessary, the practitioner will, if the case be one of misplaced pregnancy, discover a rounded, elastic, tender tumour, behind and to the right or left of the uterus. If watched for a few days it will be found to be rapidly increasing in size and vascularity. When considered with the history and symptoms of the case, I know of no other pelvic tumour with which it could be confounded.

The Condition and Situation of the Uterus provide us with other valuable diagnostic information. The uterus will be found enlarged, its os soft and patulous, and its cavity, if examined by the sound, elongated and empty. The uterus will also be discovered displaced, and pressed by the tumour against the front of the pelvis. To make a satisfactory examination of the tumour and uterus it may sometimes be necessary to give the patient an anæsthetic.

The Treatment of Early Extra-uterine Gestation.—Laparotomy after rupture of the tube is a necessary and life-saving operation, and it was successfully performed forty years ago by Dr. Clay, of Manchester, but the object of all treatment should be to prevent rupture, and thus render the more dangerous operation unnecessary. No one would think of waiting until an aneurismal sac had burst before he used means for arresting its progress. I shall confine my observations to the use of electricity in these cases, for I believe it to be a method of treatment superior, in every way, to all others. As far as my reading goes, I know of

no case in which it has failed, when properly applied. It may certainly be used with every chance of success during the first four months. As to its employment later than this, experience has not yet given any definite answer. There can be no doubt, however, that the earlier it is had recourse to the better.

A satisfactory diagnosis having been made out, the fœticidal effects of electricity should be promptly employed. Fortunately no large and expensive battery is necessary, for a moderate interrupted current is in most cases all that is required. Nor is any great manipulative experience required. Certainly any one capable of making a diagnosis by examination would find the electrical treatment comparatively easy. This cannot be said of the rival method of treatment by laparotomy, for Mr. Tait, describing the operation says, "Adhesions occur to every one of the pelvic viscera, and there can be little doubt that, for *success* in dealing with them, very considerable experience with the finger tips will always be necessary, for it can only be after prolonged acquaintance with the sensations which are conveyed by different structures to the fingers that the adherent tube and placenta can be recognised from coils of intestines, broad ligament and uterus." If, as Mr. Tait says, very considerable experience with the finger-tips is always necessary to insure success in dealing with extra-uterine gestation by laparotomy, how many are there who will venture to undertake the operation?

Before going further, let me here make a few remarks upon the mode in which electricity causes the death of the fœtus. At present there are two theories held; one that the fœtus is killed by electrolysis; the other that death is due to nervous shock. My belief is that, although both these methods may be possible, the mode in which destruction of fœtal life has been usually and most successfully effected, has been by tetanic contractions of the fœtal heart due to the repeatedly broken current of an induction machine.[1] This theory, which I have not seen anywhere suggested, explains why Dr. Braxton Hicks and Dr. Matthews Duncan failed. Neither of them used the interrupted current long enough. The action upon the fœtal heart was only transient; time was given for it to recover from its spastic condition. To be effective, the current

[1] If this theory be correct, the primary coil of the battery would be most efficacious.

should be as strong as the patient can bear, not turned on all at once, but gradually increased to that point. It should be continued for at least ten minutes, and repeated every day until the effects upon the tumour become evident. These effects, which confirm the accuracy of the diagnosis, are, cessation of pulsation, diminution of resistance, and reduction in size of the tumour, and, besides these, retrograde changes in the breasts and retiring of cervix uteri from the pubis.

In a case which I treated a short time since, with the details of which I shall not trouble you, as they have been published in the *British Medical Journal*, December 4th, 1886, I used Gaiffe's induction machine, and only half its power was employed. The negative electrode was applied to the most prominent part of the cyst through the vagina. (It may be found convenient to pass this through the rectum in some cases). The positive electrode was placed on the abdominal wall opposite the tumour. No pain or inconvenience was felt after the applications. They were only four in number, for, on the fifth day, when I was prepared to repeat the Faradization, I found such a marked change in the cyst that I felt convinced gestation had been arrested. This proved to be true, and the patient is now in perfect health and no trace of the tumour can be felt.

As I have before said, we are indebted to our American brethren for having popularised this method of treatment, and I cannot do better than conclude by giving you the opinions arrived at by two of the best authorities on the subject in that country.

Dr. Thomas, after an experience of twenty-seven cases of ectopic gestation, says : " The growing triumphs of abdominal surgery are apt to lead to the conviction that laparotomy should, as a rule, be the procedure of election in these cases. From this view I unqualifiedly dissent. In the electrical current we appear to have an infanticide agent of reliable character, and, as in the woman, as Leopold has proved to be the case in the rabbit, the retained fœtus seems to be readily dealt with by the absorbent process of nature, this should, in the early months of pregnancy (I should say up to the fifth month), be preferred to the more radical and dangerous procedure of laparotomy."

Dr. Garrigues, who, after recounting the various plans proposed, or carried out, for treating early extra-uterine gestation, says : " Against all these dangerous or doubtful

methods stands electricity, with a record unblemished by a single failure or any dangerous consequences. It has been used in quite a number of cases. The pregnancy has been promptly interrupted, and every single patient has definitely recovered within a short time. This success has been so uniform that it seems the time has come to put it down as an axiom based on experience that in the early part of pregnancy electricity is *the* remedy, and that it is the duty of the physician to give his patient the benefit of its application."

Such are the conclusions of physicians who have employed the electrical treatment and have thoroughly informed themselves of all that has been done by others in the same direction; and against these strong opinions and this incontrovertible evidence we have, at least in this country, but the opposition of one surgeon, who, without practical experience of the subject, ventures to denounce the electrical treatment of early extra-uterine gestation as a "most nonsensical proposal."

I think Mr. Tait is rather overstraining one of his eyes, I mean the one with which he views laparotomy. I believe it to be a real sorrow to him that every disease to which flesh is heir cannot be cured by this operative treatment. It is quite true that success can only be attained by working heart and soul at one subject to the exclusion almost of every other, and the whole world is indebted to Mr. Tait for advances in abdominal surgery which have resulted from his genius, courage, and skill; but I would like him, now that he has achieved his triumphs, to give that laparotomy-eye a rest, and, using the other, gaze with some complacency upon an alternative plan of treatment which is safe and satisfactory and does not demand exceptional manipulative skill.