paucity of records of the results of operations on the brain depends on the fact that the animals generally die, or have to be killed, owing to the extensive inflammation.

Many methods of producing a lesion of the brain have been used; but all appear to cause extension of the injury, by setting up inflammation. In the former experiments of Dr. Ferrier, not one animal escaped intracranial inflammation and suppuration of the scalp (except those which died before these changes could take place), and only one recovered from the effects of these changes. As far as can be gathered from the descriptions of Luciani, Tamborini, and Munck, the animals operated on by them were generally attacked with encephalitis, which commonly necessitated their destruction.

Of our twenty-six cases, only seven deaths occurred from all causes; and, if we examine these, we find that four at least may be omitted, because they depended on causes other than the operation or the method of dressing. The intense cold of the winter session, 1879-80, may be blamed for the deaths of three of the animals; one of which survived the operation thirteen days without inflammation, and therefore may fairly be reckoned as a successful case, as far as the antiseptic method is concerned. One death may be assigned to chloroform. This cannot be wondered at, since it is necessary to keep the animals in a state of profound anaesthesia during the entire time of the operation; and, when the bone is being cut, respiration becomes very feeble, and often the respiratory movements cease, so as to make it necessary to suspend the operation, and resuscitate the animal. Of the remaining three fatal cases, one was caused by hæmorrhage six days after the operation. Here, also, as no trace of inflammation could be made out, we may claim the case as an antiseptic success. Another animal died from the shock of the operation, and one only from inflammation.

Hence, in fact, twenty-one of the animals lived long enough for the full development of inflammation. Of these, twenty were treated successfully with antiseptic dressings; and one animal removed the dressing, and had to be treated in an ordinary way (modified antiseptics). Among the cases treated antiseptically, there was not one case of inflammation; and, where this method could not be used, there was intense encephalitis. Or, if these numbers be reduced to a percentage, we find that 100 per cent., under antiseptic dressing, were cured without any inflammation of the meninges; and 100 per cent., without antiseptic dressing, died of acute encephalitis.

ON THE ETIOLOGY AND TREATMENT OF LACERATIONS OF THE CERVIX UTERI.

By MONTROSE A. Pallen, M.D., LL.D.,

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THE acts of parturition ought to be so thoroughly and completely performed, that no ill effects should ensue, and the woman should rise from her lying-in couch, as perfect anatomically as when she went to her travail. That such is the design of nature, is witnessed in the numbers of women who bear children, without the sundering of a single fibre of the entire genital tract; and, from the vestibule to the internal os uteri, no traces of the labour are to be seen, sixty days after the delivery, with the exception, perhaps, of a slightly increased size in the rugæ of the vagina, and a greater diameter of the external os uteri.

Why so many women suffer from lacerations of the vulva, of the perineum, and the cervix uteri, is a question worthy of our most serious consideration. I propose on this occasion to call attention to the etiology and lacerations of the cervix uteri.

The neck of the womb, in a large number of cases, is torn during parturition, either from causes residing in the pelvis, or in consequence of neglect or misuse of instruments upon the part of the accoucheur. Of about nine hundred patients treated in the Gynecological Clinic at the University Medical College of New York during the past six years, more than two hundred had a certain amount of cervical laceration, which either interfered with the generative functions, or produced more or less positive disease. In the vast majority of these cases, the lesion was producing the gravest results; and, in all of them, there were marked symptoms of disorder, not only of the local pelvic regions, but throughout the general system also. This proportion may not be absolutely accurate with regard to all parturient women, more particularly of the better classes, whose financial status enables them to procure the skill and comforts which should be awarded all lying-in women; but it applies to the poorer and labouring classes, whose surroundings necessarily promote accident, in consequence of the ill-trained midwife, or the blundering of the impatient medical man, whose ignorance or neglect

contributes largely to the promotion of those factors which enter into the etiology of laceration of the cervix uteri. Skilled obstetrics, based on common sense, and freed from the shackles of "authority", so called, may prevent the accident, as it should always facilitate the woman's complete return to physiological preparturient health. If the science and art of obstetrics were taught more philosophically and practically in all the schools, of both the Old and the New Worlds, and if "society" were instructed up to the point that the acts of maternity should be conducted only by the most learned and intelligent of surgeons and physicians, much could be done towards the prevention of ailments which frequently sap the integrity of the health, or which destroy the fecundity and family usefulness of many mothers subjected to unskilful midwifery, and a want of the due appreciation, upon the part alike of the family and of the medical man, of the supreme importance of the duties of the accoucheur. Lacerations of the cervix uteri are often prevented by facilitating labour and promoting a reasonably rapid delivery, so that certain conditions of the generative organs may be averted, presently to be described.

The causes promoting laceration are more frequently dependent upon slow tedious labours than one would suppose. In former years, I presumed the most active agent to be energetic uterine contraction, which drove the head through an undilated cervix; but a careful clinical study of numerous cases, where each successive stage of labour was noted with accuracy, as well as the histories of very many more, convinces me that retarded, tedious, and laborious labours, in fully 85 per cent., develop conditions which become undoubted factors in the production of the lesion.

The same conditions are not unfrequent causes of perineal laceration, and I have rarely seen a lacerated cervix without a certain amount of perineal rupture, although I frequently see the latter without the former. In rapid energetic contraction, where the placenta is implanted upon either side of the uterus, but which usually induces tedious labour, so as to diminish the force of the contraction at the site of the implantation, thereby awakening a sigmoid wave of expulsive force, one can understand how the effort of expulsion is diverted from the centre of the pelvic planes, with the formation of a folding of one of the cervical segments over the parietal boss. A rupture of tissue at that point ensues, because it is directly below the line of expulsive force, which should normally correspond with the lumen of the canal, and the centre of the external os; and undoubtedly the laceration begins in the cervical tissue to extend towards the os, whereas in those conditions of tedious, retarded, or laborious labour, the rent commences at the oral circumference, and travels upward towards the uterine texture. The majority of single lacerations occur on the left posterior cervical segment, at a point corresponding with the engagement of the foetal bimestoid diameter, because of the very much greater frequency of the left occipito-anterior position of the foetal cranial presentation.

Laceration of the right side of the cervix rarely occurs singly. I have seldom seen it unless coexisting with a certain amount of sundering of the left side also. In every hundred cases, as far as my observation extends, laceration on the left is found in about 80 per cent., bilaterally in 15 per cent., and on the right in 5 per cent.

We can readily understand the peculiar tendency to cervical sundering during a prolonged, tedious, or laborious gestation, when we take into consideration the fact that healthy speedy labour only occurs where all the normal factors of parturition exist. The cervix is especially liable to rupture, should, from any cause whatever, the symmetry of contraction be diverted into lines of expulsion, away from the centre of exit, and the head be driven anteriorly, laterally, or posteriorly, to form a capsule of the cervical segment, with production of perivascular ecchymoses, rupture of capillaries, œdema, and actual bruising of tissue. Undoubtedly, under these circumstances, the elasticity and distensibility of the cervix are impaired.

One of the most frequent causes of rupture is in the scleremic condition often following congestion or inflammation—the so-called hyperplasia cervicis—but which is in reality a result of the hyperplasia attendant upon preceding congestion and inflammation. The changes in the parts are actually shrinkage, atrophy, and induration of the connective tissue, with agglutination of the muscular striae, rendering the whole substance hard, inelastic, and very friable. These conditions of the neck are among the most prolific in the production of tedious labour, as the os is very slow to dilate, and the uterus exhausts itself by repeated efforts towards expulsion. The jamming of the anterior segment of the cervix upon the pubis by futile uterine contractions bruises and congests the already inelastic non-distensible tissue, and further develops its already very great tendency to rupture.

The osseous structures may be too small, or the child's head too large; or deformities may exist, which, recognised too late, render the application of the forceps indispensable; and the dragging of the child

through a bruised and exhausted cervix necessarily produces tearing, the same taking place pending version and head-last delivery. Even when the channels of exit are normal, and the uterus has been inert in consequence of an excessive quantity of liquor amnii, whereby the contractions are lost, because diffused over too much surface, a failure of elasticity, a sort of paralysis, ensues; and, even if we disengage the head without accident, the shoulders are most certain to produce the tearing. Unless a skilled and wise accoucheur recognises the tendency to the development of these conditions, and, by a judicious and expert management of the labour, rapidly terminates it, we may safely say that the accident is almost unavoidable; yet, proper hydrostatic dilatation, followed by version or the forceps, may speedily finish the delivery before the paresis, oedema, or ecchymosis ensues, and the woman thereby saved serious injury. Should, unfortunately, the accident ensue, nothing short of surgical skill rescues her from certain future ill-health, or perhaps death from immediate hæmorrhage, or septic surgical fever—a true puerperal fever from absorption.

Such cases do not recover of themselves, notwithstanding that writers on obstetrics state that very little importance is to be attached to these fissures. They may exist for years without appreciable harm, yet in the end they become sources (however trivial originally) of erosions, of leucorrhœa, of reflex symptoms; and I have known them to be the cause of ultimate degeneration of tissue, and of the formation of epithelioma.

It is needless to say that the cervix is not unfrequently torn by the accoucheur's forceps, or by his hand, when rudely thrust in to make an *accouchement forcé*, or a version.

How is the accident to be recognised? Not positively, until the delivery is completed; yet, in very roomy pelves, it is to be suspected when a sudden bloody bathing of the child's head and the mother's vulva takes place. Hæmorrhage is the chief symptom. If the bleeding persist, which sometimes is quite sufficient to produce fatal results, we require the most painstaking efforts, not only to check it, but to discover whence issues all the blood. Given a hypothetical case, where the labour (either normal, tedious, or laborious) has been conducted to its termination, the uterus well contracted, the perinæum and the vestibule not torn (it should be an inexorable rule to assure ourselves by ocular inspection); and, after thoroughly cleansing the parts with carbolised tepid water, should the blood continue to well out of the vagina, the deduction necessarily ensues, that there must be a rupture somewhere below the thoroughly contracted uterine body, and above the intact vestibule and perinæum. The tactus eruditus soon reveals the vagina to be uninjured, and a sweep of the finger indicates the torn cervix. Should one be in doubt, there should be no hesitancy to place the woman in the semi-prone position, retract her perinæum with a Sims' speculum, cleanse the vagina of clots, and see the point whence issues the hæmorrhage. I always insist on this manœuvre, whatever may be the subsequent treatment, because no tampon can be well and thoroughly applied otherwise than by means of the Sims' speculum; and tamponing, in default of more radical treatment, is sometimes necessary to save our patient from imminent death; besides, it is always advisable to immediately staunch the blood. Under such circumstances, I have not hesitated on several occasions to stitch the rent with silver-wire sutures, for reasons presently to be described.

Just here, I may insist upon the fact that no accoucheur knows, before his patient is delivered, what complications may arise; therefore, no delivery should be attempted upon the part of the medical man, unless he is fully prepared to make any operation likely to arise in obstetrical surgery; and he should always have ready his obstetrical bag, containing not only the forceps, cranioclasts, blunt hooks, cephalotribes, etc., usually recommended by obstetrical writers, but he should have needles, silver-wire, bistouries, scissors, needle-holders, serre-fines, good sponges and sponge-holders, absorbent and styptic cotton, nitrite of amyl, ammonia, chloroform, ether, fluid extract of ergot fit for hypodermic use, a small electrical battery, and a stout wire *écraseur*. With these, he is prepared for any emergency; and they may be packed compactly in rather a medium-sized box, which is not very heavy, and which may be readily carried or put in one's carriage. For years past, I never think of visiting an obstetrical patient without it; and, whilst I seldom open the box, yet I believe I have saved some valuable lives by having it with me, which might have been lost had I been compelled to wait until the necessary instruments were sent for and brought.

When the laceration is positively diagnosed, I am convinced that the best treatment, based on thoroughly philosophic grounds, is to close the wound with silver-wire sutures. Primarily, we thereby check the hæmorrhage; and, secondarily, remove a serious cause of subsequent septicæmia. The torn edges being well fitted together, and the wires twisted sufficiently tight, no suppurative foci remain, as it may be safely said that

union by primary adhesion will ensue, and no raw surfaces are left to absorb septic material from the lochial discharge, because it flows over the approximated torn edges—really healthy tissue; nor will they generate the poison of themselves. In addition, the woman utilises her period of lying-in to facilitate the union by her quiescence, and she is thereby saved a future operation, involving, possibly, months of suffering before it is discovered to be requisite, and a subsequent period of more suffering and danger during its performance. More than ten years have elapsed since first I stitched a severe laceration of this kind; and, in a monograph* on the Surgical Accidents of Parturition, I cited several successful results. Whenever this procedure can be performed, I should unhesitatingly recommend it in preference to tamponing, the only other method of arresting the sometimes frightful hæmorrhage. We have but to recall the anatomy of the vascular distributions around and in the cervix uteri, to appreciate the possibility of extreme results ensuing from their disruption.

If, from untoward circumstances, the obstetric surgeon be prevented from accurately sewing up the laceration, only because he has no instruments with him, and the gravity of the hæmorrhage demands it, he should tampon first with styptic cotton, saturated either with alum or the persulphate of iron, then pack the cervix with as many layers of carbolised cotton as he can place in the vagina. This tamponing must invariably be done by means of a Sims' speculum, with the woman in the semi-prone position, and each layer of cotton must be smoothly and accurately placed in position. The usual method of stuffing the vagina, with the patient on her back, is inefficient and painful, resulting in the wads of cotton or charpie very soon becoming rolled into irregular bloody balls, which are sources of irritation rather than smooth layers of compresses. So full must the vaginal canal be plugged, that it is requisite to catheterise the bladder, and sometimes to free the rectum of flatus, prior to the removal of the cotton. No effort at dislodgment of the tampon should be attempted under four or five days, and then with the most extreme care, lest we start the bleeding anew. Notwithstanding the necessities of the emergency which requires tamponing to stay the hæmorrhage, it is attended with dangers of a most serious character, as we lock up the lochia, and bathe the wound with that ichorous discharge, in addition to its own purulent exudation. Fever, in consequence of septic cervico-lymphangitis and cellulitis, is most probable, and fortunate we are if the patient do not succumb to a septicæmia or a metro-peritonitis. After the tampon has been removed (the patient being in the semi-prone position, and the perinæum retracted by the Sims' speculum during the removal), the wound should be irrigated with carbolised or thymolised water, at least every two hours for two or three days, and then every four hours for twelve more; until all possibility of sepsis has been removed by the development of the granulation-process. Even at this period, I see no reason why the edges of the wound should not be approximated by silver-wire sutures, in the strong hope of promoting union by bridging of granulations. I have seen this form of union ensue in the restorative operation (to be described further on), which had not resulted in primary adhesion, but which did close by the granulation-process, after eighteen or twenty days, either from tightening the wires, or in consequence of the passage of new and deeper sutures.

If, however, no silver sutures be used, we must particularly give our patient all the care possible to facilitate involution of the uterus, as fully 95 per cent. of lacerations of the neck are attended with sub-involution of the body of the womb; and in all there is more or less of cervical hypertrophy, because the fracture of the texture seems to paralyse the absorbents, and to arrest the metamorphosis of tissue necessary to a proper involution. These cares also should be directed towards the prevention of retroversion, which I have found to co-exist with cervical laceration in more than 80 per cent. of cases. The retroversion is produced primarily by gravitation from increased weight, the organ toppling backwards into the hollow of the sacrum, as it droops in the pelvic planes; secondarily, because the laceration destroys the symmetry of support given by the surrounding attachments and duplicates of the vagina; and, thirdly, the uterus is very frequently forced downwards and backwards, in consequence of the habit of bandaging the abdomen of every parturient woman.

When silver sutures are used, we may confidently expect union, and their removal is a matter of no special consequence, provided they be permitted to remain at least fifteen days. The wound ought to be examined from time to time, and, should a wire be loosened, it must be tightened. With regard to the application of these sutures, we should recollect that we have an exaggerated surface on which to operate, and

* "On the Surgical Accidents of Parturition", read before the Missouri State Medical Society, and subsequently (1874) published in the *Louisville and Richmond Medical Journal*.

that in the process of healing we must anticipate a marked degree of contraction; therefore, the wires are to be passed fully one-third to half an inch from the margin of the torn surfaces; and, when ready to be removed, they will be separated scarcely more than one line. As many sutures should be passed as are absolutely necessary to prevent any gaping of the wound—enough to insure a smooth surface, close and compact, whereon the lochia may flow without bathing any raw tissue whatever.

Irrigations of carbolised and thymolised tepid or hot water, as the case may require, must be made every few hours. In all cases of confinement, it is the practise now recognised by the obstetric surgeons of the New York Maternity Hospital to wash out the vagina immediately, and every six hours thereafter, with antiseptic, tepid, or hot water, and to continue to use the douche until the water returns colourless and clear. So in the cases after operative interference, exceeding great precaution is taken against septic developments. The result of this prophylaxis has been marvellous, as there was not one single death during the five months preceding July 1st, 1880, no tendency to puerperal epidemics, and but very few cases of high temperature in a hospital exclusively devoted to obstetrics, and constantly filled with the poorest and most abandoned of the population of New York, where about 1,200 deliveries take place during the year.

[To be continued.]

A CASE OF PROLONGED FASTING.

By JAMES DOUGAL, M.B.

CHRISTINA MARSHALL was born in the village of Chapelton, Lanarkshire, in the year 1867. While from her father she might have inherited a vigorous and robust constitution, by her mother she could fall heir at best to a system generally weakened, and probably specially tainted, from the fact that its development was coeval with that of pulmonary phthisis, which, six years later, deprived her of a maternal guardian. The family, of which she is the third youngest, consisted, when entire, of nine members. That number has been reduced by three deaths: one from scarlet fever and two from consumption. The remaining six, although by no means the hardiest, have not as yet shown any decided tendency to the development of the mother's fatal complaint; and, further, of those six our patient is decidedly the least strong. They have been provided for through the exertions of the father as a road surfaceman; and the result of the up-bringing has been comparatively favourable, alike mentally and bodily, in the case of Christina. As to her personal history, I am told that, when three years old, she was the subject of a rather peculiar ailment, which was shown chiefly in the development of a strong craving for sugar, and an equally strong aversion to all that had previously been her staple diet. This state of matters extended over three months, and, during this time, life was maintained by beef-tea. From the age of three onwards till last May, no incidents of her life are at present of much interest. She was often a little ill, seldom seriously; and her parents were never made cognisant of any distinct formation of tubercle in the lung or other organs. She had phlyctenular ophthalmia, which left much dimness of vision, and she was harassed with frequent and severe attacks of headache, probably gastric in their origin. Owing to these circumstances, her attendance at school was irregular; but the breaks were of short duration. She was an intelligent girl, was possessed of a disposition which was above the average in its liveliness, and was tempered with a quiet and becoming thoughtfulness, which at no time merited the term melancholy.

Exactly a year ago, she contracted a cold; and, this not seeming to leave her, I was asked to see her about the middle of July. I then found her suffering from bronchitis of a moderate type, and was led by the general symptoms and the local chest-examination to negative any idea of a phthisical element in the case. From this she recovered in the course of a week or ten days, to be immediately tortured with a headache, which has continued more or less ever since. During the autumn, she was able to be out a good deal, and, towards its end, a great change came over her disposition and general condition. She now seldom spoke, almost never except when questioned; and she uniformly maintained a sullen and morose cast of countenance. She became very averse to taking food, extremely constipated, and sleepless; and all those symptoms have since gone on more and more firmly establishing themselves as part of her existence. For some weeks previously to December, she went less out of doors; on the 20th, she went out for the last time, and then only for a few minutes; and, on January 8th last, she lay down on the bed, which she has never since quitted. Eighteen weeks ago, she took a small piece of fruit-cake, and,

since then, her parents distinctly assert that no food of any kind has passed into her stomach, and that all their most earnest entreaties to get her to take food have resulted in failure. She takes water freely, and occasionally sweets; but of these only a few, and not by any means frequently; and, lastly, she herself distinctly asserts, when pressed to take nourishment, that she cannot swallow; she begins to cry, and becomes very excited. When deluded into taking a mouthful of water with a little milk in it, she instantly rejects it. When reminded that she will die, she answers that she has the inward feeling of approaching death, but that no efforts of hers are powerful enough to avert the sure though slowly approaching fate.

Present Condition.—Her body is very emaciated, but free from bed-sores; the complexion is very sallow, the lips pale and dry, the tongue clean and dry. The throat is abnormally high in colour, dry, and the situation of a choking sensation. Pulse 82, regular, but very weak. On each cornea, there is an albugo. Headache is constant and severe. She has pain over the stomach and bowels, increased on pressure, and severe and continuous in character. The lungs are normal, if I except the slightest suspicion of dulness over the left apex. She has no cough; and the heart's sounds are normal, but the impulse very weak. She occasionally vomits a glairy mucus; and, while the effort entailed leaves much weakness, it gives a transient relief to the gastric pain. The urine is scanty, pale, and deposits some urates, but is free from albumen. The bowels have not been moved for eleven weeks; and previously to that the intervals were five and six weeks. Then the motions were dark, scanty, and very hard. She is quite unable to leave her bed, which is in a small room, and so situated that it is impossible for her to reach any of the food-stores. Her parents have now ceased offering her anything beyond the water and sweets. The only persons who see her are the father and stepmother who alternately sit overnight with her; a sister and brother, respectively eleven and eight years old, who reside in the house; and three older ones, who visit her at longish intervals. When I have named these, and added the clergyman and myself, I have given everyone who has any regular communication with the room.

I have now followed this case carefully from the earliest years of the girl's life up to the present time. I have put on paper the results of my inquiries amongst the attendants, and added thereto my own medical examination of the case. I can vouch for the truth of none of the statements made to me by others; but I may fitly close this rather mysterious record by saying that I have known the father and step-mother for six years, that they are in easy circumstances, that I believe the honesty and integrity of their characters to be above the faintest taint of suspicion, and that I have never, in all my connection with the district in which they reside, heard even the gentlest murmur of gossip pointing in the direction of latent channels of supply of food.

May 5th, 5 P.M. I have just had word from Scotland that the girl Marshall is gradually losing strength, but is quite conscious. There is no other important change.

A CASE OF REMOVAL OF THE UTERINE APPENDAGES.

By LAWSON TAIT, F.R.C.S.

So much interest is being expressed in the operation which has been termed "oöphorectomy", and there is so much of a disposition to pre-judge it, that I desire briefly to describe one of my recent cases in which, like many others, my only regret is that, instead of temporising so long with the patient as I did, I did not press the only real remedy which the case admitted. I have reason to believe that many unfounded rumours are abroad, that those who have adopted a wide extension of abdominal section are operating in a reckless fashion. I can only say that in my own practice I think no evidence of this will be found, and the following case will prove much to the contrary.

Mrs. L., aged 34, was sent to me by Dr. McLintock of Church Stretton in September 1878. She had been married four and a half years, and had one child in 1875. Since her confinement, she had never been well, and had suffered from symptoms which clearly were those of subinvolution and retroflexion. She had profuse menstrual hæmorrhage; and, on consulting a physician in July 1878, she was told she had a tumour behind the womb, and that the womb must be dilated and the tumour removed. For this purpose, a sponge-tent was introduced, and left in, according to her reiterated statement, for nine days. She suffered from an attack of acute "inflammation of the bowels", and was in bed for seven weeks. This incident occurred, I am pleased to say, neither in Church Stretton nor in Birmingham. When she came to me on September 24th, 1878, she was in a