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CÆSARIAN SECTION.

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THE first Cæsarian section to be performed in England successfully was done by Barlow, of Bolton, in 1793; before this period no woman in England had survived the operation.

Statistics of British operations from 1737-1860, collected by Professor E. W. Murphy, show that the maternal mortality for the whole period was 84 per cent., but in the period 1840-60 it had fallen to 28·5 per cent.

In 1876 Porro introduced his method of amputation of the uterus, after Cæsarian section, which reduced the total death-rate to 24·8 per cent. for the years 1876-1901.

At the same time the antiseptic system of

surgery introduced by Lister in 1867 was reducing the death-rate of all operations.

In the series of cases operated on by British surgeons from 1911-1920, collected by Munro-Kerr and Eardley-Holland, the following mortality is given :—

(1) In cases of contracted pelvis done early, 1·6 per cent.; (2) in cases of contracted pelvis done late, 10 per cent.; (3) in cases of contracted pelvis done after attempted forceps delivery, 27 per cent.

Owing to the increased safety of the operation, especially in cases which are decided on beforehand, and done deliberately, under the best conditions, the indications for Cæsarian section have increased greatly; but nevertheless very great care should be taken in selecting cases.

It is just as wrong to do Cæsarian section unnecessarily as to hesitate to do it in the right type of case.

In some cases of contracted pelvis or tumours of the pelvis there is no other method of delivery—these are “absolute indications.”

There are also relative indications, and the commonest of these is contracted pelvis.

The more thorough knowledge of antenatal diagnosis has made it possible to decide beforehand, to a very large extent, which patients will need operation.

The commonest types of pelvis which call for Cæsarian section are generally contracted pelvis, contracted pelvis with flattening, flat pelvis and kyphotic pelvis. The decision in some cases is easy, and in others demands much care and knowledge. No cut-and-dried rule can be given, and each case must be decided on its merits.

The type of pelvis is diagnosed by external and internal examination. Accurate external measurements often give a very good idea of the type of pelvis. On internal examination the whole pelvis wall is carefully palpated, because one cannot rely on feeling the promontory alone.

A reliable knowledge gained from numerous examinations of normal pelvises is of great value, and also the realization of the wide range of pelvises through which spontaneous labour can occur.

To base the decision on the diagonal conjugate, or estimated true conjugate, is a less scientific measure.

In addition, the size of the child, as indicated by the size of the head, is estimated in proportion to the particular pelvis through which it has to go.

If the presentation is a breech, it is turned by external version and the relative size of the head and pelvis considered.

The age of the patient and her general physical condition are important and in a multigravida her past obstetric history.

By these methods it is possible to divide the cases of contracted pelvis into three groups:—

(1) Those of marked disproportion, which will require Cæsarian section.

(2) Those of less marked disproportion, in which there is a choice between Cæsarian section at term or of induction of premature labour.

(3) Those of mild disproportion, in which delivery will be spontaneous or at the worst will need low forceps.

There will be a few cases about which uncertainty will be felt. It is generally wisest to allow them to go into labour. After a few hours it will be possible to decide whether they should continue in labour or whether Cæsarian section should be done.

It is important to remember that inductions of labour done before the thirty-seventh week of pregnancy, for contracted pelvis, give a very high foetal mortality.

I am venturing to illustrate this article by a series of cases which I have done personally. It is not a long series but has points of interest. They are consecutive cases and have been done during the last ten years.

In my series there are forty cases of Cæsarian section performed for contracted pelvis.

Of the primigravidæ operated on: One case was complicated by severe toxæmia; one case had myocardial trouble; one patient, aged 41, had in addition fibroids, which were enucleated at the time of the operation.

In one case I had done myomectomy of a large degenerating fibroid eight weeks previously to the Cæsarian.

In one case induction of labour had been done forty-eight hours previously for moderate disproportion. She had an occipito-posterior presentation, and had been twelve hours in labour without any progress. The membranes had just ruptured when the operation was done. The patient's temperature rose to 99° F. on the night of the operation, otherwise she was afebrile throughout.

Of the multigravidæ: Ten had previously had one or more stillborn children; two of the patients had previously had induction of labour with stillborn children.

One patient with a kyphotic pelvis, on

whom I had done a Cæsarian section two years previously, contracted an acute vaginal discharge (probably gonococcal) with multiple arthritis six weeks before the second operation. As there was no possibility of delivering her except by Cæsarian section, hysterectomy was done after delivery of the child. The puerperium was uneventful and the arthritis improved.

Another patient on whom I had previously done Cæsarian section had in the next pregnancy twins and hydramnios. There was also albuminuria, with vomiting and œdema of the legs. The uterus was greatly distended and the mother's condition poor. The operation for these reasons was done two weeks before term. The puerperium was afebrile and the twins did well.

Of these forty cases, thirty were done before the onset of labour. There was no maternal mortality. Forty-one children were delivered and forty survived.

Another Indication is Antepartum Hæmorrhage.—Placenta prævia frequently manifests itself some weeks before full term, and in these cases Cæsarian section is not required. It is only needed in multigravidæ occasionally, near full term with central placenta prævia.

In cases of central and lateral placenta prævia, in primigravidæ about term, Cæsarian is the safest method of delivery for the mother and child. This is specially true if the case is diagnosed early, before sufficient bleeding has occurred to endanger the life of the child.

In my series there are six patients operated on for placenta prævia; three of them had also toxæmia of pregnancy.

The only multigravida had previously had a stillborn child at the thirty-sixth week associated with a *Bacillus coli* pyelitis. In the second pregnancy she came under my care when two months pregnant. She then had slight albuminuria and *B. coli* were grown from the urine. She was treated throughout pregnancy and kept well until the thirty-seventh week, when she developed

pyuria, rigors, and œdema of the face and hands. It was decided to induce labour at the thirty-eighth week because of the kidney condition and the possibility of another still-born child. Whilst examining the patient under anæsthesia and dilating the cervix, a profuse hæmorrhage occurred and lateral placenta prævia was found. The vagina was packed, whilst the instruments were boiled, and Cæsarian section was done at once. Her temperature that night was 102° F., and 100° F. on the two succeeding nights. There were no complications and she was discharged on the twenty-eighth day. The child did well.

Of the primigravidæ, two had had a single profuse hæmorrhage. They were nearly full term and not in labour. Both did well and the children survived.

The other two were very complicated cases. One had a most severe toxæmia of pregnancy and her general condition was poor. The uterus at the time of operation looked unhealthy and was infiltrated with blood. It contracted fairly well after being sewn up. There was no abnormal vaginal loss until ten hours after the operation, when she had a profuse hæmorrhage and died. This case might have been saved if hysterectomy had been done. It was considered, after delivering the child which was dead, but was decided against, as the uterus contracted fairly well and the patient was young.

The other patient had a very severe toxæmia of pregnancy with also a degree of pelvic contraction and placenta. At thirty-three weeks the patient's condition was critical; she was cyanosed, very œdematous and had anuria. An effort was made to induce labour, but after eleven hours there were no uterine contractions and Cæsarian section was done as being the quickest method of delivering her. The mother did extremely well. The œdema had gone in forty-eight hours and she passed 20 oz. of urine in the twenty-four hours following the operation. In three weeks she was up and about. Since this time this patient

has had two healthy children delivered by me.

Of these six patients, one died.

Of the six children, two died, one being seven weeks premature and one being dead on delivery.

In accidental hæmorrhage Cæsarían is rarely required and then only in grave cases. In Cæsarían section for concealed hæmorrhage the mortality is 20 per cent., but this can be considerably reduced by doing hysterectomy. I have never done Cæsarían section for this condition.

In the two cases of concealed hæmorrhage of the most severe type with which I have had to deal, the patients were in such a state of collapse that I did hysterectomy without opening the uterus.

Both these were multigravidæ; one had a family of nine children and the other had four. Both were nearly at term and neither were in labour. In both cases the child was dead. In one the hæmorrhage was entirely concealed, but in the other there was profuse vaginal hæmorrhage as well.

Both these patients recovered, but convalescence was slow.

Heart Disease.—Patients suffering from cardiac lesions in which there is failure of compensation stand labour very badly.

In certain selected cases Cæsarían section is undoubtedly the least risky method of delivery. A physician's help is invaluable in coming to a decision. The earlier in pregnancy the heart failure begins the worse is the prognosis.

The convalescence is often long and bronchitis is fairly common.

The child as a rule is not put to the breast.

There are five cases of Cæsarían section for cardiac lesions in this series, and they are all grave cases. Three of the cases had double mitral disease and two had mitral stenosis.

Two of the patients were primigravidæ, and one of them had been in bed since the fourth month, when heart failure began. She was aged 35, had been married for

fifteen years and was pregnant for the first time. She was extremely breathless. Labour started spontaneously at the thirty-eighth week and the operation was done at once. The child weighed 4 lb. It cried strongly and was fairly well until the tenth day, when it vomited repeatedly and died. The mother made a good recovery.

Another of these patients had been delivered of a thirty-six weeks' child thirteen months previously. She had, at that time, severe postpartum hæmorrhage with acute heart failure and very nearly died. She was seen at thirty-four weeks for the first time in the second pregnancy, in a state of great breathlessness, with bronchitis and albuminuria. Cæsarían section was performed followed by hysterectomy, just before term. Gas and oxygen was the anæsthetic used. The mother and child both did extremely well.

Of these five cases done for severe cardiac lesions there was no maternal mortality. One child died on the tenth day.

In eclampsia routine Cæsarían section is not the best treatment, though in a few cases the results are remarkably good. The particular type of case giving good results is in the case of a primigravidæ, near full term, where the patient is not in labour. Quickness in decision is important, as the earlier the case is done the better.

In Professor Munro-Kerr's series, published in 1921, of 336 cases done there was a 30 per cent. mortality. Probably this mortality would have been lower if the patients had been seen earlier.

Professor Stroganoff's maternal mortality for cases treated by conservative measures is 6 per cent., though other authorities using the same methods do not get such good results. It is probable that many of his cases were of a milder type.

There are no cases in my series done for this condition.

In Obstructions to Delivery due to Partial Atresia of the Birth Canal or to Non-Dilatation.—In cases of true rigidity of the cervix,

a rare condition, where the cervix does not dilate and the child is alive, Cæsarian section is a much better method of delivery than any other.

There are two cases of this kind in my series. Both primigravidæ. One aged 37, and one aged 30. Neither of these patients had had any operation performed on the cervix. One had been in labour for forty-eight hours and the other for fifty hours, with good pains but no cervical dilatation. Cæsarian section was done in both cases, and both did well.

Breech Presentation with Extended Legs in a Primigravida with a Large Child or a slightly Small Pelvis.—I have performed the operation once for this condition.

The patient was aged 40, and when first seen had been in labour for twelve hours without any progress. The membranes were ruptured. Both did well.

There are certain indications for the operation which are met with, such as tumours of the uterus and ovaries. Cæsarian section is only rarely needed in labour complicated by ovarian tumours, as in most cases the tumour can be removed and the labour allowed to proceed naturally.

The technique used in these cases has been that in general use in England. The points that I have found important are as follows:—

The anæsthetic is not started until everything is in readiness in the theatre, and as little anæsthetic as possible is used.

If there has been vaginal manipulation, the vagina is disinfected. If the presentation is a breech it is delivered head first to prevent liquor from being swallowed by the child. In removing the placenta and membranes care is taken not to put the fingers nearer to the os than can be helped. Interrupted sutures are used, in two layers, through the musculature of the uterus alone. A continuous Lembert suture is used to close the peritoneum covering the uterus. The stitches are tied fairly tightly.

Accurate approximation of the cut uterine wall is supremely important, and as few

stitches are used as possible to attain this end. It is important to return the uterus to its normal position in the body as quickly as possible, as until this is done contraction and retraction cannot act to the fullest extent.

In seventeen of my cases No. 3 30-day catgut sutures was used, and in thirty-seven cases No. 4 silk.

After the abdominal incision has been closed, a sterile towel is laid on the wound and the uterus squeezed to express any clot which may have accumulated. If clots are lodging in the vagina they are cleared out. It is essential for the success of the operation that the uterus and vagina should be left empty of clot.

Certain modifications of the operation have been necessary in some cases.

In cases where there has been interference, particularly if the membranes have ruptured, the uterus was delivered out of the abdomen and packed off from the abdominal cavity before being opened. After delivery of the placenta and membranes, the endometrium was swabbed with 2 per cent. iodine in spirit.

Where there was great risk of sepsis and Cæsarian section a necessity, hysterectomy was done after removal of the child.

The after-treatment was exactly the same as after any major abdominal operation. The child is put to the breast just the same as after normal labour. It may need some artificial feeds for about ten days, in addition.

Of my series of fifty-four cases, one patient died of postpartum hæmorrhage associated with placenta prævia and toxæmia.

This gives a maternal mortality of 1·85 per cent. of all cases.

Fifty-five children were delivered; of these four died, giving a foetal mortality of 7·4 per cent. One of these was dead before delivery, one was seven weeks premature. One never breathed properly and, after vomiting blood, died. One was two weeks premature and lived ten days.

In the puerperium a severe standard has been adopted, and only those patients whose temperature never reached 99° F. at any time in the puerperium are counted afebrile.

A rise of temperature to 101° F. on one or two occasions is common after Cæsarian section.

In my series of 54 cases : 14 cases were completely afebrile ; 12 cases had a temperature on the first day only ; 13 cases had a temperature on the first and second days only ; 9 cases had a temperature from three to six days only ; 6 cases had a temperature for longer than six days.

Fifty-two of the wounds healed by first intention.

Two had slight superficial sepsis and were well healed when discharged. All the uteri involuted well. The majority had no lochia when discharged.

Bronchitis occurred in five cases, slight mastitis in two cases, breast abscess in two cases, white-leg in one case, in which the operation had been done after severe hæmorrhage.

Thirty-six of the mothers were able to feed the children entirely on the breast, and forty of the children had more than regained their birth weight when discharged.

The advantages of Cæsarian section to-day are due, first to the lowered mortality. I feel sure that the mortality in suspect cases can be greatly lowered by adequate disinfection of the vagina and by opening the uterus outside the abdominal wound, and by disinfection of the endometrium, and occasionally by hysterectomy.

Secondly, the ultimate success of the operation is increasing, as there is more knowledge regarding the accurate suturing of the uterus. It is known that it is possible to leave a scar in the uterus after Cæsarian section which cannot be detected even histologically.

Accurate approximation of the cut uterus is required, and perfect asepsis or disinfection, to secure perfect healing.

The best results must always be obtained

in the cases which are done early ; this applies to every type of case, and though good results can be got in late cases, they can never equal those which are undertaken early.

The best results therefore must ultimately depend on skilled antenatal diagnosis and treatment, and in doubtful cases on consultation with a surgeon with special knowledge of the subject.

In some of the cases the precarious condition of the patients could have been avoided by adequate antenatal treatment. The number of emergency Cæsarian sections ought to diminish as antenatal work increases. The more this is done the greater is the patient's chance of having the maximum benefit from the operation, as it enables the operation, when it is necessary, to be done deliberately under the best possible conditions.

A PLEA FOR THE STUDY OF METEOROLOGICAL CONDITIONS IN RELATION TO OPEN-AIR TREATMENT AND TUBERCULOSIS.

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It goes without saying that all of us are interested in the weather. Every human being and every animal feels its influence. Indeed many of the lower animals seem to be more sensitive to weather changes than human beings. They appear to be able to detect and predict certain changes even before the most accurate scientific instruments give any indication and one would sometimes feel inclined to think that they have certain means of knowledge and