

CÆSAREAN SECTION***A. W. Andison, M.D., M.R.C.O.G. (Lon.)***Winnipeg, Man.*

IN recent years, due largely to improvements in technique the safety of Cæsarean section has markedly increased. This has resulted in a widening of its indications, so that today there are few obstetrical complications which may not, on occasion, be best dealt with by abdominal section. Cephalopelvic disproportion, while still an important reason for its performance, does not exceed by such a wide margin the other indications in any series of cases. But while this might suggest a greatly increased incidence of the operation, actually this need not be so. With the more frequent employment of trial labour as a means of dealing with cases of apparent disproportion, many patients who formerly might have been delivered by elective Cæsarean section are today being allowed to deliver themselves vaginally. On the other hand, having confidence in the outcome for the mother, we can give more consideration than was formerly possible to the fetus. So we find Cæsarean section being done, and justifiably, for some cases of prolapsed cord, for types of placenta prævia other than central, and for certain cases of malpresentation. Cæsarean section is now a safer method of delivery for mother as well as for her child, than a difficult forceps extraction.

As a basis for the remarks in this communication I wish to use a series of Cæsarean sections performed during the six years 1940 to 1945 by myself, or by a resident doing the operation with my assistance. The cases are 158 in number. Of these, more than half were performed in the Maternity Hospital of which I had the complete charge; the remainder were done in three other hospitals to which I acted as consultant. This is a very modest series and too small to warrant any detailed statistical analysis. I wish to use it therefore merely as a starting point for some reflections on the place of Cæsarean section in modern obstetrical practice.

At the outset, let us consider what should be the incidence of Cæsarean section in any

well run maternity hospital. According to Stander, it should not exceed 4% and in private practice it should be much lower. There are not a few institutions where this figure is greatly exceeded and rates as high as 8 or 10% are reported from some hospitals in the United States and in Great Britain. One cannot but believe that such figures as these indicate a distorted view of the place of Cæsarean section in midwifery. When one considers that one woman in ten or twelve is delivered by an abdominal operation, one is forced to conclude that a valuable procedure and obstetricians themselves are being brought into disrepute. It needs to be emphasized and re-emphasized, that delivery by Cæsarean section is still a more dangerous method for the mother than delivery *per vias naturales* for one still encounters doctors, not to speak of patients and their relatives, who consider it the simplest way out of any difficulty that may develop in midwifery. Reports from various centres show maternal mortality rates as high as 5%. According to Aleck Bourne the mortality risk of Cæsarean section even in selected cases, is four times that of labour. In a study of cases performed at the Winnipeg General Hospital made by Ross Mitchell in 1938, the death rate from Cæsarean section was 6 times that of the general rate. In a recent detailed study of Cæsarean section mortality made by Dieckmann of Chicago it is claimed that in favourable circumstances and when the operation is done by skilled operators the maximum total mortality rate should be 0.5 to 1%, still appreciably higher than the rate for vaginal deliveries.

There is not only the question of mortality to be taken into account. There is a good deal of evidence to suggest that the performance of a Cæsarean section reduces a patient's fertility. Even apart from this, once a section has been performed, there is a strong likelihood that the next pregnancy will have to be terminated by the same method, when, in very many cases sterilization will be carried out as well. Moreover there are few obstetricians who will permit their patients to undergo more than three sections. It follows, then, that if a woman has a section for her first pregnancy, the size of her family is likely to be seriously restricted.

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In six years in which I was in charge of the Maternity Hospital of the Preston Royal Infirmary there were 113 sections in 5,133 cases, or an incidence of 2% and in the last year of the series there were only 17 sections in 947 cases, that is, a frequency of only 1.8%. This figure includes all cases, booked and emergency.

In the 158 cases there were three maternal deaths, a relatively high rate of 1.9%.

The first of these occurred in a woman of 26, admitted to hospital at the 24th week in her first pregnancy because of congestive heart failure, the result of a rheumatic infection. She made a reasonably good recovery with rest in bed and digitalis, but was kept in hospital continuously until the onset of labour. About the 34th week her cardiac condition began to deteriorate and at the 35th week she started in labour. Although the baby was small, it was considered advisable to spare the mother the exertion attending a vaginal delivery, so a lower segment Cæsarean section was performed under local anæsthesia and a living child, weighing 2 pounds 15 ounces was delivered. The mother's condition was not satisfactory throughout the operation and shortly after its conclusion left ventricular failure became evident and death occurred three hours later.

The second maternal death was in the case of a woman who had already had one classical Cæsarean section because of disproportion. At the second operation, done under ether anæsthesia prior to the onset of labour, the abdomen contained very many adhesions, making exposure of the lower segment very difficult, therefore a classical incision was made and a living mature child was delivered. The mother made an apparently satisfactory recovery and was afebrile. On the eighth day, while sitting in bed nursing her baby, she suddenly collapsed and died within a few minutes. Autopsy confirmed the obvious clinical diagnosis of a large pulmonary embolus.

The third fatal case of the series was the only one to occur in my own hospital. The patient was a booked case, a primigravida admitted at the 34th week. She had last attended the ante-natal clinic about 10 days previously, when nothing unusual had been noted. At 7 a.m. on the day of admission she was found lying unconscious on the floor of her home and was sent in to hospital as a case of eclampsia. On admission she was stuporous, there was a moderate cloud of albumin in the urine, the blood pressure was 150/90, no œdema was present and the fetus was alive. She was given a quarter grain of morphine, but as the case presented some rather unusual features the usual routine treatment of eclampsia was withheld pending further observation. Three hours later it was noticed that the pulse rate had fallen to 52 and the patient roused herself sufficiently to complain of pain at the back of the neck. The true diagnosis was now apparent; a lumbar puncture revealed almost pure blood in the subarachnoid space. As the day went on her condition deteriorated further and in the evening convulsive seizures supervened, Cheyne-Stokes respirations developed and it was obvious that a fatal outcome was to be expected. With the patient in a moribund condition, a classical Cæsarean section was done under local anæsthesia and a living male child, weighing 3 pounds 12 ounces was delivered. The mother expired 4 hours later; autopsy revealed a ruptured congenital aneurysm of the middle cerebral artery. The child was successfully reared.

I believe that in such circumstances as these a Cæsarean section done on a dying patient is to be preferred to the post-mortem Cæsarean section usually advocated; certainly the prospect for the child is better if the former is chosen.

In the series presented, 19 of the sections were of the classical type, the remainder, or 88%, were done through the lower uterine segment. The latter operation was used routinely for elective cases as well as for those in labour. The classical incision was reserved for patients in whom the lower segment was inaccessible because of markedly pendulous abdomen, the capacity of the belly being extremely reduced as a result of spinal deformity, or because of extensive adhesions. To argue here the advantages of the lower segment Cæsarean section should be superfluous. To all modern obstetricians the classical operation is practically obsolete. Yet in spite of the years of preaching the superiority of the lower segment operation, notably by DeLee in America and Marshall in England, there are still too many classical operations being performed. It has been demonstrated repeatedly that the maternal mortality for classic section is 3 to 4 times that of the lower segment operation in the hands of the same operators. In the series I present there was no death from puerperal sepsis, even though in many instances the membranes had been ruptured for as long as 48 hours and even up to 84 hours.

I cannot imagine any valid reason for failing to employ the low segment operation as a routine. Technically it is only slightly more difficult than the classical section. It involves working in a somewhat less accessible field, and requires the elevation of a peritoneal flap before incising the uterine musculature. It therefore takes a little longer time, but is a neater procedure, involves less blood loss and is more satisfying to the surgeon, apart altogether from its advantage to the patient, than the old "smash and grab" classical operation. I have taught many hospital residents (within a reasonably short time) to do the operation proficiently.

However, it must be admitted that one does encounter trouble more often in the lower segment section. In some cases where the fetal head is deep in the pelvis, it is no easy matter to dislodge it upwards and through the uterine incision, and it may take all the strength of one's hand and forearm to accomplish. In such cases as these, and also where the fetal head is large, the uterine incision may extend to a serious degree, making subsequent suture very awkward. In the same circumstances one may tear into the greatly dilated veins of the broad ligament, with resultant furious hæmorrhage.

A very interesting error one can make is, in a case where labour is well advanced and the cervix is almost fully dilated, to mistake the posterior lip of the cervix for the lower margin of the uterine incision. This may sound absurd and appear to justify censure for gross carelessness, but it is easy to do. It is a recognized danger and is described in Marshall's monograph on lower segment Cæsarean section.

Placenta prævia is often conceded as an indication for doing a classical section, even by those who admit the superiority of the more modern operation. With this I cannot agree. If the lower segment method is safer for cases, say, of disproportion, it is more so for placenta prævia cases, since these patients have usually had one, and often more than one vaginal examination before they reach the theatre table and the risk of infection is correspondingly increased. What is the objection to the lower segment operation in placenta prævia? Simply that if the placenta is located on the anterior wall one will encounter severe hæmorrhage in cutting through it. But surely the same situation, *i.e.*, the placenta underlying the uterine incision, is just as likely to be met with in classical sections when the placenta is normally situated in the upper segment. While it may be a little more troublesome, it does not greatly increase the difficulty of the operation. Moreover, the lower segment operation has the advantage in those instances of placenta prævia where there is profuse bleeding from the placental site after the placenta has been delivered, since the bleeding point can be accurately distinguished and the hæmorrhage checked by appropriately placed sutures.

The most important advantage of using the lower segment operation is that it permits one to intervene with safety after the patient has been in labour. This means that in cases where, before labour, one is in doubt as to a successful outcome for vaginal delivery, one can give the patient a trial of labour. Since the great majority of such women do deliver themselves vaginally or can be delivered by a relatively easy forceps operation, the result is that one does fewer sections, and many patients are spared abdominal delivery. The obstetrician who does only elective sections (and if he does not practice the lower segment operation all his sections must perforce be elective, the risk of sepsis following classical sections during labour

being prohibitive) may declare that his judgment is so accurate that he can select without error, prior to labour, those cases that will deliver vaginally and those who will not. I wish to state firmly, no matter who he is that makes such an extravagant claim, that he *cannot* be sure. He will always have a significant percentage of errors. In cases of moderate disproportion it is impossible to distinguish those that will require section and the others that will not. I never cease to be amazed at the degree of disproportion that can be overcome, granted a co-operative patient and strong uterine contractions. In so many of the most unlikely cases will an uncomplicated vaginal delivery ensue. Of the cases here reported 67 were elective and operated upon before the onset of labour, while in 65 labour had been in progress a variable length of time when the section was performed. In the remaining 26 cases the patient was not in labour but there had been ante-partum hæmorrhage.

ANÆSTHESIA

Ether anæsthesia was used more often than any other anæsthetic agent, in 68 cases, induction being by ethyl chloride or chloroform. Ether is far from being the best anæsthetic but it is often the only one available, when one has to depend on house surgeons or general practitioners to administer the anæsthetic. The particular objection to ether in Cæsarean section is that it makes for poor retraction of the uterine muscle following delivery, so that there is often very free bleeding; one has to introduce one's hand into the upper part of the peritoneal cavity to grasp the uterus to express the placenta and to apply massage or compression, an undesirable procedure when there is a possibility that the case is infected. In many ways a general ether anæsthetic throws an additional burden on a patient who needs all the energy she can summon for her recovery.

My experience with spinal anæsthesia has been limited; in only five of my cases was it used. Like many obstetricians I have been wary of it because of its condemnation in obstetrics by DeLee, who believed that pregnant women were peculiarly sensitive to spinal anæsthesia and that to it alone could be attributed 1% of maternal deaths from Cæsarean section. But it has been pointed out before now that it is as important to distinguish among the different drugs used for spinal anæsthesia as it is among those used for

inhalation anæsthesia. One would hardly condemn all forms of general anæsthesia because there have been deaths from chloroform. There is good uterine retraction and very little postpartum hæmorrhage with spinal anæsthesia and these advantages make it a valuable method.

A large percentage of my cases were done under infiltration anæsthesia. The actual number was 64, or 40%. The drug used was novocaine 0.5% and between 250 and 300 c.c. was the amount usually required. In many respects this is the ideal mode of anæsthesia for Cæsarean section. Certainly no death due to its use has ever been reported. The uterine retraction which occurs is most striking, there is very little blood loss, often as little as 2 to 4 ounces, and the placenta separates without delay so that it can be withdrawn by steady traction on the umbilical cord. It is thus the method of choice if the patient has already suffered from blood loss. There is never any difficulty in resuscitating the fetus, which usually cries as soon as the head is delivered. The postoperative course is undisturbed by any complications due to the anæsthetic, there is usually no vomiting and therefore no strain put on the sutures. With its use one is assured that no additional handicap has been imposed on the patient's recovery. It is the method of choice in cardiac disease, in cases where the patient comes to operation tired out due to neglect in a long drawn-out labour, in diabetes and in eclampsia. A diabetic patient can have her usual breakfast, go up to the theatre an hour or two later, be delivered under infiltration anæsthesia, then be returned to the ward to have her usual dose of insulin followed by lunch, with no untoward disturbance. In eclampsia, I am sure that a good part of the extremely high mortality associated with Cæsarean section for that condition can be ascribed to the use of general anæsthesia. It is important to realize, of course, that in very few cases of eclampsia is a Cæsarean section indicated, and I intend to discuss these indications later, but if an operation has to be done, local anæsthesia is the only method to be considered.

Local is not a suitable form of anæsthesia for all patients. One would not select it where any additional intra-abdominal procedure is contemplated, such as removal of fibroids or ovarian cysts. It is possible to ligate the tubes under local anæsthesia after first infiltrating

between the layers of the mesosalpinx, or alternatively the patient can be given pentothal a minute or two before the sterilization is commenced. In the case of a very nervous, apprehensive patient one would naturally consider some other form of anæsthesia, although it is surprising how well behaved most women are when they are told beforehand the advantages for themselves and their baby from having a local anæsthetic. Just before the operation is commenced one can administer morphine gr. 1/6 or omnopon gr. 1/3. I have had good success with demerol 100 mgm. combined with scopolamine gr. 1/150 given 45 minutes preoperatively, and another 100 mgm. demerol with scopolamine gr. 1/450 administered as the operation is commenced. Some patients will remain asleep almost throughout the operation and have no recollection of it afterwards under this sedation.

The operation takes a rather longer time (usually an hour or slightly less, I find) under local anæsthesia than when other methods are employed and of course one must exercise the utmost gentleness. It entails greater strain on the operator but this is well worthwhile.

More recently I have had the opportunity of doing a group of sections, 18 in number, under cyclopropane anæsthesia. It has no depressing effect on the patient, there is excellent uterine retraction and not a great deal of blood loss. The high percentage of oxygen given with the gas means that the fetus is generally in good condition. Despite this theoretical consideration there are occasions when the fetus seems adversely affected and I had one case where the fetus was stillborn after an elective operation when there had been no undue difficulty in delivery. It appears that pituitrin shock is greatly accentuated when it occurs under cyclopropane anæsthesia and may cause a fatality. Therefore one should use only pitocin or preferably ergometrine, as an oxytocic agent when using this form of anæsthesia.

INDICATIONS

When we come to consider the indications for Cæsarean section in this group of cases, we find, as is to be expected, that more were done for disproportion than for any other single cause. The total number in which this was the indication was 60. Of these, 34 were performed after a trial labour and 26 were done as

elective operations. In this latter group 11 had already had a previous section for disproportion and 2 had a malpresentation as well as pelvic contraction, so that in only 13 cases was the operation done before the onset of labour because of gross disproportion alone. Two of these were done on the same patient, an achondroplastic dwarf with a diagonal conjugate of $2\frac{1}{4}$ inches. Another patient was 3 ft. 8 in. in height due to Pott's disease of the spine. A third had gross lumbar kyphosis and scoliosis with a pendulous belly. There was one, a primigravida of 41, with a markedly contracted outlet. I mention these to make it quite clear that our general policy was to give all save very few patients a chance to demonstrate whether or not they could deliver themselves vaginally. There are circumstances when it is not possible to conduct a trial of labour. A trial of labour means that a patient must be under close and accurate supervision by the obstetrician, in the constant care of midwives experienced in the management of such cases. If the patient is in a hospital ten miles away from the centre where one is directing a busy obstetric practice, one cannot see her as often as a proper test of labour demands, and one will be forced to do an elective operation on a woman who might otherwise have been given an opportunity to deliver herself with a fair prospect of success.

In 21 cases of the 158 the operation was performed for the sole reason that the patient had already had one, and in 2 instances, two Cæsarean sections. This raises the question as to whether a patient should be allowed to have a vaginal delivery when she previously has had an abdominal section. In the opinion of many obstetricians of repute, the reply to this query is "No, she should not". The objection to vaginal delivery subsequent to section is, obviously, that the risk of rupture of the uterine scar greatly exceeds the risk of a section done before term in favourable surroundings. But this doctrine carries with it the corollary that the size of the family must be restricted to only one, or at the most, two more children in addition to the first one born by Cæsarean section, since the same obstetricians advise that sterilization be carried out after the second section and insist on it after the third. This is a condition refused by many mothers.

I can only answer from my own experience. I can report a series of 34 vaginal deliveries conducted under my charge in 33 patients who had had a prior section; one patient had two children vaginally after her first operation. In seven of these the section had been through the lower segment of the uterus, in the remainder it had been of the classical type. The danger of rupture is estimated to be ten times as great (4%) in cases coming within the latter category. In twelve cases the operation had been done for cephalopelvic disproportion. In some instances the subsequent child had a smaller birth weight, but in not a few it was heavier than the first infant. The indication for the first section in the remaining patients was; malpresentation (breech) 5 cases; placenta prævia, 5 cases; toxæmia, 2 cases; pelvic tumour, 1 case; and in 6 cases the reason for the operation was not known. Three patients were delivered vaginally after 2 previous sections, in one case done for disproportion, in one for an unknown reason, and in the third because of tonic contraction.

This last case was the only one in which rupture of the uterus occurred. I performed her first Cæsarean section when she was admitted with tonic uterine contraction, with a retraction ring and imminent uterine rupture. When she returned pregnant a second time the fetus was a very large one (10 pounds) and a second section was done. At the close of the third pregnancy it was considered that the fetus would pass through the pelvis without difficulty, and as it proved, it did so. Labour was uneventful but the fetus was stillborn and shortly afterwards signs of intra-abdominal hæmorrhage became apparent. Laparotomy revealed a rupture through the old uterine scar. The error in judgment here was to allow a uterus whose lower segment had been so extremely overstretched on a former occasion to go into labour; one could not expect a strong scar from suture of such a thinned-out uterine wall.

My opinion is that if all other circumstances are favourable, it is reasonably safe to allow a patient who has had a previous lower segment operation to go into labour on a subsequent occasion if the postoperative course had been comparatively afebrile. A history of uterine infection would imply a weakened scar. In the case of a former classical section, as well as selecting for vaginal delivery only those whose recovery had been uneventful, I would endeavour, by soft tissue radiography, to determine the position of the placenta. If this is found on the anterior wall I would certainly do a repeat section just before term, since the implantation of the placenta over the old scar renders it liable to rupture. Moreover, the placenta can be adherent to the scar and the

patient's life may be endangered by post partum hæmorrhage, while in removing the placenta manually in such circumstances there is a grave risk of passing one's hand through the uterine wall in its thinned-out portion.

Heart disease was the indication for Cæsaean section in four patients, one of whom had a subsequent repeat operation and sterilization. In all of these the cardiac condition was rheumatic in origin, and there was considerable reduction in the heart's reserve. The more one sees of patients with heart disease associated with pregnancy, the less one is inclined to resort to an operative method of delivery. I have seen a patient who had to walk very slowly the few yards from the hospital entrance to the consulting room couch, because of extreme shortness of breath, deliver herself normally of a seven pound child, with no untoward symptoms whatever, after a short labour. Almost every midwife can remark glibly and cheerfully that "heart patients have easy labours" and, to a point, this is true. Nevertheless there are some cases (in their selection one will naturally be guided by the physician), who are not fit to bear the strain of labour and are best dealt with by section. Local anæsthesia is excellent for these mothers.

Section was chosen as the mode of delivery in three cases in whom extreme rigidity of the cervix developed with consequent prolongation of labour. Almost always this condition can be satisfactorily dealt with by general supportive treatment including the judicious use of sedatives. In one instance operation was made necessary by fetal distress, in another by extreme distress of the mother, even though the fetus was known to be dead, while in the third case the patient had already had a Cæsaean section and a rupture of the scar was feared.

In seven cases section was performed because of the presence of pelvic tumour. This was a uterine fibroid in four instances. Such tumours in the great majority of cases have little, if any, effect on the course of labour and only rarely cause obstruction. It is only when the fibroid is situated very low on the posterior uterine wall, so as actually to underlie the fetal head, that interference through the abdomen is called for. If a fibroid so placed is very large it can also cause a malpresentation which is an additional indication for operation.

If a pedunculated fibroid is found which can easily be removed at the time of the section, it is wise to do so, but large intramural fibroids, it is generally conceded, are best left alone. There were three cases of ovarian cyst occupying the pelvis preventing descent of the fetus. Such tumours should be removed when first discovered early in pregnancy, but if they are not found until the gestation is far advanced there is some disagreement among obstetricians as to their management. My own opinion is that the patient should be permitted to go practically to term and that then a Cæsaean section should be performed as well as removal of the tumour. The entire situation can thus be dealt with at the one operation. Others claim that one should remove the ovarian tumour no matter how late in pregnancy it is first discovered. Then the patient is allowed to go into labour spontaneously and deliver herself or be delivered with forceps early in the second stage. By this means, it is true, the woman is spared a scar in her uterine wall, but it is a heroic form of treatment. The only type of case I would manage in this way is one which has been neglected, and is potentially infected on admission.

Cæsaean section was done for toxæmia of pregnancy on only 3 occasions, and in only 2 cases of eclampsia. These are conditions which are best managed more conservatively, usually by induction of labour. Many American obstetricians perform section on a considerable number of patients with pre-eclamptic toxæmia, especially if prodromata of convulsions are present. But patients should not be permitted to progress to such a stage without induction, and even so late as that it is possible to avert the seizures with sedatives. I resort to section only in the case of elderly patients of low fertility or if some other complication is present. The high mortality of section for eclampsia is now everywhere acknowledged but I believe there are rare cases where it is justified. These are patients in whom the fits have been adequately controlled by sedation for twenty-four hours or so, yet there is persistent deep coma with no indication of the onset of labour. I have seen such cases as this die, even though vaginal delivery may have eventually taken place. In two cases of this description I have done Cæsaean section under

local anæsthesia, with survival of the mother in both instances. One fetus was stillborn.

Accidental hæmorrhage is another condition which can almost always be safely dealt with by measures which result in vaginal delivery, and so in only 2 cases of this series was Cæsarean section selected as the mode of delivery; in one because the fetus was still alive despite the classical picture of combined concealed and revealed hæmorrhage. Vaginal delivery would have resulted in a stillbirth, whereas actually the baby survived. In the other case the cervix was long and narrow, external bleeding was continuous and profuse, and the patient was badly shocked. She survived a classical section done under local anæsthesia.

In 26 cases placenta prævia was the indication for Cæsarean section. In 16 of these the placenta covered completely the internal os and this type of case does not need further discussion. No other method of delivery ought to be considered. In regard to the marginal variety, the more experience I have of these, the oftener am I inclined to select section as the method of delivery. There was a time when I prided myself that if I could feel even the smallest area of membrane at the os, I could terminate the case vaginally with success as far as the mother was concerned but I found I had too many stillbirths. One can never be sure of the outcome. The case may be one of marginal placenta prævia in a multipara, in active labour with the cervix dilating well, when the only treatment used is rupture of the membranes and the baby is born only a few hours later, yet may be stillborn. If the bleeding is profuse, if the cervix is undilated, if the patient is not in labour, if the baby is particularly badly wanted, I therefore have no hesitation in doing a section for this type of case. In 2 instances section was performed for lateral placenta prævia, but in each there was an additional complicating feature; in one, a cord presentation, in the other a transverse lie.

Uterine inertia, though such a trying condition, both for mother and obstetrician, is usually best managed by patience and careful attention to details in the conduct of the first stage of labour, but where other factors have as well to be considered section may be a wise procedure. In 10 of my patients inertia was the indication for operation. In 2 of these there was a degree of disproportion present

which could have been overcome by the development of strong contractions but which, in their absence, sufficed to prevent the passage of the head through the brim. In another instance the patient had already had one Cæsarean section. But in most of this group operation was resorted to because the patient was advanced in years (the ages ranging from 39 to 44) and was of low fertility (married from 6 to 18 years with no previous pregnancies).

Akin to this type of patient are those, 5 in number, on whom Cæsarean section was done solely because of an unfortunate obstetric history of repeated stillbirths or stillbirth with advanced years. In such cases one should not take any avoidable risk with the fetus.

Malpresentation of the fetus constituted the indication for section in 19 cases, but in many of these there was some additional complication which lent weight to the decision to adopt operative delivery, for example, a bad obstetric history, contracted pelvis, previous Cæsarean section or low fertility, and, in the case of oblique lie, placenta prævia or pelvic tumour. There were 7 cases of breech presentation, 7 of oblique lie, 2 of brow, 2 of face, and 1 of posterior parietal presentation.

There remains a group of miscellaneous conditions for which Cæsarean section was done in only one or two instances in the present series. These comprise such conditions as: diabetes (2 cases); tonic uterine contraction, previous rupture of the symphysis pubis, dystrophica dystocia, moribund patient, cord presentation and cord prolapse. The latter may appear somewhat radical, but there is a growing opinion among obstetricians that Cæsarean section is justifiable in some cases. The management of prolapsed cord is almost invariably attended by a high fetal mortality, especially in those cases in which the cervix is only beginning to dilate. If other conditions are favourable and if the delay in the patient reaching the theatre table is very short, one can prevent a number of stillbirths by performing section.

This discussion makes no claim to be a complete statement of the factors involved in the selection of Cæsarean section as a mode of delivery. Obviously a topic of such major importance cannot be adequately covered in a single article. I submit the above remarks simply as an outline of the cases within my

personal experience together with some of the conclusions for which they have formed the basis.

RÉSUMÉ

Réflexions basées sur l'expérience de 158 cas de césariennes en 6 ans. Pas plus de 4% des parturientes devraient avoir des césariennes. La mortalité maternelle varie de 1 à 5%. Cette opération limite les naissances subséquentes à 2 ou 3 enfants. Le procédé de choix est la section du segment inférieur de l'utérus, même au cas d'un placenta prævia, et le mode d'anesthésie le plus sûr semble être l'infiltration novocainique. L'anesthésie générale sera jointe s'il y a lieu de faire d'autres opérations concomitantes. Les principales indications de la césarienne sont la disproportion cranio-pelvienne, une césarienne antérieure, une mauvaise présentation, certains placenta prævia, les toxémies, les tumeurs pelviennes et certains cas d'inertie utérine. Toutes ces indications générales sont affaire d'interprétation et de circonstances particulières.

JEAN SAUCIER

SARCOIDOSIS*

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THE modern concept of sarcoidosis is that it is a systemic disease in which many tissues, or any tissue, may be involved. Commonly affected sites are the skin, lymph nodes and lungs, but the lesion has been found in the bones of the hands and feet, in the mucosa of the mouth, nose and throat, in the tonsils, in the breast, in the wall of the gastro-intestinal tract, in the salivary glands, eyes, liver, spleen, kidneys, testicle, skeletal muscles, pituitary gland, central nervous system and heart.

The condition has been variously referred to in the literature as Boeck's sarcoid, Besnier-Boeck's disease, Schaumann's disease and benign lymphogranulomatosis.

ETIOLOGY

The etiology of the disease is obscure, and its nature is disputed. David Reisner¹ in an exhaustive review of 35 cases stresses the not infrequent occurrence of frank pulmonary tuberculosis as a late stage in sarcoid of the lung, and on this and other evidence, bases his suggestion that the disease is of tuberculous origin. Boeck² found a few acid-fast bacilli in a nodule from the nasal mucosa of one of his patients and inoculation of this material into a guinea pig produced a very chronic form of tuberculosis.

He concludes, therefore, that sarcoidosis is an atypical form of tuberculosis. Schaumann³ is of the same opinion, believing that the etiological agent is probably a benign form of the bovine bacillus. Tice and Sweany⁴ state that many cases which have been followed for years have shown a gradual change from the "sarcoid state" to some form of tuberculosis showing both caseation and tubercle bacilli, and several writers refer to the disease as non-caseating tuberculosis. However, the results obtained by the majority of workers coincide with those of Harrell⁵ who, in a study of eleven cases, failed to demonstrate tubercle bacilli by microscopical examination, cultural methods, or by inoculation of guinea pigs, rabbits, mice, rats, and fowl. He suggests that sarcoidosis may represent a reaction to the lipid fraction of a variety of organisms. Many continue to believe, however, that it is a specific disease due to an unknown agent.

PATHOLOGY

Pathologically, sarcoidosis is characterized by the appearance in the affected tissues of cell aggregations which resemble miliary tubercles, but which differ from these in that the giant cells tend to be very large and vacuolated, the peripheral zone of lymphocytes being absent or poorly developed. The nodule is very sharply delimited and, it is very important to note, caseous necrosis does not occur and tubercle bacilli cannot be found. With aging of the lesion the giant cells disappear and the nodules are eventually replaced by fibrous tissue.

Because of the presence of tissue changes of this type many clinically diverse conditions are now described as sarcoidosis. These are multiple benign sarcoids, lupus pernio, benign lymphogranulomatosis, uveoparotitis, regional ileitis, atypical miliary tuberculosis and atypical tuberculous splenomegaly.

CLINICAL FEATURES

Sarcoidosis occurs chiefly in young adults. It runs an extremely chronic, relatively apyrexial course, usually uninfluenced by any treatment, although spontaneous regression frequently occurs and many cases have been known to progress to apparent cure. Constitutional symptoms are rarely severe, but weakness, loss of weight, joint and muscle pains, cough, shortness of breath, and pain in the chest have been noted. The eye may be involved, leading to partial or even, in rare cases, complete blindness. Con-

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