Frequency of Pulmonary Signs.

Since my attention was attracted to the presence of basal congestion in biliary infections I have operated on 31 acute cases. In 8 of these there is no note of an examination of the bases; of the remaining 23 crepitations were noted at the right base in 12, in 11 the examination was negative. In two cases pleural friction was present in addition to the moist sounds.

Influence on Prognosis.

In no case did any pneumonic complication follow operation. In one case a pleurisy with effusion was found on the day following the removal of a gall bladder full of pus. The bases of the lungs had not been examined in this case prior to operation, otherwise some abnormal physical signs would doubtless have been discovered.

There was no death in the series of 31 cases. In 24 cases ether anaesthesia was used, in 7 chloroform.

Conclusions.

The conclusions to be drawn from the study of these cases are:

1. That in a patient complaining of pain at the right costal margin and round the right side of the chest the discovery of crepitations or even of pleural friction at the right base does not preclude, but may support, the diagnosis of an acute biliary infection.

2. That such pulmonary signs are secondary to the biliary infection, and, far from contraindicating operation, will be effectively treated by dealing surgically with the primary focus of disease.

CAESAREAN SECTION:

WITH SPECIAL REFERENCE TO PRESENT-DAY INDICATIONS
FOR OPERATION.*

BY

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THE operation of Caesarean section must always be a matter of supreme interest to general practitioners, as upon them rests the responsibility for the care and safety of the majority of mothers and their infants at the time of parturition. Herman classified the indications broadly into absolute and relative. Under the heading of absolute he included those conditions only which cause such a narrowing of the birth canal that the child, even after embryotomy, cannot be made to pass through the pelvis. All other conditions fall within the category of relative indications. During the past few years the list of relative indications has been enormously amplified, and careful judgement is called for in making a decision in individual cases between this operation and alternative methods of treatment.

Absolute Indications.

1. Extreme forms of pelvic deformity. As a general rule a space measuring 2 by 4 inches represents the very minimum through which delivery can be effected successfully either by cephalotribe or craniotomy forceps. It is safe to say that Caesarean section is absolutely imperative if the conjugate is 2 inches or less. Probably it would be more accurate to place the figure at 2½ inches or less.

2. Hard solid tumours, fixed in the pelvis and causing narrowing to the extent that delivery through the pelvis is quite impossible.

Relative Indications.

1. *Contracted Pelvis.*—This is the most common condition for which Caesarean section is called for. It is generally agreed that a true conjugate of between 3½ and 3¾ inches is the lowest limit permitting delivery of a living child. There is some slight variation of opinion among the experts as to which figure should be taken. I think myself we should accept the 3½ inches true conjugate. But it is not enough to measure the conjugate only—the size of the child must be taken into consideration, and especially the size of the head, and whether the head can be made to engage comfortably in the brim. With a large child it may be advisable to choose Caesarean section with a true conjugate even of 3¾ inches, while it may be possible to deliver naturally a small child through a con-

jugate of 3½ inches or less. Every individual case must be considered on its merits. What are the alternatives in these cases to Caesarean section? (a) Craniotomy—a barbarous operation not without risk to the mother, which might be avoided entirely if only the public and many practitioners were educated up to the supreme importance of the careful examination of the pregnant woman, especially all primiparae and all who have experienced previous trouble in labour. (b) Pubiotomy. I believe the scope of this operation to be very strictly limited to cases of minor contraction at the pelvic outlet. (c) Induction of premature labour. This is really useful only in minor cases of pelvic contraction. Obviously it is inadvisable to induce labour long before full term, as in all probability the child will die. I think we should practise this method as a rule only on women whom we have attended at a previous confinement and delivered by forceps after a struggle. We know then that a slightly smaller head will pass through the pelvis naturally, and, when pregnancy occurs again, by carefully estimating the size of the head from time to time we should be able to judge the correct moment for inducing labour. After induction of labour, maternal mortality averages 1 per cent., infantile mortality 30 per cent.—some say even from 50 to 60 per cent.

All that I have said up to now presupposes that we have been given the opportunity to examine our cases before labour has begun, and that we have diagnosed correctly the degree of deformity with which we have to deal. Unfortunately, as things are constituted at present, we do not often enjoy such opportunity; far more often we are summoned to a case with no more than a curt note from the midwife that "the baby is lodged." On examination we may find the membranes ruptured, the lochia drained away, and the head still above the brim. What are we to do if, after measuring the conjugate, we find that it is useless to attempt forceps delivery?

I think, having examined the available statistics, that in a case which we have every reason to suppose is grossly infected the safest procedure is craniotomy, and this follows as a matter of course if the child is already dead. If we know that examinations have not been frequent, the general circumstances satisfactory, and the child still alive, we should favour Caesarean section. Professor Munro Kerr thinks that the risks of setting up peritonitis may be considerably diminished by delivering the infant through the uterine incision, but leaving the placenta and membranes to be expelled by the vagina, thus avoiding contamination of the abdominal wound with the torn and almost certainly infected edges of the membranes. Others, again, advocate immediate hysterectomy in obviously septic cases. Whatever treatment we may adopt may involve considerable risk to the mother, consequently in dealing with a case of this kind we must weigh all the pros and cons with great care, and, above all, decide on a definite line of treatment without delay.

2. *Tumours.*—The most common tumours likely to interfere with the birth of the child are fibromyomata and ovarian cysts; other forms of tumours, such as enchondromata, osteomata, etc., are rare. Obviously if a fibroid blocks the passage of the foetus the only thing to do is to deliver by Caesarean section, and at the same time deal with the fibroid by hysterectomy. It not infrequently happens that a fibroid which in the early months of pregnancy appears to be obstructing the birth canal subsequently becomes drawn up out of the pelvis and ceases to cause any obstruction. It may be possible in these circumstances to remove the fibroid by myomectomy and allow the pregnancy to continue uninterruptedly to term. There does not appear to be any undue risk of a miscarriage; of course the mere presence of a fibroid may bring on a miscarriage in any case.

In ovarian cysts as a rule Caesarean section is not called for. The cyst can be removed even after labour has begun and parturition allowed to terminate naturally.

Other growths—of bone, cartilage, and so on—are of such rare occurrence that we need not waste any time discussing them. But there remains one very important form of growth which I think deserving of special mention. I refer of course to carcinoma, and more particularly, as the most common form met with, carcinoma of the cervix. Caesarean section for carcinoma of the cervix is not very frequently necessary. Pregnancy is likely to cause such a rapid exacerbation of the disease that in all likelihood our attention will have been called to it long before full term is reached. In such circumstances if the growth is operable we must urge the imperative necessity of a radical operation without delay and without regard to the life of the infant. In the event of the disease not being discovered until the late weeks

* A paper read before the Nuneaton and Tamworth Division of the British Medical Association.

of pregnancy, or supposing that, after having the circumstances and the dangers fully explained to them, the woman and her husband elect to risk all in favour of a living child, then delivery must be accomplished by Caesarean section, as the effect of a natural labour on the growth would be disastrous.

3. *Placenta Praevia*.—The treatment of this condition by Caesarean section was first advocated by Lawson Tait in 1898. His suggestion was jeered at by his colleagues, but he was less than twenty years ahead of his time. It is safe to say now that the majority of gynaecologists, though not all, regard Caesarean section as the standard method of treatment in practically all cases of central and lateral placenta praevia. In marginal placenta praevia the older methods are usually quite efficacious. In the central and lateral cases operation should be performed as soon as the diagnosis is made; there is usually an initial haemorrhage, probably not very serious, and on examination the os is sufficiently dilated to admit of the placenta being felt. Now is the time to do Caesarean section before a further serious haemorrhage makes the life of the mother precarious and that of the child hopeless. Foetal mortality by the older methods is between 50 and 70 per cent., and maternal mortality about 10 per cent.

4. *Eclampsia*.—During the last ten years Caesarean section has been frequently performed for eclampsia, but I cannot find that any of the experts give more than a somewhat qualified and guarded approval of the practice. Herman, who had a very large experience of this complication, makes the bold statement that four-fifths of all cases get well, and states with refreshing frankness his view that no treatment whatever is necessary—an opinion which was also shared by Matthews Duncan. Herman only justifies what he calls "meddling" as being the best means of keeping the patient's friends quiet. But I think Herman's figures err somewhat on the optimistic side. A considerable majority of eclamptics are primiparae, and the first stage of labour is often very considerably prolonged. Not infrequently a marked improvement sets in after delivery. I think, therefore, that Caesarean section is certainly justifiable, if not absolutely indicated, when the onset of eclampsia is early in labour and we are convinced from the way things are going that the first and second stages are going to be slow. Bleeding and transfusion of saline to dilute the toxins can quite well be carried out while the operation is in progress. I should like to mention one practical hint here which applies equally whether an anaesthetic is being given to control fits or for the operation—that is, not to give eclamptic patients chloroform. The morbid appearances after death from eclampsia are very similar to those produced by chloroform poisoning; both are set up by a condition of acidosis, and it is reasonable to argue that chloroform definitely does harm. Therefore, ether should always be given; it is just as simple and quite as efficacious.

In a sense allied to eclampsia we have the chronic nephritis of pregnancy, or chronic nephritis aggravated by pregnancy. It has been customary to teach that, should the condition of a patient not show considerable improvement under treatment by rest and strict milk diet, or should alarming symptoms develop, such as headache, vomiting, eye symptoms, or a marked diminution in the quantity of urine passed, the correct procedure is to terminate pregnancy by induction of labour. It is not as a rule necessary to do this till the later weeks of pregnancy. Induction of labour is not always a very certain proceeding, especially as regards time, so that in many of these cases Caesarean section may well be the method of choice, especially when we bear in mind that the mother in such cases is spared the undoubtedly great strain of ordinary labour.

5. *Concealed Accidental Haemorrhage*.—Caesarean section is only called for in the most severe forms of this condition in which other methods have been tried and failed. In these cases the baby is nearly always dead, so no efforts are called for on its behalf. The bleeding can generally be checked by complete rest, morphine, rupture of membranes, a binder, and injections of pituitary extract. If the mother does not improve then the only thing to do is hysterectomy, as the uterine muscle will have been so stretched and disorganized that retraction will be quite impossible.

6. *After Vento-fixation*.—Occasionally labour will be obstructed after this operation by reason of the cervix being so far tilted backwards that the presenting part cannot dilate it. Caesarean section then becomes necessary. The moral is, do not perform ventro-fixation on a woman of child-bearing age.

7. *Prolapse of the Cord*.—Caesarean section has been performed for this complication, but infant mortality does not appear to be thereby diminished, so it is hardly to be recommended as a routine practice. I think the same remark applies to—

8. *Impacted Shoulder Presentations*.—If the case is too far advanced for version I should imagine decapitation to be the best procedure, but Caesarean section has been performed very occasionally. The mortality rate is 50 per cent. for both mother and child in the few cases which have been recorded.

9. *Abnormal Conditions of the Child*.—A very large child even with a normal pelvis may occasionally best be delivered by the abdominal route, especially if it is presenting by the breech. Post-maturity is now, I think, generally accepted as a possible complication of pregnancy, and may not be of such infrequent occurrence as at one time was believed. Possibly a recent case heard in the law courts may be called to mind where, after taking expert evidence, the Lord Chancellor pronounced a child to be legitimate when it was born 331 days after the last possible chance of conception from the efforts of the lawful father. The child in such a case may be so large as to render Caesarean section necessary.

On rare occasions the operation has been performed for brow presentation, impacted breech, and persistent occipito-posterior positions. I think these cases should be regarded as constituting somewhat exceptional indications, and should require some other circumstance to justify operation.

10. *Retraction and Contraction Rings*.—It has happened that the after-coming head in a breech, and even the presenting head, has been caught and prevented from advancing by Bandl's ring. This might conceivably call for abdominal section.

11. *Scar Tissue and Rigid Cervix*.—Dilatation of the cervix may be unduly delayed by the toughness of scar tissue resulting from an operation or loss of elasticity of the normal tissue, the latter particularly in the case of elderly primiparae. Labour in some of these women is a terribly long business; if left to themselves the baby will probably die, and if forcible measures are adopted there may be very extensive laceration of the cervix and severe tearing of the perineum. I should imagine that a breech presentation in a primipara well advanced in her thirties or over forty causes more trouble and anxiety than any other problem of midwifery.

An unreduced occipito-posterior presentation may be almost as bad. Now, would it not be better to deliver many of these women by Caesarean section? The risk to the mother is very slight if operation is decided upon early, while the advantages may be enormous—a live and undamaged child, and results to the mother, both immediate and remote, very much more satisfactory. I do not, of course, advocate such heroic measures in every case of breech in a primipara—it is a difficult matter at the best of times to estimate the duration of a first labour—but I do think it would be worth while when we realize that a case is going to be protracted and we anticipate the kind of trouble I have described.

The operation has also been performed for extreme oedema of the vulva and very severe varix of the vagina and vulva. Obviously such cases must be treated purely on their individual merits.

12. *Serious Disease of the Mother*.—In such cases, particularly in fully developed mitral stenosis or advanced pulmonary tuberculosis, when the additional strain of labour may seriously imperil life, I have no doubt that the correct procedure is to perform Caesarean section. The shock of operation is far less than that arising from an ordinary labour of even moderate duration. From what I have seen in my own experience in other fields of surgery I would strongly advocate the use of a local infiltration anaesthesia in such cases.

Of post-mortem Caesarean section I need say no more than that it is possible to deliver a living child from twenty to twenty-five minutes after the death of the mother.

This completes the catalogue of indications, but there are still a few points to which reference should be made as having a distinct bearing on the subject of this paper.

First, as to the time of performing Caesarean section. Should we wait until labour has begun? On theoretical grounds it might be supposed that haemorrhage would be much less and more easily controlled during labour, but in practice it makes little or no difference. The manipulations of the uterus set up muscular contractions, and there need be no more haemorrhage in a case operated on before true labour has begun than after its onset. Again, should the patient be

sterilized at the time Caesarean section is performed, or should she be allowed to run the risk of becoming pregnant again? So recently as ten years ago it was widely held that the majority of cases should be sterilized at the time of the first Caesarean section. At the present day the general view is in complete opposition to this, and it is held to be rarely justifiable to sterilize a patient except in such circumstances as we have already considered, where the condition found at operation renders this course necessary in order to obtain a successful result—for example, hysterectomy for fibroids. Now that Caesarean section is so frequently performed for conditions other than obstruction in the pelvis, obviously there is no reason why many of the mothers should not have any number of subsequent labours—and a number do so. In cases of pelvic contraction, however, the view generally held is, "once a Caesarean always a Caesarean," and there are many cases on record of women undergoing Caesarean section four, five, or even more times, quite successfully. Unfortunately it is a fact that in a certain number of cases the uterine scar is not strong enough to withstand the strain of a subsequent pregnancy, and rupture of the uterus has been found to occur far too frequently. The direct cause of the weakness of the scar is sepsis at the time of the original operation.

Another fact to be noted is the relatively high rate of sterility following the operation. This, I think, is due not so much to the operation itself as to the fear that it engenders in the minds of the patients and their husbands and consequent avoidance of pregnancy.

In conclusion, I should like to emphasize, first, the supreme importance of educating ourselves and—a far more difficult matter—our patients and their mothers and mothers-in-law in the absolute necessity of keeping a careful watch on all women throughout the period of pregnancy; it is the only means of avoiding occasional disaster. Secondly, the urgent need for the provision of maternity beds in all large towns and country districts. Possibly since the introduction of the panel system and the almost universal employment of midwives in maternity cases in industrial districts we may be able to view these questions in a more detached spirit than heretofore. In any case the remedy lies first and foremost in our own hands; if we make it our business to insist that beds for maternity cases are provided, I feel convinced that the time will not be far distant when women will clamour to be admitted to them.

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CAESAREAN SECTION.*

BY

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CAESAREAN SECTION is one of the most spectacular but also one of the easiest of abdominal operations to perform if the patient has not undergone the operation on a previous occasion. With practice this operation can be accomplished rapidly; with an efficient staff of nurses and assistants I have performed the entire operation in seven minutes. A general practitioner with an average surgical training may safely perform it in cases of obstruction due to contracted pelvis, provided the case comes under observation early in labour and that he can secure thorough sterilization of instruments, suture materials, and gauze. On reviewing my more recent results I find that I have lost one patient in seventy-nine consecutive cases of Caesarean section. The only case which died succumbed to an ordinary bronchopneumonia ten days after operation. Ether alone had been administered in this case, and I would strongly urge that for purposes of anaesthesia chloroform should be used in preference to ether in the case of rachitic patients, as they are extremely susceptible to certain pulmonary disorders; a large number of them suffer from bronchitis and emphysema.

Within recent years the indications for the operation have been extended, and at the present time the obstetrician will be most liable to be called on to employ it in one of the following conditions:

1. In all cases of contracted pelvis where the obstruction prevents effectively the foetal head from engaging at the brim. In studying the causes of operative failure in my earlier cases of contracted pelvis I found that the chief danger was sepsis. At that time I performed the operation, even if forceps had been employed unsuccessfully by the practitioner, or if the membranes had been ruptured for many hours. As a rule the patients recovered, but a few died, and others had a prolonged convalescence due to septic infection. Accordingly I determined to operate only in cases which were probably free from contamination, and therefore I performed craniotomy in most cases which had been examined vaginally before admission to hospital, and in all of these cases if the membranes had been ruptured for longer than twelve hours.

2. Neoplasms in the uterus, ovaries, or pelvic bones sometimes cause such a degree of obstruction that Caesarean section has to be performed. As a general rule, cystic tumours of the ovary can be removed through the abdominal wound without incising the uterine wall, and whenever this is feasible it should be the operation of choice. In order to minimize the strain to which the abdominal wound is subjected during labour forceps should be employed when the second stage is reached. On the other hand, we can seldom remove a fibromatous tumour which has obstructed labour without first performing Caesarean section; nevertheless it is possible when a subperitoneal tumour is pedunculated, and in one instance of this kind I was able with my hand in the vagina to push the tumour upwards over the foetal head, and by so doing operative interference was avoided at the time. When a patient with a fibroma does not wish to be sterilized, occasionally we are able to perform myomectomy immediately after delivery has been effected by Caesarean section. As regards carcinoma of the cervix, the radical operation should be practised as soon as the case comes under observation if there be a reasonable chance of success; the child's life is of secondary importance. If the disease be too advanced to permit of extirpation, pregnancy should be allowed to proceed, and at full time Caesarean section should be followed by supravaginal hysterectomy, as the risk of sepsis is thereby diminished.

3. Excessive cicatricial contraction of the cervix and vagina may so obstruct labour that the lives of mother and child can be best safeguarded by Caesarean section. As a rule this difficulty follows an operation where the cervix has been amputated and the vaginal walls have been extensively denuded and sutured for the cure of uterine prolapse.

4. The operation is valuable in certain cases of accidental haemorrhage and placenta praevia, but in placenta praevia I recommend it mainly in cases where the patient is elderly and the child is alive. It seems to me that the operation should not be recommended in such cases if the patient be young, as she may be left with a weak uterine scar which may give way during a subsequent pregnancy. It is also a justifiable procedure in any case where the placenta is central and the os is not dilated. Many lives have been saved in cases of severe accidental haemorrhage by means of this operation. If the cervix be closed and the bleeding profuse it appears to be the most certain method of controlling the haemorrhage. Theoretically the proper procedure would be to remove the uterus without incising it, as the patient can ill afford any additional loss of blood, and by adopting this plan the main vessels supplying the organ are at once clamped. In practice I find, however, that evacuation of the contents shortens the operation, as the surgeon is not hampered by a bulky organ, and, after all, the loss of blood is relatively small. In cases of accidental haemorrhage I usually perform hysterectomy immediately after removal of the foetus and placenta, but this procedure is not always necessary, and cases may make an uninterrupted recovery after the uterine wound has been sutured in the usual way.

5. There is a tendency at present to advocate Caesarean section in cases of eclampsia, but as far as my observations go much better results can be obtained by less drastic measures which leave the uterus intact. I refer to induction of labour in combination with medicinal and other measures.

6. Vento-fixation and vaginal fixation of the uterus may disturb the position of the organ to such an extent that delivery by the natural passage is impossible, and in such circumstances Caesarean section is indicated. I have had personal experience of three cases of this character.

7. In rare instances this operation is performed in cases where labour is obstructed by a retraction ring which has formed in advance of the presenting part.

* Abstract of a lecture delivered to the Medico-Chirurgical Society, Queen Margaret's College, Glasgow.