As an example of a successful operation advised under special circumstances the following case may be mentioned:

Mrs. M., aged 27, seen on February 14th, 1921. A goitre had first appeared eighteen months before; this was followed by dyspnoea on exertion and occasional palpitation. She had a moderate uniform enlargement of the thyroid gland with tremors of the hands. The pulse rate was 150 and the cardiac impulse extended two fingerbreadths outside the left nipple line. There was exophthalmos. As this patient wished to go to China as soon as possible with her husband to reside in a district some 7,000 ft. above sea-level, and was about to visit relations in Minnesota, I advised her to go to the Mayo clinic for operation. In June last the basal metabolic rate was *plus* 40, when Dr. Verne C. Hunt of Rochester did a ligation of both superior thyroid vessels. After this she gained 20 lb. in weight and improved in general condition, but the basal metabolic rate was *plus* 45. Dr. Hunt has kindly informed me that on September 6th a double resection of the gland with removal of the isthmus was done. She had an uneventful convalescence and was able to go to Japan in November. The latest report received from Mrs. M. in Japan stated that she was perfectly well. I advised early operation in this case owing to the special circumstances already mentioned, and the result has been most satisfactory.

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A PULMONARY SIGN IN ACUTE INFECTIONS OF THE BILIARY TRACT.

BY

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Most medical men are familiar with the deceptive abdominal symptoms and signs which may sometimes dominate the clinical picture in the early stages of pleuropneumonia. Most can recall mistaken diagnoses as well as the feeling of satisfaction which has followed a successful detection of the trouble above the diaphragm and the sparing of the patient an abdominal exploration both unnecessary and fraught with risk. On the other hand, I find that very few are familiar with the converse picture—namely, the case presenting pulmonary symptoms and signs in which the primary and focal lesion is in the upper abdomen.

That acute infections of the gall bladder and bile ducts are frequently associated with definite physical signs at the base of the right lung is a fact I have repeatedly observed; in a number of cases it has led to an incorrect diagnosis, a primary lung lesion being suspected and the pain in the right hypochondrium being regarded as referred from the pleura.

My attention was first directed to this sign some ten years ago by the case of a gentleman on whom I had operated for inguinal hernia:

Mr. T. D., aged 65, was operated on (December 12th, 1912) for a right inguinal hernia. Four days later (December 16th) he complained of severe pain on the right side of his chest and in the right hypochondriac region of the abdomen; temperature 100°, pulse 90, respirations 26. There were very definite tenderness and rigidity just below the right costal margin, and a deep inspiration caused great pain in this region. I made a diagnosis of acute cholecystitis probably associated with gall stones, and recommended the local application of heat. At the request of his relatives a physician was called in to see him, and he discovered that there were numerous crepitations at the base of the right lung, and diagnosed congestion of the right base with referred abdominal pain. Two days later a definite tinge of jaundice appeared, and the original diagnosis received strong support. In a week the infra-costal pain and tenderness had subsided.

In January, 1914, I was called to see the patient again. He had had three attacks similar to that described above, and in this, the fourth, attack the symptoms were much more urgent than ever before. I operated and found a partially gangrenous gall bladder, containing pus and over 100 calculi.

Since then I have made a habit of examining the bases of the lungs in cases of acute biliary infections, and have found that crepitations at the right base occur in quite a fair percentage of cases. The following case illustrates the importance of recognizing the significance of this physical sign:

Mrs. F., aged 53, was operated on for gall stones on November 10th, 1920. She gave a typical history of recurrent attacks of gall-stone colic extending over a period of five years. At the operation ten gall stones were removed from the gall bladder, which was

drained. She left hospital at the end of four weeks with the wound healed. Five days after leaving hospital she had an attack of pain round the right side of the chest. Her doctor found crepitations and some pleural friction at the right base, and gave the opinion that this was a chest condition and not connected with the biliary tract. The patient, however, insisted that the pain was the same as she had had before operation. At intervals of a few weeks the attacks recurred, always accompanied by the basal pulmonary signs, and she had poultices applied round the right side of the chest.

On January 16th, 1921, she had a very severe attack, again with crepitations, but this time also with very acute tenderness in the right hypochondrium. Poultices over the right base gave no relief, and after a few days she had a definite tinge of jaundice. Her doctor diagnosed cholecystitis and sent her into hospital. A swelling was found in the right hypochondrium and great tenderness on pressure in this region. Over the base of the right lung numerous fine crepitations could be heard, and there was slight dullness on percussion. On January 19th, 1921, she was again operated on. The gall bladder, greatly enlarged and thickened, containing muco-pus and one faceted calculus plugging the cystic duct, was removed. Since the second operation she has been entirely free from biliary and pulmonary symptoms.

This pulmonary sign may also be found where the infection is located in the ducts and where the gall bladder is not the chief seat of trouble, as the following case shows in a most instructive manner:

Mr. D., aged 67, had suffered for over a year from frequently recurring attacks of pain and discomfort in the epigastrium, accompanied by rigors and always followed by a faint tinge of jaundice. The pain was never very severe, but in each attack he felt ill, had a temperature of 100° to 101° F., and was confined to bed for several days—the latter mainly because his doctor always found signs of congestion at the base of the right lung. On several occasions the question of operation was discussed, but it was doubted whether it was justifiable on account of the pulmonary symptoms. Latterly the attacks recurred so frequently, and the jaundice though slight became so constant, that he consented to operation. His doctor noted in each attack crepitations at the right base, none at the left.

Operation (January 9th, 1921).—A very large and somewhat thickened gall bladder was found. It contained no calculi. The common duct was very dilated and thick-walled, the head of the pancreas was hard—the seat of chronic interstitial pancreatitis. The common duct was opened and a large quantity of granular debris and bile-sand scooped out. No calculi of any size were present. A probe passed readily into the duodenum. The common duct was drained, and in view of the sclerosing pancreatitis a cholecysto-duodenostomy was performed. The patient made an uneventful recovery, rapidly put on weight, and a year later reported that he had been entirely free from all biliary and pulmonary trouble.

The interesting point in regard to this case was the fact that the pulmonary signs accompanying his recurring attacks of cholangitis were for a time regarded as a contraindication to operation, and had no jaundice been present even more emphasis would certainly have been laid on the pulmonary as opposed to the biliary symptoms.

Etiology of the Pulmonary Congestion.

Three possible explanations for this must be considered:

(1) The infection in the gall bladder or bile ducts spreads by way of the peritoneum through the lymphatics of the diaphragm and so reaches the pleura and the base of the lung. Facts which favour this theory are that in two cases, besides the crepitations, pleural friction was detected over the right base, and in another case a well-marked pleurisy with effusion was present within twenty-four hours of the operation for removal of the infected gall bladder.

(2) That reflexly, from irritation of the sensory fibres of the phrenic nerve, the diaphragmatic excursion on the right side is diminished, the expansion of the base of the right lung is restricted, and some hypostatic congestion results. There can be no doubt that this factor of impaired movement of the diaphragm plays a considerable part, and whether it be a phrenic reflex or a mechanical difficulty owing to the boarding of the abdominal muscles and the plastic adhesions so frequently present about the lower border of the liver, or both, is of little moment. It is of interest, however, in this connexion to note that over 50 per cent. of those patients showing pulmonary signs complained of acute shoulder pain, usually attributed to a phrenic reflex.

(3) That the lung condition is a blood infection settling in a part of the lung the expansion of which is restricted by the factors mentioned in (2).

The work of Else and of Rosenow has shown how liable the gall bladder is to infection through the blood stream. It is therefore perfectly feasible that the blood-borne infection which settled in the gall bladder might secondarily light on a part of a lung crippled by deficient expansion.

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.