It will be seen that in tuberculosis arthrodesis is the standard operation, for wide excision is only carried out when the area of disease is so extensive that arthrodesis is impracticable, and amputation only when life is threatened by severe septic complications not amenable to drainage. (The average age of the amputation patients was 33.) In the "arthritic" group mobilizing operations outnumber fusions, thus showing a contrast with the tuberculous cases, in which fusion is always desirable because it almost certainly eliminates the risk of local recurrence. In "arthritis" there is a free choice—on the one hand of a result which is stable, painless, and permanent, though awkward and inclined to strain the low back, on the other hand of a free pseudarthrosis in which one can be sure of mobility and freedom from pain, but so little stability that a walking appliance is necessary for at least part of the day. Thirdly, there are the various forms of reconstruction—a middle course giving fair stability, but, as a rule, only a small, though useful, range of movement.

Pseudarthrosis is indicated when free and permanent mobility is specially desirable—for example, in poly-articular arthritis—and particularly when both hips are ankylosed or in danger of becoming ankylosed.

Figure 1 in the Plate shows a case of femoral tuberculosis involving the whole head and neck and upper trochanteric region: arthrodesis was impracticable. In Figure 2 is seen a case of acetabular disease so extensive as to make wide excision an alternative to arthrodesis. Figures 3 and 4 illustrate the definite extra-articular method of arthrodesis and the development of the graft.

CHLOROFORM CAPSULES DURING LABOUR *

BY

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For some years I have been endeavouring to find the ideal method of producing analgesia, particularly as applied to the pains of labour. Gas-and-oxygen administered by an expert is the nearest approach to the ideal that I have yet found. But "administered by an expert" is the all-important qualification, and this, added to the somewhat cumbersome machinery required, puts it out of court for most labours. For the lucky few who can afford to pay for it, it has very few drawbacks, and such drawbacks as exist are only minor ones. Perhaps the greatest of these is the discomfort of the closely fitting rubber facepiece when this form of analgesia is kept up for a considerable period of time.

In England and Wales there are about three-quarters of a million labours annually, and of these nearly 60 per cent.—about 450,000—are cases conducted by midwives without the aid of a medical practitioner. Nearly all the rest—about 300,000 cases—are conducted by a medical practitioner in general practice aided by one midwife or maternity nurse, and in only a few, and those mostly abnormal cases, is a second medical practitioner present.

It is obvious that gas-and-oxygen can benefit only an extremely small proportion of parturient women, from economic reasons alone. Let us first consider the 300,000 who are attended by medical practitioners. About 90 per cent. are normal labours and are attended by medical practitioners in general practice assisted by a qualified midwife or maternity nurse, who, as a rule, informs the practitioner when labour starts, leaving him to pay a

flying visit when he can spare time to ascertain that all is normal. The midwife or maternity nurse is then left in charge of the patient, and in many cases where the doctor concerned knows the midwife and her capabilities, he relies on her to inform him when the second stage is definitely in progress. The doctor then leaves his practice—or bed—and goes to the case armed with his traditional black bag. From this he extracts a drop bottle and a piece of lint, and proceeds to administer very small doses of chloroform with each pain. When the head appears at the vulva he hands over the lint and drop bottle to the nurse and proceeds to wash up, don mackintosh gown, gloves, etc., and conduct the actual delivery. Should there be any delay at the outlet he instructs the nurse to administer a little more chloroform, and proceeds to effect delivery with the forceps, which he has previously extracted from his little black bag and had sterilized. Some doctors go a stage further, and if the pains are really severe at the commencement of the second stage, administer a few drops of chloroform with each pain, and in many cases, especially where the second stage is slow and the practitioner busy, leaves the drop bottle with the nurse with the instructions to apply one or two drops with each pain. This is done to my personal knowledge by many practitioners around London, and I am confident that it is done by many practitioners throughout the country. It does not appear to have any ill effects, and chloroform, in very small doses indeed, produces a remarkable degree of analgesia without reaching even the first stage of anaesthesia. In fact, this form of analgesia, which was the form in which chloroform was administered to Queen Victoria in 1853, very closely approaches gas-and-oxygen as being an ideal analgesic during labour, and it is with this form of analgesia that I am particularly concerned to-day.

I feel rather like a lion in a den of Daniels, in coming here to-day to advocate chloroform in this city, because I am quite sure I shall meet with strong and eloquent criticism. I also feel sure that my critics will be divisible into classes as follows: (a) The diehard who has never used chloroform, is quite sure that chloroform in every form is a dangerous and wicked drug, and anyway thinks labour pains are good for women. (b) The practitioner who has lost one or two cases after some severe obstetric operation during which anaesthesia has been produced by chloroform. The patient has really died from obstetric shock, but in order to excuse himself from blame he attributes the death either directly or indirectly to chloroform poisoning. Of course, if ether has been used, he has to admit that death is due to obstetric shock.

In searching for a method by which the 450,000 women who are delivered by midwives alone can receive some relief from the pains of labour I came to the conclusion that gas-and-oxygen was not yet practicable, although I have heard a rumour that a London anaesthetist is devising an apparatus which can be used by a midwife; I am looking forward to its materialization with great interest. Meanwhile I find chloroform is infinitely the most promising. In order to overcome the risk of a midwife applying too much chloroform from the drop bottle, I have had chloroform put up into crushable glass capsules, and a mask fitted with a little clip into which these capsules can easily be inserted one at a time, and in over 3,000 cases at Queen Charlotte's we have found these capsules eminently satisfactory. A capsule wrapped in its gauze covering is placed in the clip, and when the patient states she feels a pain coming it is crushed and the mask applied about two inches free of the patient's face, so that the patient gets little more than the odour of chloroform. Labour pains usually last from thirty to forty seconds, and as soon as each pain has ceased

* Paper read in the Section of Obstetrics and Gynaecology at the Annual Meeting of the British Medical Association, Dublin, 1933. A note on the discussion appeared in the *Journal* of August 19th (p. 347).

the mask is taken away altogether and the next pain awaited. The patient should not go unconscious. If she does the mask has been too closely applied. She should remain sufficiently conscious to respond to instructions to bear down, to be able to say or indicate when a pain is coming on; and if the chloroform is used to this extent only, almost perfect analgesia is produced in at least 95 per cent. of normal labours, and the patient remembers, and apparently feels, nothing of pain or of the actual birth of the child. Chloroform administered in this way can be used throughout labour without detriment. In order to test this thoroughly I have a series of cases recorded over three months showing time during which capsules were administered.

Queen Charlotte's Hospital during April, May, and June, 1933

Total number of cases receiving capsules...	...	342
Patients receiving capsules for less than 2 hours	...	226
" " " 2 to 3 hours	...	38
" " " 3 to 4 "	...	16
" " " 4 to 5 "	...	16
" " " 5 to 6 "	...	9
" " " 6 to 7 "	...	6
" " " 7 to 8 "	...	5
" " " 8 to 9 "	...	3
" " " over 9 "	...	23

Of those cases receiving capsules for over 9 hours, 20 out of the 23 terminated in forceps delivery.

It is noticeable in how few cases the capsules were administered for more than five hours, and it is particularly interesting because I was urging the two resident anaesthetists to get me a series of one hundred cases in which capsules had been administered for at least ten hours. In most of this series of 342 cases, capsules were started when the cervix was dilated to the size of a florin, but very few of them lasted more than five hours longer before they delivered themselves. Of the twenty-three cases of over nine hours, twenty were posterior positions, or closely fitting heads which required forceps delivery; and this fits in with our experience that analgesia markedly shortens the duration of labour by relaxing the soft parts, and only in those cases where there is a real obstetric difficulty will labour last over twelve hours, even in primigravidae.

Now during this period at Queen Charlotte's there have been two disasters among these 342 cases. One patient, who had had capsules for fourteen hours, subsequently developed puerperal sepsis. Sixty-six capsules were used during this time. The presentation was right occipito-posterior, and the forceps was used to complete delivery. She had a positive blood culture, but did eventually recover, and I do not doubt that several "category (a)" listeners will be quite convinced that her sepsis was entirely due to the lowering of resistance by this prolonged administration of chloroform.

Another patient died; she was a primigravida, who had had thirty-seven capsules over a period of five and three-quarter hours, and delivered herself of a living child weighing 8 lb. 10 oz. In doing so she sustained a second degree laceration of the perineum. The capsules were discontinued and the placenta was expelled about twenty minutes later. Some ten minutes later anaesthesia was produced by chloroform out of a drop bottle in order to insert stitches. As she reached the stage of anaesthesia her tongue fell back into her pharynx and she stopped breathing. The tongue was pulled forward and breathing was re-established, but only for a very short time. At the post-mortem examination she was found to have a fatty heart, and no smell of chloroform was detected in the tissues. Here again "category (a)" will be convinced that death was due to the capsules, but I am sure that it was the deeper anaesthesia which allowed the tongue to fall back, and the resulting partial asphyxia which stopped the diseased heart.

To sum up, these capsules are intended for the use of midwives. They are only meant to be used during the second stage of labour or perhaps during the end of the first stage also if the pains are particularly strong. They are not meant to be an anaesthetic, only an analgesic. They are not intended to be used for the application of forceps or the insertion of stitches, although in some cases they may produce sufficient analgesia for the latter operation.

Memoranda

MEDICAL, SURGICAL, OBSTETRICAL

CHRONIC BILATERAL SPONTANEOUS PNEUMOTHORAX

(With Special Plate)

On examining the literature one is struck by the comparatively few reported cases of acute bilateral spontaneous pneumothorax. Hans Kjaergaard, in his book *Spontaneous Pneumothorax in the Apparently Healthy*, draws attention to the very few cases of chronic spontaneous pneumothorax reported, his reference being to unilateral cases, but does not mention chronic bilateral pneumothorax in his survey of this obscure condition. This latter condition must be excessively rare, as I have been unable to find a solitary reference to it after an exhaustive search of the current literature. On this account I have been prompted to report one such case, which came under my care in June, 1932.

CASE RECORD

A married man, aged 49, enjoyed perfect health up to the age of 42, when he noticed the first symptom of the present illness. His occupation as an electrician did not entail any laborious work, whilst during his leisure hours he took part in amateur theatricals. He was married, but had no family. There was no history of venereal disease, or of abortions or miscarriages, nor was there a family history of tuberculosis. He stated that his illness commenced seven years previously with a cold resembling "flu," which left him, after a few days of malaise, with a slight cough. A certain amount of dyspnoea accompanied the residual cough, but was for some time not sufficient to cause him any respiratory embarrassment whatsoever. Gradually, however, the dyspnoea became worse, and over a period of two to three years the hitherto unproductive cough became accompanied by a muco-purulent expectoration, and as a result he decided to consult his doctor. A diagnosis of bronchial asthma was made, and he was treated by means of autogenous vaccines prepared from his sputum. Several courses of vaccine therapy were employed over a period of years without any noticeable improvement in his condition. Instead, he became more and more dyspnoeic, his cough more troublesome, his sputum more profuse, while his general condition slowly deteriorated.

He consulted me with a history, as he said, of "asthma" of seven years' duration, but as there was complete absence of spasmodic dyspnoea this diagnosis was eliminated. His breathing was markedly distressed, whilst the slightest exertion was sufficient to produce an alarming duskiness of his face, almost amounting to cyanosis. Although he was unable to walk more than two hundred yards without resting he was sufficiently tenacious to continue his occupation, though in a greatly restricted capacity, but was with reluctance compelled to abandon his theatrical aspirations. His sputum did not contain tubercle bacilli, was profuse and muco-purulent, but not fetid. His main concern was his gradually increasing breathlessness, which was now almost suffocating and at times alarming. He was of small stature, with a pale, drawn, expressionless face. His hands were cold, but the fingers were not clubbed. His respirations were short and quick, and on attempting to remove his clothes for examination he became so terribly distressed and cyanosed that I thought he was about to die.