1. Strong steady traction on the hand in slight *radial* deviation obtains disimpaction, overcomes shortening at the radio-ulnar joint, and, if strong enough, secures anterior cortex-to-cortex apposition.
2. Strong traction in 30 degrees palmar flexion with direct pressure, by the chin if necessary, over the lower fragments corrects backward rotation without further trauma to the joint capsule.
3. Traction in ulnar deviation and pronation corrects radial deviation and supination.
4. Direct antero-posterior and lateral compression moulds the fragments.

This method is similar to many others, but I would stress that, unless disimpaction is carried out by strong traction in radial deviation, shortening at the radio-ulnar joint and posterior subluxation of the triangular fibrocartilage may persist.

The method of Sir Robert Jones (or, rather, of Hugh Owen Thomas—see Parker, 1929) is satisfactory if there is no shortening or gross comminution, but a generally applicable method is preferred.

Immobilization and After-treatment

Reduction is confirmed and its stability tested. The arm is held in moderate traction in the mid-pronated position with considerable ulnar deviation and no palmar flexion. The thumb is opposed, abducted, and flexed to meet the flexed index finger. A $\frac{3}{4}$ -circle plaster back slab is applied gripping the anterior surfaces of radius and ulna and the dorsal surface of the first metacarpal, and taking a long grip of the upper end of the ulna. This position helps to maintain the full length of the radius. The slab is secured with a dry cotton bandage. No moulding is performed if the fracture is stable, but if unstable—as, rarely, it is—careful moulding to the anterior radial concavity is essential.

Reduction is checked radiographically, and graduated and vigorous active exercises to fingers, elbow, and shoulder are started immediately under supervision. A high sling is worn for three or four days. The plaster is removed after five weeks and the exercises are intensified. The patient usually returns to light clerical work after one week (in plaster), to light manual work after seven weeks, and to heavy work after about nine weeks. He is discharged when his range of movement is approaching that of the normal side and he has been doing his usual work without complaint for at least a week.

It is hoped to discuss in detail the results of a smaller series later.

Summary

238 fractures about the lower end of the radius have been analysed and shown to fall into certain definite groups. Their mechanisms have been discussed and their treatment outlined.

I am much indebted to Mr. V. H. Ellis, honorary orthopaedic surgeon to St. Mary's Hospital, for his encouragement and helpful criticism; and to my fellow casualty house-surgeons for their co-operation and stimulation.

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A message from Washington announces the appointment of Dr. Wilbur A. Sawyer, of New York, as Director of Health of the United Nations Relief and Rehabilitation Administration. He will be assigned to Washington and will be in charge of the Health Division of UNRRA and be responsible for planning and directing health and medical activities. His duties will require frequent visits abroad to the regional offices and field work. Dr. Sawyer has had long experience in international health activities through his connexion with the Rockefeller Foundation's International Health Division, of which he has been director for nine years. During his service with the Rockefeller Foundation he directed a hookworm campaign in Australia, made investigations of yellow fever in West Africa, carried on research in New York that revealed a method of vaccinating against yellow fever, and negotiated and planned co-operative projects with the health authorities of many countries of both hemispheres.

AN OUTBREAK OF PUERPERAL SEPSIS DUE TO A SINGLE TYPE OF HAEMOLYTIC STREPTOCOCCUS

ITS INVESTIGATION AND REMEDY

BY

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From 1935, in the obstetric unit of the British Postgraduate Medical School, a carefully conceived and operated routine has obtained good results in the prevention of epidemics of puerperal sepsis. Among 12,283 deliveries, only 19 isolated cases of haemolytic streptococcal infection of the genital tract have occurred, and none of these could be traced to respiratory tract infection of attendants. In 1938 and 1939 not one occurred. One woman has died of puerperal sepsis since the founding of the unit—a non-haemolytic streptococcal peritonitis developing after Caesarean section for placenta praevia in an emergency case which had been examined vaginally by outside attendants; and one has died of lobar pneumonia complicating localized uterine non-haemolytic streptococcal infection.

Preventive Routine

Booked cases without septic foci and with intact membranes are admitted in labour to a "clean" suite (D 6), and after delivery are drafted to "clean" lying-in wards (D 3 and D 5). These wards are made up of several 4-bed units. Unbooked cases without septic foci and booked cases with ruptured membranes are delivered and spend the lying-in period in a "suspect" suite (D 4). Vaginal swabs of all such patients are sent for routine bacteriological investigation, and pyrexial cases are removed from this and the "clean" wards to the isolation block. All cases found to have respiratory tract or other infection are admitted, delivered, and nursed in the isolation block of 10 single-bed rooms and attached labour theatre. These cases, too, have bacteriological investigation of the genital and other tracts performed as a routine measure, whether they are febrile or not.

Each suite has a separate nursing staff; the isolation block has its own house-surgeon, who does not enter the other suites. The visiting and resident obstetricians change their overalls before entering each ward and wear masks covering nose and mouth when in the isolation block, when examining women in labour, and in the delivery theatres. All students and members of the staff submit to a bacteriological investigation of the respiratory tract before joining the unit and on return from holiday. Respiratory tract or other infections bar entrance to the unit pending a bacteriological report on the nature of the infection.

Each patient when admitted in labour has a shower-bath and, after shaving, has the vulva and surrounds painted four-hourly with dettol 30% cream until delivery has taken place. In addition, women in the isolation block with upper respiratory tract infections have their hands anointed with the cream. Dettol cream is also used as a lubricant for pelvic examinations and instrumental deliveries; dettol 10% lotion is employed for swabbing the vulva in the early puerperium.

- The following is a report of a recent epidemic of haemolytic streptococcal puerperal sepsis that overleaped these precautions, its investigation and remedy.

Case Records

Case 1.—On Jan. 10, 1944, Mrs. E., primipara, was admitted in the first stage of labour to the clean suite D 6. She was delivered $5\frac{1}{2}$ hours later by Sister M. and a student and sent on to lying-in ward D 5. On the 12th her temperature rose to 103° F. She was at once transferred to the isolation block. Bacteriological investigation of her lochia showing haemolytic streptococci, she was removed to the North-Western Fever Hospital, and recovered under sulphamide therapy, as did all the other women involved in the outbreak.

Case 2.—On Jan. 13 Mrs. T., primigravida, with a slight cold, was taken in error to the receiving room of D 6, but was transferred very shortly to the "suspect" D 4, as the isolation block was fully occupied that night. Five hours later she was delivered under the close supervision of Sister M. A superficial perineal tear was stitched with silkworm-gut. She was kept in lying-in ward D 4. On the 17th she developed a temperature of 99.4° F.; the routine vaginal swab taken of all patients in this suite showed in her case haemolytic streptococci.

Case 3.—On Jan. 14 Mrs. R., primigravida, after 6 hours' labour in D 6, was delivered by Sister M. She, too, had a small tear stitched with silkworm-gut. She was sent to lying-in ward D 3; on the 17th she had a temperature of 102° F. Haemolytic streptococci were cultured from the vagina.

Case 4.—On Jan. 17 Mrs. H., primigravida, was delivered in D 6, after a 10-hours stay, by Sister M. On the 20th her temperature was 102° F. in lying-in ward D 5 (in another than the 4-bed room once occupied by Case 1). Haemolytic streptococci were found in her vagina.

Case 5.—On Jan. 18 Mrs. W., primigravida, was delivered in D 6, after 11 hours in labour there, by Sister M. and had a first-degree tear stitched. On the 19th her temperature was 99.6° F., and haemolytic streptococci were cultured from her genital tract. She manifested the infection while in lying-in ward D 3, though not in the same 4-bed room as Case 3.

Case 6.—On Jan. 23 Mrs. C., primigravida, was delivered in D 6 by Nurse B., after a stay of 8 hours. Dr. P. sutured a second-degree tear and cared for her during a post-partum haemorrhage. While in ward D 3 her temperature was 101° F. on the 25th, and haemolytic streptococci were recovered from the vagina. This is the only infected woman who was not delivered by Sister M.

Case 7.—On Jan. 25 Mrs. D., primigravida, was admitted from the ante-natal clinic at term with hypertension and albuminuria. She went into labour in the ante-natal ward and was sent up to the delivery room of D 6, not entering the receiving room there at all. An hour and a half later she was delivered by Sister M., and a tear was sutured by Dr. P. On the 27th, in lying-in ward D 4, she developed a temperature of 101° F., due to a haemolytic streptococcal infection of the genital tract.

Investigation and Remedy

The bacteriological report on the vaginal swab of Case 1 was known on Jan. 14, and at once nose and throat swabs were taken of the nursing, domestic, and medical staffs of the labour and lying-in wards concerned, and vaginal and nose and throat swabs of the three puerperal women who had shared a 4-bed lying-in ward with Case 1. The nose and throat of the patient herself were also examined. Haemolytic streptococci were not recovered from any of these sites. When the other cases appeared, similar investigations were made, and all proved fruitless. Repeated cultures from the respiratory tract of Sister M. were negative. Late in the course of the epidemic a few colonies of haemolytic streptococci were recovered from the throats of a member of the consultant medical staff, Dr. K., who had not attended any of the affected women, but who had visited all the wards involved; of a nurse who worked in lying-in ward D 3; and of a ward maid of D 3. The dust of the receiving and labour wards was negative; a few colonies of haemolytic streptococci were found in an office attached to D 6 which is used by the medical and nursing staffs. This room was fumigated with formalin vapour at once.

Diligent search for the source of the epidemic went on. The bed-pan- and bidet-sterilizing apparatus in the labour ward was proved relatively effective only, for a test implant of streptococci survived, although streptococci were not found on any utensils that had already been "sterilized" and held ready for use. The apparatus was overhauled, and the steam pressure, upon which its efficiency depends, has been adjusted. It is now satisfactory.

However, an abundant growth of haemolytic streptococci was recovered from the under-rim of the lavatory seat in the receiving room of D 6, through which all but two of the infected women had passed on admission. The lavatory seat is two feet away from the porcelain slab on which all patients admitted to D 6 receive a shower-bath. It was cleaned daily by a maid, using Jeyes' fluid; the positive swab was obtained shortly after such a cleaning had been performed and before its next use. On the discovery of its contamination the room was disinfected with formalin vapour. There have not been any infections since, and the furniture of the room is now

cleansed with pure dettol after each time of use. To strengthen the barrier, each woman now admitted in labour has the vulva painted with dettol cream *before* the parts are shaved or the bath given or the lavatory visited, as well as thereafter.

Bacteriological Report

In searching for a source of infection for these cases of puerperal sepsis 350 specimens were examined for the presence of haemolytic streptococci. These included nose and throat swabs of staff; nose, throat, and vaginal swabs of contact patients; samples of dust from various sources; plates exposed to the air in labour wards; and swabs from lavatory seats and bed-pans. Lancefield A haemolytic streptococci were isolated from 5 of these specimens—three throat swabs of members of the staff, the lavatory seat in D 6 receiving room, and the dust in the office of this suite. The number of haemolytic streptococci isolated from the lavatory seat was overwhelming. Lancefield G haemolytic streptococci were isolated three times—from the throat of a nurse and from the vagina of two apyrexial patients. One patient had Lancefield C streptococci in the throat.

All the Lancefield A haemolytic streptococci were submitted for typing to Dr. Dora Colebrook and Mr. Maxted, of the Emergency Public Health Laboratory, Ravenscourt Square. We have to thank them both for this co-operation, and Dr. Dora Colebrook for most helpful comment. They reported that the seven streptococci isolated from the cases of puerperal fever all belonged to the same type, provisionally diagnosed as 4/24. Of the other five Lancefield A haemolytic streptococci, the two isolated respectively from the lavatory seat in D 6 and the dust in D 6 office were identical in their reaction with those isolated from the infected women. The streptococci recovered from the throats of members of the staff (Dr. K., a nurse, and a ward maid from D 3) were of different types and not related to the epidemic. None of the three cases in which operative delivery was performed by Dr. K. about this time were infected by the strain she carried, nor was the type carried in the throat of nurse and maid conveyed to any patient in their ward.

Discussion

The cause of the epidemic is not quite clear. Although the lavatory seat in D 6 receiving room was heavily contaminated with the causal organism, it is difficult to imagine that direct spread took place from seat to patient, and in two cases (Case 2, delivered in D 4 after only a few minutes' stay in D 6; and Case 7, conveyed from the ante-natal ward straight to the labour room of D 6) this was not even a possibility. Unfortunately, immediately this bacteriological report was known the receiving room was closed and fumigated with formalin vapour, so that further investigation of its flora could not be carried out. It is very probable, in view of the gross contamination of the lavatory seat, that other objects in the room, and even, the air, contained streptococci. After fumigation streptococci were not isolated from any part of the room. The swab from the lavatory seat was taken from underneath the "plastic" rim, and, although the seat is cleaned daily with an antiseptic, it is possible that the lower surface had been neglected, so that enough organic material remained to permit growth of organisms. In this case it might have acted as a reservoir of streptococci, contaminating the receiving ward and possibly the gowns of patients and nurses. The strongest piece of evidence pointing to this source of infection as the cause of the epidemic is the fact that after fumigation of this ward no further cases occurred. How the seat originally became contaminated is a matter for speculation; it is quite conceivable that it took place through Mrs. E. (Case 1) or an unknown non-febrile carrier before her.

There is no other strong link connecting all the cases. During the two weeks of the epidemic 71 women were delivered in the unit, 28 of these at night. Of the 28 night cases 11 were delivered by Sister M. and 6 became infected. Two of these had not used the contaminated seat. The remaining case was delivered by day and by another hand. She had used the contaminated seat.

The apparatus for sterilizing bed-pans was not entirely satisfactory at the time. It is possible that the spread of infection was aided by this, although once again it is difficult to believe

that direct spread from bed-pans was the cause of the epidemic, as pathogenic organisms were not recovered from any in use.

Summary

An outbreak of haemolytic streptococcal infection among puerperal women is described. All the 7 cases were infected with the same type of streptococcus. It is suggested that the infection was spread, directly or indirectly, from a lavatory seat in the receiving ward.

NARCO-ANALYSIS WITH NITROUS OXIDE

BY

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Since anaesthetics were first used in surgery it has been common knowledge that during the periods of induction and recovery the tongue of the patient tends to be loosened and expressions are uttered which would ordinarily be repressed. This observation merely bears witness to the truth of the saying, *In vino veritas*. During recent years psychiatrists have made use of this phase of lowered self-criticism and self-control for various purposes. The anaesthetic agents that have been chiefly employed in psychiatry have been the barbiturate group of basal narcotics.

Narco-analysis in the Twilight State

I first became interested in the possible utilization of the twilight state produced by these agents, in suitable dosage, by the accidental observation at Guy's Hospital that it was exceptionally easy to convey suggestion to patients who were recovering from avertin anaesthesia. The matter was there subsequently pursued with greater precision by Campbell (1938), who recorded a series of experiments using intravenous evipan (soluble hexobarbitone) and summarized the literature then available. Horsley (1936, 1943) has carried on a far wider range of investigations. He has coined the convenient term "narco-analysis" and has been chiefly responsible for the present widespread use of the method.

As with all new techniques, some exaggerated claims have been made for its usefulness. However, it appears to have a definite role in the treatment of certain psychiatric disorders, and has been employed at the Cassel Hospital since 1937.

The effect of the intravenous injection of a soluble barbiturate seems to be to produce a state of temporarily reduced self-criticism in which suggestions are more readily accepted and in which painful or repressed ideas come more readily to consciousness. This effect is closely comparable to that which may be produced by light hypnosis, but it is achieved without the two main disadvantages of hypnosis—namely, a semi-magical atmosphere and the risk of the development of an excessive, often sexually coloured, dependence upon the hypnotist.

In the treatment of neurosis the method is useful in two types of problem: first, in conversion hysteria, particularly in hysterical fugues, for the rapid removal of symptoms or recovery of memory by suggestion and persuasion under narcosis; secondly, in anxiety neuroses and other disorders in which fairly deep psychological analysis is required, for the rapid access, by free association under narcosis, to repressed ideas and complexes which may lie at the root of the condition. In both types of disorder the use of the drug may produce dramatic results ranging from the vivid emotional recollection of some recent terrifying incident to the recapture of some long-forgotten childhood fantasy.

The method is essentially and principally a time-saving one. It is doubtful whether, in the neuroses at least, results are obtained which could not ultimately have been gained without its use. However, in psychiatry particularly, any method of investigation or treatment which saves the time of physician or patient is of the utmost practical value.

The disadvantages of narco-analysis by means of barbiturates are twofold. There is first the objection, which has recently been brought more clearly to the attention of the medical profession, that the intravenous injection of barbiturate drugs, particularly when it may have to be repeated many times, is not without hazards. This links up with the second objection

—namely, that the method is not as time-saving as one would like. In order to carry it out with adequate safeguards for the patient an assistant is necessary; the patient must be prepared as if for a short general anaesthetic, and resuscitation materials must be at hand. This preparation must be repeated for each injection, although in some cases the progress made at a single session may be very limited.

The Nitrous Oxide Method

During the past 12 months a way has been found of overcoming these objections by the substitution of inhaled nitrous oxide for intravenous barbiturates as the anaesthetic agent. Experiments with nitrous oxide were begun because many patients and normal individuals spoke of the remarkable feeling of release, of freedom, and of power which they experienced under gas. Such feelings generally point to just that reduction of the normal critical faculties which it is the aim of narco-analysis to achieve.

It was found that a slow induction of analgesia, using a mixture of gas and air, gave the best results, and for this purpose the Minnitt obstetrical gas-air-algesia apparatus proved ideal. This has a number of advantages over the ordinary gas-anaesthesia apparatus. First, the flow of gas is regulated by the patient's breathing, so that there is no waste. Secondly, the patient himself controls his intake of gas and can stop at any moment; fear is thus almost entirely eliminated. Lastly, the apparatus is simple and requires almost no manipulation by the psychiatrist.

The proportion of gas to air delivered by the machine in normal usage is about 45%. This is enough for many patients, but can be increased if necessary by closing one or two of the air-inlet holes with the fingers. With this method it is not advantageous to render the patient unconscious, as it wastes time to do so and is apt to diminish the co-operation of the patient. The best technique appears to be to allow the patient to breathe the mixture until restless movements and some change in the rhythm of respiration herald the approach of loss of consciousness. At this point the patient's own grip on the mask and on the air-hole at the back of it relaxes (as indeed with this apparatus it is intended that it shall do), and the inhalation of gas ceases. The subsequent twilight state, which lasts for a minute or two and which is very easily prolonged by suggestion, is utilized for narco-analysis. About 20 breaths of the mixture usually suffice, and the experiment can be repeated as soon as the effect has worn off.

In practice the method and its intentions are explained to the patient and the use of the apparatus is demonstrated to him. He is shown how the whole process is under his own control, and this at once allays apprehension. He is invited to have a "trial run" without any attempt at psychotherapeutic intervention. After this he is ready to begin.

At first, during the whole of the induction period, gentle suggestions are given that he is becoming relaxed, that painful ideas will come more readily to his mind, and that his thoughts are flowing easily and without restraint. Directly he drops the mask he is urged to express whatever comes into his mind. In the case of a hysterical fugue he is told that he will relive the forgotten incidents, just as would be done under hypnosis or narco-analysis with a barbiturate.

In our experience abreaction and the recall of repressed memories are as vivid and as readily obtained as with any other method, and the time and preparation saved are of course very great. The method has been employed with a considerable number of patients during the past year, of which the two following are representative examples.

Illustrative Cases

Case 1.—A male aged 19; admitted July, 1943. Reason for referral: loss of memory; periodic fugue states in which he wandered away from home after an emotional crisis, usually in relation to some delinquent behaviour. A normal child until the age of 5, when he had rheumatic chorea and his parents were told that he must not be crossed in anything. Subsequently avoided responsibility and punishment because of his "delicacy." First wandered away from school at 14 in a fugue following some minor difficulties there. Had subsequent fugues after failing an examination and after being found out in a series of lies. Three months before admission, after a row with his grandfather, who took a stern and realistic view