

used. In two cases, the exitus was so sudden that the patient expired undelivered, and in the other case, an agonal cesarean section resulted in delivery of a living child. There will ever remain some risk due to anesthesia, and in a total of 66,376 births, 8 cases died of anesthesia, a ratio of 1 to 8,297.

"This represents the sum total of our experience with anesthesia, and in attempting to assess the element of preventability, one must say that, with the exceptions noted, all the approved and standard technical criteria and procedures were followed and adhered to, and in viewing the problem from this standpoint, there is present an element of preventability in but two of the eight cases."

A. W. F.

HAND, L. V.: *Anesthesia for Gynecologic Surgery*. Surg. Clin. North America, Lahey Clinic Number 530-535 (June) 1945.

"Anesthesia for gynecologic operations must insure the maximal degree of safety for the patient. . . . The methods of choice for minor procedures are intravenous, inhalation and caudal anesthesia. The inhalation anesthetic agent of choice is cyclopropane. The use of cautery or high frequency currents in these operations introduces the factor of explosive hazard. In the presence of this hazard an intravenous agent is employed, preferably pentothal sodium. . . . The methods of anesthesia for major procedures may be classified under two main groups, inhalation anesthesia and spinal anesthesia. The inhalation anesthesia employed for these operations is closed system carbon dioxide absorption with cyclopropane-ether, either with or without endotracheal intubation. The customary agents employed for spinal anesthesia at the Lahey Clinic are pontocaine and nupercaine.

. . . For operations probably lasting less than one and one-half hours and requiring little or no Trendelenburg position, pontocaine with dextrose solution by the Lahey Clinic (Sise) technic has proved satisfactory. Combined perineal and intraabdominal operations frequently exceed one and one-half hours. These operations often are performed in moderate to steep Trendelenburg position. . . . In such operations nupercaine, 1 to 1500 dilution, using a modification of the Howard Jones technic is employed. . . . Our agent of choice for continuous spinal anesthesia is pontocaine-dextrose. . . . Supplementary anesthesia is occasionally resorted to when the patient is uncomfortable as a result of traction reflexes. This supplementary anesthesia may be administered by inhalation or by intravenous injection." 5 references.

J. C. M. C.

WAINWRIGHT, G. A.: *Experiences with Pentothal During the First 100 Days Following the Normandy Invasion*. Canad. M. A. J. 52: 484-488 (May) 1945.

"No. 4 Canadian General Hospital, with a normal capacity of 600 beds, functioned during this first 100 days following the Normandy invasion as a C. C. S. rather than as a static base hospital. Only those cases requiring urgent surgery could be dealt with during those strenuous days. During this period 2,203 cases were operated on and pentothal was the anaesthetic agent employed in 1,887, a percentage of 86.3. Of these 1,887 cases it was used as a single agent in 1,790, and in combination with other agents in 97. . . . Two grams of pentothal was decided upon as the maximum dose to be used and this was rarely exceeded. . . . Routinely, morphine gr. $\frac{1}{4}$, and atropine gr. $\frac{1}{50}$ were given 45 minutes before operation. If the crowded

schedule necessitated a delay of 1½ hours, the hypo was repeated. . . . We found the 5% solution more satisfactory than the 2½%. . . . An endotracheal tube was introduced in these cases and oxygen administered directly from the Heidbrink machine. If the operation was not complete when the 2 gm. of pentothal had been used, the switch to cyclopropane or nitrous oxide and oxygen was effected with no disturbance to the course of the anaesthetic. . . . One foot was usually left exposed. In most cases if the anaesthesia became light, dorsiflexion of the foot indicated the fact before other movement was evident. . . . No throat or neck procedures were carried out under this agent because of the danger of carotid sinus stimulation. The great stimulus from skin incision and suturing has long been recognized. Some restraint of the arm or leg while the initial incision was being made was found to reduce definitely the amount of pentothal required when an extensive debridement was to be done. Shock and exhaustion cases tolerated the drug much better than we anticipated. Our observation was that they required much less pentothal although their recovery period was more prolonged. Induction with these cases was usually quiet, but they were more excitable during the recovery phase. . . . We noted that the prisoners of war, while usually undergoing induction quietly and co-operatively, were often noisy, excitable and highly emotional during the stage of recovery. . . . Investigation revealed that these men believed they were to be executed when taken to the operating room. . . . With many of the early cases, this fear was aggravated by the sight of the syringe, as this instrument had been utilized in many of their 'mercy killings.' . . . Two German medical officers who came to us as prisoners, told us

that intravenous anaesthesia was used very little in the German army. . . .

"One of the difficulties encountered in this series was the plugging of the needle in the vein. . . . To offset this we tried 2½% sodium citrate solution as the diluent for the pentothal rather than the usual sterile distilled water. While clotting still occurred to some extent, it was appreciably diminished. . . . In many cases both in the lateral and flat positions the contents of the syringe were very markedly diluted with blood due to venous back-pressure. This was offset by attaching a U-shaped strip of adhesive from one side of the syringe over the end of the piston and fastened to the opposite side of the syringe. . . . Our experience was that the Cambridge table did not lend itself well to the use of pentothal. . . . The lack of support for the thorax seemed to be responsible for a marked tendency for respiratory depression to occur. . . . The use of the prone position caused respiratory difficulty in many cases if pentothal was used. . . . Although ordinarily there is little tendency for vomiting to occur with pentothal, it was our experience that this did not pertain if the prone position had to be used. We encountered vomiting in this position so frequently that we resorted to gastric lavage if food had been ingested within four hours. . . . If respiratory depression occurred during the course of the anaesthetic we always anticipated a recurrence after the patient's return to the ward. . . . In this series of 1,887 cases no fatalities occurred which could be attributed to the anaesthetic, although five cases caused us considerable concern. All five occurred in cases necessitating the prone position. . . . Rapid evacuation of casualties precluded a follow-up to observe anaesthetic complications postoperatively. No pulmonary mishaps occurred in this series before their departure. . . .

Most of our cases had received varying amounts of sulfathiazole before reaching us. No untoward effects following the injection of pentothal were noted, even when large doses of the sulfathiazole had been given. . . .

"Reactions similar to, although milder than, ether convulsions have long been recognized with pentothal. We experienced a number of such reactions, usually late in the operation or after return to the ward. They varied in degree from mild shivering to rather severe jactitation. Their incidence was reduced when the heating facilities in the theatres were improved, and they may well have been thermal in origin. . . . A carbon dioxide and oxygen mixture was run into the bag and artificial respiration carried out by compression of the bag. Three cases required artificial respiration on the wards. This was carried out by the Schaeffer method with direct flow from the oxygen tank passed directly into the endotracheal tube under low pressure. The use of larger doses of coramine than we formerly employed, given intravenously, firmly convinced us of the efficacy of this agent. Four or five c.c. were given directly into the vein in severe cases. We did not have to resort to tracheotomy or cardiac massage in any of our cases."

J. C. M. C.

BEECHER, H. K.: *Preparation of Battle Casualties for Surgery*. Ann. Surg. 121: 769-792 (June) 1945.

"The enemy has produced the worst wound he could, and its consequences are cumulative—dehydration increased by unusual fluid loss in sweat and vomitus, continuing hemorrhage or plasma loss, pain making rest impossible, increasing emotional exhaustion, developing infection—these and other factors are set in operation by the ini-

tial wound. Their progress in the seriously wounded is to be checked in most cases only by surgery or by death. . . . The initial assumption of the writer, in common with most physicians treating the wounded, was that bad wounds are generally associated with bad pain. This was early found to be incorrect. Careful observers in battalion aid stations estimated that only about one-fifth of the freshly wounded had bad pain. . . . Of all of the various types of wounds considered, patients with penetrated abdomens have by far the most pain. . . . Mental agitation and thirst are factors that may be as important to the patient as pain. . . . Repeatedly it was found that a small dose of a barbiturate would provide relief not obtainable by reasonable doses of morphine. Barbiturate sedation offers a real addition to the treatment of the distressed wounded men. Small doses of barbiturates (60 mg. sodium amytal intravenously) and small doses of morphine will frequently accomplish what large doses of either will fail to do satisfactorily. . . . Recognition of the man already in poor condition presents few problems. The main difficulty comes in early identification of the patient whose condition is deteriorating, recognition of this early enough to check the destroying forces. . . . The estimate of which patients will bear watching is usually made on the basis of their immediate appearance: Cool extremities and pale skin, with abnormal delay in filling of skin vessels blanched by pressure. The blood pressure may or may not be below normal. If it is, resuscitative care is obviously urgent. The pulse is usually rapid and of rather small volume. The appearance of the wound, its extent, the presence of signs of considerable blood loss either internal or external as in blood-soaked clothing, a history of delay in hospital admission, of exposure,