age of satisfactory anesthesias is shown. . . . In addition to those which were 'entirely satisfactory to both surgeon and patient' . . . there is included a second group in which the anesthesia was satisfactory for as long a period as could be reasonably expected, but in which the operation for some reason was prolonged beyond the anticipated time. . . . Eighty-nine and five-tenths per cent of all the cases were entirely satisfactory, with another 5.2 per cent falling in the group just described. These total 94.7 per cent. In the remainder the spinal was a failure or so poor that supplementary anesthesia was required for the major portion of the operation. . . . The higher the anesthesia . . . the greater the percentage of failures. . . . While pontocaine did have a higher percentage of failures than procaine or metycaine, it should be noted that it was also used predominantly in the most difficult cases—the upper abdominal operations and those of long duration. . . .

"It is significant and worthy of mention that there was none of the patients in the entire group in whom the condition during the operation became alarming, or where resuscitation was required. Most of them received 25 or 50 mg. of ephedrine sulfate about five minutes before the injection of the anesthetic solution. . . . Of all cases 76.8 per cent did not vomit at all, and an additional 6.9 vomited only during the operation, so that 83.7 per cent were free of all postoperative vomiting. . . . Approximately one-fourth of all the patients who were given spinal anesthesia required catheterization at least once, and . . . if the group of operations on the bladder, prostate and urethra is eliminated . . . about one-third of the patients who had an opportunity to void were unable to do so the first attempt. . . . The mortality rate is rather high (34 deaths or 8.5 per cent) but when we study the actual causes of death we find that the larger percentage of them were due to causes which were beyond the control or influence of the anesthetic or in many cases of the operation. . . . The complications which are not included in the mortalities total 23 in number, and are: Pneumonia 2; bronchitis 5; pulmonary infarct 1; parotitis 1; thrombophlebitis 4; post-operative hemorrhage 1; back pain 1; urinary retention (prolonged) 2; broken needle 1; paresthesia of thigh 1; peroneal nerve paralysis 1; psychosis 1; headache 2." 1 reference.

J. C. M. C.

MARKS, M. M.: *Improvement in the Action of Procaine Salts in Caudal Anesthesia.* J. Missouri M. A. **38**: 196–197 (June) 1941.

"Procaine hydrochloride is the anesthetic of choice in caudal anesthesia. However, in the use of this anesthetic, frequently there is pain in the injected area and delay in the induction time. In a series of 100 anorectal surgical cases, caudal anesthesia was employed. Thirty cc. of 2 per cent procaine hydrochloride was used and in 60 of the cases the caudal area was painful after anesthesia; in 20 of these cases the pain persisted throughout the entire period of convalescence, that is, from two to four weeks. By comparative experiments, attempts have been made to determine the causes of these undesirable qualities. . . .

"The injection of solutions such as procaine hydrochloride, which has a pH volume of 5.5, produces edema and pain because of acid-base difference. Procaine hydrochloride buffered with sodium bicarbonate or carbonate with a pH of 7.4, which is almost identical to normal tissue, minimizes post-anesthetic pain and shortens induction time. The buffered salts of procaine are more efficient than procaine hydrochloride because less anesthesia is required. Ephedrine hydrochloride is unnecessary." 4 references.

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