

Comparison of Results to Infant Following Maternal Regional or General Anesthesia for Delivery

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UNTIL recently, clinical impressions have led us to believe that there was no difference in the condition of the infant at birth as related to the anesthetic method chosen for the mother if an anesthesiologist experienced in obstetric problems administered the anesthesia. In the absence of other evidence^{1,2,3} indicating that one of the inhalation agents, cyclopropane, is accompanied by certain undesirable changes in the infant, it seemed indicated to examine more fully the results of our own experience at the New York Hospital for Women.

For the past five years in this clinic 70 per cent of the infants have been in excellent condition, 20 per cent moderately depressed, and 6 per cent severely depressed, as judged by a scoring system.

This incidence apparently prevailed whether the anesthesia was by a regional method, a general anesthetic method, or even if no anesthesia at all were used.

Three obstetric situations accompanied by a high infant perinatal mortality are cesarean section, breech delivery, and premature delivery. Three criteria were used to examine these situations, insofar as the data were available: neonatal death rates, scores, and time of sustained respiration. By "regional anesthesia" is meant epidural block, or spinal, caudal, or lumbar sacral block, with no supplementary anesthesia of any kind. By "general anesthesia" is meant the use of nitrous oxide or cyclopropane anesthesia without the use of Pentothal or relaxants.

The cesarean sections chosen were entirely elective, before the onset of labor, and with no complications such as bleeding or toxemia. Premedication in all cases was 50 mg. of morphine and 0.4 mg. of scopolamine intramuscularly. In 67 sections with cyclopropane there was one infant death, as there was also in a group of 66 sections with spinal anesthesia. No con-

clussions can be drawn from this small number. Likewise, since we have been recording time of sustained respiration in every case, there have been no elective sections with cyclopropane. From the scores, however, it can be seen that the infants following spinal anesthesia were significantly better than those following cyclopropane anesthesia (Table I). The score depends on the heart rate, respiratory effort, muscle tone, reflex irritability, and color one minute after the birth of the infant.

The high death rate following breech deliveries has been disturbing us for years. It is imperative to know whether the impression that conduction anesthesia should be chosen preferentially for breech deliveries is correct or incorrect. In 382 breech deliveries there was no difference in the death rates in the regional anesthesia and general anesthesia groups (Table II). Likewise, there was no significant difference in scores (Table III) or in time of sustained respiration (Table IV). Twenty-seven version and breech extractions were omitted because of the need for

TABLE I.—ELECTIVE CESAREAN SECTIONS*

Anesthesia	Scores	
	0 to 4	5 to 10
Spinal	1	165
Cyclopropane	28	39

* Probability = <0.001.

TABLE II.—BREECH DELIVERIES

Anesthesia	Number of Deliveries	Number of Deaths	Per Cent of Deaths
Regional	98	8	8.17
General	284	23	8.10

TABLE III.—BREECH DELIVERIES*

Anesthesia	Scores	
	0 to 4	5 to 10
Regional	25	73
General	88	196

* Probability = > 0.30.

TABLE IV.—TIME OF SUSTAINED RESPIRATION IN BREECH DELIVERIES*

Anesthesia	Time in Seconds	
	0 to 149	150 and Over
Regional	43	6
General	126	15

* Probability = > 0.30.

TABLE V.—PREMATURE VAGINAL VERTEX DELIVERIES 1,000 TO 1,999 Gm.

Anesthesia	Number of Deliveries	Number of Deaths	Per Cent of Deaths
Regional	78	15	19
General	52	10	19

a relaxed uterus and deep general anesthesia.

Premature infants born vaginally in the vertex position were studied. The infants below 1,000 Gm. were omitted because of their excessively high death rate, and those over 2,000 Gm. were omitted because their condition appeared to be similar to the full-term infants. In 130 infants between 1,000 and 1,999 Gm. the death rates were identical whether regional or general anesthesia was employed (Table V).

Comment

The only significant result from this study is the superiority of infants born after elective cesarean section with spinal anesthesia. The average score of 166 infants following spinal anesthesia was 8.4, while for 67 infants following cyclopropane anesthesia it was 5.0. As seen in Fig. 1, the death rate of infants scored 5 is five times that of infants scored 8. It is impossible to compare emergency cesarean sections by these two methods of anesthesia, for in almost all cases cyclopropane anesthesia was chosen for reasons of the necessity of speed.

The main objection to spinal anesthesia voiced in some quarters is the high maternal death rate. Recently in another borough there were 12 maternal deaths following spinal anesthesia used for delivery,⁵ and last year in a neighboring state there were 14 maternal deaths, 11 of which were accompanied by spinal anesthesia.⁶ In one case the wrong drug was administered, and in the other ten the complications were mishandled.

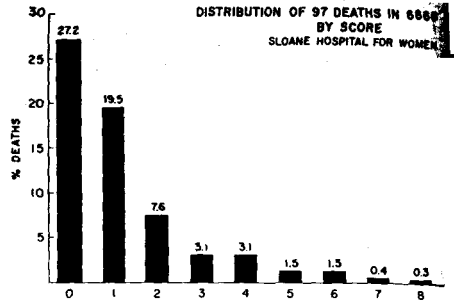


Fig. 1

In our experience, if spinal anesthesia is considered with the same gravity as is general anesthesia, especially in a short, fat obstetric patient, no fatalities whatsoever should occur. Marshall has recently reported no anesthesia deaths in 27,178 consecutive spinal anesthetics for obstetrics.

In order to improve infant mortality as related to anesthesia problems, it is necessary to consider the method individually for three people: the patient, the person available to administer the anesthesia, and the obstetrician.

Conclusions

As anesthesia and obstetrics are practiced at the Sloane Hospital for Women, the choice of regional or general anesthesia in breech delivery and for premature infants between 1,000 and 2,000 Gm. makes no difference in the condition of the child, but in elective cesarean section spinal anesthesia is preferable to cyclopropane anesthesia.

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