

## SHALL SPINAL ANESTHESIA BE USED IN OBSTETRICS?

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SINCE the introduction of twilight sleep into the United States, judging from published reports in medical journals, lay magazines and newspapers, women in this country have virtually clamored for relief from the pains of labor. During the forty years which have elapsed since this dramatic education of women concerning the relief of labor pains, numerous drugs and procedures for alleviating pain have been introduced and the large number of drugs used and procedures practiced constitute sufficient proof that none are perfect. One method of assuring relief from pain in childbirth in spinal anesthesia and since its introduction, various types have been advocated. These include both single dose and continuous spinal anesthesia and the modern saddle block. As each type was introduced into obstetrics, obstetricians and anesthesiologists became enthusiastic and described how remarkable each procedure was. As the years went by, however, trouble arose so that improvement was sought both in the technic of spinal anesthesia, the type of drug used, the dosage and the care of the patient. With each successive improvement statistics were published to show that that particular modification was safer than spinal anesthesia without such change. I wonder whether similar remarks will be made about the present technic of spinal anesthesia when the next improvement in this procedure makes its appearance.

From a statistical point of view, it has been shown that spinal anesthesia is the most dangerous of all forms of anesthesia for pregnant women. For this statement, made many times, I have been severely criticized by those who are enthusiastic about one or another type of spinal anesthesia.

In almost a million surgical cases, which Hanson (1) collected and in which ethylene, nitrous oxide, cyclopropane, ether, chloroform, local and spinal anesthesia were used, the highest death rate was that following spinal anesthesia. Since this article was published in 1937, it may be argued that these figures are not applicable today even though then, as now, the authors of these papers on spinal anesthesia were enthusiastic. In 1944 Trent and Gaster (2) analyzed the anesthetic deaths in more than 54,000 consecutive patients and proved the same thing. In this series there were no deaths following local anesthesia, whereas with spinal anesthesia alone the incidence was 1 death per 1000 and that for spinal with supplemental anesthesia was 1 death per 500.

Franken (3) collected 2088 cases of cesarean section performed under spinal anesthesia and found that there was 1 death for every 139 cesarean sections. Franken contrasted this with an incidence of 1 death in 3600 operations performed under spinal anesthesia on non-pregnant individuals. Hence, the death rate following cesarean section under spinal anesthesia was 26 times higher than that among nonpregnant patients. Franken attributed the increased death rate in pregnant women to two factors. If uterine contractions are present and not relieved by analgesics, the spinal anesthetic agent may be forced up to the medulla oblongata. Furthermore, the combination of the characteristic circulatory changes in pregnancy and the effect of spinal anesthesia on the circulation becomes particularly dangerous. Perhaps the physiologic lordosis of pregnant women near and at term favors the progress of the anesthetic agent toward the brain.

Jarman (4) analyzed 1300 deaths on the operating table and found that 80 occurred from spinal anesthesia as compared with 29 under what is generally considered to be a dangerous anesthetic, namely, chloroform. Concerning this paper, Bourne and Williams (5) who write reviews on obstetric and gynecologic subjects, said as follows: "The percentage risk of the two anaesthetics cannot be ascertained since Jarman does not indicate the total number of administrations among which the deaths occurred. But when such a large number of deaths as 80 are reported as having resulted from even an unknown number of administrations it is really not much good producing a series of a few hundred cases without a death. Admittedly such a series is one of which anyone may be proud but we think that most anaesthetists would agree that when 10,000 spinal anaesthesia cases are compared with 10,000 cases anaesthetized in almost any other generally accepted way, the spinal group would show the higher mortality and the higher morbidity. This last word should not be overlooked."

The risk of death is not the only serious drawback to the use of spinal anesthesia in obstetrics. Everyone knows that headaches occur often after the use of spinal anesthesia. Likewise, there is a pronounced drop in the blood pressure level in a considerable number of the patients. A monograph written in 1947 by Thorsén (6) of Sweden, dealing with neurologic complications after spinal anesthesia in 2493 cases, disclosed that complications from the central nervous system occur after spinal anesthesia, with the presently employed technic and that the frequency of these complications is far greater than is generally assumed. I quote the following significant statement from this monograph: "Neurological complications occur in such frequency, to such an extent and with such an intensity and duration of the symptoms, as to presume strict indications for Spa. It (spinal anesthesia) should not be adopted at operations which can be performed with the same prospect of success under local anaesthesia, possibly supplemented with superficial narcosis. Unless individual or local circum-

stances render it unavoidable, it should not be applied except at major, complicated interventions and at operations demanding complete muscular relaxation or a contracted intestine. Technical advances will in all likelihood considerably facilitate the use of general anaesthesia in the cases where Spa has hitherto been advisable."

In an article on low spinal cord injuries following spinal anesthesia, Schildt (7) stated that between 25,000 and 30,000 spinal anesthetics are given each year in Sweden. He collected 23,000 cases for 1945 and found 6 cases of postanesthetic lesions in three years. He warned that, "the indications for spinal anesthesia should be made more rigid. In those cases in which, without any essential inconveniences or risks, other and less harmful methods of anesthesia can be substituted for spinal anesthesia, without doubt this should be done."

I grant that the most important factor in the use of spinal anesthesia is the anesthetist and that the drug and the method are of secondary importance. Anesthetists, however, at least some of them, admit that the method and the anesthetic agent are responsible for some fatalities. For example, Nicholson and Eversole (8), in their article on "Neurologic Complications of Spinal Anesthesia" published in 1946, wrote the following: "In the concentration employed most spinal anesthetic drugs have a toxicity little short of that which would produce paralysis in a higher percentage of patients. . . . There seems to be little doubt, therefore, that the toxicity lies within the spinal anesthetic agent itself when the cat or dog is the subject." In speaking of the neurologic complications of spinal anesthesia these authors said: "It seems rather evident that the lesion produced is the direct result of the administration of a spinal anesthetic agent, since in most cases it has occurred immediately following the operative procedure." In the discussion of this paper, which was read at the 1946 meeting of the American Medical Association, J. A. O'Reilly said: "I feel that a spinal puncture or the giving of a spinal anesthesia should be considered a major surgical procedure. I think, sometimes, that fact is overlooked. . . . I feel that from this paper there is a definite lesson to be learned. Complications are fairly frequent. Some of the complications are very serious. . . . What I get from this paper is the fact that spinal anesthesia may cause considerable damage."

Lest we assume that these remarks apply to only certain types of spinal anesthesia, I will quote Eversole (9) because he is associated with one of the largest clinics in the world, namely, the Lahey Clinic, where spinal anesthesia has been used in more than 15,000 patients with a low mortality. In a discussion of his paper (9) and that of Touhy (10), Eversole (10) said: "I assume he meant the dangers of this particular technic in contradistinction to the inherent dangers of all types of spinal anesthesia. I accept that criticism."

Several authors have reported that large numbers of women were delivered under some form of spinal anesthesia without any deaths,

but fatalities can occur from these procedures, regardless of who gives the anesthetic because the method itself can produce a fatality. Since even trained anesthesiologists encounter complications when using spinal anesthesia in obstetrics, it is unwise to acclaim spinal anesthesia in pregnant patients as absolutely safe and that it can be employed by anyone who knows how to perform a spinal puncture. General practitioners are now giving spinal anesthesia in small hospitals which lack the personnel and equipment to combat properly its possible complications. Shepperd (11), a general practitioner, informs us that "Special equipment and personnel are unnecessary" and that after he administered this type of anesthesia he "remained only a few minutes to check the anesthesia, contractions, and blood pressure. Then he (the physician) returned home or to his office and let the nurses check the blood pressure occasionally." At the time of writing, Shepperd's experience with spinal anesthesia was limited to only 60 cases. In my opinion, this method of administering spinal anesthesia is pernicious and if it is used generally by general practitioners, trouble will arise sooner or later and then spinal anesthesia will not only be condemned in obstetrics but also in general surgery where its application is extremely helpful.

In my opinion, all spinal anesthetics should be administered only by well-trained anesthetists, and not by obstetricians, just as inhalation anesthetics should be given by specialists in anesthesia. Certainly, it is not safe for the same person to give a spinal anesthetic and then proceed to deliver a baby either from below or by cesarean section. The patient who is given a spinal anesthetic agent must be watched constantly from the moment the drug is injected until some time after the delivery or after the operation is completed. Furthermore, the person giving the spinal anesthetic must be well versed in the art of preventing and of dealing with any complication that may arise from the anesthetic agent.

This brings up the question of the Golden Rule. I have encountered not a few individuals who use spinal anesthesia on their patients but who said they were not sure they would have such an anesthetic themselves unless an expert anesthetist administered it. Unfortunately, the number of such experts is limited. At the meeting of the Southern Surgical Society in 1938, Lahey (12) stated that approximately 100 men in the audience were asked how many of them would have spinal anesthesia for an upper abdominal operation; only 6 men answered in the affirmative. Along these lines Bourne and Williams (5) said: "Doubtless opinions will continue to differ but for ourselves we would not willingly be given a spinal anaesthetic nor would we wish our patients to be given one despite the advantages when a lower segment caesarean section is to be done. We noted with some trepidation that there was, at the meeting of the Obstetric Section of the Royal Society of Medicine in March, 1947, a very vocal section loud in the praise of spinal anaes-

thetia for caesarean section. We feel that many young obstetricians who are not yet too set in their habits will be swayed and will use spinal anaesthesia without perhaps all the skill and caution of Malkin or Rufus Thomas. In that event, there is, we fear, in this country a considerable number of young healthy pregnant women who stand condemned to death by spinal anaesthesia for caesarean section. An unpleasant thought!"

Most of the enthusiastic advocates for the use of spinal anaesthesia in obstetrics, who have been fortunate enough to have had no fatalities, have had occasional "near deaths" which have given them terrifying moments even though these moments were brief. I venture to say that some anaesthetists administer spinal anaesthetics to obstetric patients with some degree of trepidation.

All of us remember the many enthusiastic papers written in 1943 on the use of caudal anaesthesia. This enthusiasm spread from medical journals to lay newspapers and magazines and even to the radio. In my editorial comments (13) concerning caudal anaesthesia in the 1943 Year Book of Obstetrics and Gynecology, I said: "In the mad propaganda for painless labor which has been evident in American newspapers and magazines during the last few years physicians have been forced by the laity to use more and more analgesia and anaesthesia in obstetrics. It is now high time that all physicians called a halt and took stock. Many of us have repeatedly called attention to numerous maternal and fetal deaths directly or indirectly due to analgesia and anaesthesia. These facts should be published in magazines and newspapers to counteract the malicious propaganda of a few skillful and lurid writers. Furthermore, what has happened to the power of suggestion? Any physician who will take the time can talk with an obstetric patient and relieve all or nearly all of the fears about labor. Fear is the basis for a good deal of the pain and tension women experience in labor and much can be done to remove the fear. At the risk of being called an ultraconservative, I believe that despite its auspicious start, continuous caudal anaesthesia will not become part of our general obstetric armamentarium." Other articles in which I (14-20) have discussed the subject of anaesthesia in obstetrics are listed for the convenience of the reader.

The future will decide whether spinal anaesthesia will also lose its popularity for obstetric patients. When a man or a woman requires an operation we must administer an anaesthetic and hence take some risk, even though it is a very small one. On the other hand, women who are to give birth to babies are essentially normal individuals going through a physiologic process and there is no need to take any risks. We should recall that great numbers of women throughout the world give birth to babies without the benefit of any analgesic or anaesthetic, although, of course, this is no argument to withhold relief of pain from women in labor. We should however, use the least harmful drugs and

procedures. In the case of cesarean sections, whenever possible, we should not employ the most dangerous of all anesthetics, namely, spinal, but the safest of all, namely, direct infiltration anesthesia. When the use of local anesthesia is inadvisable or not feasible, an inhalation anesthetic agent should be given, but far more women, however, can be delivered under local infiltration or block anesthesia other than spinal anesthesia, than is generally believed. This was pointedly demonstrated at the Chicago Lying-in Hospital before the advent of saddle block anesthesia. Before 1945 local infiltration anesthesia was employed in more than 80 per cent of the patients; this is indeed a high incidence of women who can be delivered under local anesthesia. Therefore, it is not asking too much of obstetricians that they use more local and less spinal anesthesia in their obstetric practice.

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