Arthur E. Guedel Memorial Anesthesia Center

The Guedel Center
The center offers an outstanding collection of rare and contemporary anesthesia literature, audiotape and videotape resources, as well as the ability to research specialized topics.

Obstetric Anesthesia in California

By Selma Harrison Calmes, M.D.

This year marks the 150th anniversary of the discovery of chloroform by James Young Simpson and is being celebrated as the 150th anniversary of obstetric anesthesia. Chloroform was much more suitable than ether for use in obstetrics because of more rapid onset and a more pleasant smell. After significant controversy about whether women deserved pain relief during labor, anesthesia began to be used for relief of obstetric pain. This article will briefly review obstetric anesthesia in California in the past.

One hundred fifty years ago, California had no hospitals, no medical schools, no medical societies, no pharmacies and no medical journals. The only physicians were a few Army surgeons. They probably did not get the news of the discovery of ether until two years later, when physicians began to come for the Gold Rush of 1849. When the state's first medical journal was published in 1854, 13 cases of anesthesia for surgery and two cases of anesthesia for labor were reported. Both laboring patients demanded

46. 21 - 24

chloroform. There were few women in the state then, and there was little surgical intervention in obstetrics at the time, so there was little need for obstetric anesthesia. (Two cesarean sections were known to be done in the early Spanish period by mission padres who operated on mothers near death to save the babies' souls. The operations were fatal to both mothers and babies. There is no mention of any anesthesia for these.)

Selma Harrison Calmes, M.D.

Because of the lack of medical journals, not much is known about early obstetric anesthesia in the state until 1928. That year, the Anesthesiology Section of the California Medical Association (this evolved into the California Society of Anesthesiologists) held its sixth meeting. Dr. Frank W. Lynch, an obstetrician at the University of California Medical School, presented a paper, "Anesthesia in Obstetrics," the first paper on this topic at an anesthesia meeting in the state. Why did an obstetrician present an anesthesia paper? At that time, nearly all obstetric anesthesia was performed by obstetrcians or nurses, not anesthesiologists. There were not yet enough anesthesiologists to meet obstetric needs.

Lynch's presentation was published (see Anesthesia in Obstetrics. *Calif and West Med* 1928;29:173-176). The article shows he knew many of the principles we understand today as the basics of obstetric anesthesia. He reviewed maternal physiology and lamented that "*the profession as a whole has not yet appreciated that the pregnant woman as a class is never so good a risk for prolonged anesthesia as the very same woman in the nonpregnant condition. ...*" He noted that the "*CO_2 tension is normally low...,*" especially in toxemia. (CO_2 measurements at that time were grossly inaccurate. However, apparently they managed to learn about the hormonally-induced hyperventilation we know about today.) Acidosis and hyperglycemia were of great concern, and these would be aggravated by anesthesia, so "*surgery in pregnancy should be restricted to the minimum, performed as rapidly as is consistent with safety, and be done under morphine and local anesthesia whenever possible.*" Inhalation anesthesia should be limited to N_2O-O_2 or ethylene for general surgery in pregnant patients.

Dr. Lynch knew that "*ether passes over to the child and may cause fetal death ... and very often has to be resuscitated while one born under gas* (the term for N_2O at that time) *and oxygen usually cries as soon as born.*" He was aware of the risks for preoperative morphine before delivery of a child by Cesarean. "*In patients with cardiac or nephritic complications, the operation should be done under local anesthesia.*"

Spinal and N_2O seldom gave adequate muscular relaxation for versions, but N_2O, ethylene or lumbo-sacral anesthesia did. "*The latter is ideal in event of serious lung conditions.*" It's not clear what type of lumbo-sacral anesthesia he was writing about. It may have been caudal anesthesia through the sacral canal (known by the turn of the century). Lumbar epidural was known but not recommended for obstetric patients until after the 1960s.

He recognized that "*most women of the present day desire protection from the pain of labor. ...*" He acknowledged labor pain relief was not a simple problem and there was no good solution. Analgesia during the first stage of labor was a problem since everything used to relieve pain prolonged labor. He then went on to emphasize the need to maintain forceful contractions. Inhalation analgesia was recommended for pain during the second stage. Both chloroform and ether impaired the "*efficiency*" of uterine contractions and "*favor postpartum hemorrhage.*" He did not use chloroform himself because he knew of several deaths. N_2O was "a true blessing" when given in analgesic doses during contractions. Attention to detail was needed: the N_2O had to be given before the contraction became painful, otherwise the patient would remember the pain. "*Uterine contractions are rarely reduced in force, and may even be stimulated,*" and one could end N_2O's effect quickly by taking off the mask. Lynch had no experience with ethylene (introduced in 1923 as the first potent gaseous anesthetic) because it wasn't given at the University of California hospital due to its explosion hazard. Lynch noted that "*local anesthesia can be used to infiltrate the perineum for passage of the head*" and that lumbar or sacral anesthesia did take away labor pain, but "*neither are suitable for routine administration.*" These techniques seldom lasted more than one hour, and "*both were known to be dangerous.*" Infiltration anesthesia was recommended for repair of the perineum.

There is no mention of the danger of aspiration of gastric contents, our most-feared obstetric anesthesia complication today. But Lynch clearly knew the other basics of obstetric anesthesia: inhalation anesthetics depress uterine contraction and cause postpartum hemorrhage and fetal depression;

Guedel–Cont'd

inhalation agents should be used for uterine relaxation; obstetric patients are at worse anesthetic risk when undergoing abdominal surgery. There are various ways of approaching the problem of labor pain, and none are perfect. Nitrous oxide was recognized as a relatively safe method for labor analgesia and for Cesareans and forceps extractions. And there was an obvious role for local anesthesia.

Anesthesia staff at the University of California Hospital at the time Dr. Lynch gave his paper were Dr. Mary Botsford, several part-time women physician anesthetists and interns rotating on anesthesia. Botsford was the first physician to specialize in anesthesia in the state, the first president of the Section of Anesthesia of the California Medical Association, and president of the Associated Anesthetists of the U.S. and Canada, the national anesthesia organization then. So Dr. Lynch had the best anesthesia available at his hospital at the time. But he, or his interns, were giving most of the anesthesia for obstetrics. In other hospitals in the state, nurses were giving obstetric anesthesia. The inability of physician anesthetists to cover obstetric anesthesia then was one factor leading to persistence of nurse anesthetists in the state. Fortunately, nationwide interest by anesthesiologists in obstetric anesthesia after 1970, the increase in physician anesthesia manpower and the availability of catheters and suitable drugs for continuous epidural analgesia/anesthesia have greatly improved the situation for obstetric patients in the state, 150 years after the discovery of chloroform.