

# LUMBAR EPIDURAL ANAESTHESIA FOR VAGINAL DELIVERY

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THIS is a report of the use of lumbar epidural anaesthesia for vaginal delivery at the Toronto East General Hospital. Although this method of anaesthesia has been employed in other centres, it was not utilized in this institution until the occurrence of a second death from aspiration of stomach contents. Because of the greater incidence of this catastrophe during general anaesthesia for delivery, many believe that regional anaesthesia is desirable.

Spinal anaesthesia is not acceptable to many physicians and patients. Pudendal nerve block, combined with general infiltration of the outlet, does not supply the degree of anaesthesia which we desire. Caudal anaesthesia may result in inconsistent analgesia.

## TECHNIQUE

Lumbar epidural anaesthesia is administered to the primipara when the cervix is fully dilated and when the head is low or when the obstetrician declares that he wishes to proceed with the delivery. In the primipara the presenting part is usually visible during a contraction. The multipara is anaesthetized when the cervix is three-fifths to fully dilated, depending upon the speed of labour. It is desirable to administer the anaesthetic at least fifteen minutes before delivery.

The many methods of identifying the epidural space and the use of different anaesthetic agents are well described in standard textbooks. The following is a brief outline of the technique which we have adopted

Great care must be taken to maintain sterile technique. The nurse positions the patient on her side or sitting and the skin is prepared with tincture of Zephiran. No drapes are used because if the patient moves during a contraction the field may become contaminated by the shifting drapes. A skin wheal is raised with a 24-gauge needle over a suitable lumbar interspace. The epidural puncture is made using a 17- or 18-gauge Tuohy needle and the space is identified by the loss of resistance on a 20 cc. syringe partially filled with air or the anaesthetic solution. Autoclaved Xylocaine brand of lidocaine is the local anaesthetic of our choice for the procedure. It is used in a 1.5 or 2 per cent concentration with or without epinephrine. The total volume injected varies from 15 to 25 cc. This is administered in a single injection after careful aspiration to avoid subarachnoid or intravascular injection. It has not been found practical to use a test dose.

## RESULTS

As of March 28, 1958, 2,747 lumbar epidural anaesthetics for vaginal delivery have been administered in our case room. The technique varied for the first 1,747 patients, when various methods of identifying the epidural space, different sizes and types of needles, and various drugs, concentrations, and dosages were

used Since then we have adopted the technique outlined above and the results of one thousand consecutive cases are described below

The pain of uterine contraction is usually absent five minutes after administration and adequate anaesthesia for outlet forceps, delivery, and episiotomy is established within fifteen minutes The premature application of and traction on forceps has necessitated supplementation with general anaesthesia.

Sensory anaesthesia usually extends to between T<sub>7</sub> and T<sub>10</sub> (Fig 1) The wide variation in height of anaesthesia should be noted One patient had sensory loss to T<sub>1</sub> Rapid forceful injection of solution and Trendelenburg position will produce a higher level of anaesthesia

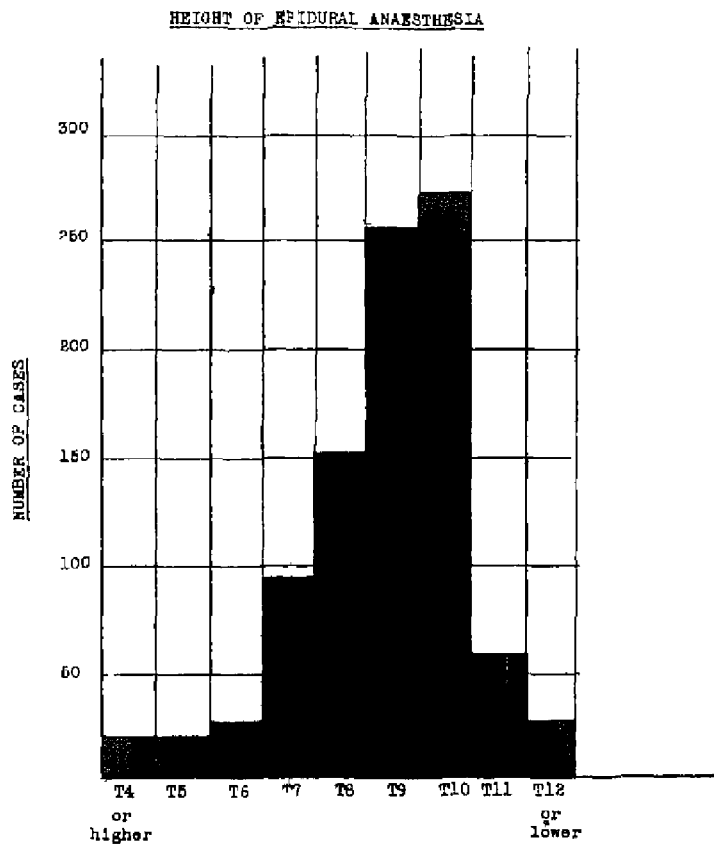


FIGURE 1

The efficiency rating of the anaesthesia is presented below

**RATING OF EPIDURAL ANAESTHESIA**  
(1,000 consecutive cases)

<i>Excellent</i>	<i>Good</i>	<i>Fair</i>	<i>Unsatisfactory</i>
772	197	17	14

This was assessed by the anaesthetist who administered the anaesthetic. The results were considered excellent when the patient felt no discomfort during delivery. A good result occurred when the patient described only a sensation of pressure or pulling. A few of these patients were given an analgesic mixture of nitrous oxide and oxygen until the head was delivered. Fair results required 50 to 75 per cent nitrous oxide with oxygen for more than the delivery of the head. Unsatisfactory results required surgical anaesthesia. This group consisted of 1.4 per cent of the total. There were 114 patients who required some inhalation anaesthetic supplement. For many of these this was necessitated by spontaneous precipitous delivery or too early application of forceps. In a few patients the epidural anaesthetic was administered too early and its effect had decreased or was gone by the time of delivery.

Complications are recorded below

Inadvertent dural puncture	11
"Spinal" headache	4
High spinal	1
Deaths	0
Neurological complications	0
Convulsions (intravenous injection)	1
Shivering	85
Drowsiness	68
Bloody tap	11
Forceps delivery	748
Hypotension	35
Supplement	114
Not delivered	14

It is of interest that inadvertent dural puncture did not occur with two of our staff who have always administered the anaesthetic with the patient in the lateral decubitus position. It is assumed that in this position the dura is not as tense as when the patient is sitting and bending forward. Headache occurred in four patients who had inadvertent dural puncture.

In most patients a transient drop in blood pressure occurred. We did not consider this significant unless the systolic pressure was reduced to below 90 mm Hg. There were 35 patients with significant hypotension. Among the babies belonging to this group 29 had Apgar ratings of 10, 2 had Apgar ratings of 8, 2 had Apgar ratings of 5, 1 had a rating of 3, and 1 was a stillbirth for reasons not related to the anaesthetic. The Apgar ratings of the total series are presented below.

10	9	8	7	6	5	4	3	2	1
850	56	56	12	9	10	—	5	1	1

There were 6 stillbirths, none attributable to the anaesthetic.

Included in our series were 14 sets of twins and 27 single breech deliveries.

DISCUSSION

The graph in Figure 2 illustrates the number of vaginal deliveries under lumbar epidural anaesthesia, for a twelve-month period, compared to the number of deliveries with general anaesthesia. This shows a very receptive response to a new method of anaesthesia. One of the important reasons for this was the reaction of the patient. She was pleased to be awake and hear her baby give its first cry. She was happy to avoid the nausea, vomiting, and mental confusion

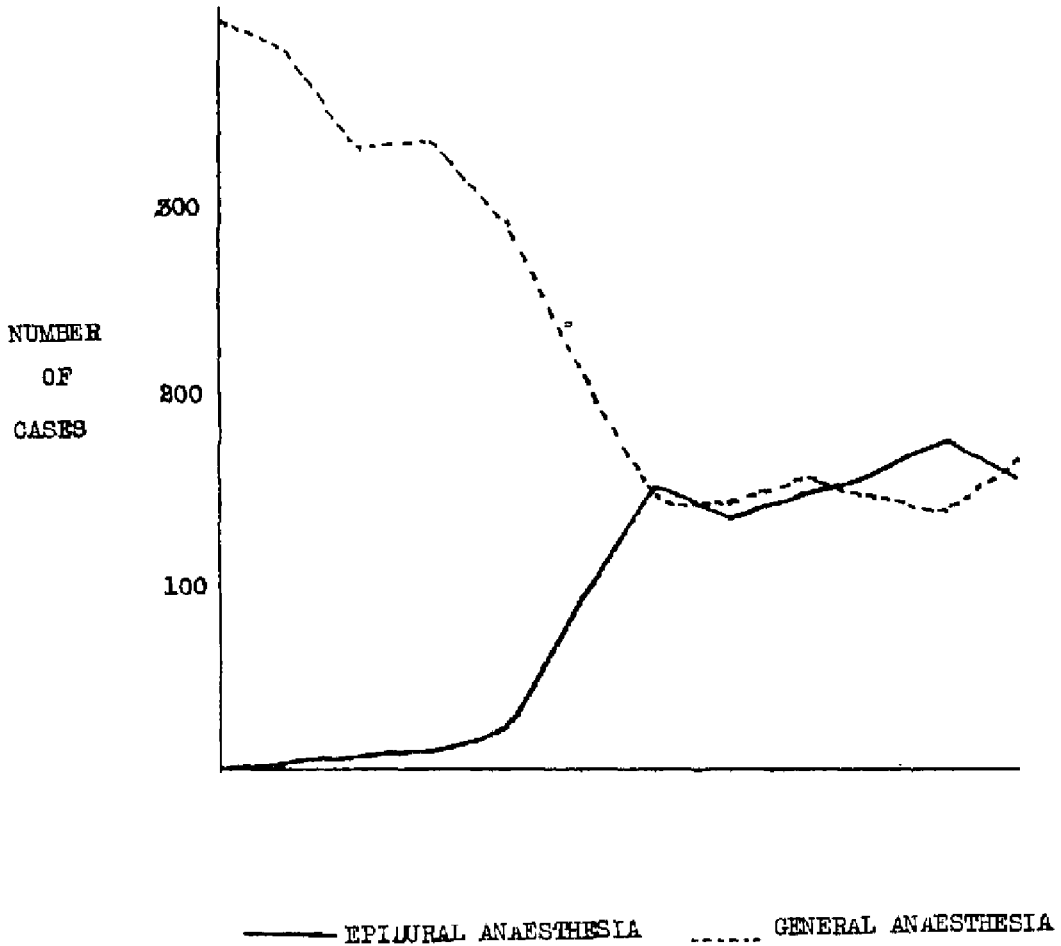


FIGURE 2. A comparison of the number of cases receiving general anaesthesia vs epidural anaesthesia month by month (July 1, 1956, to June 30, 1957)

often associated with general anaesthesia. We have rarely encountered a patient who had previously received a general anaesthetic for labour, who did not afterwards state that an epidural was more pleasant. Many patients now request that they be given a local anaesthetic similar to that which was administered to a friend. A few have been hesitant to stay awake or receive a needle. These required some tactful explanation and reassurance that they would be put to sleep if for any reason they felt pain.

When this method of anaesthesia was first introduced into our delivery rooms, the results were not completely satisfactory because some obstetricians hesitated to use outlet forceps and anaesthetists had difficulty in knowing the optimum time for administration of the anaesthetic. Also, during this early period, the number of failures was greater because we were still acquiring the ability to identify the epidural space.

Lumbar epidural block is now our anaesthetic of choice for vaginal delivery. There are very few absolute contraindications to its use in practice. Epidural block is best avoided when there is a history of nervous system disease, a history of reaction to local anaesthetic, septic foci in the back, or bony malformation of the lumbar vertebrae.

#### SUMMARY

A technique for the administration of lumbar epidural anaesthesia for vaginal delivery is described and the results of one thousand consecutive administrations are presented. Epidural anaesthesia is our anaesthetic of choice for vaginal delivery.

#### RÉSUMÉ

En obstétrique, au cours de l'accouchement par les voies naturelles, plusieurs sont d'avis que l'anesthésie régionale est préférable à cause du risque de regurgitation et d'aspiration de vomitus. Nous pratiquons un blocage épidural lombaire environ quinze minutes avant le moment prévu de l'accouchement. Notre technique consiste à employer une seule dose de Xylocaïne stérilisée à l'autoclave avec ou sans épinéphrine en employant une aiguille Tuohy. Voici les résultats de mille cas consécutifs. Quinze minutes après le blocage, nous avons pu pratiquer un accouchement sans douleur. Habituellement l'anesthésie atteint les racines T<sub>7</sub> et T<sub>10</sub>. Dans 98.6% des cas, nous avons obtenu une anesthésie satisfaisante. Au besoin, nous avons eu recours à l'anesthésie générale. Ce genre d'anesthésie a plu à la plupart des malades. L'habileté pour pratiquer l'épidurale peut s'acquérir rapidement. Le blocage épidural lombaire est devenu notre anesthésie de choix pour l'accouchement vaginal.