A SURVEY OF OBSTETRICAL ANAESTHESIA PRACTICE, TEACHING AND RESEARCH IN CANADIAN UNIVERSITY DEPARTMENTS OF ANAESTHESIA

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ABSTRACT

A report is presented of a questionnaire survey of obstetrical anaesthesia practice patterns, academic structure, resident teaching and research programmes in Canadian University Departments of Anaesthesia. Replies were received from 13 of the 16 departments, representing 24 university-affiliated hospitals.

It is apparent that the majority of these hospitals do not have adequate obstetrical anaesthesia coverage. In most instances the delivery suite is covered by the anaesthetists on duty in the operating rooms. While epidural analgesia is widely used during labour, there are some hospitals where it still has a limited use, or is not used at all. Caesarean sections are still largely done under general anaesthesia in most reporting hospitals, with a few institutions reporting an increasing use of regional (mainly epidural) anaesthesia.

Resident training in this branch of anaesthesia is felt to be deficient, based on the reports from many hospitals that resident staff are frequently not in attendance at deliveries; and on the evident failure in the majority of institutions to utilize their clinical material for teaching purposes.

Research programmes in obstetrical anaesthesia are rare. The most common reason cited was the difficulty experienced in obtaining research funds.

It is suggested that the major problems in obstetrical anaesthesia service, teaching and research are:

1. Economic,
2. Lack of interest, and
3. Lack of manpower.

It is recommended that consideration be given to:

1. Consolidation of obstetrical services into larger units wherever practical.
2. Creation of more geographic full time appointments in obstetrical anaesthesia.
3. More efficient use of clinical material for teaching.
4. Development in individual hospitals of prenatal and public education programmes.

IN RECENT YEARS there has been increasing interest manifested in obstetrical anaesthesia and analgesia. Concern has been expressed about the effects on mother, foetus and neonate, of drugs used in the perinatal period. A substantial increase in the amount of research has resulted in the introduction of new or modified techniques and agents.

However, a survey of obstetrical anaesthesia practice in the United States by Hicks, Levinson and Shnider¹ has suggested that there is much room for improvement in both service in, and teaching of, this sub-specialty. It was our feeling that the practice in university-affiliated hospitals in Canada would largely determine the attitudes of residents in training and their subsequent patterns of practice. A survey of Canadian university departments of anaesthesia then, would

probably provide some indication of obstetrical anaesthesia practice across the Dominion.

A questionnaire was sent to the heads of each of the 16 Canadian university departments. These, in turn, obtained the requested information from their affiliated hospitals. Replies were received from 14 departments (Table I). One of the replies was incomplete and was not used in the survey. The 13 complete replies represented 24 university-affiliated hospitals, having a total of 59,815 births per year (16.6 per cent of the total number of births in Canada).

The annual birth rate varied widely among the

TABLE I
QUESTIONNAIRE REPLIES

No. of Canadian University Departments of Anaesthesia	16
Replies received to questionnaires	13
Hospitals represented	24
No. of births/year	59,815
= 16.6 per cent of total births in Canada	

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TABLE II

OBSTETRICAL CASE LOADS

Annual No. of Deliveries	No. of Hospitals
< 1,500	3
1,501-2,500	14
2,501-3,500	5
> 3,500	2

reporting hospitals from a low of 750 to a high of 6000. (Table II).

RESULTS OF THE QUESTIONNAIRE

Six of the 13 reporting departments had directors of obstetrical anaesthesia, but only one of these held a geographic full-time appointment. Three of the directors held dual appointments; one in obstetrics and gynaecology, one in paediatrics and the other in neonatology.

1. Clinical Practice

Only nine of the 24 hospitals reported having an anaesthetist in the delivery suite at all times. In 14 hospitals obstetrical anaesthesia coverage, at night and the weekend, was provided by the anaesthetist on call for the operating rooms. The one remaining hospital was covered by an anaesthetist at home, with a resident present in the hospital.

In only four of the hospitals was a prenatal visit to an anaesthetist encouraged and other forms of information about obstetrical anaesthesia were limited (Table III).

It would appear (Table IV) that, in teaching hospitals, lumbar epidural block is the major form of analgesia used for labour and vaginal delivery. However, the reported range indicated that there were still some university-affiliated hospitals where epidural analgesia was not being used, or had a very limited use. A very low mean of 3.2 per cent of all reported vaginal deliveries received inhalation anaesthesia/analgesia from an anaesthetist. It is also noted that, in spite of the pur-

TABLE III

PRENATAL PATIENT EDUCATION

	Hospitals
Visit to hospital encouraged	21
Visit to anaesthetist encouraged	4
Obstetrical anaesthesia literature available	1
Audio-visual presentations - OB anaesthesia	8

TABLE IV

ANALGESIA/ANAESTHESIA FOR VAGINAL DELIVERIES
(Percentage of all deliveries)

	Mean (%)	Range (%)
Lumbar epidural (continuous)	40.0	0-95
Lumbar epidural (single dose)	27.9	0-90
Caudal*	0.04	0-1
Spinal or Saddle block	0.52	0-5
Paracervical block†	0.13	0-1
Pudendal block	4.5	0-43
Inhalation - Endotracheal	1.2	0-11
- Mask	2.0	0-14
"Natural" child-birth with analgesia supplement	11.9	0-100
"Natural" child-birth without analgesia supplement	5.1	0-20

*Used in only one reporting hospital.

†Used in only four reporting hospitals.

ported popularity of so-called "natural childbirth", only 5.1 per cent of all deliveries were conducted with no analgesia at all, while a further 11.9 per cent of labours started as "natural childbirth" but eventually required some form of supplemental chemical analgesia (range 0-100 per cent).

The caesarean section rate varied widely among the reporting hospitals from a low of 1 per cent to a high of 25 per cent (Table V).

The majority of caesarean deliveries were done under general anaesthesia. However, there was a very wide divergence of practice among the individual hospitals, which is reflected in the reported range of both general and regional anaesthesia. Subarachnoid blocks were used for caesarean sections in only four of the 24 reporting hospitals (Table V).

2. Teaching

A mean of only 46.33 per cent of all vaginal deliveries and 56.12 per cent of caesarean sec-

TABLE V

ANAESTHESIA FOR CAESAREAN SECTION
Caesarean Section Rate - Mean = 12.93%
- Range = 1-25%

	Range (%)	Mean (%)
General anaesthesia	2-100	71.13
Epidural anaesthesia	0-98	28.2
Spinal (Subarachnoid) block*	0-10	0.68
Local	0	0

*Used in only four hospitals.

TABLE VI
RESIDENT TRAINING EXPERIENCE

	Range (%)	Mean (%)
Vaginal Deliveries Attended	0-90	46.33
Caesarean Sections Attended	10-100	56.12

tions were reported as being attended by anaesthesia residents (Table VI). It is noted that in at least one hospital, anaesthesia residents were not in attendance at any vaginal deliveries.

Apparently the majority of the reporting hospitals were not making active use of their clinical material for teaching purposes, in the form of regular case reviews, maternal and perinatal morbidity/mortality conferences, pending high-risk pregnancy reviews or obstetrical and intensive care nursery rounds (Table VII). In no instance was any particular attention being paid to obstetrical anaesthesia in journal clubs.

3. Research

Obstetrical anaesthesia record utilization was generally reported as being minimal. Only two hospitals reported having their records computer-stored and easily recallable. Three hospitals made a practice of recalling records from time to time for review, other than for specific research purposes.

Research projects in obstetrical anaesthesia

TABLE VII
TEACHING PROGRAMMES

Conferences	Regular	Irregular	None
Case reviews	13	2	9
Perinatal morbidity/mortality	9	5	10
Anaesthesia mortality	15	6	3
Pending high-risk pregnancies	6	4	14
Infant resuscitation	3	6	15
Obstetric grand rounds	11	1	12
Intensive care nursery rounds	2	0	22
Lectures and Seminars			
Anaesthesia	20	0	4
Obstetrical anaesthesia	12	1	11
Obstetrics	0	1	23
Paediatrics/Neonatology	1	0	23
Pain Clinic	1	0	23
Obstetrical Anaesthesia Journal Club	0	0	24
Audio Visual presentations (OB Anaes.)	9	0	13

TABLE VIII

OBSTETRICAL ANAESTHESIA RESEARCH PROJECTS

Clinical	4 hospitals (7 projects)
Animal/Laboratory	1 hospital
Research Fellow in Obstetrical Anaesthesia	1 hospital (2 Fellows)
Research Project by Resident	1 hospital

were severely limited (Table VIII). Only one institution reported any animal laboratory experimentation, while clinical projects were few in number.

The difficulty experienced in obtaining funds to finance research projects was referred to in many of the questionnaires returned. Nine of the hospitals indicated the ability to accommodate a Research Fellow if funding was available.

DISCUSSION

It would appear that there is a wide variation in obstetrical anaesthesia practice and resident training in Canadian university-affiliated hospitals. There would seem to be institutions in which the exposure of residents to this sub-specialty is less than adequate, and very few hospitals reported making adequate use of their clinical material for teaching purposes.

A study of the annual number of births reported by the individual hospitals, related to the local fee schedules for obstetrical anaesthesia, suggests the possibility that many teaching institutions do not have a case load large enough to justify, economically, the provision of full-time obstetrical anaesthesia coverage (Table II). Certainly, the majority of the reporting units are still being covered, on demand, from the operating rooms.

Major advances in obstetrical care, particularly of high-risk pregnancies, and in management of critically ill neonates have led to the recognition and certification of experts in perinatal medicine, both obstetrical and paediatric. One author has stated that, in many instances, "the concomitant assumption of responsibility for obstetrical anaesthesia by equally well-trained and interested physicians has lagged behind."² This provocative statement should be considered in the light of an apparent increase in interest in this sub-specialty. However, there is not yet any wide-spread recognition of the needs of this area of practice.

The seriously ill patient has always received the most intense medical care. The obstetrical patient, however, is generally young and healthy and, in most instances, can be expected to deliver

her infant uneventfully. It is suggested that this may be at least part of the reason that there has been so little real effort to improve the anaesthetic coverage of the delivery suite in many hospitals. It is generally accepted that every pregnant woman, no matter how healthy, is potentially a high-risk anaesthetic subject.

In many parts of this continent it is being recognized that an efficient obstetrical service requires the constant presence of an anaesthetist, competent in the anaesthetic management of obstetrical and perinatal complications.^{3,4} Indeed, in the City of New York it is required that a competent anaesthetist be present "in the vicinity of the delivery suite at all times and should have no other concomitant duties".^{3,5}

It has been stated that the difficulties faced in providing efficient, 24-hour obstetrical anaesthesia coverage are:

1. Economic,
2. Lack of interest, and
3. Lack of manpower.⁶

It is suggested that the economic and manpower factors may, to a large degree, be overcome by consolidation of obstetrical services in larger regional centres. While geographic realities make this difficult, and even impossible, in many parts of Canada, it can be and is being done with a great deal of success in many parts of this continent, particularly in the larger urban centres.

It has been suggested by one author that any hospital with less than 1,000 deliveries per year will inevitably have less-than-adequate obstetrical anaesthesia coverage.⁷ We are not aware of any published data to confirm this statement, but believe firmly that unless there is an adequate obstetrical case-load to support the anaesthetic service financially and to keep the anaesthetist busy, there will generally be deficiencies in the provision of anaesthetic coverage.

The responsibility for countering the lack of interest referred to above belongs to the Department Heads and their Directors of Residency Training. Where there is inadequate obstetrical anaesthesia coverage and less-than-complete resident involvement, this will be reflected in the attitudes of the residents when they qualify and enter practice. However, if properly developed, the obstetrical anaesthesia service could provide much teaching and research material.

We would suggest that, in addition to planning actively for larger, consolidated obstetrical units, the university departments of anaesthesia should

give consideration to the establishment of more geographic full time appointments in obstetrical anaesthesia. This, too, would help to stimulate improved standards of resident training and research and would contribute to an increased interest in this branch of the specialty.

Finally, attention is drawn to the relative scarcity of prenatal patient education programmes. Obstetricians and anaesthetists have been criticized by so-called "consumer groups", as well as by physicians, because of the alleged perinatal effects of drugs used during labour.^{8,9} Some of this criticism may well have been deserved, but perhaps we should be making greater efforts to inform the public and our colleagues of our concern for the well-being of the infants, and of the changes in agents and techniques which reflect our concern.

Only by making a conscious effort to reach out to the public with well-documented and well-presented facts will we be able to counter the misconceptions and half-truths which are so often presented to the public by zealous, and often well-meaning, lay groups.

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RÉSUMÉ

Les auteurs présentent les résultats d'une enquête effectuée par correspondance portant sur les modalités d'exercice de l'anesthésie obstétricale, de sa structure académique, des programmes de résidence et de recherche dans les départements universitaires d'anesthésie. Treize des seize départements universitaires représentant 24 hôpitaux d'affiliation universitaire ont rempli le questionnaire.

Il semble que la majorité de ces hôpitaux ne bénéficie pas de service d'anesthésie obstétricale efficace. Dans la plupart de cas, la salle d'accouchement est sous la responsabilité de l'anesthésiste de garde en chirurgie. Bien que l'analgesie péridurale soit en général assez répandue, il y a encore des hôpitaux où elle est peu ou pas utilisée. La césarienne se fait encore en grande partie sous anesthésie générale dans la plupart des hôpitaux répondant alors que certains établissements rapportent une augmentation de fréquence de l'utilisation de l'anesthésie régionale, plus particulièrement de la péridurale.

L'enseignement aux résidents est considéré comme déficient dans cette discipline de l'anesthésie, si on s'appuie sur les rapports de plusieurs hôpitaux où les résidents n'assistent même pas aux accouchements et sur l'insuccès évident de l'utilisation du matériel clinique dans un but éducatif dans la majorité des cas. La recherche en anesthésie obstétricale est un phénomène rare, à cause semble-t-il, de l'impossibilité d'obtenir des subventions.

On en conclut que les problèmes majeurs de l'anesthésie obstétricale sous l'aspect de l'exercice, de la recherche et de l'enseignement résultent:

1. de problèmes économiques;
2. du manque d'intérêt;
3. du manque d'effectifs.

Il est recommandé de donner de sérieuses considérations:

1. au regroupement dans des unités plus grandes;
2. à la création de plein temps géographiques en anesthésie obstétricale;
3. à une plus grande utilisation du matériel d'études;
4. au développement de programmes d'éducation publique dans certains hôpitaux.