

A survey of obstetric anaesthesia practice in Flanders

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Summary : The use of locoregional anaesthesia in obstetrics in Flanders was assessed by a postal questionnaire sent to the directors of the anaesthesia departments of the 72 hospitals with an obstetric unit. 59 (82%) answers were returned. In the group of parturients who had a vaginal delivery a neuraxial technique was requested by 65% of the patients and consisted of epidural analgesia in 84%, and combined spinal epidural analgesia in 16%. Test doses are used in labour in 67%. To perform the block – spinal as well as epidural – the sitting position is somewhat preferred over the left lateral (55 versus 45%). For caesarean section general anaesthesia was used in only 5 % of the deliveries, whereas spinal, single or as a part of a CSE technique, was preferred in 80 %; the epidural technique was applied in 15%. There is no clear preference in technique for postoperative analgesia after caesarean delivery as both parenteral and epidural analgesia are used in 50% of the cases.

Key words : obstetric anaesthesia ; analgesia in labour ; caesarean section.

Since 1985 the Flemish “Study centre for perinatal epidemiology (SPE)” registers the number of births in Flanders. In 2004 there were 61.647 deliveries. Whereas over the last 10 years the number of deliveries decreased slowly – except for the last 2 years – the use of locoregional anaesthesia for labour analgesia steadily increased. Based on the information from the same centre there was an overall increase in incidence from 32% in 1990 to 64.4% in 2003, with a small decrease down to 61.6% in 2004 (Fig. 1).

Obstetric anaesthesia is widely available in Flanders : all 72 hospitals with an obstetric unit offer locoregional anesthetic techniques for pain relief during delivery and caesarean section. However, the extent to which it is applied as well as the techniques used, differ markedly between the anaesthesia departments.

This survey aims to explore a number of technical aspects related to the application of neuraxial block in this indication in Flanders : the technique used, positioning of the patient, drugs used, use of test dose, mode of maintenance of analgesia during labour, anaesthesia for caesarean section and post caesarean section analgesia.

METHODS

In 2004 a postal questionnaire (add. 1) was sent to the directors of the anaesthesia departments of the 72 hospitals with an obstetric unit in Flanders. The questionnaire examined the specific areas we were interested in

- 1) The choice of technique to control pain during labour including position of the parturient, use of a test dose, the local anaesthetics used and the way analgesia was maintained until delivery.
- 2) The anaesthetic technique used in caesarean section (CS).
- 3) The analgesia regimen for control of postoperative pain after CS.

A reminder was sent when no answer was obtained within 6 weeks.

RESULTS

Altogether 59 out of the 72 questionnaires were returned, yielding a response rate of 82%.

This represents 84% of the accredited maternal beds and is therefore felt to be a reliable source to evaluate the obstetric activity in Flanders. All departments provide labour analgesia on a 24-hour basis in a range between 21.9% and 86.1% for 2003.

1. Analgesia for labour

Technique : the classical epidural technique was performed in 84% of the cases, whereas the CSE technique was used in 16 percent. Seven of the 59 centres always use CSE, 32 centres never use CSE and in 20 centres CSE is used on indication (Fig. 2). Indications stated are late labour, multiparous women with more than 5 cm of cervical dilatation, vaginal birth after caesarean section

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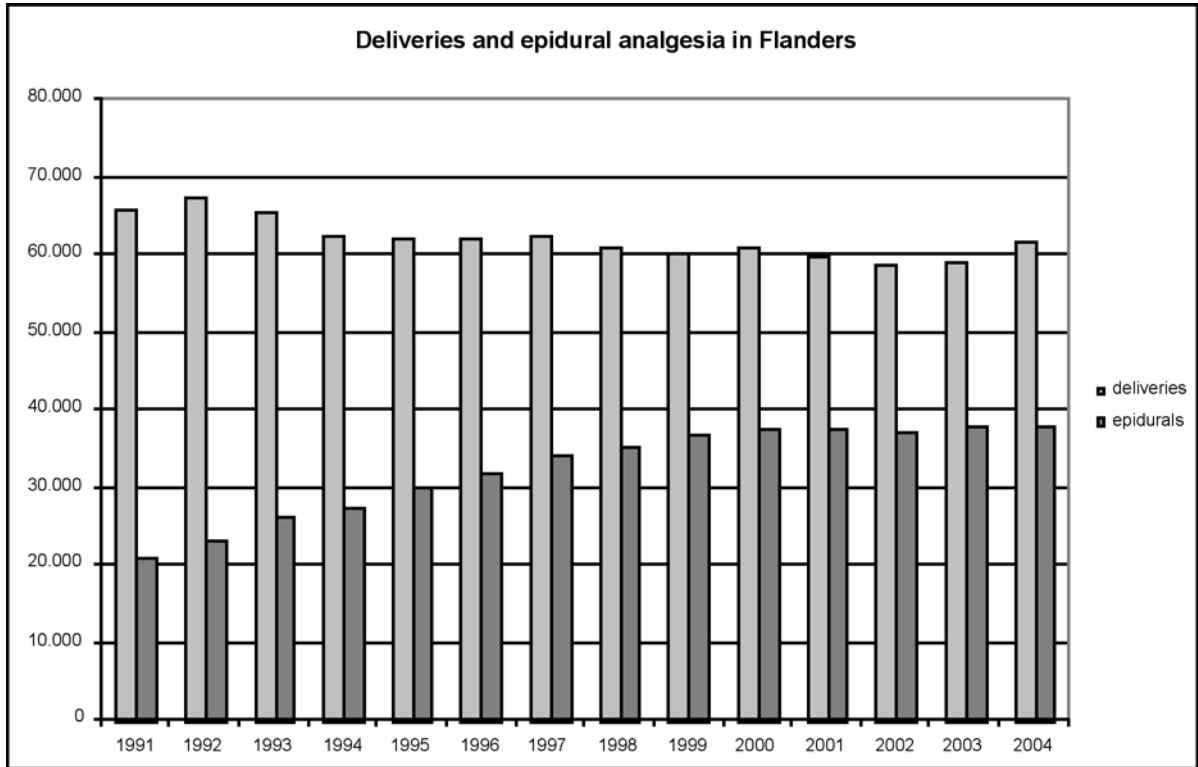


Fig. 1. — Evolution of deliveries and epidural analgesia in childbirth in Flanders (SPE).

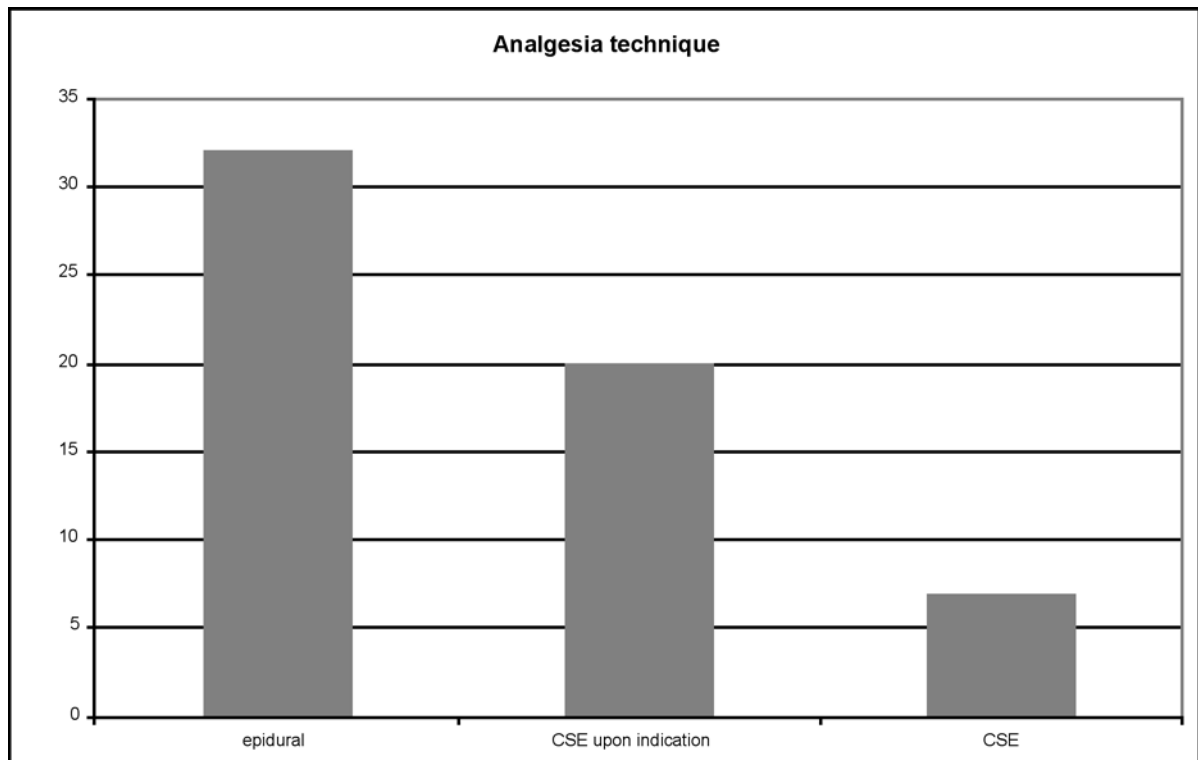


Fig. 2. — Analgesia for labour.

(VBAC) and personal choice of one of the staffmembers. Ambulation was not mentioned as an indication. In the centres where both techniques are used, CSE for labour analgesia varies between 2% and 15%.

The neuraxial block was mostly performed in the sitting position (55%, vs. 45% in left lateral decubitus).

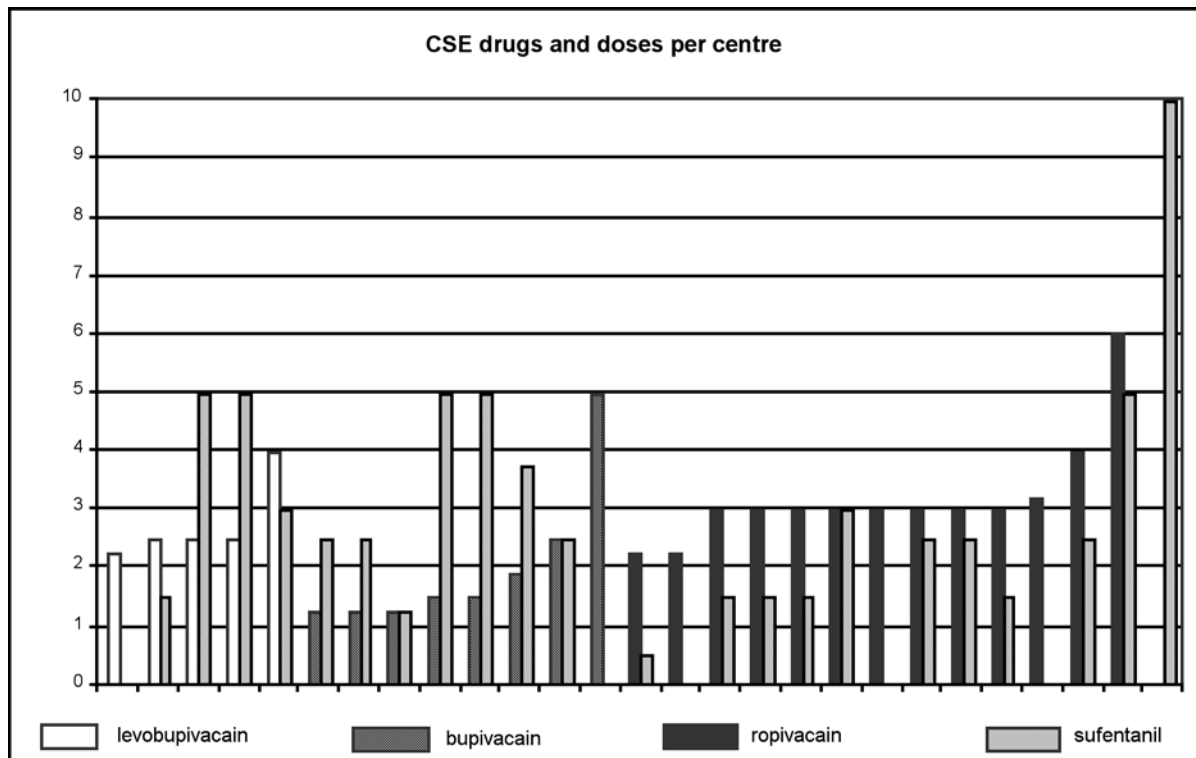


Fig. 3. — Loading dose in the CSE-group.

CSE for labour

The CSE technique for labour is used in 27 centres, in 7 of them exclusively. Levobupivacain is preferred in 5 centres (2.5-4 mg), bupivacain in 8 centres (1.2-5 mg) and ropivacain in 13 centres (2.5-6 mg). Except in one centre using levobupivacain, 1 centre using bupivacain and 3 centres using ropivacain the local anaesthetic is always used in combination with sufentanil in a dose range of 0.5 to 5 microgram. In one centre sufentanil is used as the sole agent in a 10 microgram dose (Fig. 3).

Epidural Analgesia for labour

The local anaesthetic used for epidural analgesia in the majority of centres is ropivacain (38/52 centres), most frequently combined with sufentanil. A test dose is applied in 35 of the 52 hospitals where epidural analgesia for labour is performed. Generally, lidocain in a dose of 40 to 80 mg with adrenaline 1/800.000 is used.

17 hospitals mention that their first epidural dose is their test dose : 13 use ropivacain (12 to 24 mg) 2 bupivacain (12.5-15 mg) and 2 levobupivacain (10-15 mg), in 16 cases combined with sufentanil (4-10 µg).

Patient controlled epidural analgesia (PCEA) is the preferred technique for maintenance of analgesia during labour (39/59). In 18 centres a contin-

uous infusion is used without patient input. In 2 hospitals the top-up technique still is used (Fig. 4).

8 centres use a pure on-demand PCEA-regimen, with bolus doses from 3 to 6 ml, and a lock-out interval of 5 to 20 minutes. The remaining 31 centres use a background infusion, varying from 2 to 8 ml, a lockout interval ranging from 5 to 30 minutes and a bolus dose from 2 to 6 ml. Local anaesthetic drugs used for maintenance are also shown in Fig. 4.

2. Anaesthesia for Caesarean Section

In 2004 the percentage of caesarean section was on average 18.3%, ranging from 8.5 to 25.4%. Overall general anaesthesia (GA) was used in 5%. In 80% a spinal technique was applied of which 34% as a pure spinal and 46% as a part of a CSE. In the remaining 15 % the epidural technique was used (Fig. 5). This was usually the case for a secondary CS in patients who were already in labour and had an epidural catheter in situ. In the latter group, lidocain was used as local aesthetic drug in 50% of the cases.

Where 15 centres never use epidural anaesthesia for CS, 3 centres apply it nearly exclusively as neuraxial block for CS. In the spinal group 22 centres use only the pure spinal technique, 27 only CSE and 7 use both.

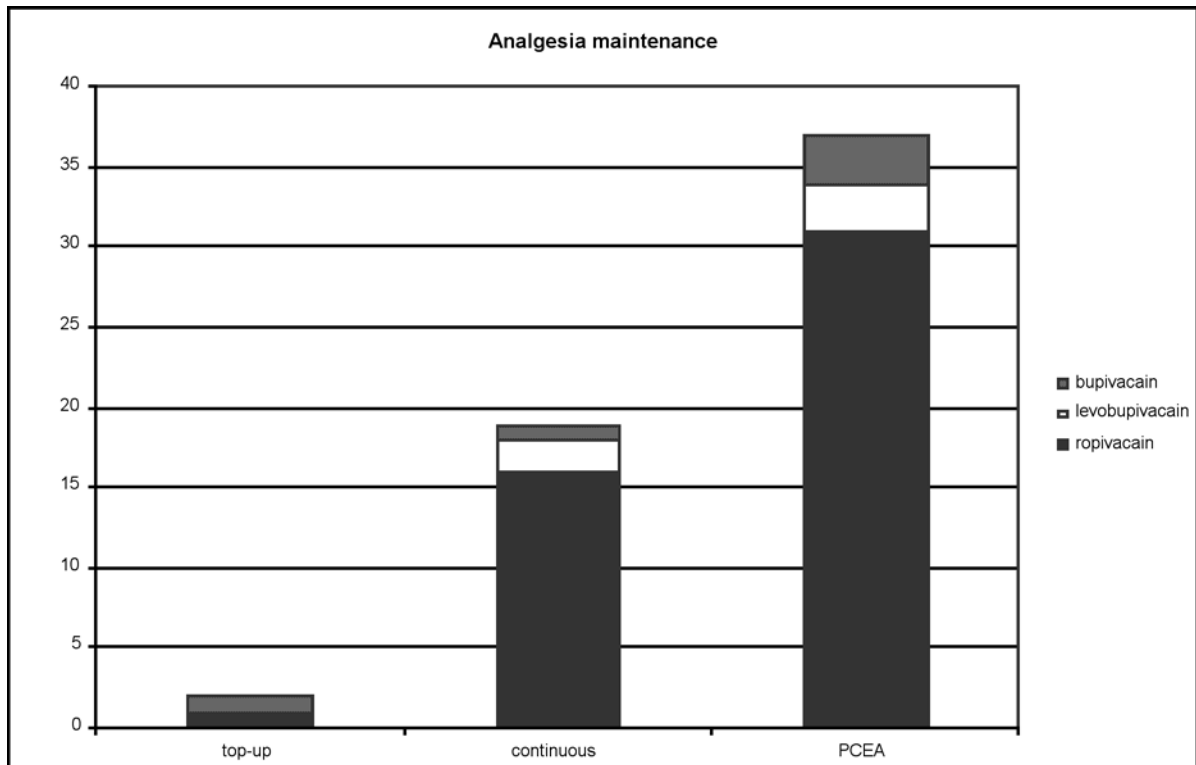


Fig. 4. — Local anaesthetic drug and technique for maintenance of epidural labour analgesia.

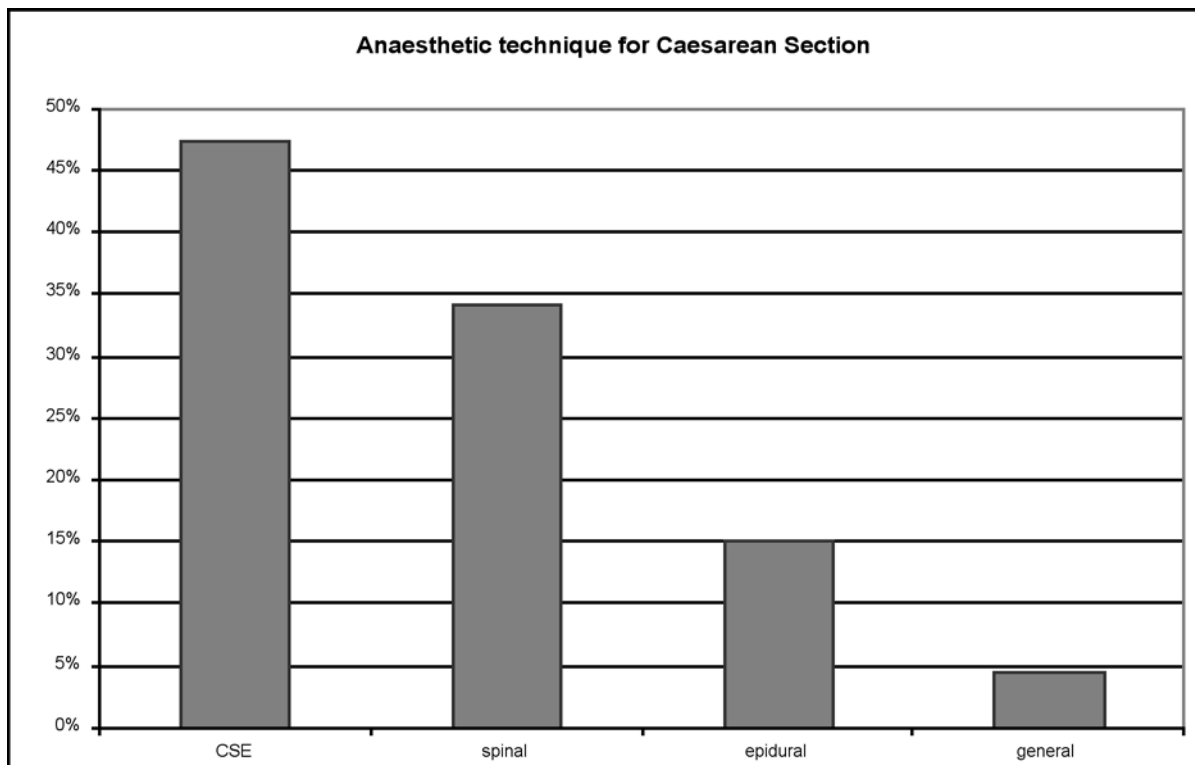


Fig. 5. — Anaesthetic technique for Caesarean Section.

In the spinal and the CSE group, hyperbaric bupivacain was the most frequently used local anaesthetic drug (22 centres); plain bupivacain was used in 7 centres, levobupivacain in 4 centres and ropivacain in 1 centre.

When comparing the pure spinal versus the CSE technique of those centres which use hyperbaric bupivacain the average dose appeared to be 1 mg higher in the pure spinal group (Table 1 and 2).

Table 1

Local anaesthetic drugs and dosage used for CSE in CS

Caesarean Section CSE dose			
Drug	No. of centres	dose	
		mean	range
bupivacain plain	7	7,9	8 - 17,5
bupivacain hyperb	22	8,0	6,5 - 14
levobupivacain	4	8,3	6 - 9
ropivacain	1	10	

Table 2

Local anaesthetic drugs and dosage used for spinal in CS

Caesarean Section spinal dose			
Drug	No. of centres	dose	
		mean	range
bupivacain plain	5	10,9	8 - 17,5
bupivacain hyperb	22	9,0	6,5 - 14
levobupivacain	1	17,5	
ropivacain	1	10	

Eight centres mention never to use general anaesthesia any more for CS, where as one centre still uses GA in 34% of CS. For induction of GA thiopental is still used in one third of the cases. In the other two thirds, propofol is administered. In 50% of the cases succinylcholine is used to facilitate endotracheal intubation ; atracurium (5/51) and rocuronium (7/51) are the other muscle relaxants used for induction.

3. Postoperative analgesia after Caesarean Section

In nearly half of the cases postoperative pain is treated with epidural analgesia, in the other half IV / IM analgesia is administered (Fig. 6). In the former group a PCEA technique is preferred in 81%. Only 7 hospitals use a continuous regimen.

Again ropivacain is the most widely used drug (more then 80%) in this indication, nearly always in combination with sufentanil.

In the IV / IM group, a multimodal combination is most commonly used, consisting of paracetamol and an NSAID, usually diclofenac, with an opiate as escape medication.

DISCUSSION

The availability of obstetric analgesia and anaesthesia is well spread in Flanders. All 72 hospitals with an obstetric department provide obstetric anaesthesia care 24 hours a day.

The use of locoregional analgesia during labour has steadily been increasing over the years and is reported to be over 65% since 2003 (SPE) (1). This is comparable with France where globally 61.6% of the parturients deliver with

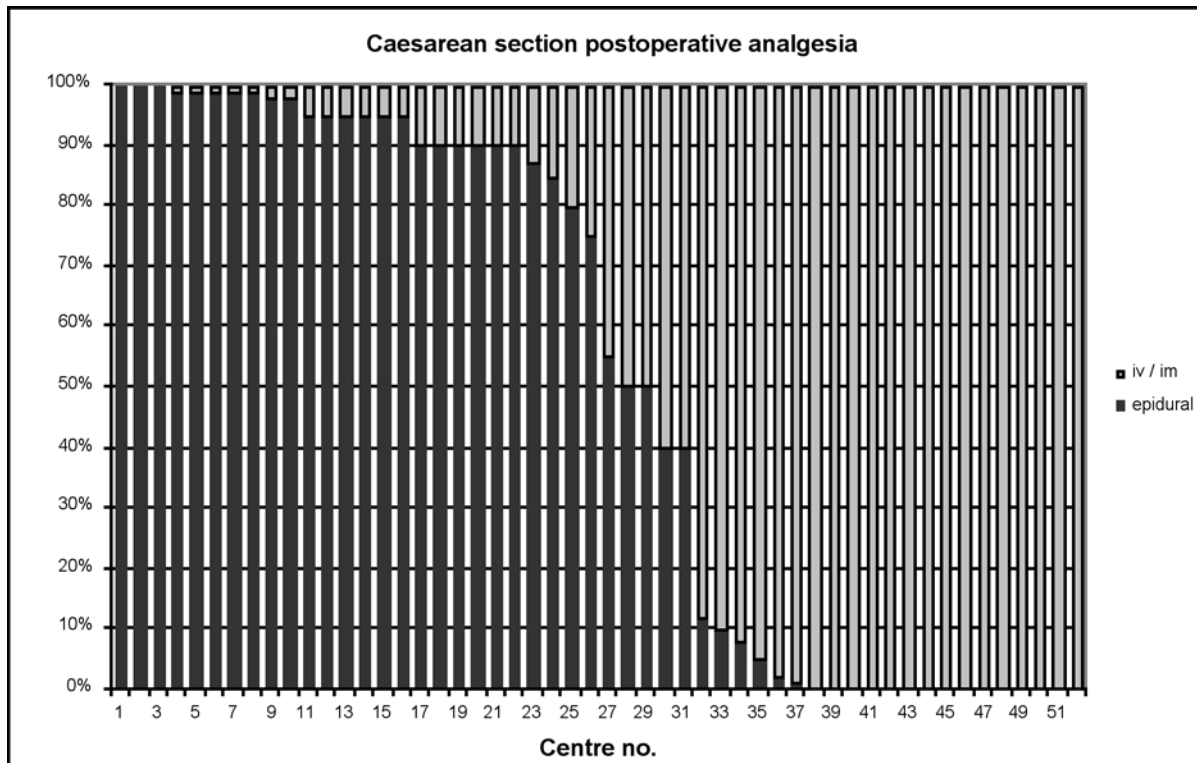


Fig. 6. — Analgesia regimen after Caesarean Section. Per centre.

epidural analgesia (2), but a much higher incidence than in the UK (3) or the Netherlands (4) where the reported use is around 25%. This large difference in request for epidural analgesia appears to be mainly influenced by culturally determined differences with respect to women's views of the painfulness of childbirth or more generally "birth culture". Other factors that may be important however are the increasing safety of the neuraxial techniques, the ready availability of this service in most hospitals as well as the obstetric management as such: a more aggressive obstetric approach requires a more intensive anaesthesia care.

Analgesia via epidural catheter placement is still used in the vast majority of the cases. The use of a test dose, mostly lidocain with adrenaline, is widely accepted and implicated in two thirds of the patients. With the advent of low-dose epidural analgesia in labour some centres mention that they consider the first dose administered as the test dose. In 50% of the centres ropivacain is used in this situation whereas the safety of this kind of test dose has in fact only been studied with bupivacain (5). In view of the different attitudes it is obvious that different signs and symptoms have to be sought after, e.g. somatic motor block, sensory effect, blood pressure change and symptoms from inadvertent systemic injection of local anaesthetic. Apparently, the effect of the test dose is usually assessed after only a very few minutes.

There appears to be a slight preference for placing the epidural catheter in the sitting position rather than in left lateral decubitus (55 versus 45%). This is motivated by a purportedly increased ease of access to the epidural space. However, the possibility of an increased incidence of epidural vein cannulation has recently been corroborated (6).

Only a few years ago bupivacain was still the most popular local anaesthetic drug to induce analgesia. The use of ropivacain is now most popular (nearly 80%) because of the perception of a lower toxicity and decreased motor impairment, although current data do not support the contention that ropivacain is superior to bupivacain for any obstetric or neonatal outcome (7). However it is possible that ropivacain may produce less motor block after prolonged use (8).

Patient controlled epidural analgesia (PCEA) is most often preferred to maintain labour analgesia (62%); continuous infusion (CEI) without patient input is used in 34% of the centres, and 2 centres still prefer the top-up regime. Therefore, the conviction that the PCEA-technique offers the best compromise between lowest dosage of analgesia and

maximal comfort of the parturient appears to be widespread. Reduction in the need for clinician top-ups, a reduction in the amount of drug needed and in the incidence of motor block are clear advantages when comparing PCEA to CEI (9). In most centres a basal rate is used in the PCEA-regimen. This leads to a better pain relief, with however a higher volume of local anaesthetic used, but with no difference in the incidence of motor block or obstetric outcome (10).

Whereas university and training centres promote the CSE technique for labour, its overall use is restricted to only 16% of the cases. This is a slight increase in comparison with the 10% in 1998, published by M. Vercauteren (11). The use of CSE in this indication is comparable with Switzerland and Austria, but more widely available than in Germany, where 96.7% of the hospitals do not offer the CSE-technique (12). Seven centres in Flanders (12%) invariably use this technique for labour analgesia; 20 centres (34%) on indication only. Late labour remains the most important reason to effectuate the CSE technique. VBAC is mentioned as indication as there is the belief that CSE gives a 'lighter' block. This may facilitate the diagnosis of a uterine rupture (13). Ambulation is not an issue in Flanders, since for the time being most parturients do not appear to be interested in the ability of to walk during labour. In most hospitals, the safety measures are not provided. This however may be only a temporary perception.

A wide variety of drugs is injected as first intrathecal (IT) dose in the CSE-technique. Mostly a combination of a low dose of local anaesthetic, with a low amount of sufentanil. In 1 centre sufentanil in a dose of 10 µg is still used where caution has been recommended using a large (7.5µg or more) dose of spinal sufentanil when performing CSE, because of the risk of uterine hyperactivity and FHR abnormalities (14). Furthermore, using such high dose of I.T. sufentanil may cause a high cephalad spread of sensory blockade (15) and one dramatic presentation has been described (16). Even with lower dose of I.T. sufentanil, an excessive spread of sensory blockade was reported (17). Possibly the hypobaricity of the spinal sufentanil solution explains the excessive extension (18).

The low rate of CSE in labour proves that until now most of the practitioners prefer not to breach the dura if it is not necessary and that the gain in analgesia onset of only a few minutes is hardly considered a significant advantage. The complexity, the costs, and the fear of complications are cited as other reasons for not using the CSE technique in labour.

The CS-rate increases every year and was reported by the SPE to be 18.3% last year (1).

In his report published in 1998, Vercauteren(11) mentions a locoregional anaesthesia rate for caesarean sections of 82%. In our survey we found an increase to 95% in 2004. The low rate of c-sections under GA has been motivated by avoiding serious airway management problems and has furthermore been promoted by the better training and the greater experience in neuraxial anaesthesia for this indication. This and other surveys indeed show an important global decline in the proportion of CS being conducted under GA (19), apparently leading to a steady reduction in the absolute numbers of maternal deaths directly related to anesthesia (20,21,22).

Eighty per cent of caesarean sections are performed under spinal anaesthesia, 46% as a part of CSE and 34% as a pure spinal technique. The use of small-dose hyperbaric bupivacain, mostly in combination with sufentanil (23), is well accepted. Interestingly, the average dose of bupivacain used is 1mg higher in the pure spinal group than in the CSE-group (9 mg vs. 8 mg) This indicates that the CSE-technique allows the practitioner to lower the dosage believing that the block can be extended by injecting saline in the epidural space, although it has recently been shown that EVE (epidural volume expansion) does not appear to offer reliable or clinically relevant reductions in dosing with IT bupivacain (24). Furthermore, there is a rescue possibility with a top-up dose administered via the epidural catheter, if the IT dose should not be suffice.

The epidural technique (15%) is mainly used for secondary sections, with an epidural catheter in situ topped-up to an anaesthetic level.

Since the number of caesarean sections performed under general anaesthesia has decreased dramatically over the last 20 years there is some concern over the lack of experience attained by trainees as well the confidence by some anaesthetists in the anaesthetic delivery in this setting.

Half of the centres do not use the in situ epidural line in the postoperative period after SC. This indicates that 50% of the anaesthesiologists are not convinced that analgesia by central block gives a better quality of pain relief after CS. In their opinion, the modified pain perception of patients after SC, the ability to leave quickly and safely the bed to care for their baby and a more simple way of drug administration favour a parenteral analgesia regimen after SC(25). The use of a balanced multimodal approach for postoperative SC-analgesia with paracetamol, NSAID, mostly diclofenac, and opioids such as prtramide is chosen.

In the majority of centres there appears to exist a clear preference for either one of the approaches. Only 6 of the 52 centres offer both techniques to the same extent. A clear advantage of one of both techniques over the other has to our knowledge, never clearly been shown. Therefore this difference in attitude mainly appears to be based on custom and department policy regarding this specific setting.

A part of the results of this survey has been presented at the regional BARA-meeting in Antwerp on 11 december 2004.

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Enquête obstetrische anesthesiepraktijk in Vlaanderen

Ref.: APV
volgnummer

1. Analgesie bij arbeid

a) Gebruikte techniek

altijd peridurale

altijd C.S.E.

C.S.E. op indicatie

%

indicaties zijn dan:

b) houding : zittend

liggend

c) Testdosis

nee ja

Product

Dosis

ml

d) Oplaaddosis

periduraal

Product

Dosis

ml

C.S.E.

ml

e) Onderhoud

Top-up

Product

Dosis

ml

Continu

ml/uur

PCEA

rate ml/uur

lock-out min

bolus ml

2. Anesthesie bij sectio

Periduraal %

Product

Dosis

ml

C.S.E. %

ml

Rachi %

ml

Algemene anesthesie %

Inductie

Onderhoud

3. Analgesie na sectio

Periduraal %

Product

PCEA

continu

Ander %

4. Vrijblijvende informatie

Aantal bevallingen per jaar

% sectio

% Neuraxiaal blok bij vaginale partus