Satisfaction of patients in pain management delivering in Reunion Island with or without neuraxial analgesia

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Key words: satisfaction, labour, delivery, epidural analgesia, neuraxial analgesia, analgesic method

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List of abbreviations:

NA	Neuraxial analgesia
EA	Epidural analgesia

ABSTRACT

Background: Neuraxial analgesia (NA) rate during labour in Reunion Island is below the average rate in continental France. Our study objective was to know if the patients that deliver with or without NA were satisfied. We also wanted to identify the reasons of this lower rate.

Method: This was a multicentre prospective observational study led in the seven Reunion Island maternity hospitals including all patients who delivered after 24 weeks of gestation onwards during two weeks in 2019 and excluding scheduled caesarean sections. Included patients received a satisfaction questionnaire the day after delivery and returned it before leaving.

Results: Of the 497 patients who met the inclusion criteria, 303 questionnaires were analysable. 216 patients had NA (71.3%) and 87 patients (28.7%) delivered without. A total of 88.0% of patients with NA were satisfied with pain management compared to 83.9% without. There was no significant difference between the groups (p=0.68). Among patients who delivered without NA, it was their choice in 55.2% of cases. They wanted the most natural birth possible in 87.5 % of cases. Birth without NA in opposition to their wish was related to too rapid dilation in 90.0% of lowerecases.

Discussion: No significant difference in satisfaction between women who delivered with or without NA was found. The lower regional NA rate seems to be linked to a choice to give birth as naturally as possible and to too fast dilation at the time of requesting NA.

Key Words: satisfaction, labour, delivery, epidural analgesia, analgesic methods

INTRODUCTION

Analgesic techniques during labour and delivery are generally separated into those with or without neuraxial analgesia (NA). Nowadays in France, the most widely used method of analgesia for labour and delivery is epidural analgesia (EA). According to the French good practice recommendations, NA is the safest and most effective method for both mother and child. NA includes epidural analgesia (EA), spinal analgesia and combined spinal epidural analgesia. It usually consists of an injection of a local anaesthetic (ropivacaine or bupivacaine) and a soluble morphine (fentanyl or sufentanil) [1] respectively in the epidural space, in the subarachnoid space or both.

Analgesic methods without NA include nitrous oxide, parenteral opioid administration, nerve blocks and non-pharmacological methods. These can be combined or not combined with pharmacological methods. They contained such techniques as bathing, positioning, aromatherapy, massages, transcutaneous electrical nerve stimulation, various relaxation techniques or traditional Chinese medicine.

In 2016, in continental France, the rate of NA was 83.8% while in the French overseas departments and regions, 53.2% of women gave birth without EA [2]. More specifically, the EA rate was 66.1% in Reunion Island [3]. A national perinatal survey in 2016 suggested that this may be due to disparities in access to obstetric analgesia [4]. Another analysis from these data showed that the use of nonpharmacological analgesia alone was associated with organizational factors such as the availability of anesthesiologists and midwives in the delivery unit [5].

In 2018, a French public newspaper published an article to propose explanations of why deliveries were less medicalised in overseas French regions. They suggested this may be due to a lack of specialists, a lack of obstetric monitoring or a lack of information [6]. We wanted to know if patients delivering in Reunion Island were satisfied with pain management despite this lower rate. This rate could be explained by a lack of access to care or a different demand from the patients on the island according to their culture.

The objectives of this survey were to:

- Evaluate the satisfaction of patients delivering in Reunion Island with or without NA
- Compare the satisfaction of patients delivering in Reunion Island without NA according to the initial choice of analgesia

- Study the reasons of the low rate of NA in Reunion Island

MATERIAL AND METHODS:

Type of study and selection of the population

We conducted a population-based multicentre prospective observational study. Reunion island has seven maternity wards. The supply of maternity service in this region is divided into 7 maternity wards. There is one level I maternity unit (around 1000 deliveries a year), three level 2A units (around 1200, 1400 and 1900 deliveries a year), one level 2B unit (around 1500 deliveries a year) and 2 level 3 units (around 2200 and 3800 deliveries a year). Only one level 2A maternity unit has an anesthetist on call. Patients were selected following their delivery in the 7 maternity wards of the Island for 2 non-consecutive weeks. Patient eligibility criteria included any patient giving birth in Reunion Island with or without NA from 24 weeks of gestation onwards. Patients who had a scheduled caesarean section or spinal anaesthesia prior to labour were excluded. Incomplete questionnaires that could not be assigned to either group were also excluded.

Data collection

The inclusion period was one week in April 2019 and one week in October 2019. Data was collected using an anonymous survey. It was designed to be as simple as possible for the patients. It consisted of a series of multiple-choice questions in two parts: one part for women who gave birth with NA and one part for those who gave birth without. As the distinction between EA, SA and CSEA cannot be asked of patients, we consider them all as “peri-medullary analgesia” in our study. The questionnaires were distributed by the midwives the first day after delivery to all patients with an attempted vaginal birth. They were retrieved either during the midwife's visits the following days or at discharge and then collected by the service managers. The questionnaire was filled in by the patients with or without the help of a member of the medical team. All questionnaires were anonymous and oral consent was obtained from patients for their participation in the study. The data filled by the patient could not be verified.

The questions were about:

- History of epidural analgesia and satisfaction (Yes or No question)
- The information received about labour pain management (multiple choice question)
- Participation in childbirth education courses (Yes or No question)
- Obstetric data: induced, preterm, delivery mode, length of time in the delivery room (multiple choice question)
- For those who received an NA: the choice and satisfaction of the NA (multiple choice question)
- For those who delivered without NA: the initial choice of analgesia and reasons (multiple choice question and open question)
- Global satisfaction with pain management (Yes or No question)
- Use of NA for a next delivery (Yes, No or Unsure question)

Statistical analysis

The statistical analysis was performed using SAS® statistical software (SAS Institute, version 9.4, North Carolina, USA).

First, we analyzed general and medical characteristics in terms of numbers and percentages. Secondly, we used Chi-square independence tests or the Fisher exact test at the 5% significance level in bilateral formulation to compare:

- patients with and without NA
- patients without NA according to the patient's choice of delivering without NA.

RESULTS:

Population

The 7 maternity wards of the island were supposed to take part in the survey. During the first week, 277 patients gave birth from 24 weeks of gestation onwards, scheduled caesarean section excluded. Patients were encouraged to take part in the survey but were free not to give

back the questionnaires if they did not want to without justification. The survey was launched regionally and only 118 questionnaires were retrieved. We found out that the largest level 3 unit did not take part in the survey. Given the lack of participation we decided to relaunch the survey for a second week 6-months later when all the maternity units were ready again. During this second week of the study, 220 deliveries were included, and 183 questionnaires were retrieved. Two incomplete questionnaires were excluded since they could not be assigned to either group. A total of 303 patients were included in this 2-week regional study. The exhaustiveness rate was 60.9%. Epidural analgesia was performed in 216 patients (71.3 %) and 87 patients delivered without it (28.7 %) (see figure 1).

First, we analyse the different characteristics of our population (see table 1).

Among all the patients, 44.6% had a history of NA and with a good experience in more than three quarters of cases.

Regarding information received during pregnancy on pain management, 11.6% of the patients did not say they received any. In three quarters of the cases, the information was provided by an anaesthesiologist and in about half of the cases by a midwife. Two thirds of these patients were informed that some conditions were required to receive an NA including the cervical dilatation and the availability of the anaesthesiologist.

Of all patients, less than half had attended antenatal classes during pregnancy.

In the group without NA, 55.2% of women gave birth without NA by choice. The desire to have the most natural birth possible was expressed by 87.5% of patients who chose to give birth without NA. For the 30 patients that gave birth without NA in opposition to their wish, all of them received explanations of why they could not receive it. A too rapid dilation was the reason described by 90.0% of the patients. The two other reasons were medical contraindications to NA and failure to put one in. No patient was told that the anaesthesiologist was unavailable.

For the 71.3% patients who received an NA, it was described as a desire they had throughout pregnancy by 52.3% of them. In 36.6% of cases, the patient decided to ask for an NA in the delivery room. And 9.7% of patients would have preferred not to have an NA but had a medical indication.

In this study, 86.8% of patients were satisfied with pain management at delivery.

Comparative analysis according to NA status:

In a second step we compared patients with and without NA (Table 2).

There were more patients informed about pain management in the NA group than patients that delivered without NA (92.6% vs 78.2%, p=0,0001). In the same way, patients that delivered without NA knew less regarding the conditions required to receive an NA compared to patients in the NA group, such as the availability of the anaesthesiologist (55.2% vs 68.1%, p=0,02) or a cervical dilation not too advanced (51.7% vs 66.2%, p=0,02).

Patients who delivered without NA had lower participation in childbirth education courses (34.5% vs 49.1%, p=0.02).

The rate of patients who were satisfied with pain management was higher in patients who delivered with epidural analgesia (88.0%) compared to those who delivered without epidural analgesia (83.9%), but with no significant difference (p=0.68).

Patients without epidural analgesia spent a shorter time in labour in the delivery room with two thirds of them for less than 2 hours, $p < 0.0001$.

Comparative analysis according to patient's choice of delivering without NA:

Lastly, we compared women who delivered without NA according to the patient's initial choice (Table 3).

The rate of patients that had a history of NA and a good experience was higher in the group of patients that delivered without NA but wished to have one, than in the group where delivering without NA was the patient's choice (63.3% vs 20.8%, p=0.0002) and to have a good experience of it (94.7% vs. 50%, $p < 0.01$).

They tended to have a shorter delay between entry into the birthing room and delivery than patients who had chosen to deliver without NA but with no significative difference (for a delay of less than 2 hours, p=0.07).

Patients who gave birth without NA by choice were more satisfied than patients who had no choice (87.5% vs. 76.7%, $p < 0.05$). To the question of the next delivery, 73.3 % of patients who did not have an NA but wanted one would like an NA while only 8.3% of patients that delivered without NA by choice would ask for one ($p< 0.0001$).

DISCUSSION

This work showed that there was no significant difference in satisfaction between patients giving birth with or without NA in Reunion Island. On the other hand, more than half of the patients giving birth without NA did so by choice. The desire to have a birth as natural as possible was the main reason for the patient's choice. Patients who gave birth without NA when they wanted it were given a justification in 100% of cases. In 90% of cases, they explained that they had arrived or asked for the NA too late. Finally, patients who delivered without NA were more highly satisfied if it matched with their choice.

Strengths and limitations:

This study is the first satisfaction survey on pain management during labour and delivery in Reunion Island. We managed to lead a study that was population-based with data from the 7 maternity wards of the island. We obtained data not only about satisfaction but also general data on information, deliveries, choice of analgesia and its motivation. Nonetheless, we retrieved only 60.9% of patients that could have been included. During the first week of the study, the participation rate was lower than the second week. The low participation rate in small maternity wards which are more physiological might have deprived us of data about the deliveries without NA. On the other hand, the missing questionnaires from the largest level 3 unit of the island might have lower the NA rate of our study. Our sample may not be representative of our population since we found a lower rate of delivery without NA compared to the regional figures for 2016. This rate in Reunion island tends to decrease over the years though. Since the questionnaire was anonymous, data filled by the patients could not be verified. Some interesting information to interpret the results is missing, particularly patient’s parity or socio-economic data. They were not asked in the questionnaire. However, the first goal of our study was not to determine factors associated with the choice of analgesia by the patient. Definition of satisfaction or effectiveness were binary. It was a yes or no question while the patient’s experience might be more nuanced. We did not ask a question about overall satisfaction of the delivery. This may imply that patients could have mixed the global satisfaction of pain management with her overall satisfaction of the delivery in this question.

Satisfaction outcome:

There are a variety of birth satisfaction studies in the literature. Our study finds similar results to those of Howell et al. in 2001 [7]. They had conducted a randomized controlled trial, between delivery with EA and without EA. Their analysis showed no difference in satisfaction between the two groups.

Other studies, however, are contradictory in one way or another. Most often, it is the satisfaction of the birth experience that is compared according to the analgesia method. In their systematic review of the literature comparing EA vs. non-EA, Anim Somuah et al found that EA may increase satisfaction with pain relief compared to other analgesic methods [8]. Capogna et al. in 1996, conducted a multicentre study in 5 different countries: Italy, Finland, Belgium, Portugal and the United Kingdom. Satisfaction with analgesia was higher in the EA group (with a significant difference). [9]. In Poland in 2018, Czech et al. compared patients with EA satisfaction with non-pharmacological methods. The most effective analgesia was EA. However, the highest satisfaction rate was in the group giving birth in water without EA [10]. In Norway in 2016, Bernitz et al. compared maternal satisfaction between two units: a midwife-led unit aiming at the most physiological possible delivery to a unit with more intervention. The use of EA significantly decreased maternal satisfaction in both groups [11]. Similarly, in 2016, Conesa Ferrer et al in Spain compared two units similar to Bernitz's and showed that despite a less frequent use of EA in the physiological unit, patients had a greater feeling of receiving adequate analgesia compared to the group with higher intervention [12].

Thomson et al, in 2019, found in their study that efficiency and satisfaction were not always linked. While pharmacological methods such as EA significantly reduce pain, they can also be the source of side effects. Non-pharmacological methods, although less effective from an analgesic point of view, increase the connection with the medical team [13]. In our study, in the EA group, there was a higher rate of patients who were generally satisfied with their deliveries than patients who considered their EA effective, suggesting that patients may be satisfied despite ineffective analgesia.

Reasons for delivering without EA:

Palot et al. in 2006 conducted a survey in 4 French regions on the use of EA. Their work also assessed the causes of childbirth without EA, despite the patient's wish. They found a fast

labour in 28.3% of cases, an unavailable anaesthesiologist in 23% of cases, and an unfavourable obstetric medical team (midwives and/or obstetricians) without obvious contraindications in 10% of cases [14]. The anaesthesiologist on-call influenced whether or not to use EA [15]. In their study, Sheiner et al highlighted the unavailability of anaesthesiologists, technical problems or medical reasons as the primary reasons for the absence of EA despite the patient's wish [16]. It was therefore interesting for us to find out whether the lower EA rate in Reunion Island was linked to a lack of availability of an anaesthesiologist or not. Our survey revealed that patients chose to give birth without NA in more than half of the cases. They gave birth without NA against their initial wish in 34.5% of cases. Of these, 90.0% were dilating too rapidly. There was also a failure to insert and a medical contraindication. Approximately 10% of patients did not answer the question but the figures are far from those that could call into question the offer of care in anaesthesia on the island. Only one maternity unit on the island works with the anaesthesiologist on call at home. All the others maternity units have the anaesthesiologist on call on site. This maternity unit did not present different results from the other maternity hospitals.

Information received:

In our study, we found a significant difference between the two groups regarding the analgesia information received during pregnancy. Patients who delivered without NA had received less information compared to those who delivered with NA. There was no difference in the source of the information. Munro et al. conducted a study in 2018 evaluating the rate of decision making for EA during pregnancy before and after reading an information leaflet. While patients were satisfied with receiving complete information, they did not show an increase in the EA rate [17]. On the contrary, Togioka et al. conducted a similar study in 2019 among the Hispanic population in the United States, which has a lower EA rate than white patients. They saw an increase in EA requests after more complete information. In contrast, they did not obtain an increase of EA use among non-Hispanic patients [18]. It would be interesting in another study to know if improving Reunion Island patients' access to information regarding analgesia during childbirth would increase the EA rate.

Match between patient's choice of analgesia and received analgesia:

Among the patients who delivered without NA, the rate of satisfied patients was higher among those who chose to deliver without NA. This supports the idea that patients are even more satisfied if they can choose their analgesia. The match between the patient's chosen analgesia and the one received seems to be a key for satisfaction. In France, we talk more and more about obstetric and gynaecological violences. EA imposed without medical justification and EA refused without explanation can be experienced as such by parturient. In their French study, Kpéa et al. found out that a quarter of low-risk C-section patients preferred to deliver without EA, but only half of these patients eventually delivered without [19]. They considered it a challenge in France to follow the wishes of patients without EA because of the ease of use (on-site anaesthesiologists, health insurance coverage, mandatory anaesthesia consultation, ease of management by midwives). According to Lally et al., patients are as concerned about being involved in their own delivery as they are about being involved in decisions made during labour and delivery [20]. In our population-based study, less than 10% of patients with NA described receiving NA for medical reasons (advancing labour, breech presentation, multiple pregnancy) while they did not want it and only one wanted a NA but could not receive it for medical reasons. Among those who did not receive a desired NA, it was related to a rapid dilation. This shows that in our study the patient's choice was respected everytime the medical condition enabled it. In this way, no violence about NA has been reported.

CONCLUSION

Our survey of patients giving birth in Reunion Island showed a high level of satisfaction. It did not show any significant difference regarding satisfaction between the two ways of giving birth. Moreover, the primary reason for giving birth without NA was the woman's choice to have the most natural birth possible. Considering patients' wishes and involving them in analgesia decisions is a key factor in maternal satisfaction. At a time when the least medicalized delivery possible is once again developing, being able to meet patients' expectations and respect their choice with or without NA is a quality criterion that all maternity wards should be concerned about. Our results show that the patient's choice was respected each time medical and obstetric conditions allow it. The first barrier to receiving a desired NA was a too fast labor.

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Declaration of interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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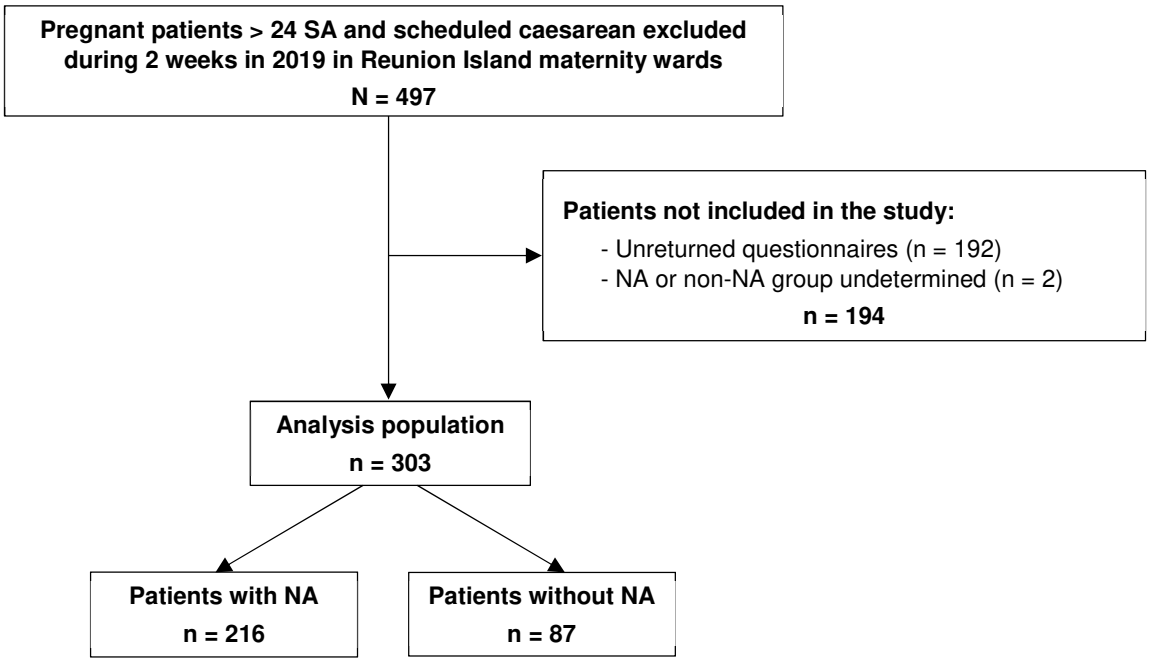
Ethics approval and consent to participate

Patients filled up an anonymous survey with no personal information. They all gave a consent to participate. The privacy rights of human subjects have been observed.

Availability of data and material:

The dataset used and/or analysed during the current study is available from the corresponding author on reasonable request.

Figure 1: Flow chart



NA: Neuraxial analgesia

Table 1: Patients general characteristics

	Analysis population n = 303
History of neuraxial analgesia, n (%)	135 (44,6)
Good experience of the neuraxial analgesia[1], n (%)	105 (77,8)
Information on pain management during pregnancy, n (%)	268 (88.4)
Birth education courses, n (%)	136 (44.9)
Premature birth, n (%)	24 (7.9)
Induced labor, n (%)	72 (23.8)
Delivery mode, n (%)	
Spontaneous vaginal delivery	232 (76.6)
Operative vaginal delivery	27 (8.9)
Caesarean section	44 (14.5)
Delay between entering the birth room and delivery, n (%)	
< 2h	84 (27.7)
Between 2 and 6h	110 (36.3)
> 6h	97 (32.0)
Neuraxial Analgesia, n (%)	216 (71.3)
Effectiveness of neuraxial analgesia[2], n (%)	176 (81.5)
No neuraxial analgesia, n (%)	87 (28.7)
Choice to deliver without neuraxial analgesia[3], n (%)	48 (55.2)
Reasons for childbirth without neuraxial analgesia[4], n (%)	
Desire for the most natural childbirth possible	42 (87.5)
Fear	9 (18.8)
Culture	4 (8.3)
Entourage	4 (8.3)
Childbirth without neuraxial analgesia against her choice[3], n (%)	30 (34.5)
Explanations received on the impossibility to have one[5], n (%)	30 (100.0)
Overall satisfaction with pain management during childbirth, n (%)	263 (86.8)
Wish for a neuraxial analgesia for the next delivery, n (%)	
Yes	179 (59.1)
No	77 (25.4)
Does not know	47 (15.5)

[1] among patients that had a history of neuraxial analgesia
[2] among patients that received a neuraxial analgesia
[3] among patients that delivered without neuraxial analgesia
[4] among patients that chose to deliver without neuraxial analgesia
[5] among patients that did not choose to deliver without neuraxial analgesia

Table 2: Patients characteristics according to neuraxial analgesia status

	Neuraxial analgesia		
	Without n = 87	**With n = 216**	**p-value**
Information on pain management during pregnancy, n (%)	68 (78.2)	200 (92.6)	0.0001
Birth preparation courses, n (%)	30 (34.5)	106 (49.1)	0.02
Delivery mode, n (%)			<0.0001
Spontaneous vaginal delivery	84 (96.6)	148 (68.5)	
Operative vaginal delivery	1 (1.1)	26 (12.0)	
Caesarean section	2 (2.3)	42 (19.4)	
Delay between entering the birth room and delivery, n (%)			<0.0001
< 2h	54 (62.1)	30 (13.9)	
Between 2 and 6h	25 (28.7)	85 (39.4)	
> 6h	3 (3.4)	94 (43.5)	
Overall satisfaction with pain management during childbirth, n (%)	73 (83.9)	190 (88.0)	0.68
Neuraxial analgesia satisfaction, n (%)	0 (0.0)	177 (81.9)	-
Wish for an neuraxial analgesia for the next delivery, n (%)			<0.0001
Yes	27 (31.0)	152 (70.4)	
No	46 (52.9)	31 (14.4)	
Does not know	14 (16.0)	33 (15.3)	

Table 3: Characteristics of patients delivering without neuraxial analgesia according to their choice of analgesia

	Choice to deliver without neuraxial analgesia		
	No n = 30	**Yes n = 48**	**p-value**
History of neuraxial analgesia, n (%)	19 (63.3)	10 (20.8)	0.0002
Good experience with previous neuraxial analgesia[1], n (%)	18 (94.7)	5 (50.0)	0.01
Information on pain management during pregnancy, n (%)	26 (86.7)	40 (83.3)	0.76
Birth education courses, n (%)	14 (46.7)	13 (27.1)	0.07
Delivery mode, n (%)			0.48
Spontaneous vaginal delivery	28 (93.3)	47 (97.9)	
Operative vaginal delivery	1 (3.3)	0 (0.0)	
Caesarean section	1 (3.3)	1 (2.1)	
Delay between entering the birth room and delivery, n (%)			0.07
< 2h	25 (83.3)	26 (54.2)	
Between 2 and 6h	5 (16.7)	15 (31.3)	
> 6h	0 (0.0)	3 (6.3)	
Overall satisfaction with pain management during childbirth, n (%)	23 (76.7)	42 (87.5)	0.03
Wish for a neuraxial analgesia for the next delivery, n (%)			<0.0001
Yes	22 (73.3)	4 (8.3)	
No	3 (10.0)	37 (77.1)	
Unsure	5 (16.7)	4 (8.3)	

[1] among patients with history of neuraxial analgesia