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ORIGINAL ARTICLE

# National survey of obstetric anaesthesia clinical practices in the republic of Austria

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## ABSTRACT

**Background:** The aim of this study was to describe the current obstetric anaesthetic practices in Austria by performing a comprehensive questionnaire survey.

**Methods:** A questionnaire was sent via email to key anaesthesiologists from obstetric anaesthesia departments of 81 hospitals registered at the Austrian Ministry of Health.

**Results:** Of 81 departments contacted, 65 (80%), covering 84% of annual births in Austria, responded to the 82-question survey. Epidural analgesia was offered universally, at a rate under 30% in 56 (86%) of respondent hospitals. The caesarean section rate was under 30% in 44 (68%) respondent obstetric units. All respondents provided spinal anaesthesia as the primary anaesthetic technique for elective caesarean section. Three (5%) respondents administered long-acting intrathecal morphine and 18 (28%) respondents did not routinely administer any intrathecal opioid. Wound infiltration for acute postoperative pain control was practiced in two (3%) respondent units. A transversus abdominis plane block was offered as rescue analgesia in 14 (22%) departments. Spinal hypotension was treated using a prophylactic phenylephrine infusion in two (3%) respondent hospitals. Prophylactic antibiotics were administered prior to skin incision by 31 (48%) respondents.

**Conclusion:** This survey reveals that obstetric anaesthetic practices in Austria differ in part from current European and American guidelines. Findings will direct the national workforce on obstetric anaesthesia that aims to introduce into Austria practice guidelines, based on international collaborations and guideline recommendations.

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**Keywords:** National survey; Austria; Obstetric anaesthesia

## Introduction

With a maternal mortality ratio of two per 100 000 live births and an annual healthcare expenditure of 13.5% of gross domestic product, the republic of Austria has a well-established healthcare system and one of the lowest national maternal mortality rates worldwide.<sup>1</sup>

To date, no practice recommendations or structured curriculum for obstetric anaesthetic training programmes have been formulated by the Austrian Society

of Anaesthesiology, Resuscitation and Intensive Care Medicine (ÖGARI) and no information is available on obstetric anaesthetic practices delivered in Austrian hospitals. In 2016, guidelines for obstetric anaesthetic practice were updated by the American Society of Anesthesiologists (ASA). These guidelines provide recommendations on peri-anaesthetic evaluation and preparation, aspiration prevention, anaesthetic care for labour and delivery, and the management of obstetric and anaesthetic emergencies in the United States of America.<sup>2</sup> Comparable guidelines were published by the Association of Anaesthetists of Great Britain and Ireland (AAGBI) and the Obstetric of Anaesthetists and the Association (OAA) in the United Kingdom in 2013.<sup>3</sup>

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The aim of this study was to describe current obstetric anaesthetic practices in Austrian labour and delivery units by performing a comprehensive practice survey.

## Methods

This questionnaire-based survey was approved by the institutional review board of the Innsbruck Medical University on October 20, 2016 and on February 21, 2017 by the ÖGARI.

There are 81 hospitals offering obstetric care registered at the Austrian Ministry of Health. The study questionnaire was sent via email on March 12, 2017 to an anaesthesia representative of the labour and delivery services at each of these hospitals. Non-responders were reminded by follow-up email four weeks later, and if acquainted with our authors, by informal telephone calls. The survey was closed on July 7, 2017. All responses were anonymised.

The survey underwent content and face validation following a structured review process among directors of obstetric anaesthesia at three teaching hospitals in Austria and 32 members of the Austrian Workforce for Regional Anaesthesia of the ÖGARI. There were 82 individual stems categorised into seven sections (Supplementary Table 1). The first section covered hospital demographics, services and staffing; followed by sections covering practices in relation to general anaesthesia, labour analgesia, neuraxial and regional anaesthetic techniques such as transversus abdominis plane (TAP) block, management of post-dural puncture headache and newborn care. Multiple responses and free text comments were permitted for all questions.

Free text comments were grouped and transformed into a numerical code. The SPSS 1.0.1 software programme was used for statistical analysis (SPSS Version 24, IBM Corp, Troy, NY, USA). Descriptive statistical methods were applied to present results of single sections and questions. To accurately assess the percentage of categorical data, the number of each completed single question was used as the denominator. Results were presented descriptively as numbers and percentages. Non-completion of all questions was not an exclusion criterion.

## Results

The response rate was 65/81 (80%), which accounted for 84% of the annual births in Austria during the study period. Variation in the response rates of the different provinces was noted (Supplementary Fig. 1).

### Labour epidural analgesia

All hospitals offered labour epidural analgesia, and the rate was under 30% in 56 (86%) of the responding hospitals. According to 64 (98%) respondents, no alterna-

tive neuraxial labour analgesia was available in their hospital. Combined spinal-epidural (CSE) analgesia technique was occasionally used by one respondent. Fifty-five (85%) respondents initiated labour epidural analgesia with ropivacaine: 33 (51%) administered 0.2% ropivacaine, with fentanyl and sufentanil being added by seven (11%) and five (8%) respondents, respectively. Ultrasound-assisted placement was performed by eight (12%) respondents. Accidental intrathecal or intravenous catheterisation was tested by administering a dose of higher concentration local anaesthetic in 40 (62%) responding units and epinephrine in 12 (19%) units. Sixty-one (94%) respondents had lipid rescue solution available to treat local anaesthetic toxicity. During labour, 27 (42%) respondents administered labour epidural analgesia regardless of cervical dilation, in line with ASA recommendations.

### Caesarean section

Unless clinically contraindicated, spinal anaesthesia was the primary technique for elective caesarean section. Combined spinal-epidural anaesthesia was not performed and three (5%) occasionally performed epidural anaesthesia. Twenty-five (39%) selected the spinal dose according to patient weight and height. Fentanyl and sufentanil were administered intrathecally by 44 (68%) and six (9%) respondents respectively and two (3%) used intrathecal morphine. Hypotension was treated by administering intravenous boluses of phenylephrine and ephedrine by 32 (49%) and 33 (50%) respondents, respectively. A prophylactic phenylephrine infusion was used in two (3%) responding hospitals.

**Table 1** Key demographic and service findings.

Hospital birth rate	
<500	11 (17)
500–999	27 (42)
1000–2000	16 (25)
>2000	11 (17)
Rate of caesarean section (CS)	
<20%	7 (11)
20–29%	37 (57)
30–40%	13 (20)
>40%	5 (8)
Anaesthesia consultant available at all times	
Yes	61 (94)
No	2 (3)
Consultant paediatrician available at all times	
Yes	32 (49)
No	31 (48)
On-call*	2 (3)

Data are presented as number (%).; Multiple answers were possible, hence totals can add up to >100%

\*Open text responses

General anaesthesia for emergency caesarean section was induced with propofol and thiopentone by an equal number of respondents (46.70%). Suxamethonium and rocuronium were used by 51 (78%) and 36 (55%) respondents, respectively. Prophylactic antibiotics were given prior to skin incision by 31 (47%) respondents. Thirty-two (49%) administered antibiotics after cord clamping. Oxytocin and carbetocin were given routinely as a pro-

phylactic uterotonic agent by 32 (49%) and 33 (50%) respondents, respectively.

Wound infiltration for acute postoperative pain control was practised in two (3%) responding units. Twenty-four (37%) respondents reported no use of regional analgesia for postoperative pain. A TAP block was offered as a rescue analgesic treatment in 14 (22%) departments.

No correlations or associations were found in the response patterns or number of deliveries between academic and non-academic centres or public and private hospitals. Selected pertinent responses are presented in [Tables 1 and 2](#). All other responses can be found in the Supplementary Table.

**Table 2 Key practice findings.**

Epidural catheterisation at cervical dilation over 8 cm	
Yes	33 (51)
No	26 (40)
Rarely*	6 (9)
Early epidural placement for high-risk constellation (preeclampsia, obesity, anticipated difficult airway)	
Yes	23 (35)
No	35 (54)
Occasionally*	5 (8)
No high-risk deliveries*	2 (3)
Content of syringe during "loss-of-resistance"	
NaCl 0.9%	62 (95)
Air	12 (19)
Epidrum*	1 (2)
Mode of maintenance of epidural analgesia	
Continuous infusion	35 (54)
Intermittent automated boluses	7 (11)
Continuous infusion + patient controlled boluses	9 (14)
Intermittent automated boluses + patient controlled boluses	15 (23)
Boluses given by anaesthesia staff upon parturient request	14 (22)
Boluses given by obstetrician/midwife upon parturient request*	4 (6)
Timing of consultation/consent for epidural analgesia	
Days or weeks before delivery	47 (72)
During labour in delivery ward	44 (68)
No prior consultation	2 (3)
Situational*	2 (3)
Other*	1 (2)
Routine use of intrathecal opioid	
Yes	46 (71)
No	19 (29)
Application of uterotonic agent	
Bolus	29 (45)
Short infusion	44 (68)
Other	5 (8)
Routine use of transversus abdominis plane block	
Yes	3 (5)
No	48 (74)
Occasionally	13 (20)

Data are presented as number (%).

Multiple answers were possible, hence totals can add up to >100%

\*Open text responses

## Discussion

This survey provides information about obstetric anaesthetic practices in 80% of hospitals providing obstetric care in Austria. We demonstrated wide variations in practice from the ASA and OAA/AAGBI recommendations, particularly with respect to the management of pain following caesarean delivery, spinal anaesthesia-induced hypotension and the timing of antibiotic prophylaxis.

The labour epidural analgesia rate was comparatively lower than that in North America but similar to rates in other European countries.<sup>4,5</sup> In contrast to ASA recommendations the offer of epidural analgesia was dependent on cervical dilation in 38 (58%) responding units. Waiting to achieve an arbitrary cervical dilation may be contrary to the parturient's wishes and potentially lead to maternal dissatisfaction.<sup>6,7</sup>

In contrast to the ASA guidelines which recommend neuraxial rather than intermittent parenteral opioids for pain control following caesarean section, less than one-third of units administered intrathecal opioids and 98% of respondents did not administer intrathecal morphine. Sufentanil is the only opioid approved for intrathecal use by the Austrian drug approval agency and providers might lean towards avoiding off-label use.<sup>8</sup> These data suggest that women delivering via caesarean section in Austria are at increased risk of experiencing moderate to severe postoperative pain.<sup>8</sup>

A recent consensus statement on the optimal therapy for spinal anaesthesia-induced hypotension highlighted the importance of prophylactic vasopressor infusions, placing emphasis on phenylephrine.<sup>9</sup> Since such prophylactic management is barely used at all in Austria, women are at an increased risk of experiencing nausea and vomiting during caesarean section.

Evidence supports the administration of prophylactic antibiotics pre-incision, however Austrian practice is different.<sup>10</sup> Concerns that antibiotics cross the placenta with as yet an unclear long-term influence on the development of the newborn might be a potential justification.<sup>11,12</sup>

This survey revealed that obstetric anaesthesia practices in Austria differ from current European and American guidelines. The findings have led to the creation of a national workforce on obstetric anaesthesia, within the ÖGARI,<sup>13</sup> which has the aim of introducing into Austria clinical practice guidelines that are based on international collaborations and guideline recommendations.

## Funding

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijoa.2019.02.002>.