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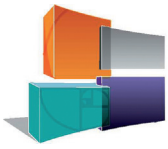

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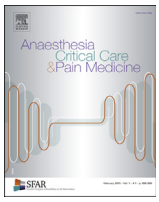

Original Article

Evaluation of a continuous improvement programme of enhanced recovery after caesarean delivery under neuraxial anaesthesia

Benjamin Deniau [a], Nacima Bouhadjari [a], Valentina Faitot [a], Antoine Mortazavi [a], Gilles Kayem [b], Laurent Mandelbrot [b], Hawa Keita [a,c,*]

[a] Service d'Anesthésie, CHU Louis-Mourier, AP–HP, Université Paris 7, 178, rue des Renouillers, 92700 Colombes, France
[b] Service de Gynécologie-Obstétrique, CHU Louis-Mourier, AP–HP, Université Paris 7, 178, rue des Renouillers, 92700 Colombes, France
[c] Université Paris Diderot, Sorbonne Paris Cité, EA Recherche Clinique coordonnée ville–hôpital, Méthodologies et Société (REMES), 75010 Paris, France

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ABSTRACT

Objective: To assess the performance of a multidisciplinary programme for enhanced recovery after caesarean delivery under neuraxial anaesthesia.
Study design: Prospective single-centre study.
Methods: Programme in 6 steps including 3 professional practice audits based on clinical records and questioning patients: audit T0, first "existing state", creation of a working group, drafting and implementation of a multidisciplinary rehabilitation procedure, second audit (T0 + 4 months), information about and implementation of corrective measures and a third audit (T0 + 8 months). Assessment of the performance of the continuous improvement programmes based on six measures comprising the post-caesarean rehabilitation score: duration infusion, early oral analgesia, time to removal of the urinary catheter, time to return to drinking, eating recovery time, use of carbetocin.
Results: Two hundred and thirty-one patients were included, with 45, 64 and 122 patients at T0, T0 + 4 months and T0 + 8 months, respectively. There was a significant increase in patients who received the recovery measures ($P < 0.0001$ for all items) between T0 and T0 + 8 months: removal of the infusion before 24 h (49% versus 93.5%), drinking before 6 h (31% versus 55%), eating before 6 h (2% versus 38.5%), early oral analgesia before 24 h (38% versus 95%), withdrawal of the urinary catheter before 24 h (80% versus 95%), use of carbetocin (0% versus 99%).
Conclusion: Improved practices in rehabilitation after caesarean can be obtained by setting up a multidisciplinary programme as part of a quality approach.

1. Introduction

The concept of postoperative recovery through a multidisciplinary approach is intended to promote the rapid recovery of the physical and psychological capacities present prior to the patient's operation [1].

Postoperative recovery relies on many factors designed to accelerate and improve physiological recovery, which include effective, multimodal postoperative analgesia reducing the need for opioids, early fluid intake, rapid removal of catheters, drains and cannulae (including urinary catheters), early patient mobilisation and prevention of nausea and vomiting [2,3].

Twenty-one percent of deliveries in France are performed annually by caesarean section and involve almost 160,000 women [4]. This is therefore a common procedure and a genuine public health challenge. The main principles of recovery apply to caesarean section and require effective collaboration between the different medical and non-medical teams involved in care of the mother and newborn, which is a key factor in the success or failure of the recovery programme [5]. Similarly, the introduction of a "quality process" with regular audits can be used to assess and improve the programme over time [6]. With caesarean section, recovery should take account of and promote specific features such as facilitating the mother/child relationship, breastfeeding and providing care for the newborn.

* Corresponding author at: Service d'Anesthésie, CHU Louis-Mourier, AP–HP, Université Paris 7, 178, rue des Renouillers, 92700 Colombes, France.
Tel.: +33 1 47 60 61 35.
E-mail addresses: benjdeniau@gmail.com (B. Deniau), bouhadjari.n@live.fr (N. Bouhadjari), valentina.faitot@chru-strasbourg.fr (V. Faitot), antoine.mortazavi@gmail.com (A. Mortazavi), gilles.kayem@aphp.fr (G. Kayem), Laurent.mandelbrot@aphp.fr (L. Mandelbrot), hawa.keita@lmr.aphp.fr (H. Keita).

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The aim of this study was to assess the performance of a multidisciplinary continuous recovery improvement programme after caesarean delivery under neuraxial anaesthesia, over a period of 15 months.

2. Patients and methods

This was a prospective single-centre study at the Louis-Mourier maternity unit, Colombes, 92700 France. This is a category III maternity unit, which carries out 3300 deliveries annually. The study was approved by the local ethics committee (Ethics Assessment Committee for Biomedical Research, Paris Nord, Paris VII). The continuing recovery improvement programme after caesarean section under neuraxial anaesthesia (spinal, epidural or combined spinal–epidural), either planned or carried out during labour with peridural anaesthesia is conducted in six stages, including three audits (T0, T0 + 4 months and T0 + 8 months) over a total period of 15 months (November 2012–February 2014). The following were excluded from the audits: caesarean sections under general anaesthesia, patients with postpartum complications [haemorrhage, preeclampsia, eclampsia or any other complication requiring specific monitoring in the postoperative recovery room (PORR), continuing monitoring room or intensive care].

2.1. First audit (T0) – "existing state"

This was an audit of professional practice in which patients delivered by caesarean section under neuraxial anaesthesia were directly questioned (face-to-face questioning after provision of verbal information and obtaining consent) by the anaesthesiology resident at 24 hours (D1) and 48 hours (D2) postoperatively. All of the information on pre- and postoperative management was recorded from the medical file. The following information was recorded: type of caesarean section (planned or during labour), type of uterine stimulant used (carbetocin or oxytocin), the post-caesarean analgesia proposed [spinal or epidural morphine, infiltration of the scar with a single injection of local anaesthetic, transversus abdominus plane (TAP) block, oral analgesia begun before or after 24 h, type of non-opioid analgesic (paracetamol, nonsteroidal drug [NSAID], nefopam or other)], type of antiemetic (ondansetron, droperidol or other), the time when the urinary catheter was removed (between 12 and 24 hours or after 24 hours), the time the patient started drinking fluids again (before 6 hours, between 6 and 24 hours or after 24 hours), the time when the patient started eating again (before 6 hours, after 6 hours, without waiting for bowel transit to return, not before first passing gas) and the time the patient first got out of bed (before 6 hours, between 6 and 12 hours or the day after procedure).

2.2. Creation of a working group

The next stage was to create a multidisciplinary working group, including professionals involved in the care of patients being delivered by caesarean section: obstetricians, anaesthetists, midwives and midwifery staff and postoperative recovery room (PORR) nurses and nurses from the obstetric department.

2.3. Producing and implementing a multidisciplinary procedure

The main aim of creating the working group was to analyse the results of the first audit and write and implement a multidisciplinary recovery procedure.

This was a three-stage procedure involving several measures.

2.3.1. Preoperative period

Hospitalisation on the morning of the procedure for planned caesarean sections.

Oral and written information about the caesarean section process and perioperative management (nil by mouth for 6 h for solids and 2 h for clear fluids).

2.3.2. Peroperative period

The father was permitted to be with the patient during the caesarean if no medical contraindications were present.

Carbetocin was used as a single injection as the uterine stimulant instead of oxytocin.

Vascular filling was limited to 800 mL of crystalloids in order to reduce the risk postoperative urinary retention.

Ondansetron was given routinely to prevent pruritus and postoperative nausea and vomiting.

2.3.3. Postoperative period

The infusion set was removed and a closed venous cannula was inserted in the PORR.

Routine multimodal analgesia was started in the PORR and included paracetamol, NSAID (ketoprofen) and nefopam, if not contraindicated intravenously and then orally when fluids were permitted.

The baby was put to the breast in the PORR wherever possible.

The patient was allowed to start drinking again as soon as she returned to the obstetric department.

Eating was permitted from 4 hours postoperatively.

The urinary catheter was removed and the patient was allowed to get out of bed from h + 7.

The procedure was then disseminated during departmental meetings and electronically to all of the professionals concerned.

2.4. Second audit (T0 + 4 months) and introduction of corrective measures

At T + 4 months, a second audit was carried out after the procedure had been implemented and repeated the methodology and items at T0. The results were analysed and discussed in the working group and then distributed to the care teams. Corrective measures were then put in place:

- reminders about the preferential use of carbetocin;
- readjustment of the analgesia protocol;
- between 24 and 48 hours postoperatively:
  - routine use of paracetamol and NSAID (ibuprofen),
  - if analgesia was sufficient [defined as a pain score of over 4 on a numerical scale (NS), where 0 is no pain whatsoever and 10 is maximum pain],
  - the paracetamol was replaced by paracetamol codeine,
  - if analgesia was still insufficient (defined as a pain score of over 4 on a NS): switch to oral immediate release morphine;
- between 48 hours and 7 days postoperatively:
  - routine use of paracetamol and NSAID (ibuprofen),
  - if analgesia was insufficient (NS > 4), paracetamol was replaced with paracetamol codeine,
  - if analgesia was still insufficient (NS > 4) sublingual nefopam was added.

2.5. Third audit (T0 + 8 months)

The third audit was performed at T0 + 8 months after the corrective measures had been implemented. All of the items from T0 and T0 + 4 months were repeated together with an assessment of postoperative pain by an NS on D1 and D2, an assessment of

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