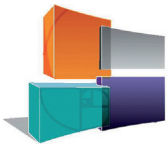
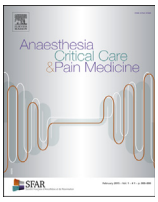
Anaesth Crit Care Pain Med 38 (2019) 277–278



SFAR
Société Française d'Anesthésie et de Réanimation



Letter to the Editor

Role of a long-lasting uterotonic drug in the implementation of a fast track rehabilitation protocol after caesarian section

1. Rationale

Rehabilitation after Cesarean section (C-section 21% of total births in France) is a multidisciplinary approach that aims for a physical and psychological recovery [1]. After C-section, in order to prevent post-partum hemorrhage (PPH), intravenous line is used for several hours of oxytocin perfusion [2]. However, extended duration of intravenous line infusion may impair the implementation of the rehabilitation protocol [3].

We assumed that reducing the intravenous line duration would facilitate the implementation of the rehabilitation protocol. We suggested that a single administration of carbetocin (long-lasting uterotonic) followed by intravenous line obturation rather than several hours of oxytocin perfusion (short lasting uterotonic) reduced the intravenous line duration and improved the rehabilitation protocol implementation. The primary objective was to assess the impact of two uterotonic administrations (oxytocin vs carbetocin) on post C-section rehabilitation protocol. The secondary objectives were the assessment of the incidence and severity of PPH, maternal satisfaction and hospital stay.

2. The study

This was an observational, prospective study in the maternity of Port Royal, Paris, France. Approval of the CNIL (Commission Nationale de l'Informatique et des Libertés) No. 1755849 and CCTIRS (Comité consultatif sur le traitement de l'information en matière de recherche) November 18, 2010 (No. 10626) was sought.

The inclusion criteria were patients hospitalised for elective and urgent C-sections. The first period from July to September 2014 defined the Oxytocin group. The second period from February to March 2015 defined the Carbetocin group. Patients younger than 18 years old were excluded from the study. The same rehabilitation protocol was applied to both groups except for the oxytocin/carbetocin administration.

We had previously established a multidimensional clinical 8C-Score of rehabilitation on April 2014 (not published) on an independent cohort. The 8C-Score was rated binary 0 or 1 (1 if the condition was fulfilled): intravenous line less than 12 hours [4], bladder catheter less than 12 hours (21), food intake within 6 hours (23), water intake within 6 hours, oral analgesic administration within 12 hours, free ambulation within 12 hours (2), absence of nausea or vomiting (2), maximum Pain Score NS (Numerical Scale) inferior to 4 in the first 24 hours.

When the umbilical cord was clamped, either carbetocin or oxytocin were administered intravenously, to prevent PPH. The oxytocin group received oxytocin (Syntocinon®, Sigma Tau France, Ivry-Sur-Seine), 5 IU followed by 15 IU postoperatively for 6 hours. The carbetocin group received a single IV administration of 100 micrograms of carbetocin (Pabal®, Ferring Pharmaceuticals Ltd, Saint-Prex, Switzerland). In case of PPH, medical management followed the national recommendations for clinical practice of the French National College of Gynaecologists-Obstetricians [5]. Post-operative surveillance included a minimum of 2 hours period in the recovery room.

Furthermore, a self-filled questionnaire was filled up to assess maternal satisfaction.

A total of 138 patients were included in the study, 70 patients during the oxytocin period from July to September 2014 and 68 patients during the carbetocin period from February to March 2015.

Patients were 34 (30–38) or 33 (29–37) years old $P = 0.39$, had 39 (28–40) or 38 (37–40) $P = 0.44$ weeks of amenorrhea, the number of previous pregnancies was 2 (1–3) or 2 (1–3) $P = 0.64$, the number of previous births was 1 (1–2) or 1 (1–2) $P = 0.49$ for the oxytocin or the carbetocin group respectively. The C-section main indication was foetal asphyxia or acidosis 25 (36%) and 33 (49%) $P = 0.73$.

The anaesthetic technique was not different between the two groups: epidural analgesia in 36 (51%) or 38 (56%) $P = 0.61$, 25 spinal anaesthesia (36%) or 25 (37%) $P = 0.86$, combined spinal and epidural 3 (4%) and 3 (4%) $P = 0.78$, general anaesthesia 6 (9%) or 2 (3%) $P = 0.74$, for the oxytocin or carbetocin group respectively.

The median rehabilitation 8C-Score was improved in the carbetocin group vs. the oxytocin group: 5 (4–6) or 4 (3–5) $P = 0.045$ as shown in Fig. 1.

PPH rate 3 (4%) vs. 0 (0%) $P = 0.25$, prolonged stay in the recovery room, sulprostone (Nalador® Bayer healthcare SAS, Loos) use, transfusion or hysterectomy (1% in both groups) were comparable in the two groups.

Maternal satisfaction was in median 8 (7–9) in both groups $P = 0.34$.

Hospital stay after C-section was 5 (4–7) vs. 5 (4–6) days respectively in the Oxytocin vs. Carbetocin group ($P = 0.51$).

3. Discussion

3.1. Improved rehabilitation protocol application

This work shows an improved 8C rehabilitation Score after C-section by pharmacological intervention of using a single dose of long-lasting uterotonic drug, without increase in bleeding risk.

The benefit of C-section rehabilitation programmes has long been demonstrated (17). Its implementation is difficult (18) and one of the main limitations is prolonged intravenous line infusion. Prolonged infusion increases liquid volumes administrated, delays oral analgesics, increases the risk of bladder complications and intravenous device infection, delays early mobilization, delays oral nutrition and complicates mother and child relationship. On the other hand venous line blockage represents a safety measure for

https://doi.org/10.1016/j.accpm.2018.10.003

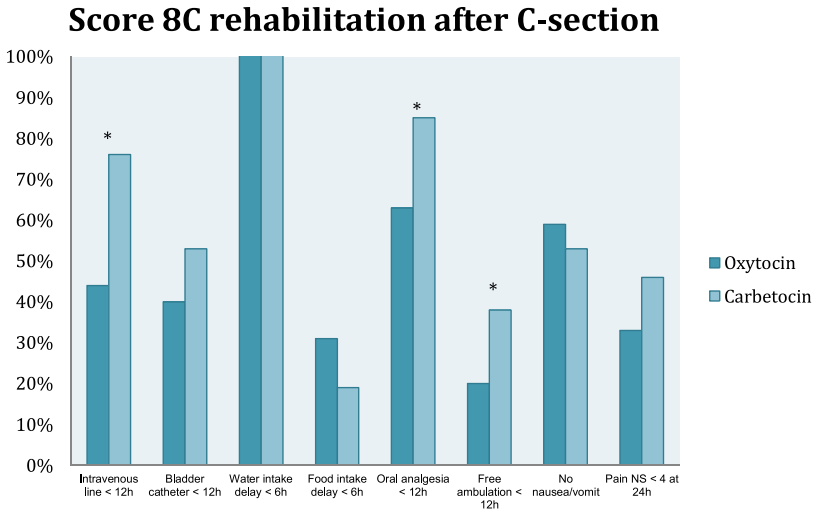


Fig. 1. 8C rehabilitation Score after C-section. $^{*}P < 0.05$.

the first 24 hours after C-section without impeding rehabilitation program implementation. Long-acting single-dose drug administration permits venous line blockage and has therefore a significant impact on the rehabilitation program.

Wyniecki et al. [4] used a score to evaluate rehabilitation practice of anaesthesiologists in obstetrics. They show difficulties of applying a rehabilitation program if France on practitioners' declarative data. Deniau and al. [5] evaluate an enhanced recovery program including professional practice audits before and after the implementation of a multidisciplinary rehabilitation procedure. Criteria of better-enhanced rehabilitation are similar to those of the 8C-Score.

3.2. Biases and limitations

The periods of study for the two groups are relatively short (two months) to assess the impact of the change in the rehabilitation protocol, however, the two populations are comparable. A four-months period of non-inclusion between the two inclusion periods was added in order not to influence the rehabilitation protocol application.

Furthermore, the participation rate was low compared to the activity of the maternity, mainly because of the few questionnaires filled out by the patients during the study period. Except for the uterotonic drug and thus venous line blockage there was no other difference in medical standard of care between the two groups.

The 8C-Score shows the limits of a composite score, because of several variables, some of them inter- dependent. However, rehabilitation is a multidimensional concept and it seems difficult to assess without taking into consideration its different components.

3.3. Outlook

Uterotonic drugs are obligatory for preventing post-partum haemorrhage, but dosage and duration of infusion are unknown. Short time administration is recommended, but no study has shown benefit upon rehabilitation. Long lasting drugs present the benefit of a single administration without extended venous infusion, thus this pharmacological choice may help improving the rehabilitation protocol application. The main disadvantage is the economic cost.

Finally, there is a non-significant reduction of the hospital stay following a C-section in the carbetocin group.

References

[1] Keïta H, Ducloy-Bouthors A-S. Enhanced recovery after caesarean delivery. Not just a postoperative rehabilitation. Ann Fr Anesth Reanim 2013;32(3):130–3. http://dx.doi.org/10.1016/j.annfar.2013.01.008.
[2] CNGOF - RECOMMANDATIONS POUR LA PRATIQUE MEDICALE - RPC - RÉFÉRENTIELS 2014. http://www.cngof.asso.fr/data/RCP/CNGOF_2014_HPP.pdf.
[3] Jacques V, Vial F, Lerintiu M, Thilly N, Mc Nelis U, Raft J, et al. Enhanced recovery following uncomplicated elective caesarean section in France: a survey of national practice. Ann Fr Anesth Reanim 2013;32(3):142–8. http://dx.doi.org/10.1016/j.annfar.2013.01.016.
[4] Wyniecki A, Raucoules-Aimé M, de Montblanc J, Benhamou D. Enhanced recovery after Caesarean delivery: a practice survey in two French regions. Ann Fr Anesth Reanim 2013;32(3):149–56. http://dx.doi.org/10.1016/j.annfar.2013.01.002.
[5] Deniau B, Bouhadjari N, Faitot V, Mortazavi A, Kayem G, Mandelbrot L, et al. Evaluation of a continous improvement programme of enhanced recovery after caeserean delivery under neuraxial anesthesia. Anaesth Crit Care Pain Med 2016;35(6):395–9. http://dx.doi.org/10.1016/j.accpm.2015.11.009.

Suela Demiri*, Fleur Kefelian, Monique Berl, François Goffinet, Thibaut Rackelboom
Maternité Port Royal, Hôpital Cochin-Port Royal, 123, boulevard de Port Royal, 75014 Paris, France

*Corresponding author at: Maternité Port Royal, Hôpital Cochin-Port Royal, 123, boulevard de Port Royal, 75014 Paris, France
E-mail address: suela.demiri@aphp.fr (S. Demiri).

Available online 25 October 2018