

Improvements of Post Caesarean Section Pain Management Following the Introduction of a New Pain Management Protocol.

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Abstract

Objective To evaluate improvements in post-caesarean section (CS) pain management in University Obstetrics Unit, Ragama, Sri Lanka following the introduction of a protocol for post-CS pain management.

Methods A complete audit cycle was conducted in University Obstetrics Unit, Ragama, Sri Lanka. Initially a prospective audit was conducted among 126 consecutive CS during July and August, 2016. Basic demographic data and details regarding post-CS analgesia during the first 24 hours were collected. Re-auditing was done four months after the introduction of the protocol. In the re-auditing, 150 post-CS mother were conveniently selected over a period of three months and a coloured visual analogue scale (VAS) was used to assess the level of pain in the re-audit.

Results There were no statistically significant difference between demographic details before and after the protocol. Before introduction of the protocol, use of diclofenac sodium rectal suppositories were the commonest analgesic type (42.9%) used. Only 6 (4.8%) out of 126 patients had properly documented pain management plan in the operative notes. None of the analgesics were prescribed for 6 (4.8%) patients. Out of total 126, only 6 (4.8%) subjects had a proper drug chart maintenance with regular analgesics. Forty two (33.3%) women were not on any analgesics within the first 24 hours. After introduction of the protocol, regular analgesic dosing were given to 140 (93.3%) women with satisfactory drug chart maintenance in 140 (93.3%) cases. Out of 150, 140 (93.3%) patients received analgesia with at least a single method. Mean VAS score was 3.5 (SD 2.0) after first 24 hours. Diclofenac sodium suppository (86.7%) is the commonest first line medication. There was statistically significant difference ($P < 0.05$) in provision of pain relief after introduction of the protocol.

Conclusion There was a significant improvement in post-CS pain management after introduction of a new post-CS pain management protocol.

Key words: Post-caesarean pain management, audit.

Failure to do so may increase the maternal risk for thromboembolic events, and may adversely affect the success of breast feeding. In addition, severe acute pain after CS may progress to chronic pain and therefore requires effective management¹. It is necessary that pain relief is safe and effective with no adverse neonatal effects in breast-feeding women.


To achieve high patient satisfaction with analgesia, coordinated action amongst service providers and also their knowledge about the available analgesic methods are very important. As well as, pregnant women having a CS should be given adequate information on different types of post-caesarean analgesia so that analgesia best suited to their needs can be offered². Optimum pain relief following CS minimizes post-operative morbidity and mortality by reducing venous thromboembolism, infections and early recovery. In addition, it also improves breast feeding and neonatal care. According to RCoA audit recipes book, women should have access to information during their antenatal period, which should be available whenever and wherever it is needed in an appropriate lay language³. Therefore, all pregnant women should have an easy access on details of all available types of anaesthesia for CS and post-operative analgesia, with their adverse effects and complications whenever and wherever it is needed³. Ideally intrathecal or epidural opioids with or without patient-controlled analgesia should be offered after CS because it improves pain relief². However, respiratory depression is a rare but serious complication of which the incidence in the post-caesarean women is likely to be low⁶. Women who are recognized as at higher risk of respiratory complications, for example those who are obese should be closely monitored^{5,7}. The common adverse effects such as pruritus, nausea

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INTRODUCTION

The adequate relief of pain is essential in treating patients who have undergone a surgery. Caesarean section (CS) pain relief is of pivotal concern, and forms a part of continuous audit of all obstetric anaesthesia interventions. Management of post-operative pain is critical in mothers undergoing CS, as adequate pain relief is required for mothers to quickly regain mobility and begin to care for her newborn.



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and vomiting, reactivation of herpes simplex, urinary retention, sedation and delayed respiratory depression, all of which have a higher incidence with intrathecal morphine compared with parenteral opioids^{5,8}.

Our objectives were to evaluate the current practice of postoperative pain management following CS in University Obstetrics Unit, North Colombo Teaching Hospital (NCTH), Ragama, Sri Lanka and to introduce a uniform protocol for post-CS pain management. Gold standard for reference were NICE 2011 guideline on CS² and The Royal College of Anaesthetists (RCOA) 2012 audit recipes³. Unit's practice was compared with the above gold standard.

METHODS

A complete audit cycle was conducted in University Obstetrics Unit, Ragama, Sri Lanka. Initially a prospective audit was

conducted among 126 consecutive CS during July and August, 2016. Provision of post-CS analgesia given during the first 24 hours was audited. Data including the age, parity, body mass index (BMI), type of CS, duration of CS, types of analgesia, dosage and route of pain relief used in first 24 hours after CS. The protocol was introduced to unit in October 2016 (Table 1) Re-auditing was done four months after the introduction of the protocol. Protocol was made available as a staff-aid chart in ward. A coloured visual analogue scale (VAS) was used to assess the level of pain as a bed side tool. In the re-auditing, 150 post-CS mothers were conveniently selected over a period of three months, from January to April 2017. Data was entered into a datasheet and standard statistical methods were followed. Descriptive statistics was used to summarize data. Independent T test was used to find any significant difference

between means and before and after introduction of the protocol. Chi-square test and Fishers Exact test were used to find any significant difference between different analgesic methods before and after introduction of the protocol. P value < 0.05 was considered as statistically significant.

RESULTS

There were total of 4106 deliveries in the University Obstetrics Unit during the year of 2016, with the CS rate of 28 %. Basic demographic details before and after the introduction of the new protocol have been summarized in Table 2.

In the first half of audit, there were ninety (71.4%) emergency CS. All the CS were done under regional anaesthesia with subarachnoid block. Ninety-three (73.8%) CS were done at day time. Use of opioids within 24 hours of CS were 27 (21.4%) with alone or combined with other drugs. Use of diclofenac sodium rectal suppositories alone were the commonest analgesic type (42.9%). Only 6 (4.9%) out of 126 had written regular analgesic dosing at post-operative note and 6 (4.9%) had no post-operative analgesics written on their post-operative notes. Out of total 126, only 6 (4.8%) subjects had a proper drug chart maintenance. None of the women had received adequate antenatal education on post-CS pain relief methods.

Results of the re-auditing can be summarized as follows. Regular analgesic dosing was seen in 140 (93.3%) out of 150 cases. Satisfactory drug chart maintenance with analgesics had been done in 140 (93.3%) cases. Out of 150, 140 (93.3%) patients received analgesia with at least a single method. Mean VAS score was 3.5 (SD 2.0) after first 24 hours. Diclofenac sodium suppository (86.7%) is the most commonly prescribed first line drug. Only 46 (30.7%) had received parenteral opioids. Most of the women were treated with diclofenac sodium first and ward staff was also more preferred to give diclofenac sodium since opioids causes drowsiness and related side effects. Pattern of post-caesarean section analgesia before and after the introduction of the new protocol has shown in Table 3. As in Table 3 there was a statistically significant difference in provision of pain relief after introduction of the new protocol.

DISCUSSION

Table 1. The new protocol for post-caesarean pain relief.

Within first 24 hours (to be written in post-operative notes after CS):
Each type of analgesic has to be given in descending order, only if pain persists after the first analgesic (add-on therapy). Level of pain can be assessed by the visual analogue scale. Consider add-on therapy according to the level of pain.
Diclofenac sodium rectal suppository maximum of 150mg within 24 hours in divided doses. If pain does not settle, add parenteral opioids. Subcutaneous morphine 0.1mg/kg of body weight or else intramuscular pethidine 1mg/kg of body weight. (Morphine is stronger than pethidine) Opioids can be repeated every 6 hours if necessary. If pain still persists, oral analgesics can be added once oral intake started. Oral intake can be started usually after 4 hours of caesarean section. Oral paracetamol 15mg/kg body weight with or without codeine. Early starting of breast feeding and early mobilization can be considered as non-pharmacological analgesic methods. Diclofenac sodium should be avoided in pre-eclampsia, HELLP syndrome, coagulation disorders, renal diseases and allergy to diclofenac sodium.
From the 2nd post-CS day onwards, until pain completely settles:
Diclofenac sodium rectal suppository maximum of 150mg within 24 hours in divided doses or oral diclofenac sodium 50mg twice a day with a proton pump inhibitor. If pain does not settle, add Oral paracetamol 15mg/kg body weight with or without codeine. If pain still persists, add Oral Tramadol 50mg twice a day.
All the analgesics should be written in the drug chart and maintenance of regular dosing is mandatory.

Table 2: Baseline demographic details before and after the introduction of the new protocol.

Demographic details	Mean (SD) before introduction of the protocol (n=126)	Mean (SD) after introduction of the protocol (n=150)	P value
Age (years)	30.9 (5.1)	32.1 (5.4)	0.74
Parity*	2 (1-3)*	2 (1-3)*	-
BMI (kg/m ²)	27.1 (4.6)	27.5 (4.4)	0.67
Duration of surgery (minutes)	63.4 (9.6)	60.2 (8.2)	0.99
Time gap of first analgesic administration from delivery (hours)	4.5 (1.6)	4.2 (1.2)	0.96

*Only for parity, median (IQR) has indicated. SD: Standard deviation. P value < 0.05 is considered as statistically significant.

Table 3: Pattern of post-caesarean section analgesia before and after the introduction of the new protocol.

Type of post-caesarean analgesia prescribed	Frequency (%) before introduction of the protocol (n=126)	Frequency (%) after introduction of the protocol (n=150)	P value
Subcutaneous morphine only	6 (4.8)	3 (2.0)	0.31
Intramuscular pethidine only	6 (4.8)	7 (4.7)	0.81
Diclofenac sodium rectal suppository only	54 (42.9)	94 (62.7)	0.002
Oral paracetamol only	3 (2.4)	0	-
Opioids with other combinations	15 (11.9)	36 (24.0)	0.02
Not on any analgesics	42 (33.3)	10 (6.7)	< 0.0001

P value < 0.05 is considered as statistically significant.

According to above results, there was a significant improvement in post-CS pain management after introduction of the new protocol. However, non-steroidal anti-inflammatory drugs should be offered after CS as an adjunct to other analgesics, because they reduce the need for opioids². Diclofenac has been shown to produce a significant opioid-sparing effect after caesarean delivery^{5,8}. Therefore, we have included it as the first line therapy in our protocol and showed a good compliance according to re-auditing.

In Sri Lankan setting, different analgesic methods are being practiced at various units. Women's awareness can be improved by educating women regarding available analgesic methods. To educate and make them aware regarding this issue, various tasks can be adopted. This can be emphasized at antenatal classes conducted at maternity units and clinics conducted by Medical Officers of Health. Staff-aid charts and leaflets can be made available at ward setting and ward staff including house officers too should be given adequate information regarding these methods. They should also be advised that regular analgesic prescription is very important and it should start from operative notes onwards. Ward staff should also be advised regarding the regular drug chart maintenance for analgesics. Non-pharmacological methods like early mobilization, patient counseling, having a bath and breast feeding are known to reduce pain after a surgery. According to latest NICE guideline and RCoA audit recipe book, we have prepared a protocol for post-CS pain relief to be used in our hospital. Any obstetric unit with lack of uniform consensus on post-CS pain management, our suggested protocol and VAS can be adapted.

CONCLUSION

Provision of post-operative pain relief and the related documentation is below the expected standard before the introduction of new protocol. There was a significant improvement in post-CS pain management after introduction of a new post-CS pain management protocol. All women who are undergoing CS should have a clear plan of pain relief documented in their post-operative notes according to the new protocol and suggested VAS can be used as a bed side tool to assess the level of pain.

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Contribution to authorship

Both authors equally contributed for the work.

REFERENCES

1. Lavand'homme P. Postcesarean analgesia: effective strategies and association with chronic pain. *Curr Opin Anaesthesiol* 2006; 19(3):244e8.
2. National Institute for Health and Clinical Excellence. Caesarean Section 2011. Available at <http://www.nice.org.uk/guidance/cg190>. (Accessed 30 November 2016).
3. Pain relief after caesarean section. Raising the standard: a compendium of audit recipes (3rd edition). The Royal College of Anaesthetists 2012: (8:11).
4. Dahl JB, Jeppesen IS, Jørgensen H, Wetterslev J, Møiniche S. Intraoperative and postoperative analgesic efficacy and adverse effects of intrathecal opioids in patients undergoing cesarean section with spinal anesthesia: a qualitative and quantitative systematic review of randomized controlled trials. *Anesthesiology* 1999; 91(6):1919e27.
5. Kwok S, Wang H, Leong Sng B. Post-caesarean analgesia: a review. *Trends in Anaesthesia and Critical Care* 4 (2014) 189e194.
6. Abouleish E, Rawal N, Rashad MN. The addition of 0.2 mg subarachnoid morphine to hyperbaric bupivacaine for cesarean delivery: a prospective study of 856 cases. *Reg Anesth* 1991; 16(3):137e40.
7. Block BM, Liu SS, Rowlingson AJ, Cowan AR, Cowan Jr JA, Wu CL. Efficacy of postoperative epidural analgesia: a meta-analysis. *JAMA* 2003; 290(18): 2455e63.
8. Siddik SM, Aouad MT, Jalbout MI, Rizk LB, Kamar GH, Baraka AS. Diclofenac and/or propacetamol for postoperative pain management after cesarean delivery in patients receiving patient controlled analgesia morphine. *Reg Anesth Pain Med* 2001; 26(4):310e5.