Original Article

COMPARISON OF PAIN SCORE AND POSTOPERATIVE ANALGESIC REQUIREMENT IN PATIENTS UNDERGOING CAESAREAN SECTION WITH & WITHOUT PERI INCISIONAL LOCAL ANESTHESIA

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ABSTRACT:

OBJECTIVES:

To determine the mean pain score and postoperative mean analgesic requirement after peri-incisional infiltration of local anaesthesia in patients undergoing caesarean section versus control group.

STUDY DESIGN:

Randomized control trial.

PLACE AND DURATION OF STUDY:

Punjab Medical College/Allied and DHQ Hospitals Faisalabad, from July 2012 to February 2013.

METHODOLOGY:

In order to compare two techniques 142 patients were divided into two groups i.e control group A (receiving peri-incisional infiltration of 20 ml of normal saline) and experimental group B (receiving peri-incisional infiltration of 20 ml of 0.5% bupivacaine). Pain score was noted in post operative period at 12 hours. Total amount of intravenous tramadol given was also noted. Statistical analysis was performed to compare results.

RESULTS:

Mean pain score of group A (4.37 ± 1.124) and of group B (4.31 ± 0.935) showed no significant difference ($p>0.05$) at 12 hour. But a significant difference ($p <0.05$) was seen in total amount of analgesia consumed up to 12 hours in group A (104.23 ± 34.586) and B (76.06 ± 32.579).

CONCLUSION:

After caesarean delivery, use of peri-incisional local anesthesia have no effect on pain score at 12 hours but results in less intravenous analgesia requirement as compared to controls.

KEYWORDS: Visual analogue scale (VAS), Local Anesthetic (Bupivacaine), Post caesarean pain relief.

INTRODUCTION:

Pain is defined as "an unpleasant sensory and motor experience associated with actual or potential tissue damage".[1] This shows that pain is a multi-modal phenomenon. The recent trend is to use balanced multi-modal analgesia that can provide better pain relief.[2] Postoperative pain is one of the most important problems in healthcare today and pain control is a topic of current interest.

Caesarean delivery is becoming a frequent method of child-birth now a day. Child-birth is an emotional event and mother needs to be bound with her newborn baby as early as possible so that breast feeding can be started.[1,2] Breast feeding helps to contract

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the uterus and accelerates the process of uterine involution in early post partum period.[3] Prompt and adequate pain relief is therefore an important component of caesarean delivery that can make the immediate post operative period less uncomfortable and more emotionally gratifying. This requires good pain relief especially in early post operative period. So any intervention that leads to improvement in pain relief is worthy of investigation.

The most appropriate method for pain relief after caesarean delivery remains uncertain.[4] Opioid analgesics continue to be the main stay of treatment despite of their side effects. Fear of opioid addiction, ventilation depression and postoperative vomiting often lead to under treatment of postoperative pain.[5,6] The local anaesthetic technique provides good post operative analgesia without fear of side effects.[2,7]

Local anaesthetics can be administered by pre-incisional or post-incisional abdominal nerve blocks. Continuous infusion of local anaesthetics into the wound is also an effective method in reducing postoperative narcotic requirement.[8,9]

Local anaesthetics have been applied as an adjunct to other methods of postoperative pain relief, but reports on the effectiveness of this strategy were conflicting.[10] Because of the good analgesic properties and lack of opioid induced adverse effects, local anaesthetics are becoming more popular for the treatment of surgical pain.[11,12] Disadvantages of local anaesthetics include allergic reactions and cardio-toxicity.[13]

Attempts are being made to see the benefits of local anaesthesia at caesarean wound of abdominal wall in reducing pain and improving post operative recovery.[13,16]

In the study conducted by Samreen and collegues,[1] the mean pain score at 12 hours was 3.48 ± 0.93 for study group and 3.84 ± 0.55 for control group. similarly intravenous tramadol consumed was 95.00 ± 27.20 for study group and 151.00 ± 29.43 for control group.

The rationale of study is to explore the utility of this modality of pain management in surgical patients. Intravenous narcotics are mostly used for postoperative pain relief. This study may help for better post operative pain management and a reduction of intravenous narcotics analgesia requirement.

METHODOLOGY:

This randomized control study was conducted in Anaesthesia Department at Punjab Medical College/ Allied & DHQ Hospital Faisalabad. Duration of study was 8 months from July 2012 to February 2013. Using WHO sample size calculator 142 patients were selected by consecutive non-probability sampling and allocated to control group A (receiving peri-incisional infiltration of 20 ml of normal saline) and experimental group B (receiving peri-incisional infiltration of 20 ml of 0.5% bupivacaine). All primigravida at full term having indications of undergoing caesarean section with American Society of Anaesthesiologists (ASA) physical status I or II were included in the study. Exclusion criteria was patients having history of allergy to local anaesthetics, patients with antepartum haemorrhage (APH), IUD and uterine rupture and patients having Diabetes mellitus or Ischemic heart disease.

Before surgery, patients were instructed about the use of 10 cm visual analogue scale (with end points "No pain" and "Worst pain"). LSCS was performed under general anaesthesia by gynaecology surgeons. Pain score was noted in post operative period at 12 hours. Total amount of intravenous tramadol given was also noted. All the data was entered into SPSS version 10 and was analyzed through its statistical package. The quantitative variables like age, pain score and intravenous analgesia given in both groups were presented as mean and standard deviation. Independent Sample t-test was applied to compare mean pain score and mean intravenous analgesia consumed at 12 hours in both groups. $P \leq 0.05$ was considered significant.

RESULTS:

Total 142 patients were included in this study and assigned randomly in two groups A and B, 71 in each group. After caesarean section, peri-incisional infiltration of 20 ml of normal saline (placebo) was done in Group A (control) patients and 20 ml of 0.5% bupivacaine (local anaesthetic) in group B (experimental) patients. The comparison of mean pain score at 12 hour and total amount of analgesia (truamal) consumed up to 12 hour in both groups were assessed in this study.

Age of the patients included in the study ranged from 18-32 years with mean 24.73 and standard deviation (SD) 3.785 (Table 3). Mean age of Group A patients was 24.68 ± 3.945 while that of Group B was 24.77 ± 3.646 (Table 4).

Pain score of all the patients at 12 hour was 2-6 with mean 4.34 and SD 1.031 (Table 3). Group A patients were having mean pain score 4.37 ± 1.124 and in Group B it was 4.31 ± 0.935 (Table 5). Independent Sample T-test was applied for comparison of mean pain scores between groups A and B (Table-6). This showed a p-value of 0.746 which was insignificant (>0.05). It means that local anaesthetic infiltration at surgical wound did not result in any additional benefit over placebo as far as pain score at 12 hour is concerned.

All the study patients consumed 50-150 mg additional analgesia with mean 90.14 and SD 39.34 (Table 3). Group A patients consumed mean analgesia 104.23 ± 34.586 and mean quantity consumed by group B patients was 76.06 ± 32.579 (Table 5). When Independent Sample T-test (table 6) was applied for comparison of mean amount of analgesia consumed by each group up to 12 hours, it showed a p-value of 0.001 which is quite significant (<0.05). Hence local anaesthetic infiltration at wound site significantly decreased the requirement of additional narcotics need up to 12 hour.

According to the hypothesis of study, local anaesthetic infiltration would have to decrease both pain score and additional analgesic requirement for pain relief. The results shows that although there is no significant affect of local anaesthetic on pain score at 12 hour but it significantly decreases the requirement of additional analgesia by the patients.

Table 3: Study statistics

Variables	n	Minimum	Maximum	Mean	Std. Deviation
Age(years)	142	18	32	24.73	3.785
Pain score at 12 hour	142	2	6	4.34	1.031
Amount of analgesia consumed up to 12 hours(mgs)	142	50	150	90.14	36.339

Table 4: Age (years) Distribution

Group	n	Minimum	Maximum	Mean	Std. Deviation
A	71	18	32	24.68	3.945
B	71	18	32	24.77	3.646

Table 5: Distribution of pain score and analgesia consumed

	Group	n	Mean	Std. Deviation
Pain score at 12 hour	A	71	4.37	1.124
	B	71	4.31	0.935
Amount of analgesia consumed up to 12 hours(mgs)	A	71	104.23	34.586
	B	71	76.06	32.579

Table 6: T- Test

Variables	Group A	Group B	p- value
Pain score at 12 hour	4.37 ± 1.124	4.31 ± 0.935	0.746
Amount of analgesia consumed up to 12 hours (mgs)	104.23 ± 34.586	76.06 ± 32.579	0.001

DISCUSSION:

"caesarean section" one of the most frequently performed surgical procedures, is an operation to be performed for child's delivery, and therefore, the provision of adequate pain relief after surgery has considerable importance.[2,3] After caesarean delivery, pain has two components i.e. somatic, from abdominal wall incision site and visceral, from uterine incision.

Caesarean delivery is being performed in our institutes since decades and postoperative pain is managed by NSAIDs and opioids. This study was conducted to see the outcome of abdominal incision site infiltration of local anaesthetic drug on pain relief at 12 hours postoperatively and additional intravenous opioid analgesia required up to 12 hours.

Severity of postoperative pain was assessed with **V**isual **A**nalogue **S**cale (VAS) recorded at 12 hours after surgery. Analysis of VAS scores at 12 hours failed to show a significant difference of pain score in both control (A) and experimental (B) groups ($p > 0.05$). This was contrary to our hypothesis and also to the work conducted by **Samreen et al**.[1] and **Nadhima and colleagues**[2] in their separate studies where this difference was significant ($p < 0.05$) showing decreased pain score in study group B at 12 hours. But this result was comparable to that of **Iman**[4] which also suggested no significant difference of pain score at 12 hours even after surgical site infiltration with bupivacaine. One explanation to this is that the half life of local anaesthetic (Bupivacaine) is 6-9 hours, so may effecting pain in early postoperative period but not at 12 hours or above.

In our study additional opioid analgesia (Traumal) consumed up to 12 hours was less in group B (76.06 ± 32.579) than that used in group A (104.23 ± 34.586). This difference is quite significant ($p < 0.05$) as was expected in our hypothesis. This is strongly supported in three different studies conducted by **Samreen et al**.[1], **Nadhima & colleagues**[2] and **Anthony et al.**[3] where postoperative analgesic drug requirement was also less after use of local anaesthetic infiltration at abdominal wound. Only one study of **Iman**[4] contradicted our results where additional amount of analgesic used was not significantly different in both study and control groups. But here pethidine was used as additional analgesia so having different results than traumal used in our study and other supporting studies.[1-3] Therefore different opioids may have different analgesic properties for postoperative pain relief.

To conclude, use of local anaesthetic infiltration at abdominal wound has a beneficial effect in terms of additional analgesic drug requirement. Although pain score at 12 hours was not decreased but patient's safety, which is a prime factor in terms of decreased opioid consumption and its side effects, can be achieved by this modality. Cost of opioids is also much more than local anesthetics so giving additional benefit of economy.

Hence on the basis of this study, this technique can be practiced not only after caesarean section but also on surgical floor after various surgical procedures to get maximum benefits without having a number of opioid induced side effects like nausea, vomiting respiratory depression and increased cost.

CONCLUSION:

After caesarean delivery, use of peri-incisional local anaesthesia have no effect on pain score at 12 hours but results in less intravenous analgesia requirement as compared to controls.

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