**ORIGINAL ARTICLE**

"To Study Analgesic Effect Of 0.25% Bupivacaine Vs 0.25% Ropivacaine In “3 In 1” Femoral Nerve Block For Knee Surgeries"

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INTRODUCTION

Total knee replacement (TKR) and other knee surgeries are amongst the most painful orthopedic procedure, mandating effective postoperative pain management. Ropivacaine is a New Local anesthetic Agent With Minimal CVS Toxicity. **AIMS:** The primary aim of is to study effect of 3 in 1 femoral nerve block for providing pain relief with Ropivacaine (0.25%). Secondary aim is to compare the effect of Ropivacaine 0.25% with Bupivacaine( 0.25%) in providing 3 in 1 femoral nerve block. **METHODS & MATERIALS:** A prospective randomised study was carried out in 36 ASA I & II patients undergoing knee surgery surgeries were divided into two groups of 18 . Group (R) received Ropivacaine (0.25%) 40 ml. Group(B) received Bupivacaine (0.25%) 40 ml. **RESULTS:** Demographic and hemodynamic parameters were statistically not significant. The duration of analgesia is longer with Group R (7.83±0.98) than Group B(6.33±0.76) (p<0.001) which is statistically very significant. observing VAS score Group R shows significantly(p<0.05) lower values than Group B for at 4th to 8th hours & than at 24th hour . Ropivacaine is significantly more effective in postoperative duration of pain. No Adverse events noted in the bothgroups. **CONCLUSIONS :** Postoperative 3 in 1 femoral nerve block with 0.25% ropivacaine is effective in providing pain relief and duration of analgesia is more in comparison to 0.25% bupivacaine.

Key words: femoral nerve block, postoperative analgesia, Ropivacaine.
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The major site of pain control was thought to be brain until, Koller’s daring introduction of local anesthetic blockade on his eye in 1884 and after successful demonstration of femoral nerve block by Winnie in 1973. After this, peripheral nerves became major option for analgesia. Regional analgic technique forms choice for providing pain relief as the techniques are easy to perform, comparatively safe, free from systemic side effects, very effective, and can provide long duration of pain relief. 3 in 1 femoral block have been shown to provide effective post operative analgesia following lower limb surgeries. The inguinal perivascular technique of lumbar plexus block commonly known as the 3 in 1 femoral block, was described by Winnie et al in 1973. Singelyn and colleagues had shown that a continuous 3 in 1 femoral nerve block using Bupivacaïne decrease pain score after TKR and was associated with fewer side effect than after continuous epidural analgesia. James E Paul & his associates carried out meta-analysis of RCT on “FNB improve analgesia outcome after TKR” from this metaanalysis of 23 studies single shot FNB improve analgesia & reduce morphine dose compare with i.v.PCA. These studies did not demanded further improvement with continuous compare to single short FNB. Regional blocks remain a well accepted component of comprehensive anesthesia care. Their role has expanded from operating suite into the arena of postoperative and chronic pain management. With appropriate selection and sedation, these techniques can be used in all age groups. Skillful application of these blocks broadens the anesthesiologist’s range of options in providing optimal anesthetic care. Bupivacaïne is the most commonly used local anesthetic in femoral nerve block, however, the onset of action is delayed and Bupivacaïne has been associated with high rate of cardiac and local toxicity. Based on investigations of etiological mechanisms of local anesthetic induced cardio toxicity, the search for less toxic alternatives to Bupivacaïne has concentrated on amide-linked agents comprised of a single enantiomer. Unlike Bupivacaïne, which is a racemate, Ropivacaïne is pure S(−)-enantiomer developed for the purposes of reducing the potential toxicity and improving the relative sensory and motor block profiles. Thus we decided to study this new compound to evaluate efficacy and to compare with commonly used compound that is Bupivacaïne and ropivacaïne via single shot femoral nerve plexus block.

AIMS OF STUDY

We carried out this study to evaluate 0.25% ropivacaïne and compare with 0.25% Bupivacaïne via 3 in 1 femoral nerve block with following goals:

A) Primary aim- To study effect of 3 in 1 femoral nerve block for providing pain relief with ropivacaïne (0.25%) B) Secondary aim- To compare the effect of ropivacaïne with Bupivacaïne 0.25% in providing 3 in 1 femoral nerve block. Parameters used are as follows- 1) Vital parameters like – pulse, blood pressure, respiratory rate, spo2, 2) Duration of postoperative analgesia assessed by VAS, 3) Requirement of rescue analgesia (vas>4). 4) Side effects and Complications.

MATERIAL AND METHODS

A prospective, randomized single blind study of 36 patients posted for orthopedic knee surgeries was conducted at Sir Sayajirao General Hospital & Medical College, Baroda during a period from December 2011 to March 2013. In all the cases a detailed history, physical examination and investigations were done before their enrolment in the study.

SAMPLE SIZE AND STUDY POPULATION Using Acastat statistical software, the mean and standard deviation for the parameter “duration of analgesia” was counted. Further these values along with α error of 0.2 and β error of 0.05 were used to compare the groups: group R and group B. Thus a comparison of two groups, using Medcalc software helped in deriving at a sample size of 18 per group.

SELECTION CRITERIA

1) Age Group – 18 to 80 years either sex, 2) ASA – I/II, 3) Planned/Emergency Surgery 4) Patients able to give informed consent.

EXCLUSION CRITERIA: Hypersensitivity to local anaesthetic...

PRE-PROCEDURE

FORMALITIES

(i) Pre anaesthesia check up 2) Consent 3) Pre operative preparations

➢ Patient Preparation: All the patients were kept nil by mouth for at least 6 hours. Anesthetic procedure. Premedication and Preloading fluids. After taking iv line with 18/20 G iv canula preloading was done with inj Ringer Lactate 10 ml/kg over period of 20 min before giving spinal anesthesia. Patients were assigned randomly in two group: Group R and Group B.

➢ Procedure: After taking the patient in operation theater vital sign monitor was attached. Baseline pulse rate, blood pressure, respiratory rate and oxygen saturation are noted down. Anesthetic Technique for surgeries was either spinal anesthesia or epidural anesthesia as per the duration of surgery; but no analgesic drugs are added, to local anesthetic agents. After achieving adequate level or analgesia surgical procedure was started.

Intraoperative period Intravenous fluids given as per the assessment of blood loss. Duration of surgery was noted.

Drug Preparation: 1. Local anesthetic solutiona) Ropivacaine 0.25%–40 ml b) Bupivacaine 0.25%–40 ml 2. Sterile water 3. Drugs for General anesthesia and sedation 4. Drugs for resuscitation.

Study Group: 36 patients were enrolled in this study which were equally divided into two study groups in 1: 1 ratio by closed envelope technique Group R – “3 in 1” FNB with Inj. Ropivacaine (0.25%) – 40 ml (18 patients) Group B – “3 in 1” FNB with Inj. Bupivacaine (0.25%) – 40 ml (18 patients) After getting written informed consent, patients were blinded. (They did not know into which group they were being allotted.)

3 in 1 Femoral Nerve Block

The block was given as per the technique advocated by Winnie in 1973. Patient positioning: The patient was placed in supine position with legs extended. In obese patient, pillow was placed beneath the hip, facilitating palpation of femoral artery. Landmarks: Femoral crease, femoral artery. Needle insertion site is labeled immediately (1 cm) lateral to the pulsation of femoral artery with the marking pen.

PROCEDURE:

• 3 in 1 femoral nerve block is essentially a modification of femoral nerve block.

- A line drawn between anterior superior iliac spine & pubic tubercle marks the position of inguinal ligament. The femoral artery is palpated as it passes behind the midpoint of inguinal ligament. The needle is inserted just below the ligament, 1 cm lateral to the artery parallel with the course of nerve but inclined superiorly at an angle of 45°.
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• A click is felt as the needle passes through fascialata and it should be advanced with the gentle probing motion until a second click is noted as the needle penetrates fascia iliaca. The needle advanced further until paraesthesia is obtained. When nerve stimulator is used, quadriiceps contraction with patellar tap should be elicited with the current of 0.5mA or less, after which needle should be held firmly to prevent it from moving. Firm pressure is applied distal to the needle with the thumb in order to prevent peripheral spread, and the local anaesthetic is injected after an aspiration test. It is best if an assistant holds the syringe & injects drug while the anaesthetist holds the needle with one hand & presses below it with other. Thus three nerves i.e femoral, obturator and lateral femorocutaneous nerve are block by this method. Pulse rate, Blood pressure, Respiratory rate and oxygen saturation (SpO₂) are monitored regularly before giving the block, 5 minutes after the block then every 5 minutes till 15 minutes and every 15 minutes till the 1 hour and then every hourly up to 4 hour followed by every 2 hourly up to 12 hour and then at 24 hour after giving block.

Post-operative Period - In the post-operative period, patients were observed at every 5 minutes upto 15 minutes till 1 hour, then hourly up to 4 hour followed by every 2 hourly up to 12 hour and then at 24 hour after giving block. The post-operative pain relief was assessed by using 10 point visual analogue scale (VAS) which is the most commonly used method of assessing intensity of acute pain and its relief. VAS is a 10 cm long scale with gradation at every 1 cm. from 0 to 10. Score 0 on this scale denotes no pain while score 10 denotes the most excruciating pain one can have. The patients were explained about this scoring system and were asked to make a vertical mark on the scale which reflected the intensity of pain, which they experienced at that time. The duration of effective analgesia or pain free interval was counted from time of giving block to when VAS score is more than 4. The rescue analgesia was given in the form of Inj. Diclofenac Sodium 1.5 mg/kg intramuscularly when VAS score was noted > 4.

STATISTICAL ANALYSIS

‘P’ values < 0.05 were taken as statistically significant
‘P’ values < 0.001 were taken as highly significant.
‘P’ values > 0.05 were taken as statistically not significant

OBSERVATIONS AND RESULTS

The present study was carried out in the Department of Anaesthesiology, Medical
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College and S.S.G. Hospital, Vadodara to evaluate and compare the effect ropivacaine (0.25%) and Bupivacaine (0.25%) in 3 in 1 Femoral nerve block. It was a prospective, randomised clinical study of 36 patients of either sex, of ASA grade I and II undergoing elective or emergency Knee surgery. Group R(n=18) patients received Inj. Ropivacaine 0.25% 40 ml. Group B (n=18) patients received Inj. Bupivacaine 0.25% 40 ml. All the qualitative and quantitative data were analyzed by using chi square test and unpaired t test respectively. Results were expressed as Mean ± SD. ‘P’ value < 0.05 was taken as statistically significant and values < 0.001 were taken as highly significant.

The number of patients in either group were 18. The mean age of patients was 37.30±12.44 years in Group R and 39.70±12.88 years in Group B (P=NS). The ratio of Male to Female was 4:1 in Group R and 2.25:1 in Group B (P=NS). The mean weight of patients was 56.61±4.22Kg in Group R and 56.33±3.75Kg in Group B (P=NS). Thus both the groups are comparable to each other without any statistical difference. Total 16.6 % of patients in Group R and 11.11% in Group B were of ASA I while rest of the most patients were of ASA II (P=NS). Thus both the groups are comparable without any statistical difference. Total 12(66.66%) surgeries in group-R and 11(61.11%) surgeries in group-B were elective surgeries while remaining were emergency surgeries. Thus both groups are comparable without any statistical difference. The mean Duration of Surgery was 100±18.62 minutes in Group R and 99.44± 20.99 minutes in Group B (P=NS) and so was comparable amongst both the groups without any statistical difference. Majority of surgeries replacement, external fixation over knee and arthroscopy. There is no any statistical difference in mean arterial pulse rate and Blood pressure in between the two groups.

Table 1: comparative VAS score in between two groups

<table>
<thead>
<tr>
<th>TIME IN HOURS</th>
<th>GROUP R</th>
<th>GROUP B</th>
<th>P VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>4 hours</td>
<td>_</td>
<td>2.38±0.77</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>5 hours</td>
<td>0.83±0.92</td>
<td>2.38±0.77</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>6 hours</td>
<td>2.05±1.11</td>
<td>3.33±0.76</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>7 hours</td>
<td>3±0.97</td>
<td>4.0±0.00</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>8 hours</td>
<td>3.88±0.32</td>
<td>4.22±0.54</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>10 hours</td>
<td>4.16±0.15</td>
<td>3.77±1.3</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>12 hours</td>
<td>3.77±0.87</td>
<td>3.5±1.09</td>
<td>&lt;P&gt;0.05</td>
</tr>
<tr>
<td>24 hours</td>
<td>3.66±0.76</td>
<td>2.94±1.21</td>
<td>&lt;P&gt;0.05</td>
</tr>
</tbody>
</table>

Above table shows comparative VAS score in between ropivacaine and bupivacaine. Table shows that patient VAS score started at 5th hour in Group R and 4th hour in Group B. The average VAS at 4th, 5th, 6th, 7th, 8th and 24th hour in between both the group when compare, shows there is statically significant difference (p<0.05). Patient has started mild pain at 4th hour after giving block in Group B and at 5th hour in Group R. Patient has significant postoperative pain relief noted upto 7th hour in Group B and upto 8th hour in Group R.

Table 2: duration of postoperative analgesia comparison between group R and group B

Above table shows duration of postoperative analgesia comparison between Group R and Group B. Above
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Table shows that patient having pain relief maximum up to 8th hour in Group R and 7 hour in Group B. Maximum number of patient achieved pain relief at 8th hour in Group R and at 7th hour in Group B. The average duration of postoperative pain relief in Group R is 7.83±0.98 hour & Group B is 6.33±0.76 hour. Which is statistically significant difference between Group R and Group B in total duration of postoperative analgesia. (p<0.001). Above representative data shows there is statistically significant in postoperative total duration of analgesia at 5 hour, 6 hour and 8 hour.

Diagram: Comparative representation of postoperative analgesia between two groups.

Table 3: Total number of rescue analgesia

<table>
<thead>
<tr>
<th>PARAMETERS</th>
<th>Group R Mean ± SD</th>
<th>Group B Mean ± SD</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>NUMBER OF RESCUE ANALGESIA IN 1ST 24 HOURS</td>
<td>0.17±0.38</td>
<td>0.55±0.51</td>
<td>&lt;0.05</td>
</tr>
</tbody>
</table>

Diagram: Comparative representation of number of rescue analgesia between two groups.

Above table and diagram shows that there is significant difference in requirement of Total Number Of Rescue Analgesia In between Group R and Group B. Group R required comparative lesser number of rescue analgesia than Group B. None of the patients from either group had any complications like nausea/vomiting/sedation. Respiratory depression/dyspnoea. Bradycardia/tachycardia. Hypertension/hypotension. Chest pain. Local anaesthetic toxicity. Hypersensitivity. Haematoma. Post block neuropathy. Convulsion/dizziness/cramps/hypoaesthesia. Anxiety. Rigors

DISCUSSION

Postoperative pain following knee surgery is distinct and they restrict mobilization of patient. Postoperative pain hampers the daily activity of patient. Current technique for providing postoperative analgesia are centered on administration of opioids and NSAIDS by various routes. Opioids associated with side effect of nausea and vomiting urinary retention, respiratory depression. NSAIDS are also associated with nausea vomiting epigastic pain, gastric ulceration and in large dose agranulosisitis. Present era is era of regional anesthesia and analgesia, regional modality such as peripheral nerve block by local anesthetist to provide postoperative pain relief has many advantage: 1) devoid of complication of epidural anesthesia 2) devoid of complication of NSAIDS 3) devoid of complication of OPIOIDS 4) provide prolong duration of analgesia 5) decrease dose requirement to produce analgesia 6) they also decrease inflammatory stress response. Innervations of knee is by femoral, lateral femoral cutaneous and sciatic nerve. Huge and colleague observe that equal analgesic efficacy with either femoral or sciatic–FNB. The addition of sciatic nerve block to the FNB did not provide additional if benefits after TKR. They postulated that sciatic innervations of posterior knee is relatively minor contribution to postoperative pain after TKR. Allen et al showed that an FNB in patient with total knee arthroplasty provided better pain score in first 8 hours and 50% reduction in morphine requirement. Therefore we decided to study only FNB & did not include sciatic nerve block for pain relief after knee surgeries. Meta-analysis of RCTs by Paul et al showed that FNB, either as a single shot or continuously with a catheter is now commonly use for analgesia after total knee arthroplasty. Paul et al and colleague showed that in a meta-analysis of 23 studies, single shot femoral nerve block improve analgesia and reduced morphine dose compare with...
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These studies did not demonstrate further improvement with continuous femoral block compared with single shot FNB alone. Ping et al (2001) showed that accumulation and toxicity is a potential problem with continuous 3 in 1 FNB technique compared to single shot. The performance of continuous 3 in 1 block requires specialized equipment, technical expertise and additional time. The necessity for postoperative monitoring and follow up add further cost to performance of continuous 3 in 1 FNB, demonstrated that single shot 3 in 1 FNB technique using lower concentration of ropivacaine and Bupivacaine decrease pain score and morphine consumption up to 48 hour. Salinas et al (2006) studied that there were no significant difference in the resting pain scores for the first 12 hour between continuous femoral nerve block and single shot FNB. Hence we selected single shot FNB. Ropivacaine is relatively new amide type long acting, pure enantiomer-S-type used for surgery and postoperative pain relief. At high doses it produces surgical anesthesia and at lower doses produces analgesia with limited and non progressive motor block. Scott et al (1989) observed that Ropivacaine caused less CNS symptoms and was at least 25% less toxic than Bupivacaine in regard to the dose tolerated. Both the drug increase heart rate and arterial pressure, stroke volume and ejection fraction reduced there is no change in cardiac output although both drug cause evidence of depression of conductivity and contractility this appeared at lower dosage and lower plasma concentrations with Bupivacaine than with ropivacaine. Knudsen et al (1997) studied that the maximum tolerated dose for CNS symptom was higher after ropivacaine than Bupivacaine. Muscular twitching occur more frequently after Bupivacaine. Bupivacaine increase QRS width during sinus rhythm. Compare to placebo and ropivacaine. Bupivacaine reduced both left ventricular diastolic and systolic function compare with placebo, while ropivacaine reduced only systolic function. Zink W and Graf BM, et al (2008) showed that Ropivacaine seems to have greatest margin of safety of all long acting local anesthetic at present. Ping et al (2001) showed that increase concentration of ropivacaine from 0.25% to 0.5% fail to improve postoperative analgesia in 3 in 1 FNB. Mulroy et al (2001) conclude FNB with 25ml of either 0.25% or 0.5% Bupivacaine provided higher frequency of satisfactory analgesia in immediate postoperative period and duration of analgesia did not differ with higher concentration. Wulf (2010) studied femoral block with ropivacaine 0.2% and 0.75%. Bupivacaine 0.25% suggested that no difference in pain scores and pain medication use. Gerhard et al (2007) also used different concentration of ropivacaine (both 0.1%, 0.2% and 0.3%) and came to conclusion that 0.3% concentration showed no advantage over 0.2%, and 0.1% provides ineffective analgesia. Hence we studied ropivacaine versus Bupivacaine (a standard drug so far) in concentration of 0.25%. Winnie et al (1973) studied that when volumes of less than 20ml are injected with the inguinal perivascular technique, the results are unpredictable. The femoral nerve will be block with this (or a smaller) volume, but the obturator and the lateral femorocutaneous nerve may be missed, on the other hand if volume of 20ml or more is utilized, the anesthesia of all three nerve is virtually assured. Ping et al (2001), Gerhard et al (2007), Allen et al (1998) and Salinas et al (2006) studied 30 ml volume for femoral nerve block. Heid et al (2008) used 35ml of volume to studied postoperative analgesic effect. Singelyn et al (1998) used 37ml of volume in his study. Ozen et al (2006) and Wang et al (2002) used 40ml of volume in their study. Thus we have decided to take 40ml volume in our study to ensure to block of all the three nerves. In a comparison of two groups, using Medcalc software the mean and standard deviation for the parameter “duration of analgesia” was counted, helped in deriving at a sample size of 18 per group. Thus our study was carried out in 36 patients, of age 18-80 years, of both sexes, of ASA grade I & II undergoing planned or emergency knee surgery has given postoperative analgesia.
in form of femoral nerve block. This selection correlates with the study by Ping et al (2001) and Mulroy et al(2001). Asa Physical Status Of Patients: (shown in Table) All the patients in our study were either of ASA Grade-I or Grade-II which is in co-relation with other studies like those of Fanelli et al(1998), Ping et al (2001) and Mulroy et al (2001). Heid et al (2008) and De lima et al study(2008) study were either of ASA Grade-1, Grade-2 and Grade 3. Gerhard et al (2007) included all ASA grade in his study. Duration Of Surgery: (Table – 3) Both planned and emergency cases were included in the study; the planned cases outnumbered the emergency ones. However knee surgery are done on routine list(nonemergency).The mean duration of surgery was 100 ± 18.62 minutes in Group R and 99.44± 20.99 minutes in Group B. both the groups the surgery was over within 120 minutes. Only 5 patients out of 36 had duration of surgery more than 120 minutes, out of them 2 require supplementation. Our study correlates with Ping et al (2001) and Gerhard et al (2007) studies showed that no significant difference in duration of surgeries. Fanelli et al (1998) studies also showed that no significant difference in duration of surgeries. Types Of Surgery: (Table – 4) Majority of studies like those by Ping et al(2001), Mulroy et al, Fanelli et al used femoral nerve block in knee surgeries. In our study also knee surgeries were included as shown in table 4. For block characteristics ropivacaine has differential blocking effect on nerve fibres and at lowest concentration used there is good differentiation between analgesia and postoperative duration of pain relief. As compared to Bupivacaine analgesia is often slower, shorter in duration and less intense. Vital Parameters: (Table No 5 And 6) Pulse rate and blood pressure were recorded regularly throughout the period of study. There was no significant difference in pulse rate and blood pressure when pre operative values were compared with intraoperative and post operative values. Thus our observation correlates with study by Ping et al (2001), Mulroy et al(2001) and Gerhard et al (2007). Duration Of Post Operative Pain Relief Table No(7 And 8) Post operative pain relief was adjudged on the basis of visual analogue score. Patients were explained about this method and the rescue analgesics were given when the VAS score was >4. VAS score was 0 up to 5 hours in group R and 4 hours in group B. The VAS score of >4 was attained in 5 hours in Group B and by 6 hours in group R. Thus rescue analgesia was started from 5 hours in group B patients while rescue analgesia was started from 6 hours in group R. Majority of patients in group R were given rescue analgesia by 8th hour, while in group B we started giving rescue analgesia in 7th hour. Majority of patients required rescue analgesia but all the patients were given rescue analgesia by 24th hour. Total average duration of postoperative analgesia in Group R is 7.83 ±0.98 and Group B is 6.33 ±0.76. This difference was statistically very significant(p<0.001). Ping et al (2001) studied that when compared with in Groups R1(Ropivacaine 0.25%), Group R2(Ropivacaine 0.5%) and Group B(Bupivacaine 0.25%) at one, four, eight, twenty four and forty eight hour after TKR(p>0.05), there was no significant difference in VPS in postoperative morphine requirement at any time between R1, R2 and B. Heid et al (2008) demonstrated that both levobupivacaine 0.125% and Ropivacaine 0.2% provide effective postoperative analgesia in patient after TKR. No difference with regard to local anesthetic consumption additional bolus doses, pain score, opioid requirement, or motor block incidence were observed. Thus our finding differ from those of above studies. lower dose range used in our study shows that ropivacaine gives longer pain relief than Bupivacaine. De Lima et al(2008) demonstrated that femoral nerve block using 0.25% Ropivacaine or 0.25% Bupivacaine is effective method of postoperative analgesia after TKR and ACL reconstruction, particularly for the first 10 hours after spinal anesthesia. Ozen(2006) studied that femoral nerve block with ropivacaine shows that pain score were significantly lower in the block group in first 8 hours.
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pain scores were similar to 48 hour postoperatively morphine consumption in first 48 hour is significantly lower in first 48 hour.Wulf(2010) studied femoral block with Ropivacaine 0.2% and 0.75% Bupivacaine 0.25% suggested that no difference in pain scores and pain medication use.Fanelli et al(1998) studied femoral block with ropivacaine 0.75%(670±227min) Bupivacaine 0.5%(880±312min) suggested that that no difference in pain scores and pain medication use.SIDE EFFECTS AND COMPLICATIONS: There were no complications or side effects noted in our study in either groups using 100 mg of the drugs. Majority of the studies not reported any significant incidence of complication in either groups. Ping et al (2001),Mulroy et al(2001),Fanelli et al(1998),Heid et al (2008)and Brodner et al(2007) noted that no such side effect noted due to femoral nerve block but opioids related side effect pruritis ,vomiting and respiratory depression noted in 1 patient during study of ping et al . Zink W and Graf BM, et al (2008) showed that Ropivacaine seems to have greatest margin of safety of all long acting local anesthetic at present.

CONCLUSION
We conclude from our study that the Ropivacaine 0.25% when compared to Bupivacaine 0.25% in dose of 40 ml in 3 in 1 Femoral Nerve block after knee surgeries for postoperative pain relief –
1. Ropivacaine has prolonged duration of analgesia.
2. VAS score of Ropivacaine is less in comparison to Bupivacaine.
3. Ropivacaine has prolonged the duration of post operative pain relief in comparison with Bupivacaine.
4. Ropivacaine as well as Bupivacaine has stable vital parameters in our study.
5. Number of rescue analgesia requirement less in Ropivacaine group.
6. No incidence of complication and toxic reaction was observed from either group. Thus, Ropivacaine(0.25% 40 ml) can be safely used in 3 in 1 Femoral nerve block prolonged post-operative pain relief in comparison with Bupivacaine.

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