



## TO EVALUATE THE EFFECTIVENESS OF CLONIDINE AS AN ADJUVANT TO ROPIVACAINE IN SCIATIC FEMORAL NERVE BLOCK FOR LOWER LIMB SURGERY A PROSPECTIVE RANDOMIZED DOUBLE BLINDED STUDY

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### ABSTRACT

**Introduction:** Sciatic nerve has a wide sensory distribution, hence it can be used together with saphenous or femoral nerve block for any surgical procedures below the knee. Several experimental and clinical studies have shown that Alpha - 2 adrenergic agonists like clonidine were able to prolong sensory and motor blockade. This study is designed to assess the efficacy of the addition of an alpha -2 adrenergic agonist, Clonidine to local analgesic solution in sciatic femoral block for lower limb surgery. **Aim:** To assess the efficacy of CLONIDINE AS AN ADJUVANT TO ROPIVACAINE IN SCIATIC FEMORAL NERVE BLOCK **Materials And Methodology:** The study was conducted at KATURI MEDICAL COLLEGE & HOSPITAL, Chinakondrupadu on 60 Patients of ASA grade I or II undergoing Lower limb surgeries who were randomly assigned into two groups, groups R and RC. Surgery was done under sciatic femoral nerve block through Labats approach after confirmation with nerve stimulator. The patients in group R received 30 ml at 0.75% Ropivacaine and 0.4 ml Normal saline. In group RC received 30ml at 0.75% Ropivacaine and 60 micrograms Clonidine. In this 30ml mixture, 18 ml given in sciatic nerve block and 12 ml given in femoral nerve block. Parameters observed were time of onset of sensory and motor block, duration of sensory and motor blockade, duration of post operative analgesia, sedation score and side effects. **Results:** There is no significant difference in the onset of sensory and motor blockade in Ropivacaine-Clonidine group when compared to ropivacaine group. The addition of Clonidine to Ropivacaine increases the duration of sensory blockade by 184 minutes, duration of motor blockade by 157 minutes and the duration of post operative analgesia by 192 minutes when compared to Ropivacaine alone ( $P < 0.05$ ). In this study, no significant difference was observed with respect to the pulse rate, systolic and diastolic blood pressure, sedation and saturation. **Conclusion:** The addition of clonidine to ropivacaine in sciatic femoral nerve block shows no difference in the onset of sensory and motor blockade but prolongs the duration of both sensory and motor blockade and post operative analgesia, when compared to ropivacaine alone.

**KEYWORDS :** Sciatic femoral nerve block, clonidine, ropivacaine, nerve stimulator.

### INTRODUCTION:

Surgery in the leg results in severe and sustained postoperative pain. This postoperative pain is difficult to control with oral medications. Single shot nerve block is very effective for postoperative pain control in orthopaedic and surgical procedures. By performing sciatic femoral nerve block for lower limb surgeries, adequate postoperative analgesia can be given.

Pain is an important factor for any cardiovascular disease patients undergoing surgery in the lower limb. Postoperative pain produces tachycardia, which could be deleterious to the patients. Hence sciatic femoral nerve block can be performed for these cardiovascular disease and high risk patients that can provide prolonged postoperative analgesia and comfort to the patient. Clonidine like adjuvants will prolong the duration of postoperative analgesia. Low dose of clonidine produces sedation without any respiratory compromise. Hence the addition of low dose of clonidine in nerve blocks will provide sedation and prolongation of postoperative analgesia without any systemic side effects.

### Aim And Objectives:

#### Primary Objective:

To study the duration of post-operative analgesia

#### Secondary Objective

To study the intra-operative haemodynamic changes, level of sensory and motor blockade, depth of sedation and duration of surgery as well as postoperative haemodynamic changes, pain, nausea and vomiting, depth of sedation, pruritus and shivering and total analgesics required over 24 hours of postoperative period.

### Methodology:

This study was done among patients undergoing elective Lower limb surgeries under Sciatic and Femoral nerve block in Katuri Medical College & Hospital, chinakondrupadu, Guntur

District during the period of AUG 2020 to NOV 2022.

### Study Population:

All Patients undergoing elective Lower limb surgeries under Sciatic and Femoral nerve block in Katuri Medical College & Hospital, Chinakondrupadu, Guntur District.

### Study Design:

A randomized, double-blinded trial

### Study setting:

Patients undergoing elective Lower limb surgeries under Sciatic and Femoral nerve block in Katuri Medical College & Hospital, chinakondrupadu, Guntur District.

### Statistical Analysis:

Sample size calculation was done based on previous study with difference of 66 minutes and SD of 61 minutes - 25 patients/each group will be need with 90% of power & 5% significance. So 30 patients will be included in each group to avoid possible dropouts. Statistical analysis was done by independent T-test, Mann Whitney U test, chi square test whichever is applicable.

### Inclusion Criteria:

Patients consenting for elective Lower limb surgeries under Sciatic and Femoral nerve block belonging to

- ASA I and II
- Age group of 18 to 35 yrs
- Body Mass Index between 18.5 - 24.9 Kg/m<sup>2</sup>

### Exclusion criteria:

- Refusal to regional anaesthesia.
- ASA III and above physical status
- Allergic to local anaesthetics and adjuvants.
- Infection at needle site.

**Sample Size:**

Total size of 60 patients

Group I - 30 patients

Group II - 30 patients

**Study Procedure**

Group I received 30 ml at 0.75% Ropivacaine and 0.4 ml Normal saline Group II received 30ml at 0.75% Ropivacaine and 60 micrograms Clonidine. The patients as well as the anaesthetist involved in the assessment of the block were blinded to the drug used for Regional anaesthesia. Separate independent investigator prepared the syringes with drugs and handed over to the performing anaesthetist. A total of 60 patients who were willing for surgery.

**RESULTS:**

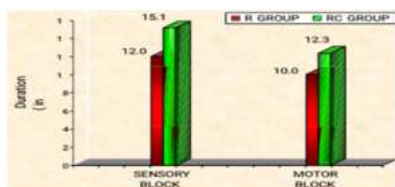
**Duration of sensory and motor block:**

Duration of sensory block in the Ropivacaine group was 12.01 ± 0.9 hours and in the Ropivacaine & clonidine group it was 15.18 ± 0.78 hours. Similarly duration of motor blocks in the two groups were 10.06 ± 0.82 hours and 12.69 ± 0.89 hours.

The differences between the two groups were statistically significant in respect to duration of sensory blockade with a "p" value of 0.0001 and the duration of motor blockade with a "p" value of 0.0001.

Parameter	Duration(inhours)of			
	Sensoryblock		Motorblock	
	Ropivacain egroup	Ropivacain e&Clonidine group	Ropivacaine group	Ropivacain e&Clonidine group
Range	10-13	14-16.5	9-11.8	11.5-14
Mean	12.01	15.18	10.06	12.69
SD	0.9	0.78	0.82	0.89
'p'	0.0001 Significant		0.0001 Significant	

DURATION OF SENSORY & MOTOR BLOCKS

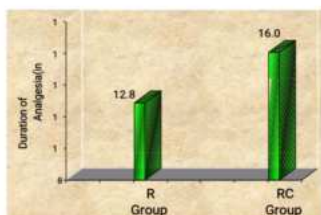


Duration of analgesia was significantly longer in the Ropivacaine - Clonidine group (16.07 ± 0.68 hours) than in the Ropivacaine group (12.87 ± 0.67 hours). 'p' value was 0.0001. The difference between the two groups were statistically significant

9. DURATION OF ANALGESIA

Parameter	Duration of analgesia (in hours)	
	Ropivacain egroup	Ropivacaine & Clonidine group
Range	12-14	15-17.5
Mean	12.87	16.07
SD	0.63	0.68
'p'	0.0001 Significant	

DURATION OF ANALGESIA



**DISCUSSION:**

In this study 60 microgram of Clonidine added to combined sciatic femoral block has showed no statistically significant difference between the two groups as regard to age, sex, weight and ASA status. Onset of sensory and motor blocks occurred in 9.93 ± 1.6 minutes and 13 ± 1.2 minutes respectively in the ropivacaine group. Onset of sensory and motor block occurred in 10.53 ± 1.8 minutes and 13.56 ± 1.96 minutes in the ropivacaine clonidine group. Mean duration of sensory block in ropivacaine group was 12.01 ± 0.9 hours and in ropivacaine clonidine group was 15.18 ± .78 hrs.

The difference between the two groups was statistically significant with a p value of 0.0001 (P<0.05). Mean duration of motor block in ropivacaine group was 10.06 ± 0.82 hours and in ropivacaine clonidine group was 12.69 ± 0.89 hours. The difference between the two groups was statistically significant with a p value of 0.0001 (P<0.05). Duration of analgesia was significantly longer in the ropivacaine - clonidine group (16.07 ± 0.68 hours) than in the ropivacaine group (12.87 ± 0.67 hours). The difference between the two groups was statistically significant with a p value of .0001.

The sedation score in ropivacaine group was 1.0, in ropivacaine clonidine group was 2.4 ± 0.5. The sedation score between the two groups was statistically significant with a "p" value of 0.0001. In clonidine group since the sedation score was not more than 3, the respiratory function was not compromised.

**CONCLUSION:**

The addition of Clonidine to Ropivacaine in Sciatic Femoral nerve block shows no difference in the onset of sensory and motor blockade but prolongs the duration of both sensory and motor blockade and post operative analgesia, when compared to Ropivacaine alone.

**Ethics approval and consent to participate:** Approval was taken from Katuri Medical College and Hospital's Ethics Committee and written informed patients consents were also taken.

**Conflict of interest**

None

**Source of funding**

Self

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