



## Efficacy And Safety of Sedation Produced By Propofol During Subarachnoid Block

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### ABSTRACT

Propofol was used as a sedative agent during Subarachnoid block (SAB). 40 ASA grade I & II patients planned for lower abdominal or lower limb orthopedic surgical procedures were taken. SAB was given with Inj. Bupivacaine heavy (0.5%). After establishment of desired segmental level, Inj. Propofol 1% was used in a bolus dose of 0.5 mg/ kg IV and then infusion of Propofol 0.2% in 5% dextrose was started and titrated to predetermined sedation level (grade III), using five point sedation score. All the patients were monitored for Heart rate, Blood pressure, Respiratory rate and SpO<sub>2</sub>. In present study, incidence of hypotension from preoperative status was 7.5%, bradycardia was 12.5%, pain on injection 4%, postoperative nausea & vomiting 2.5%. Total Propofol required 60±20 mcg/kg/min. Recovery was rapid 2.2±2 min. After discontinuation of Propofol infusion incidence of side effects was low, suggestive of a safe & effective sedative technique with SAB.

### KEYWORDS

Subarachnoid block (SAB), Sedation, Propofol HCl

### INTRODUCTION

Generally orthopedic lower limb procedures conducted in subarachnoid block (SAB). During regional anaesthesia patients are anxious, apprehensive, agitated about their operative position, operation theatre environment, noises and their impaired movements make them more disturbed.

The ideal sedative medication for use during surgery conducted in SAB would provide an easily titrated sedation, amnesia and decreased anxiety with rapid recovery and minimal side effects<sup>1</sup>. Propofol has become an accepted standard drug for sedation during procedure performed under SAB<sup>2</sup>.

We carried out this observational study to provide the supplementary sedation with SAB to enhance patient's psychological comfort.

### MATERIALS AND METHOD

Forty ASA grades I & II patient scheduled for lower limb orthopedic procedures were recruited in the study group after approval from human investigation ethical committee and informed written consent from patients.

After Preoperative measurement of vital data (HR, BP, RR, ECG, S<sub>p</sub>O<sub>2</sub>) intravenous fluids were started and Inj. Glycopyrrolate 0.2 mg intravenous was given 15 minutes prior to surgery, then SAB was given using Inj. Bupivacaine Heavy (0.5%) in a dose to achieve desired segmental level. Then the loading dose of Inj. Propofol HCl 1% 0.5 mg/kg was given IV & the infusion 0.2% started, to achieve and maintain the sedation level grade III using five point

Ramsay sedation score. Titration of Propofol infusion was done according to sedation level targeted. All vitals and sedation levels were recorded every 5-10 minutes intervals. Intraoperative decrease in blood pressure and pulse rate (more than 20% than preoperative value) were treated with Inj. Mephenteramine and Inj. Atropine Respectively. Simultaneously respiratory rate, and pattern were observed and infusion of Propofol adjusted as per need, limited by a normal S<sub>p</sub>O<sub>2</sub> Value. Oxygen was administered in stepwise fashion to those patients who exhibited S<sub>p</sub>O<sub>2</sub> value less than 95%. Finally Propofol infusion discontinued at the end of surgery and observation of vital parameters was continued till the patients regained the full consciousness (Sedation grade I). Recovery from sedation was judged by patient's orientation to time, place and ability to recognize relatives. All patients were closely observed for the post operative complications and side effects, if any.

### OBSERVATION AND RESULTS:

Results were expressed as mean ± SD.

Table 1 shows Demographic data, age, sex, weight, height.

Intraoperatively all the patients were hemodynamically stable as shown in Graph 1 and 2

In present study 3 cases (7.5%) had hypotension treated with inj mephenteramine, 5 patients (12.5%) had bradycardia treated with inj Atropine, 3 cases (7.5%) had both bradycardia and hypotension, ox-

xygen supplementation through nasal pronges were required in 07 (17.5%) cases and pain on injection of propofol was noted in 4 (10%) patients as shown in Table 2 and 3.

Nausea, vomiting, involuntary movement and hallucination were noted postoperatively in one patient each as shown in Table 4.

**DISCUSSION**

Propofol has become the attractive alternative to other sedative medications as rapid recovery with low incidence of side effects has been reported.<sup>1</sup>

Propofol causes dose dependent cardiovascular and respiratory depression. Propofol decreases vasomotor tone in arterial and venous vascular beds due to both a direct vasodilator effect of Propofol on vascular smooth muscle and decrease in sympathetic outflow<sup>3</sup>. In present study 3 cases (7.5%) had decrease in blood pressure more than 20% of the preoperative status [hypotension] and were treated with Inj. Mephenteramine.

After Propofol administration hypotension with bradycardia may be due to depression of baroreceptor response and reduction in sympathetic outflow from brain stem<sup>4</sup>. There have been many reports of sudden bradycardia and asystole in patients under Propofol anaesthesia probably due to vagotonic action<sup>5</sup>. In this study no patient had this complication; in present study 5 patients (12.5%) had decrease in pulse rate [bradycardia] more than 20% than preoperative value were treated with Inj. Atropine. This may be an important clinical consideration for its use as an adjunct to SAB. Moreover SAB also causes venous pooling in periphery, reduces stimulation of the volume receptors there by diminishing activity of cardiac sympathetic nerves, results in vagal preponderance and slowing of heart rate<sup>6</sup>. Incidence of these changes is less when lower segmental level SAB are given with adequate intravenous hydration. In this study 3 cases (7.5%) had both bradycardia and hypotension.

The sedative dose of Propofol had no adverse effects on tidal volume and minute volume<sup>7</sup>. However Propofol can depress the ventilatory response to hypoxia<sup>8</sup>, suggesting that supplementation of oxygen should always be considered, if  $S_pO_2$  value falls to less than 95%. The mechanism of its respiratory effects may be due to decreased level of consciousness and changes in alveolar ventilation are found to be variable<sup>9</sup>. In present study oxygen supplementation through nasal pronges were required in 07 (17.5%) cases. This high percentage of oxygen supplementation was required due to the fact that  $O_2$  was started much earlier before any real fall of saturation of oxygen took place.

The Propofol exhibits significant direct antiemetic property<sup>10</sup>. Which probably explains the observation that nausea was noted in 1 (2.5%) case in this study Propofol caused pain on injection particularly if small veins were used<sup>(11, 12)</sup>. This was seen in 4 (10%) cases in this study.

In present study, average total Propofol requirement for target mcg level sedation [sedation score-3] was  $60 \pm 20$  mcg /kg / min. Propofol permits quicker recovery<sup>13</sup>, and associated with decreased level of sedation, drowsiness, confusion, clumsiness and amnesia<sup>14</sup>.

In present study, recovery from sedation as judged by patients orientation to time, place and ability to recognize relatives was  $2.2 \pm 2$  min its mood altering (e.g. euphorogenic) properties are felt to be well-suited for conscious sedation procedures<sup>15</sup>.

**CONCLUSION**

Propofol infusion was safe, effective and satisfactory for providing sedation during SAB with rapid recovery without much side effects.

**(Table - 1)**

**Demographic data**

Number of patients	40
Male/Female	35/5
Age ( Years )	42.5 ± 16
Weight (kgs)	57 ± 13
Height (Cms)	167 ± 9
Total Surgical Time ( Minutes )	30 minutes to 130 min.

**(Table - 2)**

**Incidence of Intraoperative Complication and Side effects**

Intraoperative Side effects	No of patients ( % )
Hypotension	3(7.5%)
Bradycardia	5 (12.5%)
Bradycardia & Hypotension	3(7.5%)
Decreased $S_pO_2$ Value < 95%	07 (17.5%)
Pain of Injection of Propofol	4 (10%)
Total Number of Patients	40 (100%)

**(Table - 3)**

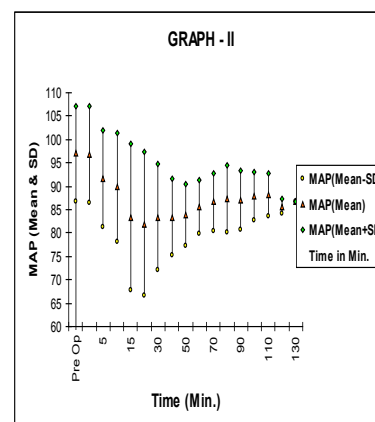
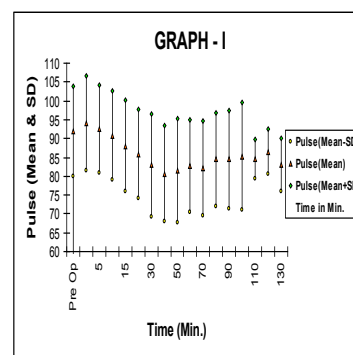
**Intraoperative requirement of Drugs**

Injection Mephenteramine	3(7.5%)
Inj. Atropine	5 (12.5%)
$O_2$ Supplementation	07 (17.5%)
Total Propofol Requirement	$60 \pm 20$ mcg/ kg / min.
Average recovery time	$2.2 \pm 2$ min

**(Table - 4)**

**Incidence of Postoperative Complications and Side effects**

Postoperative Side effects	No of patients (%)
Headache	0 (0%)
Apnea	0 (0%)
Postoperative nausea & Vomiting	1 (2.5%)
Involuntary movement	1 (2.5%)
Hallucination	1 (2.5%)
Total Number of Patients	N = 40 (100 %)



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