*Original Articles*

# Comparison of Two Routes of Buprenorphine, I V vs S L, in Minor Surgeries (< 2 hrs) done under SA for Post Operative Pain Relief

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**Abstract**

**Analgesia, haemodynamics and side effects of 3 μg/kg buprenorphine, administered by two different routes, intravenous (I V) or sublingual (S L), were compared in this study in sixty patients. These patients were undergoing minor surgery (< 2 hours duration) under spinal anaesthesia with 0.5% plain bupivacaine. The drug was administered either intravenous or sublingual, 5 min after administration of intrathecal bupivacaine. Parameters like pulse rate, respiratory rate, blood pressure, pain and sedation scores were noted at the time of administration (To), every half hourly for four hours, hourly for four hours and thereafter four hourly for 24 hours or till the patients complained pain 50% or more on the visual analogue scale, whichever was earlier.**

**Haemodynamic fluctuations were within acceptable limits by both routes of administration. Respiratory depression was more in intravenous than the sublingual group. Sublingual buprenorphine was superior than Intravenous buprenorphine due to high lipophilicity, suitability of administration, sweet taste, minimal side effects and long lasting effective analgesia.**

## Introduction

Opiates have been used since hundreds of years to reduce surgical and postoperative pain.[1-3] But addiction potential and respiratory depression[4-9] have made these drugs go into disrepute. Therefore attention has been directed to opiates having mixed agonist-antagonist action, with powerful analgesic action, low addiction liability and low depressant side effects.[4-9]

## Patients and Method

This was a prospective study, designed to compare postoperative analgesia and side effects with long acting opioid agonist-antagonist, buprenorphine, by two different routes i.e. intravenous or sublingual in patients undergoing minor surgeries under spinal anaesthesia. Sixty ASA grade I or II patients, aged 18-60 yrs who gave informed consent were included in the study and observed intra-operatively as well as post-operatively in the recovery room. Patients with significant respiratory and cardiovascular abnormalities were excluded from the study. No opiate premedication was given.

Patients were divided in two groups, I V or S L, of 30 patients each.

Routine laboratory investigations i.e. Hb, PCV, S. Biochemistry, S. electrolytes, chest X-ray were done in all the patients. ECG was done in all patients over 40 yrs of age. The height and weight of patients were recorded. All of them were nil by mouth for at least 6

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hours prior to spinal anaesthesia.

The patients baseline pulse, respiratory rate and BP were recorded prior to anaesthesia. I V access was achieved with 18 G I V cannula and the patient was preloaded with 500 ml ringer lactate over 20 minutes. Spinal anaesthesia was given with 3 ml of plain bupivacain 0.5 % in patients with height 165 cm or less and 3.5 ml in patients whose height was more than 165 cm with 25G spinal needle. Patients were allocated randomly in either of the two groups. The IV group received I V buprenorphine 3 μg/kg and SL group received 3 μg/kg sublingually 5 min after SA. At the time of administration ($T_0$) PR, RR, BP, pain score and sedation score was recorded. Pain score was recorded by modified visual analogue pain scale where '0' represents no pain at all and '10' represent the worst possible pain. Sedation score by Ramsay was also recorded. The Ramsay sedation score is a six point score and is recorded as follows:

1 - Anxious, agitated, restless.
2 - Tranquil, cooperative, oriented.
3 - Asleep, respond to command only.
4 - Asleep, respond to gentle shaking
5 - Asleep, respond to noxious stimuli.
6 - Asleep not respond to any stimuli.

PR, BP (MAP), RR, Sedation and Pain score noted ½ hrly for 4 hours, hourly for next 4 hrs, 4th hourly for next 24 hrs or till the patient complains of 50% pain, when rescue analgesia was given with 3 ml of IM Diclofenac. The study was terminated after 24 hours or if the patient needed rescue analgesia, whichever was earlier. The results were analysed using ANOVA test and Chi-Square tests.

## Observation and Results

The demographic and haemodynamic variables were comparable in both the groups (Tables 1-4). The onset of analgesia was faster in the I V group compared to S L group. Peak action was achieved after 2-2 ½ hours in I V group and 2 ½ -3 hr in SL group (Table 5).

A VAS score of over 50% was achieved earlier with the IV group as compared to the SL group. None needed rescue analgesia. The maximum sedation score was same in both the groups. The duration of sedation was about 5 hours in both groups. Maximum sedation was more in IV group (statistically significant) than in SL group (Table 6). Respiratory depression requiring immediate intervention was not reported in any patient (Table 7).

Incidence of retention of urine and mild hypotension was more in IV than SL group. Vertigo, euphoria and dizziness were side effects seen in SL group.

The demographic and haemodynamic variables were comparable in both the groups (Figs. 1 & 2). The onset of analgesia was faster in the I V group compared to S L group. Peak action was achieved after 2-2 ½ hours in I V group and 2 ½ - 3 hr in SL group (Fig. 3).

A VAS score of over 50% was achieved earlier with the IV group as compared to the SL group. None needed rescue analgesia. The maximum sedation score was same in both the

**Table 1 : Comparison of demographic variables between Intravenous and sublingual groups**

| Variables | Group | | | | Unpaired T-Test applied | | |
|---|---|---|---|---|---|---|---|
| | Intravenous | | Sublingual | | | | |
| | Mean | SD | Mean | SD | T-value | P-value | Difference |
| Age (yrs) | 37.87 | 12.98 | 38.70 | 11.09 | 0.267 | 0.790 | Not significant |
| Wt (kg) | 54.33 | 9.23 | 57.40 | 7.18 | 1.437 | 0.156 | Not significant |
| Duration of Surgery | 1.29 | 0.31 | 1.33 | 0.34 | 0.514 | 0.609 | Not significant |

**Table 2 : Comparison of pulse rate at various intervals between Intravenous and sublingual groups**

| Pulse Rate/min. | Group | | | | Unpaired T-Test applied | | |
|---|---|---|---|---|---|---|---|
| | Intravenous | | Sublingual | | | | |
| | Mean | SD | Mean | SD | T-value | P-value | Difference |
| Pre-op (T0) | 81.90 | 10.44 | 80.77 | 9.13 | -0.447 | 0.656 | Not significant |
| T 1/2 hr | 71.90 | 12.48 | 74.27 | 13.85 | 0.695 | 0.490 | Not significant |
| T 1 hr | 67.13 | 10.14 | 74.53 | 13.76 | 2.371 | 0.021 | Significant |
| T 1 & 1/2 hr | 67.53 | 9.73 | 71.00 | 13.46 | 1.144 | 0.257 | Not significant |
| T 2 hrs | 66.77 | 7.51 | 69.73 | 10.06 | 1.295 | 0.201 | Not significant |
| T 2 & 1/2 hrs | 65.40 | 7.03 | 68.10 | 9.76 | 1.229 | 0.224 | Not significant |
| T 3 hrs | 65.23 | 6.40 | 67.53 | 9.32 | 1.115 | 0.270 | Not significant |
| T 3 & 1/2 hrs | 65.20 | 5.98 | 67.53 | 8.40 | 1.240 | 0.220 | Not significant |
| T 4 hrs | 66.20 | 7.25 | 67.27 | 7.33 | 0.567 | 0.573 | Not significant |
| T 5 hrs | 66.28 | 7.38 | 67.41 | 6.81 | 0.610 | 0.544 | Not significant |
| T 6 hrs | 67.04 | 7.26 | 66.69 | 5.18 | -0.197 | 0.844 | Not significant |
| T 7 hrs | 68.00 | 7.10 | 66.36 | 5.26 | -0.837 | 0.408 | Not significant |
| T 8 hrs | 69.23 | 7.42 | 66.22 | 3.49 | -1.511 | 0.142 | Not significant |
| T 24 hrs | 79.50 | 6.48 | 70.25 | 7.44 | -2.652 | 0.019 | Significant |

Fall in pulse rate from baseline value started from 1/2 hr onwards in both groups. The fall in pulse rate was more pronounced and significant in the I V group than S L group ($p < 0.021$). The pulse rate was least between 3 – 4 hours in both groups. This relative fall in pulse rate persisted for 8 hrs with return to baseline pulse at 24 hrs. 6 patients in group I V and 4 patients in group S L had bradycardia (PR < 60/min). 4 patients of group I V required anticholinergic treatment. No statistically significant difference was found between the two groups on analysis of variance for pulse rate.

**Table 3 : Comparison of respiratory rate at various intervals between intravenous and sublingual groups**

| Respiratory Rate/min. | Group | | | | Unpaired T-Test applied | | |
|---|---|---|---|---|---|---|---|
| | Intravenous | | Sublingual | | | | |
| | Mean | SD | Mean | SD | T-value | P-value | Difference |
| Pre-op (T0) | 17.10 | 3.28 | 18.27 | 3.23 | 1.388 | 0.170 | Not significant |
| T 1/2 hr | 15.07 | 3.18 | 16.43 | 3.89 | 1.489 | 0.142 | Not significant |
| T 1 hr | 13.57 | 2.62 | 16.10 | 4.11 | 2.849 | 0.006 | Significant |
| T 1 & 1/2 hr | 12.87 | 2.39 | 15.40 | 3.61 | 3.208 | 0.002 | Significant |
| T 2 hrs | 12.07 | 1.62 | 14.73 | 3.62 | 3.684 | 0.001 | Significant |
| T 2 & 1/2 hrs | 12.13 | 1.96 | 13.93 | 3.04 | 2.726 | 0.008 | Significant |
| T 3 hrs | 12.03 | 2.21 | 13.47 | 2.73 | 2.239 | 0.029 | Significant |
| T 3 & 1/2 hrs | 12.00 | 2.03 | 13.33 | 2.85 | 2.088 | 0.041 | Significant |
| T 4 hrs | 12.13 | 2.29 | 13.00 | 2.51 | 1.400 | 0.167 | Not significant |
| T 5 hrs | 12.07 | 2.36 | 13.17 | 2.90 | 1.588 | 0.118 | Not significant |
| T 6 hrs | 12.28 | 2.70 | 13.23 | 2.54 | 1.297 | 0.201 | Not significant |
| T 7 hrs | 12.17 | 2.75 | 12.91 | 2.37 | 0.918 | 0.365 | Not significant |
| T 8 hrs | 12.62 | 2.22 | 12.33 | 1.97 | -0.373 | 0.712 | Not significant |
| T 24 hrs | 12.75 | 1.83 | 12.25 | 1.28 | -0.632 | 0.537 | Not significant |

There was a fall in respiratory rate in both groups by 5 breaths/min. which started from 1 hr ($p < 0.006$) with gradual progressive decrease over next 3 ½ hrs in both groups. Respiratory rate was maintained thereafter till 24 hr without significant change. Fall in respiratory rate was more in IV than S L group in the 1st 8 hrs. Three patients of I V group had RR 8/min while only 1 patient of S L group had respiratory rate < 8/min. The least respiratory rate achieved in both groups was 8/min. None needed oropharyngeal airway or IPPV treatment.

**Table 4 : Comparison of blood pressure (MAP) at various intervals between intravenous and sublingual groups**

| Blood Pressure (MAP)-mm of Hg | Group | | | | Unpaired T-Test applied | | |
|---|---|---|---|---|---|---|---|
| | Intravenous | | Sublingual | | | | |
| | Mean | SD | Mean | SD | T-value | P-value | Difference |
| Pre-op (T0) | 91.93 | 7.49 | 90.07 | 6.92 | -1.003 | 0.320 | Not significant |
| T 1/2 hr | 83.37 | 6.66 | 82.07 | 5.50 | -0.825 | 0.413 | Not significant |
| T 1 hr | 83.33 | 6.45 | 82.17 | 5.48 | -0.755 | 0.453 | Not significant |
| T 1 & 1/2 hr | 84.00 | 6.35 | 81.97 | 5.49 | -1.327 | 0.190 | Not significant |
| T 2 hrs | 85.10 | 6.65 | 83.07 | 4.39 | -1.399 | 0.167 | Not significant |
| T 2 & 1/2 hrs | 85.67 | 7.17 | 83.87 | 6.47 | -1.021 | 0.311 | Not significant |
| T 3 hrs | 85.70 | 7.27 | 82.97 | 4.11 | -1.793 | 0.078 | Not significant |
| T 3 & 1/2 hrs | 85.87 | 7.54 | 83.83 | 3.86 | -1.315 | 0.194 | Not significant |
| T 4 hrs | 86.57 | 7.36 | 83.97 | 3.73 | -1.726 | 0.090 | Not significant |
| T 5 hrs | 85.86 | 6.65 | 84.00 | 3.79 | -1.310 | 0.195 | Not significant |
| T 6 hrs | 86.20 | 7.53 | 83.85 | 3.48 | -1.441 | 0.156 | Not significant |
| T 7 hrs | 84.61 | 6.92 | 84.32 | 4.64 | -0.160 | 0.874 | Not significant |
| T 8 hrs | 85.15 | 7.49 | 84.89 | 4.90 | -0.119 | 0.906 | Not significant |
| T 24 hrs | 90.38 | 7.67 | 92.63 | 9.74 | 0.513 | 0.616 | Not significant |

In both groups, there was a fall in systolic, diastolic and mean arterial blood pressures by 10-20 mmHg during the first half hour after administration of study drug and maintained in that range upto 8 hours with gradual return to baseline value by 24 hours. No significant difference was found between the groups

**Table 5 : Comparison of pain score at various intervals between intravenous and sublingual groups**

| Pain Score | Group | | | | Unpaired T-Test applied | | |
|---|---|---|---|---|---|---|---|
| | Intravenous | | Sublingual | | | | |
| | Mean | SD | Mean | SD | T-value | P-value | Difference |
| Pre-op (T0) | 0.00 | 0.00 | 0.00 | 0.00 | Test cannot be applied | | |
| T 1/2 hr | 0.00 | 0.00 | 0.00 | 0.00 | Test cannot be applied | | |
| T 1 hr | 0.03 | 0.18 | 0.00 | 0.00 | -1.000 | 0.321 | Not significant |
| T 1 & 1/2 hr | 0.33 | 1.83 | 0.67 | 2.54 | 0.584 | 0.561 | Not significant |
| T 2 hrs | 2.67 | 5.83 | 1.33 | 3.46 | -1.077 | 0.286 | Not significant |
| T 2 & 1/2 hrs | 4.33 | 7.74 | 4.67 | 6.81 | 0.177 | 0.860 | Not significant |
| T 3 hrs | 9.00 | 9.60 | 9.33 | 10.81 | 0.126 | 0.900 | Not significant |
| T 3 & 1/2 hrs | 15.33 | 10.08 | 14.67 | 12.79 | -0.224 | 0.823 | Not significant |
| T 4 hrs | 20.67 | 11.43 | 20.33 | 12.73 | -0.107 | 0.915 | Not significant |
| T 5 hrs | 28.97 | 11.45 | 27.93 | 10.48 | -0.359 | 0.721 | Not significant |
| T 6 hrs | 34.40 | 10.44 | 34.23 | 9.45 | -0.061 | 0.952 | Not significant |
| T 7 hrs | 35.56 | 10.42 | 32.73 | 11.21 | -0.820 | 0.418 | Not significant |
| T 8 hrs | 36.15 | 11.93 | 38.89 | 10.23 | 0.685 | 0.499 | Not significant |
| T 24 hrs | 30.00 | 0.00 | 30.00 | 0.00 | Test cannot be applied | | |

Duration of maximum analgesia was 3-8 hrs in both groups. Incidence of patients complaining 50% pain between 4-6 hrs was more in IV group than SL group. Incidence of patients complaining 50% of pain between 7-8 hours is more in SL group than in IV group. Onset of analgesia was earlier in IV group than in SL group. No statistically significant difference was found between the groups on analysis of variance for pain score.

**Table 6 : Comparison of Sedation Score at various intervals between Intravenous and Sublingual groups**

| Sedation Score | Group | | | | Unpaired T-Test applied | | |
|---|---|---|---|---|---|---|---|
| | Intravenous | | Sublingual | | | | |
| | Mean | SD | Mean | SD | T-value | P-value | Difference |
| Pre-op (T0) | 0.00 | 0.00 | 0.00 | 0.00 | Test cannot be applied | | |
| T 1/2 hr | 0.00 | 0.00 | 0.00 | 0.00 | Test cannot be applied | | |
| T 1 hr | 0.07 | 0.25 | 0.00 | 0.00 | -1.439 | 0.155 | Not significant |
| T 1 & 1/2 hr | 0.17 | 0.46 | 0.07 | 0.25 | -1.041 | 0.302 | Not significant |
| T 2 hrs | 0.53 | 0.63 | 0.37 | 0.67 | -0.995 | 0.324 | Not significant |
| T 2 & 1/2 hrs | 0.77 | 0.82 | 0.67 | 0.96 | -0.435 | 0.665 | Not significant |
| T 3 hrs | 0.70 | 0.70 | 0.77 | 0.68 | 0.374 | 0.710 | Not significant |
| T 3 & 1/2 hrs | 0.37 | 0.49 | 0.57 | 0.63 | 1.378 | 0.174 | Not significant |
| T 4 hrs | 0.10 | 0.31 | 0.20 | 0.41 | 1.077 | 0.286 | Not significant |
| T 5 hrs | 0.03 | 0.19 | 0.07 | 0.26 | 0.584 | 0.561 | Not significant |
| T 6 hrs | 0.00 | 0.00 | 0.00 | 0.00 | Test cannot be applied | | |
| T 7 hrs | 0.00 | 0.00 | 0.00 | 0.00 | Test cannot be applied | | |
| T 8 hrs | 0.00 | 0.00 | 0.00 | 0.00 | Test cannot be applied | | |
| T 24 hrs | 0.00 | 0.00 | 0.00 | 0.00 | Test cannot be applied | | |

Onset of sedation was faster (1 hr) in IV group as compared to SL group (1 1/2 hours) - ($p < 0.025$). Maximum sedation score was similar in both groups. Duration of sedation was about 5 hours in both the groups. Duration of sedation was marginally more in I V group than in SL group with no statistical significance.

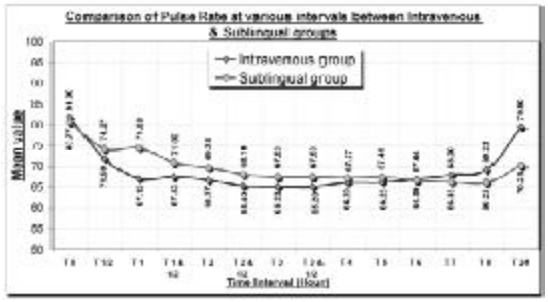


*Fig. 1 : Comparison of pulse rate at various intervals between I and II groups with unpaired T-test*

*Fall in pulse rate from baseline value started from ½ hour onwards in both groups. The fall in pulse rate was more pronounced and significant in the I V group than S L group ($p < 0.021$). The pulse rate was least between 3-4 hours in both groups. This relative fall in pulse rate persisted for 8 hrs with return to baseline pulse at 24 hrs. 6 patients in group I V and 4 patients in group S L had bradycardia (PR < 60/min). 4 patients of group I V required anticholinergic treatment. No statistically significant difference was found between the two groups on analysis of variance for pulse rate.*

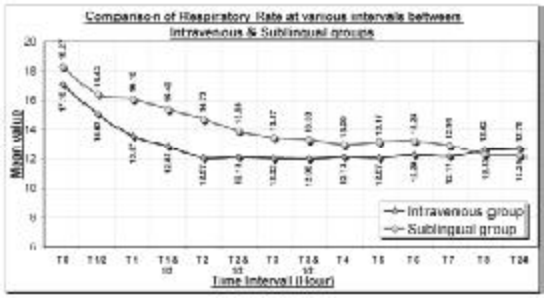


*Fig. 2 : Comparison of respiratory rate at various intervals between intravenous and sublingual groups, unpaired T test*

*There was a fall in respiratory rate in both groups by 5 breaths/min. which started from 1 hr ($p < 0.006$) with gradual progressive decrease over next 3 ½ hrs in both groups. Respiratory rate was maintained thereafter till 24 hr without significant change. Fall in respiratory rate was more in IV than S L group in the 1 st 8 hrs. Three patients of I V group had RR 8/min while only 1 patient of S L group had respiratory rate < 8/min. The least respiratory rate achieved in both groups was 8/min. None needed oropharyngeal airway or IPPV treatment.*

**Table 7 : Side effect of Cases compared between the Groups**

| Side effect | | Group Intrave-nous | Sublin-gual | Total |
|---|---|---|---|---|
| Bradycardia+ Giddiness | No. | 0 | 1 | 1 |
| | % | 0.00% | 3.30% | 1.70% |
| Bradycardia+ Hypotension | No. | 1 | 0 | 1 |
| | % | 3.30% | 0.00% | 1.70% |
| Bradycardia+ Resp.depression | No. | 1 | 2 | 3 |
| | % | 3.30% | 6.70% | 5.00% |
| Bradycardia+ Urine retention | No. | 2 | 0 | 2 |
| | % | 6.70% | 0.00% | 3.30% |
| Bradycardia | No. | 6 | 4 | 10 |
| | % | 20.00% | 13.30% | 16.70% |
| Euphoria | No. | 0 | 1 | 1 |
| | % | 0.00% | 3.30% | 1.70% |
| Hypotension | No. | 1 | 1 | 2 |
| | % | 3.30% | 3.30% | 3.30% |
| Respiratory depression | No. | 3 | 1 | 4 |
| | % | 10.00% | 3.30% | 6.70% |
| Urinary retention | No. | 1 | 2 | 3 |
| | % | 3.30% | 6.70% | 5.00% |
| Vertigo | No. | 0 | 1 | 1 |
| | % | 0.00% | 3.30% | 1.70% |
| None | No. | 15 | 17 | 32 |
| | % | 50.00% | 56.70% | 53.30% |
| Total | No. | 30 | 30 | 60 |
| | % | 100.00% | 100.00% | 100.00% |

| Chi-square Test applied | Value | df | P-value | Difference is- |
|---|---|---|---|---|
| Pearson Chi-Square | 8.192 | 10 | 0.610 | Not significant |
| Likelihood Ratio | 10.572 | 10 | 0.392 | Not significant |

Bradycardia and respiratory depression was found to be the predominant side effect in both groups with incidence more in IV than SL group (33% and 13% in IV group Vs 23% and 10% in SL group).Urinary retention was found in 10% patients of IV group and 3% patients of SL group. Hypotension (SBP < 90 mm Hg) was found in 6% patients of IV group 3% patients of SL group. Vertigo and euphoria was found in 3% patients of SL group were asymptomatic.There was no statistically significant difference in side effects between two groups though I V group had a marginally higher percentage of side effects.

groups. The duration of sedation was about 5 hours in both groups. Maximum sedation was more in IV group (statistically significant) than in SL group. Respiratory depression requiring immediate intervention was not reported in any patient (Figs. 3-5).

Incidence of retention of urine and mild hypotention was more in IV than SL group. Vertigo, euphoria and dizziness were side effects seen in SL group (Fig. 6).

## Discussion

Buprenorphine has been studied for pre-emptive analgesia and for post operative pain relief by many authors.[1,3,10-15] However, there are not many studies comparing I V route with S L route for post operative pain relief in indoor patients.

Buprenorphine, 3 µg/kg, has been shown to be an effective analgesic in doses used in trials. The drug has a slow onset of action with prolonged duration of analgesia.[1,2,4,6,10,11,13-

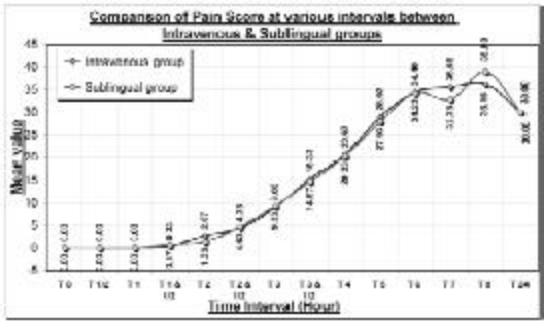


*Fig. 3 : Comparison of pain score at various intervals between IV and SL groups with Chi-square test*

*Duration of maximum analgesia was 3-8 hrs in both groups. Incidence of patients complaining 50% pain between 4-6 hrs was more in IV group than SL group. Incidence of patients complaining 50% of pain between 7-8 hours is more in SL group than in IV group. Onset of analgesia was earlier in IV group than in SL group. No statistically significant difference was found between the groups on analysis of variance for pain score.*

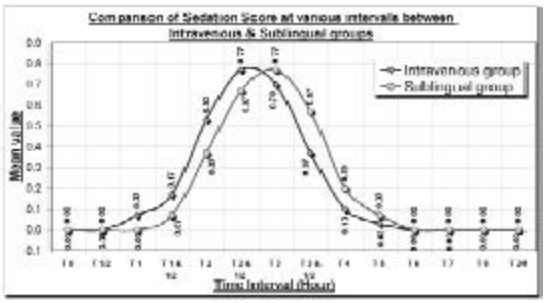


*Fig. 4 : Comparison of sedation score at various intervals between IV and SL groups with Chi-square test*

*Onset of sedation was faster (1 hr) in IV group as compared to SL group (1 ½ hours) – (p < 0.025). Maximum sedation score was similar in both groups. Duration of sedation was about 5 hours in both the groups. Duration of sedation was marginally more in I V group than in SL group with no statistical significance.*

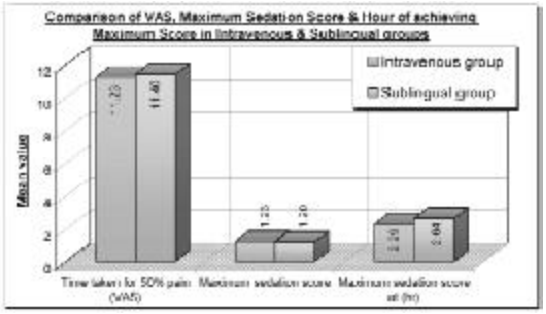


*Fig. 5 : Comparison of time taken for 50% pain (VAS) maximum sedation score and time for maximum sedation score between two groups, with unpaired T-test*

*There was no statistically significant difference in the time taken for 50% pain complained by patient and maximum sedation score in both groups. Maximum sedation was achieved earlier in IV group (Between 2-2 ½ hr) than in SL group (between 2, ½-3 hrs) and is statistically significant (p < 0.025).*

[20]

In this study, an attempt was made to compare analgesia, haemodynamic properties and side effects of buprenorphine by I V and S L routes.

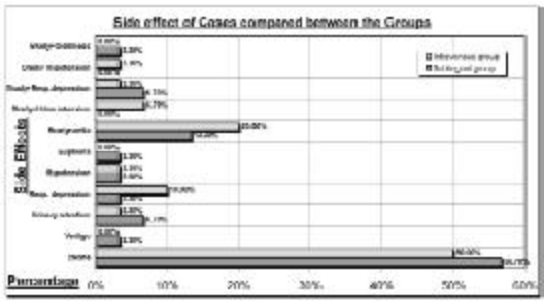


*Fig. 6 : Comparison of side effect between two groups Bradycardia and respiratory depression was found to be the predominant side effect in both groups with incidence more in IV than SL group (33% and 13% in IV group Vs. 23% and 10% in SL group). Urinary retention was found in 10% patients of IV group and 3% patients of SL group. Hypotension (SBP < 90 mm Hg) was found in 6% patients of IV group 3% patients of SL group. Vertigo and euphoria was found in 3% patients of SL group were asymptomatic. There was no statistically significant difference in side effects between two groups though I V group had a marginally higher percentage of side effects.*

Effectiveness of I V Buprenorphine is proven. Both routes of administration resulted in acceptable pain and sedation scores as well as acceptable fluctuation in haemodynamics. Suitability of drug by sublingual route is suggested by high lipophilicity and long duration of action with low addiction potential.[10,13,14,17,18,20-23] Taste of the drug is sweet and route of administration is convenient for patients as well as nursing staff. Euphoria if present is an added advantage with this route.

To conclude, in indoor patients, where continuous monitoring of vitals is available, buprenorphine is a cost effective yet good analgesic with high potency, providing maximum patient comfort with minimal side effects.

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