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Original Research

Evaluation of effectiveness of Buprenorphine Added 2 % Lignocaine 1:80000 in Postoperative Analgesia After Minor Oral Surgery: An observational study

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ABSTRACT:

Background: The present study was conducted for evaluating the effectiveness of Buprenorphine Added 2 % Lignocaine 1:80000 in Postoperative Analgesia After Minor Oral Surgery. **Materials & methods:** 40 subjects who needed minor oral surgery were included in the study. All the subjects were divided into two study groups as follows: Group A: With 0.3 mg (1 ml) buprenorphine, and Group B: Without 0.3 mg (1 ml) buprenorphine. Various minor surgical procedures included in the study were third molar surgeries, alveoloplasties and cyst enucleations. Once the surgical procedure was over, a self-analysis form to evaluate the degree of post-surgical pain on a 10-point, visual analogue scale; (VAS scale), interpreted as:0-No pain, 1 to 3- Mild pain, 4 to 6- Moderate pain, and 7 to 10- Severe pain. All the results were recorded and analyzed by SPSS software. **Results:** Mean pain score among subjects of group A at 2 hours, 4 hours, 10 hours, 18 hours, 24 hours and 48 hours was 0.52, 0.56, 0.72, 0.51, 0.41 and 0.18 respectively. Mean pain score among subjects of group A at 2 hours, 4 hours, 10 hours, 18 hours, 24 hours and 48 hours was 1.23, 1.52, 1.96, 1.25, 1.10 and 0.36 respectively. Mean pain score was significantly lower among subjects of group A in comparison to subjects of group B till 24 hours. **Conclusion:** Addition of Buprenorphine significantly improves Postoperative Analgesia After Minor Oral Surgery.

Key words: Buprenorphine, Analgesia, Oral

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INTRODUCTION

Over the past, several studies have suggested that addition of certain opiates to the local anesthetic solution used for block anesthesia may provide effective and prolonged postoperative analgesia. The presence of opioid receptors in peripheral nervous system offers the possibility of providing postoperative analgesia in ambulatory surgical patients. Over the past decades many investigators have studied this approach and have compared the efficacy of various opioids added to the local anesthetics injected into inflamed dental tissues and also in brachial plexus blocks.[1- 3]

Opioids are another group of analgesics which can be considered. They are used as the first-line drugs for severe pain control. Opioid analgesics have an advantage over NSAIDs in that they do not cause direct organ damage. Morphine is a μ-agonist that is regarded as the gold standard opioid analgesic used to relieve severe pain. However, it also produces a wide spectrum of unwanted effects such as respiratory depression, nausea, vomiting, dizziness, and dysphoria. Therefore, an opioid with better analgesic and lesser adverse effects is desirable. Buprenorphine hydrochloride is an opioid receptor μ-agonist and K-antagonist, having both analgesic and anti-hyperalgesic properties. It is both lipophilic and highly protein bound. It has a rapid onset and a long duration of action. It has an antinociceptive potency approximately 25–50 times greater than that of morphine. Furthermore, adverse effects occur at a lower frequency than morphine.[4- 6]Hence; the present study was conducted for evaluating the effectiveness

of Buprenorphine Added 2 % Lignocaine 1:80000 in Postoperative Analgesia After Minor Oral Surgery.

MATERIALS & METHODS

The present study was conducted for evaluating the effectiveness of Buprenorphine Added 2 % Lignocaine 1:80000 in Postoperative Analgesia After Minor Oral Surgery. 40 subjects who needed minor oral surgery were included in the study. 1 ml of buprenorphine hydrochloride injection I.P which contains an equivalent of 0.3 mg buprenorphine was withdrawn into a syringe and injected into a 30 ml vial of 2 % lignocaine with adrenaline 1:80000. Thus each ml of local anesthetic contained 0.01 mg of buprenorphine. This solution was labeled and was used for the study. All the subjects were divided into two study groups as follows:

Group A: With 0.3 mg (1 ml) buprenorphine

Group B: Without 0.3 mg (1 ml) buprenorphine

Various minor surgical procedures included in the study were third molar surgeries, alveoloplasties and cyst enucleations. Once the surgical procedure was over, a self-analysis form to evaluate the degree of post-surgical painon a 10-point, visual analogue scale; (VAS scale), interpreted as:

0-No pain

1 to 3- Mild pain

4 to 6- Moderate pain

7 to 10- Severe pain

All the results were recorded and analyzed by SPSS software.

RESULTS

Mean age of the subjects of group A and group B was 36.5 years and 35.1 years respectively. Majority proportion of subjects of both the study groups were males.Mean pain score among subjects of group A at 2 hours, 4 hours, 10 hours, 18 hours, 24 hours and 48 hours was 0.52, 0.56, 0.72, 0.51, 0.41 and 0.18 respectively. Mean pain score among subjects of group A at 2 hours, 4 hours, 10 hours, 18 hours, 24 hours and 48 hours was 1.23, 1.52, 1.96, 1.25, 1.10 and 0.36 respectively. Mean pain score was significantly lower among subjects of group A in comparison to subjects of group B till 24 hours.

Table 1: Comparison of pain score at different time intervals

Time interval	Group A	Group B	p- value
2 hours	0.52	1.23	0.001 (Significant)
4 hours	0.56	1.52	0.011 (Significant)
10 hours	0.72	1.96	0.025 (Significant)
18 hours	0.51	1.25	0.035 (Significant)
24 hours	0.41	1.10	0.042 (Significant)
48 hours	0.18	0.36	0.885

DISCUSSION

The evidence of peripheral opioid receptors in inflamed tissues after few seconds or minutes or hours has provided postoperative analgesia in ambulatory surgical patients when exogenous opioids were administered to them. Also lately, several studies have been conducted which suggest that the addition of opiates to local anaesthesia provides effective postoperative analgesia.[6-10]Hence; the present study was conducted for evaluating the effectiveness of Buprenorphine Added 2 % Lignocaine 1:80000 in Postoperative Analgesia After Minor Oral Surgery.

Mean age of the subjects of group A and group B was 36.5 years and 35.1 years respectively. Majority proportion of subjects of both the study groups were males. Mean pain score among subjects of group A at 2 hours, 4 hours, 10 hours, 18 hours, 24 hours and 48 hours was 0.52, 0.56, 0.72, 0.51, 0.41 and 0.18 respectively. Mean pain score among subjects of group A at 2 hours, 4 hours, 10 hours, 18 hours, 24 hours and 48 hours was 1.23, 1.52, 1.96, 1.25, 1.10 and 0.36 respectively. Chhabra N et al evaluated the efficacy of buprenorphine added to 2% lignocaine with adrenaline 1:80,000 in providing postoperative analgesia after lower third molar surgery. Sixty patients were randomized to three groups: group A received lignocaine 2% with adrenaline 1:80,000 for inferior alveolar nerve block (IANB), along with intramuscular (IM) injection of 1ml saline; group B received buprenorphine mixed with lignocaine 2% with adrenaline 1:80,000 for IANB (0.01mg buprenorphine/ml lignocaine with adrenaline), along with 1ml saline IM; group C received lignocaine 2% with adrenaline 1:80,000 for IANB, along with 0.03mg buprenorphine IM. Mean postoperative pain scores (visual analogue scale; when the patient first felt pain) were 6.0 for group A, 1.0 for group B, and 4.4 for group C. The mean duration of postoperative analgesia was 3.5h in groups A and C and 12h in group B. The mean number of postoperative analgesics consumed was 5.8 in groups A and C and 3.9 in group B. The addition of buprenorphine (0.03mg) to 2% lignocaine with adrenaline 1:80,000 significantly reduced the severity of postoperative pain and prolonged the duration of analgesia, thereby decreasing the need for postoperative analgesics.[10]

In the present study, mean pain score was significantly lower among subjects of group A in comparison to subjects of group B till 24 hours. Mancy Modi et al assessed the efficacy of buprenorphine in providing prolonged postoperative analgesia when added to 0.5% bupivacaine with epinephrine 1:200,000.Fifty healthy, consenting adult

patients scheduled for upper extremity surgery were enrolled in the study. Patients were assigned randomly to 1 of 2 equal groups based on the agents used for the blocks. Patients in group I received 40 mL of a local anesthetic alone, and those in group II received the same local anesthetic plus buprenorphine 0.3 mg. The mean duration of postoperative pain relief after injection of the local anesthetic alone was 8.34 +/- 0.11 hours compared with 28.18 +/- 1.02 hours after buprenorphine was added, a difference that was statistically (and clinically) significant (P < .001).The addition of buprenorphine to the local anesthetic used for intraoral nerve blocks in the present study provided a 3-fold increase in the duration of postoperative analgesia, with complete analgesia persisting 30 hours beyond the duration provided by the local anesthetic alone in 75% of patients.[11]

CONCLUSION

Addition of Buprenorphine significantly improves Postoperative Analgesia After Minor Oral Surgery.

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