



## THE EFFECTIVENESS OF INTRAOSSEOUS INJECTION FOR SUPPLEMENTAL ANESTHESIA IN IMPACTED LOWER THIRD MOLAR SURGERY

### Background and objective

During the surgical removal of impacted lower third molar, there would be failure in pain control may occur in procedure, supplemental injections was indicated. The intraosseous injection (IO) is an alternative option. The aim of this study was to evaluate anesthetic success, heart rate effect and pain during supplemental IO by 4% articaine with 1:200,000 epinephrine.

### Materials and methods

Clinical based and quasi-experimental study, 36 patients who experienced discomfort or pain during the process of bone removal and/or tooth sectioning in lower third molar surgery received IO by 4% articaine with 1:200,000 epinephrine at the rate of 0.6-0.9 millilitres per 30 seconds with conventional syringe. The anesthetic success was analyzed. The heart rate effect was measured by pulse oximeter in each minutes interval for 5 minutes and pain during IO was recorded by using verbal numerical rating scale (VNRS).

### Results

The IO were carried out 36 patients, 31 (86.11%) patients achieved anesthesia and surgery could be performed without pain or discomfort. According to table 1, the binomial test indicated that the proportion of anesthetic success of 0.86 was higher than the expected 0.9,  $P=0.289$  (1-sided). The mean duration after IO until complete tooth removal was  $32.07 \pm 16.41$  minutes. The other 5 patients required additional supplemental injection within a few minutes after IO.

	N	Observed Prop.	Test Prop.	P-value (1-sided)
Anesthetic success	31	0.86	0.9	0.289
Anesthetic fail	5	0.14		
Total	36	1.0		

Table 1 Anesthetic success and failure of supplemental intraosseous injection

According to the figure 1, the HR had a tendency increase to the maximum in 1 minute (mean =  $4.241 \pm 9.30\%$ ). The minute of 2-5, the HR was mostly decreased.

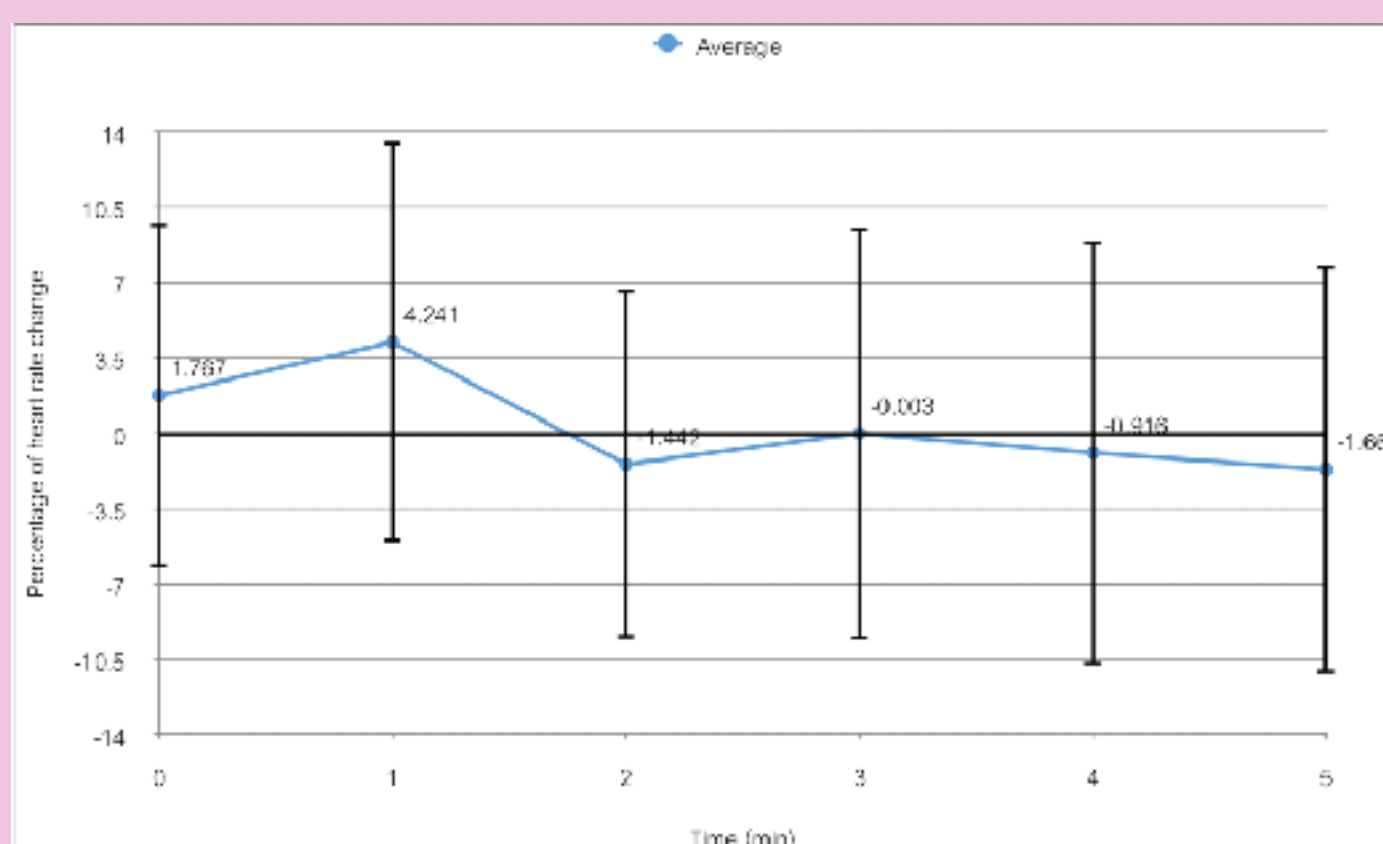


Figure 1 The mean percentage of heart rate change after IO injection in 5 minutes monitoring

Firstly, most of patients's HR was increased. The later 2-5 minutes after IO, the HR mostly decreased. For 5 minutes after IO the HR increase in range of 1-19 bpm and decreased with range of 1-18 bpm.(Figure 2)

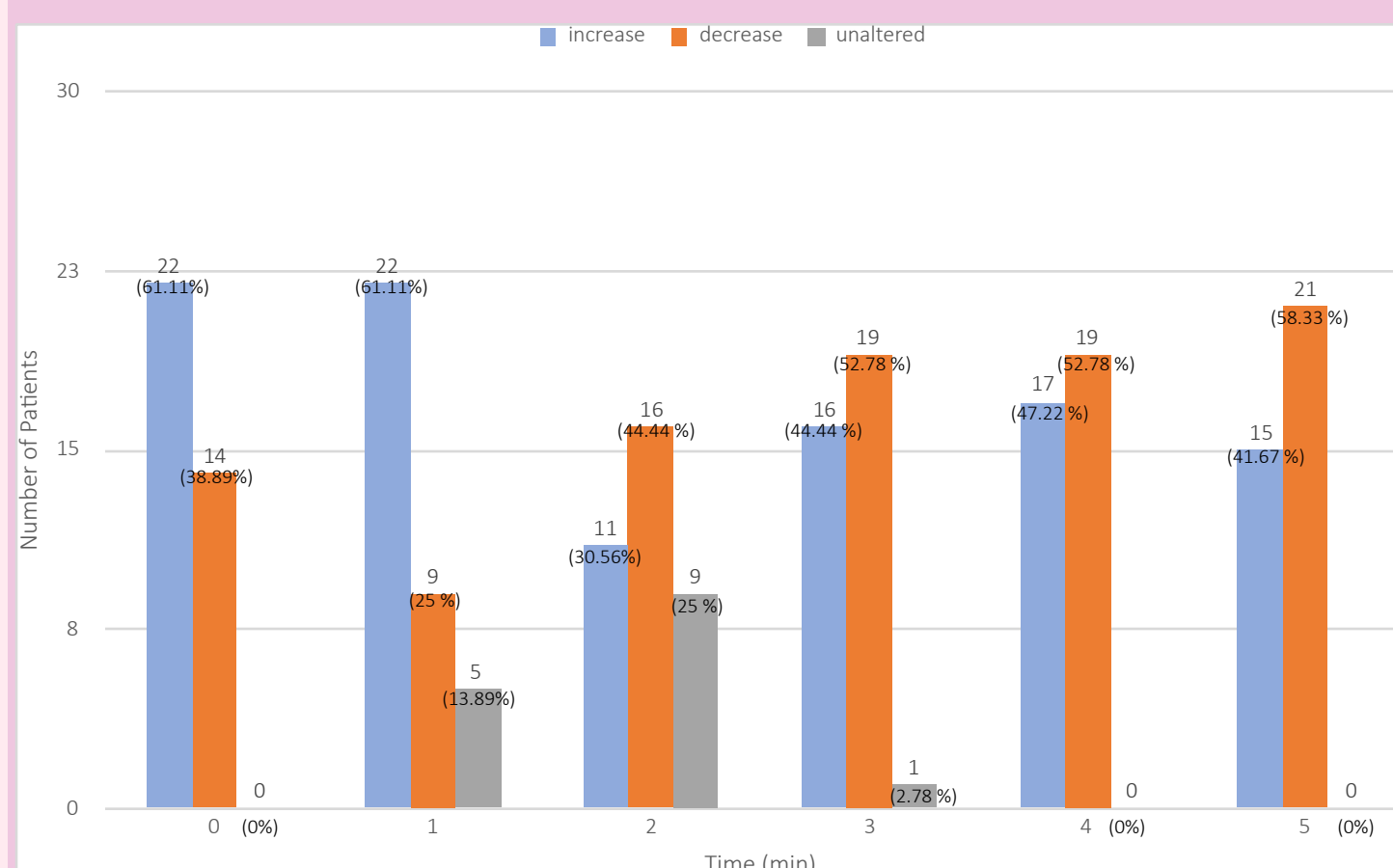


Figure 2 The number of patients with different HR effect in each minutes interval

Most of patients 12 (33.33%) reported no experience pain during IO (Figure 3). The median and interquartile were 2 and 3.5 respectively. The supplemental anesthesia by IO caused none to mild pain at the time of injection.

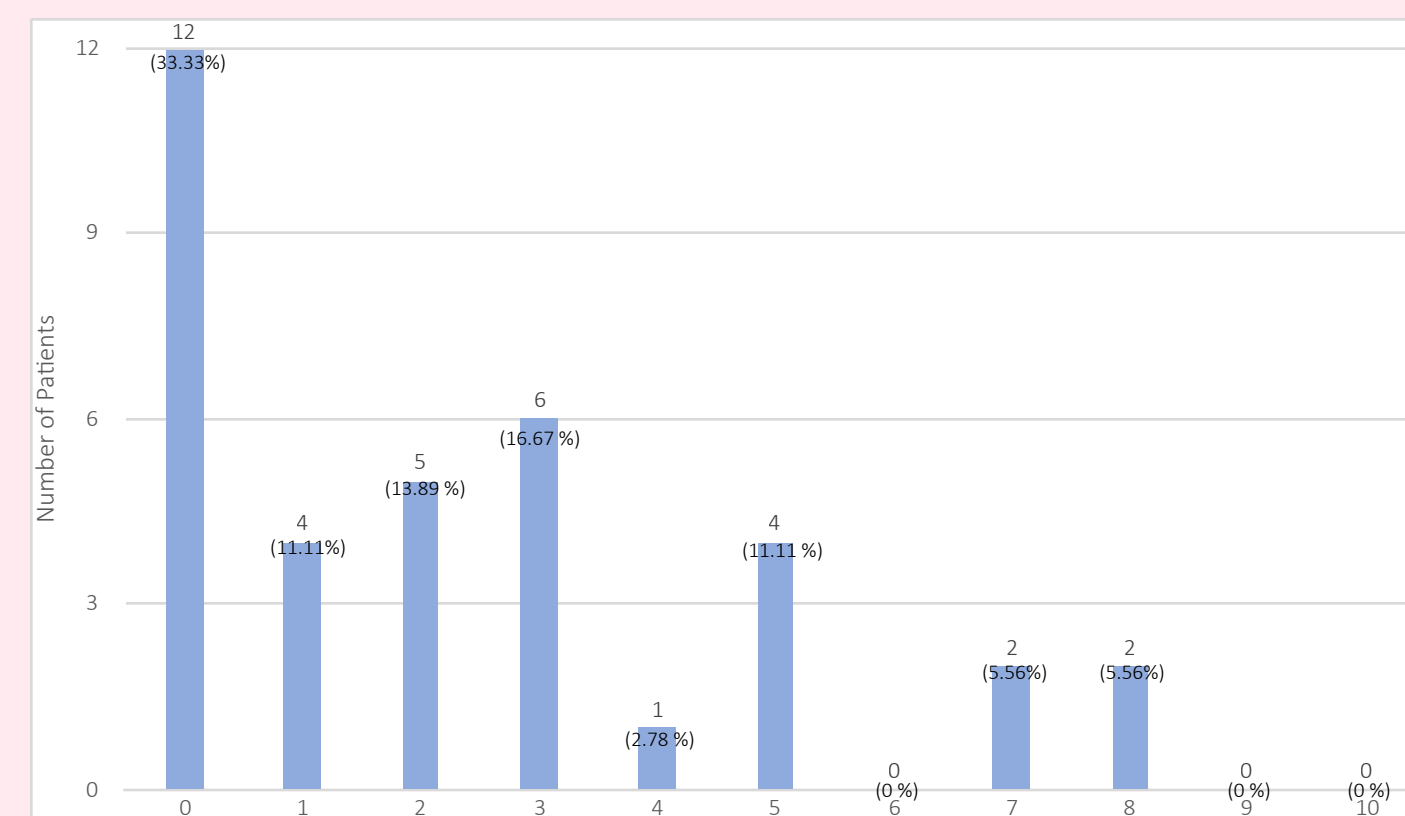


Figure 3 The number of patients according to verbal numerical rating scale

### Conclusions

IO is an advantageous anesthetic technique. It can be used as a supplemental to conventional inferior alveolar nerve block for impacted mandibular third molar surgery.



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