



Comparison of the pain relieving effect of novafen and naproxen after impacted mandibular third molar surgery

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ABSTRACT

Introduction: one of the most significant concerns after third molar surgery is the post-surgical dental pain. Regarding the efficacy of the Novafen and Naproxen in pain control treatment, it is important to compare the effect of each of these medications to decide which one should be used.

Aim: The aim of this study was to compare the effect of Novafen and Naproxen on pain management in patients after surgical removal of impacted mandibular third molar.

Methods and Materials: This study was a clinical trial that was performed as a split mouth and double-blind on 20 patients (12 females and 8 males) with a mean age of (24.2±5.8) which had surgical extraction of impacted mandibular teeth in two different dates. Novafen (Acetaminophen 325mg, Ibuprofen 200mg, and Caffeine 40mg) and Naproxen 500mg were assessed blindly in each date as a pain control treatment. The pain intensity was determined by VAS (Visual Analogue Scale). In this study, data were analyzed based on Mann-whitney U-tests.

Results: The mean pain in Novafen group was lower than Naproxen group 4, 8 and 12 hours after surgery ($p < 0.001$). But after 24 hours, pain in both groups were the same and there was no statistically significant difference ($p < 0.2$).

Conclusion: The pain in Novafen group was meaningfully lower than Naproxen group hence Novafen can be used as a more effective therapy rather than Naproxen in dental surgeries.

Keyword: Naproxen, Novafen, tooth, impacted.

Introduction

Extraction of impacted mandibular third molar is one of the most popular oral surgeries that could cause pain, trismus and swelling which are serious

concerns of patients with high or low severity [1]. Some various analgesics as Acetaminophens with or without Codeine, some NSAIDS like Ibuprofen or Naproxen can be

used in pain controlling pain controlling process [2].

Recently Novafen, as a new medication, which is a combination of Acetaminophen (325 mg), Ibuprofen (200 mg) and Caffeine (40 mg) is used [3]. In NSAIDS group, Naproxen is one of the most safe and reliable medicine [4].

Naproxen is a non-steroidal and an analgesics medicine that can prevent the prostaglandins production and their adverse effects. It acts in gastrointestinal system with the 12-15 hours plasma half-life and excreted through the urine. Naproxen usually is prescribed in migraine headaches, rheumatoid arthritis, pain and severe inflammation, peaked Gout, musculoskeletal disorders and dysmenorrhea if there is no active gastrointestinal ulcer. It should be taken in severe pain 500 mg every 8 hours and in normal pain 250 mg in every 8 hours [3]. There are a few studies on pain controlling strength of Ibuprofen and some other analgesics after impacted mandibular third molar surgery [5]. In 2009 Chopra D. et al studied on painkilling effects of Paracetamol, Serration Peptides, Ibuprofen and Betamethasone and also their adverse effects. The results revealed that Ibuprofen and Betamethasone were more effective on inflation reduction [6].

In 2004, Martines et al did a study on comparison of pain relieving effect between Dexketoprofen (25mg) and Ibuprofen (600mg). That study indicated that Dexketoprofen after the surgery is effective for 5.5 hours while the Ibuprofen's effectiveness is 6 hours. Therefore, it means that Ibuprofen starts and ends its pain relieving action longer than Dexketoprofen [7].

In 2003, Bjornasson et al studied on comparison of the pain reducing and inflammatory effects of Ibuprofen (600mg) and Paracetamol (1g) after the impacted mandibular third molar surgery. In this research they found no difference in the pain relief between Ibuprofen (600 mg) and paracetamol in the impacted mandibular third molar surgery [8].

Combinations of some drugs provide more effective medicines, Schnitzer T evaluated efficacy and safety for a novel analgesic combination: tramadol and acetaminophen (paracetamol). It was found that Tramadol / acetaminophen combination is a new preparation that is effective in acute or chronic moderate-to-moderately severe pain. It benefits from the complementary actions of the constituent analgesics, having the rapid onset of acetaminophen and the sustained effect of tramadol [9].

In 2001, Olson et al. studied on comparison of the pain relieving and anti-inflammation effects of liquid Ibuprofen (400mg), Acetaminophen (1g) and Ketoprofen (25mg) after-impacted third molar surgery. They found that Ibuprofen and Ketoprofen have more effect on pain reduction in patients versus Acetaminophen [10].

In 1994 L. Sharon et al studied on comparison of the pain-relieving effects of single dosage Ibuprofen, A.S.A (acetylsalicylic acid) and placebo in the normal up to high pain cases

after impacted mandibular third molar. Results showed that ibuprofen (500mg) had quicker and more durable acting effect than ASA, although both of these medicines (Ibuprofen 200mg & A.S.A 500mg) have acceptable pain relieving effect in moderate to severe pain, after impacted mandibular third molar surgery [11].

In 1993 Elliot V. Hersh et al studied on comparison of some difference dosages of Ibuprofen and Meclofenamate Sodium after impacted mandibular third molar surgery. This study demonstrated that advising high dosage non-steroidal analgesics immediately after the impacted third molar surgery is more effective than low dosages. It is recommended to use lower dosages in following days [12].

This study has been conducted in 2013 by Department of oral and maxillofacial surgery of Islamic Azad University of Tehran.

Methods and Materials

This study was performed on 40 fully impacted mandibular third molar in 20 patients (12 females, 8 males). All patients who entered the study were on 17-36 years old range that accepted to accompany with the researchers and signed the informed consent form. All participants had fully impacted mandibular third molars in both sides. Exclusion criteria were partially impacted mandibular third molar, operation time more than 30 minutes, systematic illnesses, taking some other steroidal medications, pregnancy, having a neurological disease, infection at the surgical place, use alcohol or antidepressants.

This study was performed as a split mouth and double-blind on 20 patients, randomly assigned to two groups. Patients attended in 2 different dates for extraction of their right and left teeth which were 4 weeks distance between the first and second surgery. Two different medicines (Naproxen/Novafen) were taken blindly to the samples in each surgery. Novafen (Acetaminophen 325mg, Ibuprofen 200mg and Caffeine 40mg -manufactured by Alhavi Medical Company) and Naproxen 500mg (manufactured by Hakim Medical Company) were prescribed as a pain control drugs.

Novafen and Naproxen were put separately in same packages with secret codes and were taken to the blind nurse in 2 times. In the first date the pain control drug which was used as a pain control treatment was Novafen with secret code and in the second date the pain control treatment medicine was Naproxen with the secret code.

Two cartridge of lidocaine 2% with 1/80000 epinephrine were used as a local infiltration and inferior alveolar nerve block. All operations were done by same oral and maxillofacial surgeon during 6 months. Patients were asked to take their medications 1 hour and every 8 hours after surgery for 2 days.

The pain intensity was determined by VAS (Visual Analogue Scale), VAS method defines the pain as a range of 0 (without

pain) to 9 (sever pain). Patients were asked to report their pain number 2, 8, 12 and 24 hours after surgery. During this period, the researchers were contacting patients to ask about the amount of their pain. Finally all the data analyzed on the base of statistic Mann-whitney U-test and Freidman tests.

Results

Table 1 showed postoperative pain analysis after 4, 8, 12 and 24 hours after surgery.

After 4 hours, the mean pain in Novafen group was 2.25 ± 0.6 and in Naproxen group was 4.2 ± 0.7 . A mount of pain in the Novafen group was 1.95 units or 86% lower than Naproxen group and this difference according to Mannu-Whitney method was statistically significant ($p < 0.001$).

- 8 hours after surgery, the mean pain in Novafen group was lower than Naproxen group ($p < 0.001$) and also 12 hours after surgery, pain in Novafen group was lower than Naproxen group ($p < 0.001$).

- But 24 hours post operation, the mean pain of both groups were the same and there was no statistically difference between them ($p < 0.2$).

Medicine type 4 hour post-op 8 hour post-op 12 hour post-op 24 hour post-op

Novafen (N=20) 2.25 ± 0.6 1.55 ± 0.7 0.65 ± 0.7 0.1 ± 0.3

Naproxen (N=20) 4.2 ± 0.7 3.4 ± 0.7 1.7 ± 0.9 0.3 ± 0.5

Results of Mannu-whitney Test $P < 0.001$ $P < 0.001$ $P < 0.001$

$p < 0.2$

Discussions

This study compared the effect of Novafen (Acetaminophen 325mg, Ibuprofen 200mg and Caffeine 40mg) and Naproxen (500mg) in reducing pain after impacted mandibular third molar surgery by VAS (Visual Analogue Scale). The results indicated that Novafen is more effective than Naproxen in controlling pain.

One of the most important reason of the pain and inflammation is prostaglandin production. Controlling the cyclo-oxygenase enzyme could reduce the prostaglandin progress. It can be controlled by some NSAIDS medicines like Naproxen that reduces the cyclo-oxygenase enzyme production [3].

According to new findings, combination of analgesics in low dosage could increase their effect. Novafen is one of the best recently found combined medicine [13].

Ibuprofen in the Novafen avoids prostaglandin production by preventing cyclo-oxygenase enzyme consequently. When there is lower cyclo-oxygenase enzyme, we observe lower pain and inflammation after surgery [3].

Acetaminophen inside the Novafen may help to reduce the pain and fever with low adverse effects. Although it is safe at

therapeutic doses; overdose of it can cause severe liver injury and hepatotoxic [3].

It was reported that Acetaminophen along with NSAIDS medicines could relief severe pain and inflammation. Its structure is very similar to ASA whereas the mechanism is not well-defined. Some believe that Acetaminophen may avoid production of prostaglandins in central nervous system to reduce the pain and inflammation [13].

Also Caffeine associated with other analgesic medicines is more effective as Aspirin which can cure the headache. There is caffeine in tea, coffee and soda which stimulate the central nervous, cardiac, vascular and respiratory system and is diuretic. Caffeine is soluble in water and lipid so it acts as an antagonist of adenosine receptor which decreases the adenosine effects in brain. Caffeine molecular structure is similar to adenosine which bind the adenosine receptor in brain. Produced adenosine molecules in brain bind «A» receptor and create fatigue and sleep feeling [13].

Novafen is relatively a new medicine that there is just one published article about it in based on our researches. In 2012 Mehrvarzfar et al. studied on the pain controlling effects of Novafen, Naproxen, Tramadol and placebo after root canal therapy which recorded in 6th, 12th and 24th hrs after treatment.

Amount of Pain in Novafen, Naproxen and Tramadol groups were significantly lower than placebo group. The pain in Naproxen and Novafen groups evaluated same and more effective than Tramadol group [3]. However in this study we found that Novafen is more effective than Naproxen in impacted third molar surgery. However it is worth mentioning that Mehrvarzfar's study was related to the root canal therapy and this study was done regarding surgery [3].

Conclusion

It was concluded that the Novafen remarkably can reduce postoperative pain after impacted mandibular third molar surgery more than Naproxen and that's the reason for preferring Novafen in dental surgeries.

Table 1: postoperative pain analysis.

Medicine type	4 hour post-op	8 hour post-op	12 hour post-op	24 hour post-op
Novafen (N=20)	2.25±0.6	1.55±0.7	0.65±0.7	0.1±0.3
Naproxen (N=20)	4.2±0.7	3.4±0.7	1.7±0.9	0.3±0.5
Results of Mannu-whitney Test	P<0.001	P<0.001	P<0.001	p<0.2

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