International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Index Copernicus Value (2015): 78.96 | Impact Factor (2015): 6.391

# Relative Efficacy of Oral Analgesics after Tooth Extraction

**Shilpa. R**

Saveetha Dental College

**Abstract:** ***Aim and objective: To compare the efficacy of Oral Zerodol P and Ketorolac after tooth extraction. Materials and methods: This is a study on the relative efficacy of two oral analgesics that are used after tooth extractions in 50 patients overall. 25 patients were prescribed tablet Zerodol Ptwice a day and the other 25 patients were given tablet ketorolac 10mg thrice a day . And the pain assessment was done for both the groups with the help of Visual Analogue Scale (VAS) with a 0-10 point numerical rating scale. Conclusion: Oral zerodol P shows better pain relief but the difference in the pain relief is not significant.***

**Keywords:** ZerodolP, Ketorolac , pain relief , efficacy.

## 1. Introduction

Pain is an unpleasant sensory and emotional experience and it varies from individuals to individuals based on their psychological pain tolerance. Pain during a tooth extraction is tolerable due to the usage of local anaesthetics and once the local anaesthetic agents' effect disappears, the post extraction pain must be managed by analgesics. Every analgesic agent has its side effects and the efficacy must be compared and weighed against the side effects to decide on the usage of the right analgesic agent for the right patient. Non-steroidal anti-inflammatory drugs (NSAIDs) are used in treatment of pain including tooth pains for many years.[1] Oral medications that reduce pain, administered pre or post operatively, improve clinical outcomes, making them an integral part of dental practice.[2]Ketorolac is an NSAID which acts by inhibiting prostaglandin synthetase. It should not be prescribed for patients with gastric irritation, peptic ulcers, renal problems and cardiac problems and also for patients who are hyper sensitive. Peak analgesic effect of this NSAID is reached by around 2 to 3 hours after ingesting the drug. Zerodol P is a combination of paracetamol and aceclofenac and it is an NSAID which is contra indicated in gastro intestinal patients and patients with renal and hepatic impairment, for patients with alcohol dependence, asthma or allergic reactions, hypertension or cardiac impairment.

## 2. Material and Method

This study was performed at Saveetha dental college, Chennai, India. 50 patients who were apparently healthy with no systemic diseases and allergies were chosen who between the age of 18 to 50 years of both the sexes, whose tooth or teeth had to be extracted, out of which 25 were prescribed Zerodol P twice a day for three days after extraction of their teeth and the other 25 patients were prescribed ketorolac 10 mg thrice a day for three days after extraction.Extractions were done under local anaesthetic 2% lignocaine with adrenaline and the socket is compressed and hemostasis was achieved for all the dental extractions and the extraction procedures were uneventful with no complications. Periosteal elevators and forceps were used for these extractions. The patient was asked to avoid any intake of food up to two hours. The patient could have cold and soft food thereafter. The patients were also asked not to use any other drug for his/her pain until the first 8 hours after tooth extraction and to report the severity of pain 3, 8 and 19 hours after dental extraction on a 10 cm visual analogue scale in the questionnaire. The pain severity was recorded only at 3 , 8 and 19 hours after extraction because the peak post-operation pain usually occurred during this period. The scale consisted of a horizontal or vertical 10 cm line with two points on both sides considered as distance between pain absence (0) and intolerable pain (10). The patient could mark the pain severity on this line while the zero point of this line indicated to a numerical pain severity. These patients were asked to give a score for the pain they experience after extraction with fixed intervals. They were asked to give a score for pain with visual analogue scale (VAS) with a 0-10 point numerical rating scale after 3hours of extraction, then again twice with an interval of 8 hours each. And the efficacy of the two drugs are compared and analysed to come to a result.

## 3. Result

The difference between the genders, age, weight and height of patients were not statistically significant.Pain was recorded on consecutive VAS at 3 hours, 8 hours and 19 hours from the time of extraction of the tooth. The average VAS score given by patients who were givenZerodol P at 3 hours was +/- 5.38 (lowest value=3 and highest value=6.5) ,at 8 hours was +/- 4.12 (lowest value=2 and highest value=5.5) and at 19 hours was +/- 2.44 (lowest value=1 and highest value=3.5) .Patients who were given Ketorolac, gave an average VAS score at 3 hours as +/- 5.22 (lowest value=3.5 and highest value=6.5) ,at 8 hours was +/-3.98 (lowest value=2.5 and highest value=5) , at 19 hours was+/- 2.72 (lowest value=2 and highest value=3.5) .The data were statistically analysed using Kruskal - Wallis test and a p value less than 0.05 was considered significant.

Number of patients who chose highest pain value for Zerodol P were 1 and the number of patients who chose

lowest pain value for Zerodol P were 2. And the number of patients who chose highest pain value for ketorolac was 2 and the number of patients who chose the lowest pain value was 1. Among the female patients the highest pain value recorded was 6 for Zerodol P which was chosen by 5 patients and the lowest pain value was 1 which was chosen by one patient. The female patients who were given ketorolac has chosen the highest pain value as 6 which was chosen by 4 female patients and the minimum pain experienced was 2.5 which was chosen by 7 female patients.

**Table 1:** The mean pain intensity at 3 hours, 8 hours and 19 hours for both the analgesic agent

| | 3 Hours | 8 Hours | 19 Hours |
|---|---|---|---|
| ZERODOL P | 5.38 | 4.12 | 2.44 |
| KETOROLAC | 5.22 | 3.98 | 2.72 |

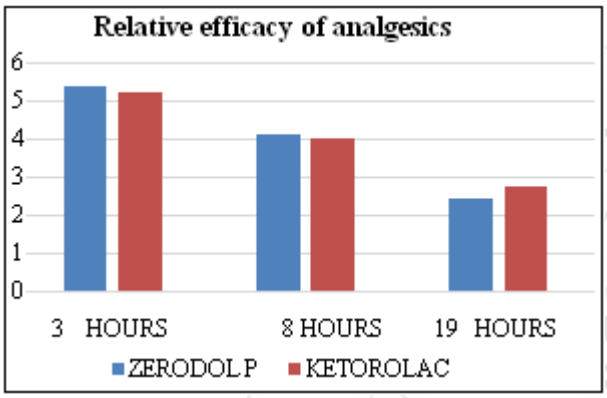


**Figure 1:** Shows bar graphs representing the mean pain intensity according to the VAS score against the time in hours.

## 4. Discussion

Postoperative pain control is one of the most important aspects of management of surgical patients. Various drugs, which are used to control the postoperative pain, are mainly categorized in two groups. i.e., Non-steroidal anti-inflammatory drugs and opioids.[3] Ketorolac has been proved to be more potent than several other NSAIDs studied under similar experimental conditions. In a study, the efficacy and safety of NSAIDs analgesic in the treatment of acute postoperative dental pain have revealed that ketorolac has a greater global efficacy than ketoprofen or placebo. [4]To avoid the dose related side effects of narcotics, use of NSAIDS has become popular for mild to moderate postoperative pain. Ketorolac is also a non-steroidal anti-inflammatory drug, which has been compared and found effective with pethidine 50-100 mg, Morphine 6-12 mg and Pentazocin 30mg. [5]

Nonsteroidal anti-inflammatory drugs (NSAID) have become popular for pain relief after different major and minor surgical procedures.8-11 NSAIDs reduce the biosynthesis of prostaglandins by inhibition of the enzyme cyclo-oxygenase (COX). [6]Drug combination allows reduction in the dose of single component to achieve the same analgesic effect with reduced incidences of side - effects. [7]Despite the above consideration, therapeutic superiority of a combination of paracetamol and NSAID combination over either drug alone remains controversial.

## 5. Conclusion

In our study, both the study drugs were effective in management of dental pain following tooth extraction. However, fixed dose combination of acyclofenac and paracetamol was more effective in relieving the postoperative dental pain as compared to ketorolac monotherapy.

It is known that combination of two drugs with differing modes of action results in an additive or synergistic analgesic effect.[8]The analgesic effect of NSAIDs is primarily due to the inhibition of prostaglandin biosynthesis through inhibition of cyclooxygenase enzymes: COX-1 and COX-2. On the other hand, the mechanism of action of paracetamol includes inhibition of COX-3 in central nervous system, interaction with spinal 5-HT3 receptors and peripheral β-endorphin receptors, [9,10]Differences in the mechanism of action of paracetamol and NSAIDs make them a viable option for an effective combination.In this study, there was no significant difference seen between the efficacy of zerodol P and ketorolac. However, studies showing contrary results have also been published.[11,12]

The difference in the results can be due to difference in study design, patient population and baseline pain intensity.[13] Moderately severe baseline pain is required to show to achieve adequate sensitivity because it may not be possible to detect any difference if there is little or no pain.[14]

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