A comparative study between the use of non-steroidal anti–inflammatory analgesic and antibiotics after apicectomy

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ABSTRACT

Non steroidal anti- inflammatory agents (NSAIAs), particularly Ibuprofen, found to be effective in lowering the degree of swelling after apicectomy when it is compared with the combined use of antibiotic particularly Penicillin with Paracetamol. This study suggests the only use of the NSAIAs after apicectomy without the need of antibiotic use, unless it is recommended or NSAIAs were contraindicated.

Key Words: Non-steroidal anti-inflammatory agents, apicectomy, swelling.

الخلاصة

وجدَ أن الأدوية المضادة للالتهابات اللاستيرويدية (وبخاصة الآيبوبروفين) فعالة في تقليل درجة التورم الناجمة عن عملية قطع ذروة الجذر مقارنةً مع استخدام البنسيلين والباراسيتول؛ ولذلك تنصح هذه الدراسة باستخدام الأدوية المضادة للالتهابات اللاستيرويدية بعد عملية قطع ذروة الجذر دون الحاجة إلى استخدام مضادات الالتهابات الأخرى إلا في حالات معينة عندما توجد نواهي لاستخدام هذه الأدوية.

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INTRODUCTION

The use of antibiotic post – operative to oral surgery was questionable, as majority of oral surgeons indicate the use of antibiotics as a routine prophylactic measures after apicectomy, other authors agreed that the administration of antibiotic after apicectomy is unnecessary.

In this study the efficacy of one of the anti-inflammatory analgesic agent was compared with the efficacy of one antibiotic in minimizing the degree of inflammation and pain post –operative to apicectomy. Ibuprofen (Brofen tab. 200 mg) was indicated as anti- inflammatory analgesic and penicillin V tab. (250 mg) was the antibiotic.

MATERIALS & METHODS

This study was conducted on "34" upper anterior teeth in patients complaining from periapical lesions attending the department of Oral and Maxillofacial surgery, Dental school, University of Mosul. Those teeth were treated by apicectomy, and divided into two groups according to the post-operative medication used: -

Group A: This group consists of "16" patients, those patients were received Penicillin V tab. 250 mg. (oral penicillin), four times daily with paracetamol tab. 500 mg. as required started the day of operation for the following three days.

Group B: "18" patients were received Ibuprofen (Brofen) tab. 200 mg., three times daily the day of operation and for the following 3 days. Additional paracetamol tab. was combined as analgesic if the patient was not responding to one tab. of Brofen.

The criteria for the estimation of the degree of swelling were: -

0 = Absent.

1= Mild, swelling localized, opposing the affected tooth, and palpable.

2 = Moderate, obvious elevation of the upper lip.

3 = Sever, visualized elevation of the upper lip with bilateral elevation of the alla of the nose.

Technique and materials used: -

1- All teeth operated on were upper single rooted anterior teeth (from canine to canine).
2- Each patient must have a preoperative radiograph.
3- All patients were treated by the same oral surgeon.
4- All the instruments were sterilized perfectly before the operation.
5- Local anesthesia used was (Mepivacaine hydrochloride 2% with adrenaline 1:100.000) infiltration technique for all the treated cases.
6- Type of periapical surgery achieved was apicectomy.
7- Three sided flaps were used for all the operations, and primary intention healing of the mucosa was intended.
8- Types of sutures used were Mersilk (3/0 black silk sutures) with figure-8 and sling type basket stitches were used for suturing the flaps.

There were special criteria for the selection of cases in order to provide standardization for all the cases, those criteria were: -

1- All patients were medically fits.
2- Cases selected should be with good oral hygiene.
3- Only small periapical lesions less than 1 cm. in diameter (by preoperative radiographic examination) were included in this study.
4- Grade of mobility of accused tooth not exceeding grade (I).

Statistical analysis: Statistical analysis was carried out using T test.

RESULTS

The degree of swelling is show in tables (1) and (2). It is clear that the degree of swelling in group B was significantly less than that in group A, $p< 0.05$.

Table (1): The degree of swelling in group A

	Degree of swelling				Total
	0	I	II	III	
2nd day	0	4	12	0	16
4th day	4	11	1	0	16
7th day	15	1	0	0	16

Table (2): The degree of swelling in group B

	Degree of swelling				Total
	0	I	II	III	
2nd day	1	9	8	0	18
4th day	12	6	0	0	18
7th day	18	0	0	0	18

The degree of pain was difficult to estimate as it depends on pain threshold although there was no significant differences between pain sensation in the two groups.

Higher incidence of periapical lesions was noticed in female, a total of 19 compared to 15 male, which reflect higher concern to appearance in female (figure 1).

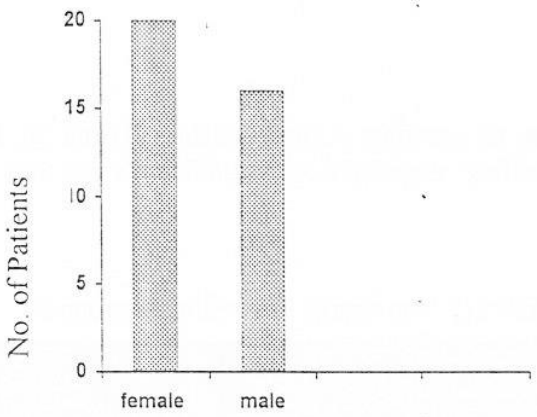

Figure (1): Patient according to sex

Highest incidence occurs in patients with average age of (15- 24 years), a total of (17) patients, followed by age group (25-34 years), a total of (15) patients, and lastly the age group (over 34 years) shows only two patients (as shown in figure 2). The precise cause of apicectomy in this study was not conducted.

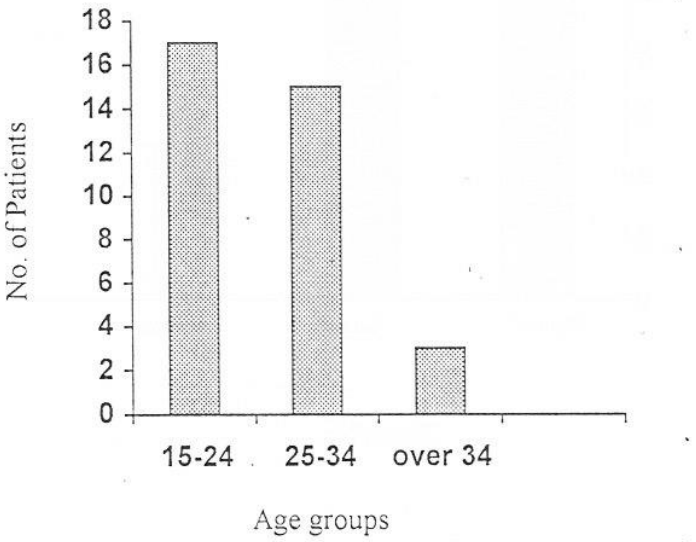

Figure (2): The distribution of patients according to age groups

The lateral incisor shows the highest incidence, a total of (15) following by the central incisor a total of (14) and lastly the canine only (5) cases (figure 3).

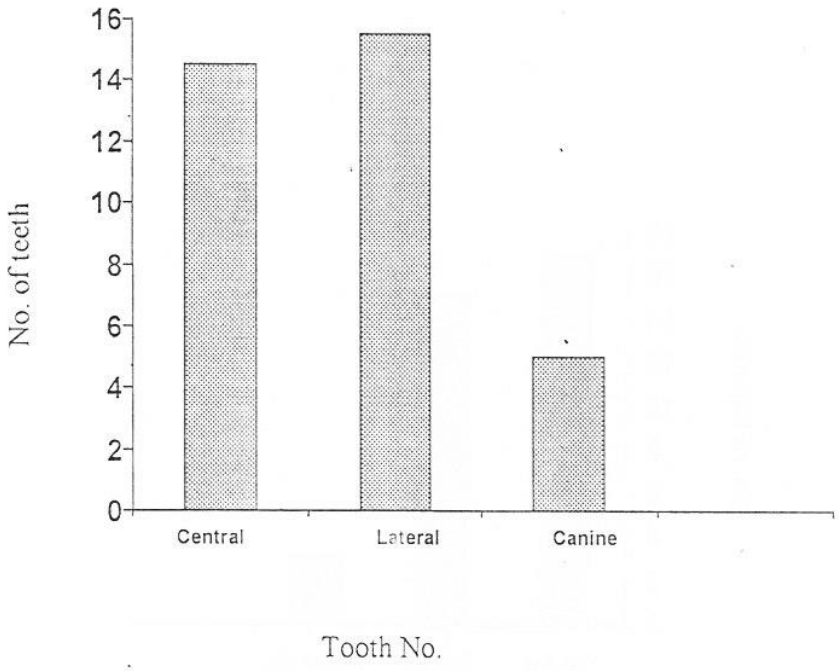

Figure (3): Observed frequencies of patients according to teeth No.

DISCUSSION

The main post-operative complication of oral surgery particularly apicectomy were pain and swelling [1].

Ibuprofen is one of non-steroidal anti- inflammatory agents (NSAIAs). In this study a dose of 200 mg. tid. was prescribed to reduce the degree of pain and swelling post operative to apicectomy. Ibuprofen act by inhibiting the enzyme prostaglandin synthetase responsible for the synthesis of prostaglandin E2 (PGE2), as prostaglandin E2 play an important role in the inflammatory process and the immune response [2]. Prostaglandin of the

E series cause a long lasting vasodilatation accompanied by an increase vascular permeability, regulate the formation of the B- lymphocyte and the activity of the T- lymphocyte by inhibiting the production and release of lymphokinase from sensitized T- cells [3]. Prostaglandins contribute to pain accompanies inflammation, either by direct stimulation of nerve ending or by sensitizing the nerve ending to other stimuli. They also produce pain when given either intra- venously or intra-muscularly [4], particularly with PGE2 [5], as it is able to sensitize pain receptors (free nerve ending) to mechanical and chemical stimuli.

Patients received Ibuprofen shows significantly less degree of swelling compared to the second group of patients receiving Penicillin V+ paracetamol, which is in agreement with the findings of other workers [1, 6].

Penicillin V was indicated in this study as it is a protype of penicillin G, given orally, penicillin V produces higher blood level approximately 2-5 times higher than an equivalent amount of penicillin G. Because of higher blood level penicillin V is used almost exclusively in the treatment and prevention of dental infections [2].

In this study, the degree of pain was not significantly differ, although pain estimation differ in each individual as it depend on pain threshold.

The incidence of apicectomy shows significantly higher incidence in female than male which reflect higher concern to their esthetic than male, $p< 0.05$.

The unjustified use of antibiotic evoke the production of resistant micro–organisms to antibiotics, the swelling and pain post operative oral surgery was mainly due to trauma induced by the surgical procedure, the administration of one of anti- inflammatory analgesic agent, shows in this study effective and superior benefit to that of penicillin V after apicectomy.

We recommend the use of anti-inflammatory analgesic agent alone after oral surgical procedure unless it is contraindicated in patient with gastro-intestinal disorder, haemostatic problem or history of hypersensitivity to aspirin [7].

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