

Preoperative antibiotic prophylaxis in oral surgery Clinical study on 58 Iraqi patients

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Abstract

Preoperative prophylactic protocol in oral surgery is well established practice; still it's not used in Iraqi surgical centers. The aim of this study is to show that preoperative protocol is reliable surgical practice.

58 patients, selected from the attendant of oral surgery clinic in Alkarama specialized dentistry center/Baghdad, were subjected to various oral surgical procedures 59 operations under local anesthesia. These patient were given single dose antibiotic prophylaxis preoperatively after we divide them into 3 groups, 1st group were given 1 gm amoxicillin (control group), second group were given 1 million i.u. of procaine penicillin; 3rd group were given 500 mg ampicillin vial,. The maximum time for all procedures was 2 hours.

We concluded that preoperative antibiotic prophylaxis can be used safely in out patient's oral surgical procedures, on Iraqi patient with minimum complications.

Key words: pre operative, antibiotic prophylaxis, oral surgery

Introduction

Prophylactic antibiotic therapy is defined as 'the administration of any antimicrobial agent that prevents the development of disease (1). Miles and Burke in the late 1950s were able to show that infections could be prevented only when antimicrobials were given prior to or at the time of the infection challenge, which has be proven by several studies in the last two decades and widely accepted. Antibiotic given 3h following a challenge with infectious bacteria were ineffective in preventing infection (2).

Peterson LJ (3) listed the following Principles of antibiotic prophylaxis:

- 1.The surgical procedure should have a significant risk of infection.
- 2.The correct antibiotic for the surgical procedure should be selected.
- 3.The antibiotic level must be high.

4.The timing of the antibiotic administration must be correct.

5.The shortest antibiotic exposure must be employed. Besides that microbiology of the infection should be known to choose the suitable antimicrobial agent (2).

The American college of surgeons considered trans-oral wound is Clean contaminated, That is, Class II, these wounds should receive protection if (a) the patient has depressed host defenses. (b) A prosthetic device is being inserted. (c) The sequel of an infection is serious; and (d) some aspect of the procedure, such as increased duration or decreased local blood supply, makes infection more likely (2). When antibiotic prophylaxis is decided, the antibiotic must be given in a dose high enough to reach a level that is four to five times the MIC for the expected organisms.

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It is important also that the plasma level dose not drop bellow the minimum inhibitory concentration (MIC). In the out patient setting, the concentration remains relatively stable for about 2 hours, falling rapidly after that. The tissue level actually remains higher than the serum level after 2 hours (2).

Materials and methods

58 patients were selected from the attendant of oral surgery department in Alkarama specialized dentistry center between October 2003 to march 2005. Most of the patients are the residence of neighborhood which is an area of relatively low socioeconomic level. No history of systemic disease and/or active infectious process, were recorded in all patient groups.

After thorough history taking, clinical and radiographic examination, 59 oral surgical procedures were done under local anesthesia. These operations were (surgical removal of Impacted lower 3rd molar: 25, Apicectomy: 16, excisional biopsy: 2, inoculation of odontogenic cysts: 10, sub mandibular duct stone removal: 1, excision of high frenal attachments: 1, surgical tooth extraction: 4, surgical removal of supernumerary tooth (mesiodens): 1, which are the usual surgical out patient procedures.

These patients were given single dose antibiotic prophylaxis in 3 groups, 1st group were given 1 gm amoxicillin (28 cases), 2nd group were given 1 million i.u. of procaine penicillin (10 cases), 3rd group were given 500 mg ampicillin vial (21 cases). 31 patients received injectable antibiotics 30 minutes before starting surgery and 28 patients received oral antibiotics 1 hour before surgery, to achieve high tissue concentration at the time of operation. The maximum time for all procedures was 2 hours from the 1st incision to the

final stitch.

Meticulous handling of the tissues, avoidance of unnecessary surgical trauma and copious irrigation of the wound before closure to remove foreign bodies and debris, leaving no potential foci for bacterial infections were of crucial importance in our measures to prevent post operative infection. These patients were examined in 2nd post-operative day by the same surgeon, to check the presence of any local and general signs of post operative infection (increased pain or tenderness and post operative swelling at the site of surgery, enlarged tender regional lymph node and fever) also were examined in 7th post operative day (the time of suture removal).

Results

Data collected and analyzed, the results were as follows;

The number of female patients was 32 (54.23 %). male patients were 27 (45.76 %). Patient age groups were recorded as follows (- 10): 0 patient, (11-20): 19 patients (32.20 %), (21-30): 25 patients (42.37 %), (31-40): 10 patients (16.9), (41-50): 3 patients (5.1 %), (51-60): 2 patients (3.38 %). All surgical procedures were done under local anesthesia in oral surgery theater, these procedures categorized as follows; removal of impacted lower rd molar: 25, Apicectomy: 16, Excisional biopsy: 2, Cyst enucleation: 10, Sublingual stone removal: 1, Surgical extraction: 4, Removal of supernumerary tooth: 1, Excision of high frenal attachment: 1

No post operative infections were recorded in all 3 groups in our sample. Complications were recorded as follows; one patient from 58 had dry socket following 2 surgical removals of impacted lower 3rd molar surgery procedures (3.3 %).

Discussion

Although some studies found that antibiotic prophylaxis in some oral surgical procedures is controversial (8) (9) (11), Its generally agreed that when antibiotic prophylaxis is decided, the antibiotic must be present in the systemic circulation at a high level at the time of surgery and is usually given as one dose(4) (9) (6).

In spite of the fact that preoperative antibiotic prophylaxis is an established practice (2) (10), oral surgeons in Iraq do not recommend the use of preoperative antibiotic prophylaxis. As they recommend antibiotic prophylaxis after oral surgery because of habitual surgical practice, they find it hard to change from currently used regimen to unfamiliar practice.

There is no consistent protocol for the method or duration of drug administration in oral surgical procedures (5), so our choice in antibiotic selection depend on the choice of antibiotic depend on two factors

1. most of oral infections caused by penicillin sensitive bacteria (2)
2. The use of penicillin is an established clinical practice in advanced surgical centers (10)

No post operative infections were recorded in our sample, for all patient groups (no difference between parenteral and oral route of administration). Complications were recorded as follows; one patient from 58 (she received 500mg ampicillin) had dry socket following 2 impaction procedures (3.3 %). This is comparable to other studies (8). This shows effectiveness of preoperative prophylactic measure, considering appropriate timing. Beside the rely on

aseptic surgical practice instead of multiple post operative dosing, its an established surgical practice in many surgical centers with minimum complication, effective, easier for the patient, less chance for bacterial resistance.

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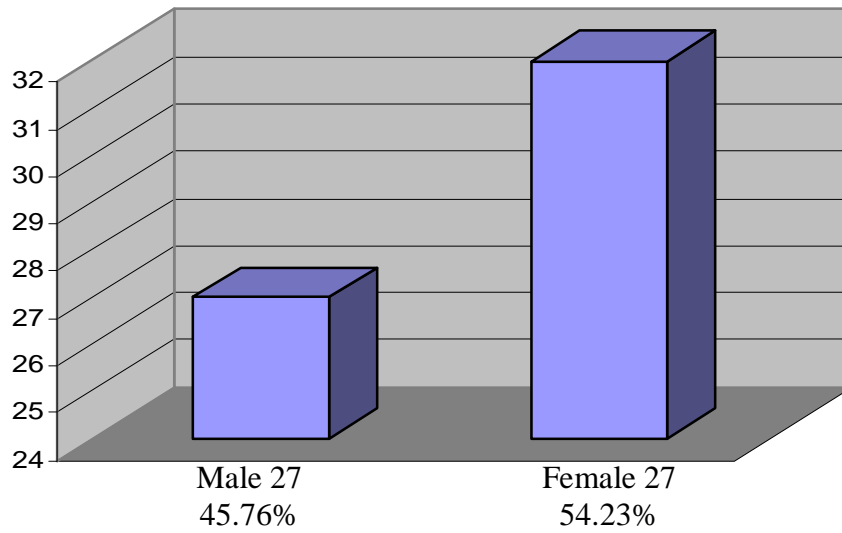


Figure (1) Histogram shows no. of patients according to gender

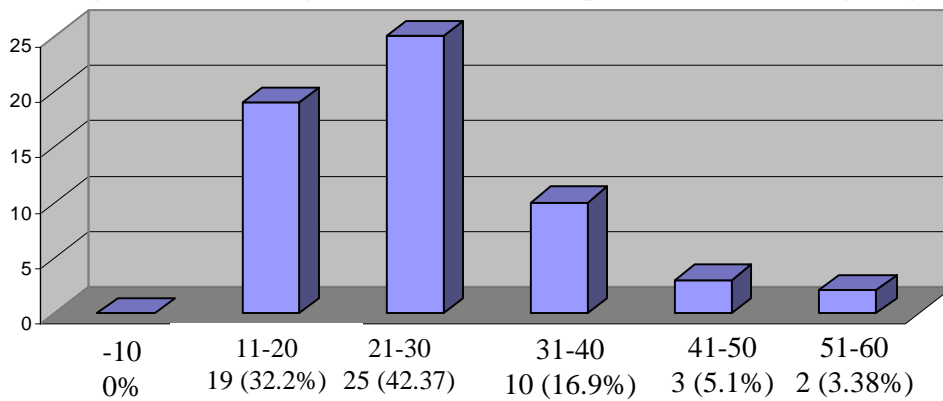


Figure (2) Histogram shows the No of patients according to age group

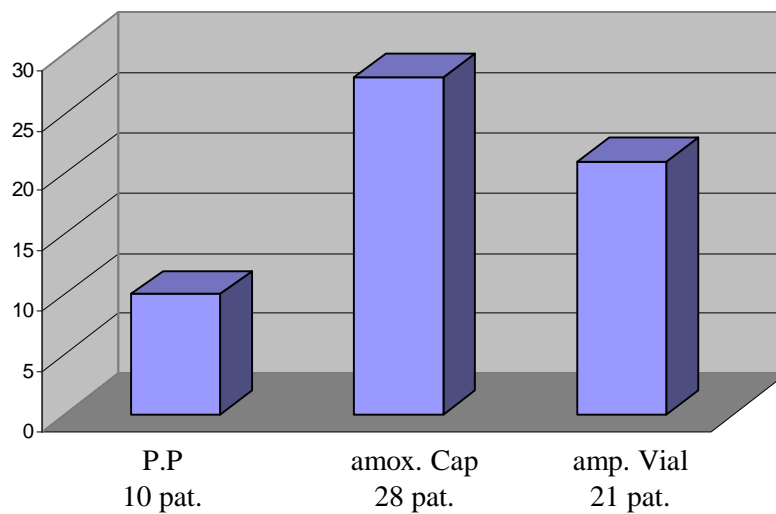


Figure (3) Histogram shows no. of patient according to the type of antibiotic used

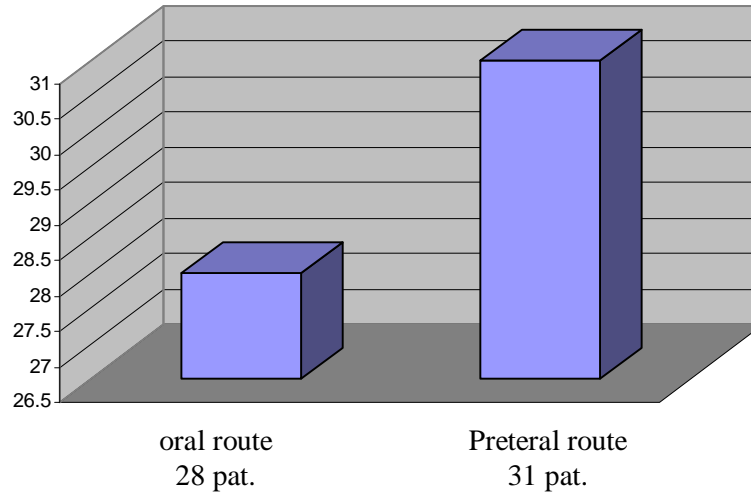


Figure (4) Histogram shows No of patients according to route of administration

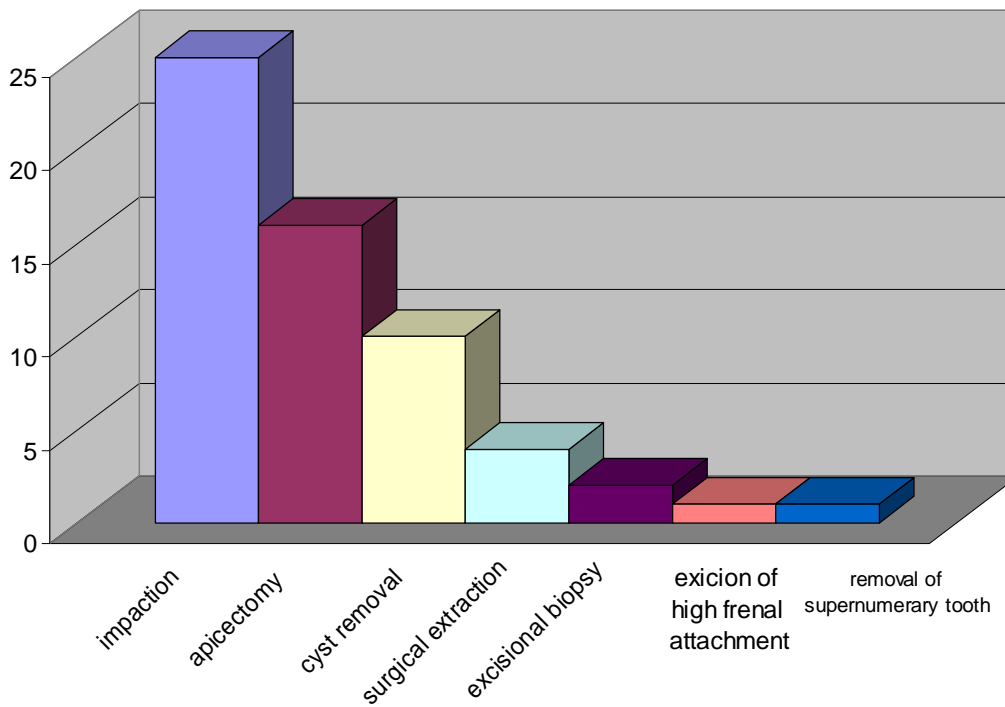


Figure (5) Histogram shows the no of various oral surgical procedures.