

Antibiotic Prophylaxis In Third Molar Extraction: A Review

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Abstract:

Introduction: This article aims to weigh in on the concept of prophylactic antibiotic therapy in the extraction of third molars.

Materials: There are four indications for antibiotic prophylaxis:

1. Antibiotic is administered to prevent bacterial contamination of the operating field.
2. Procedures have a high infection rate
3. Antibiotic Prophylaxis should be considered for surgical procedures where the incidence of infection is low although there may be high mortality rate following infection
4. When a foreign body is inserted into the tissues

Use of antibiotics is reported to reduce the infection rate, but inappropriate antibiotic administration can lead to development of side effects. The infection rate of surgically removed impacted teeth is found to be quite low however it is higher for immunocompromised patients.

Conclusion: The decision about whether or not to administer prophylactic antibiotic regimen must be made based on the individual's requirement. In case of high risk patients, it may be undertaken, but if the patient is healthy and the tooth that needs extraction is relatively low risk, antibiotic prophylaxis can be overlooked..

Keywords: Prophylaxis, Third Molar, Antibiotic, Extraction

Introduction:

Third Molar extractions are one of the most commonly performed procedures in Oral Surgery. Although, there is evidence that prophylactic antibiotics prevent post-surgical infections in third molar extractions, there is equally convincing evidence that they do not. Use of antibiotics in third molar surgeries is widespread, but controversial. This article aims to give an overview of the different schools of thoughts regarding the administration of antibiotic prophylaxis in extractions.

Methods:

There are four indications for antibiotic prophylaxis:

5. Antibiotic is administered to prevent bacterial contamination of the operating field.
6. Procedures have a high infection rate
7. Antibiotic Prophylaxis should be considered for surgical procedures where the incidence of infection is low although there may be high mortality rate following infection
8. When a foreign body is inserted into the tissues

Considerations for antibiotic prophylaxis

1. Infection rate of the Surgical procedure
2. Appropriate use of antibiotics
3. Tissue concentration of the antibiotics
4. Duration of antibiotic administration

Use of antibiotics is reported to reduce the infection rate, but inappropriate antibiotic administration can lead to development of side effects. Most side effects are not serious and can be resolved easily. Side effects are complications associated with Gastrointestinal System, resistant bacteria, secondary infection, antibiotic toxicity, and adverse reaction.

Some other side effects are anaphylactic reactions and pseudomembranous colitis. Although, there is low infection rate in surgical removal of impacted teeth, studies have shown that administration of antibiotics decreases postoperative pain and inflammation.

Pre-operative antibiotics prescribed orally or intravenously 1-2 hours before the surgery reduce infection. Although, Amoxicillin is mainly used in surgical removal of impacted teeth, there was no significant difference when compared to other antibiotic drugs such as Clindamycin or Metronidazole, as well as placebo. Moreno- Drada and Gracia-Perdomo reviewed in 10 articles that studied in antibiotic prophylaxis in extraction of teeth. They found that antibiotics reduce incidence of infections in patients undergoing extractions. While the surgical removal of impacted third molars is one of the most common minor oral surgery procedures, it comes with its own set of common complications. These include alveolar osteitis, hematoma, wound dehiscence, trismus, hypoesthesia, pain, swelling and infection. The infection rate of surgically removed impacted teeth is found to be quite low; however, it is higher for immunocompromised patients. In cases of infection *Streptococci* and *Staphylococci* are found mainly in early onset of infections while *Fusobacterium* and *Prevotella* are seen in the delayed onset infections.

Antibiotic regimens:

Even though, there is low infection rate associated with surgical removal of the impacted third molars studies show that the administration of antibiotics decreases the post-operative pain and inflammation. Most studies recommend pre-operative prophylaxis by oral administration a study undertaken by Monaco et al, studied third molar extractions in patients with a mean age of 15 years and found that 2gms of amoxicillin administered one hour prior to the surgery decreased the incidence of fever, pain, and infections additionally it also reduces the risk of alveolar osteitis.

While some studies report on the prevalence of adverse effects after antibiotic administration the severity of the side-effects were minimal and did not require intervention.

An antibiotic may be given pre operatively to prevent infection and other complications like alveolar osteitis especially in immunocompromised patients. They may not be required, however, in healthy patients for the removal of teeth which have a low infection rate like the upper wisdom teeth.

The routine use of antibiotics is not recommended as there is risk of bacterial resistance that needs to be considered. In most procedures, Penicillin and Amoxicillin are widely prescribed due to the susceptibility of the intraoral bacteria to these drugs. Of late there is evidence of bacterial resistance to these drugs.

Discussion:

Halpern and Dodson found that in a placebo controlled, double blind, randomized clinical trial the use of intravenous antibiotics administered prophylactically had decreased the incidence of the surgical site infection. Prophylactic antibiotics have been used to reduce the risk of post-surgical infections but its role in preventing infection in different situations is not clear.

Burke, in his animal study that define the scientific basis of prophylaxis clearly states that the use of antibiotics alone post operatively violates the basic tenets of the prophylaxis because there is no antibiotic in the systemic circulation or at the site of surgery at the time the microorganisms invade the wound.

Most Third molar surgeries fall into the class 2 (clean contaminated variety) so the question of whether the routine use of prophylactic antibiotics would be fruitful or not is controversial.

Conclusion:

With the limited information that we have today the responsibility of making the choice about whether or not to prescribe antibiotic prophylaxis falls on the oral surgeon. This decision must be made based on the individual for appropriate use of the antibiotic and antibiotic prophylaxis duration.

References:

1. Poeschl PW, Eckel D, Poeschl E. Postoperative prophylactic antibiotic treatment in third molar surgery — a necessity? J Oral Maxillofac Surg 2004; 62:3–8
2. Does Prophylactic Administration of Systemic Antibiotics Prevent Postoperative Inflammatory Complications After Third Molar Surgery? Leslie R. Halpern, DDS, MD, PhD, MPH,* and Thomas B. Dodson, DMD, MPH†
3. A review of antibiotic prophylaxis protocols in oral and maxillofacial

Surgery: Paksinee Kamolratanakul*, Pornchai Jansisanont
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4. Role of antimicrobials in third molar surgery: prospective, double blind,
randomized, placebo-controlled clinical study

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5. Antibiotic prophylaxis and third molar surgery

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6. Antibiotic Prophylaxis in Third Molar Surgery

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and Mohan Alexander, MDS, MOMSRCPS(Glasgow)†

7. Antibiotic prophylaxis in third molar surgery: A randomized
double-blind placebo-controlled clinical trial using split-mouth
technique: A. Siddiqi, J. A. Morkel, S. Zafar: Antibiotic prophylaxis in third molar surgery: A
randomized double-blind placebo-controlled clinical trial using split-mouth
technique. *Int. J. Oral Maxillofac. Surg.* 2010; 39: 107–114.

8. Haug RH, Assael LA: Infection in the maxillofacial trauma patient,
in Topazian RG, Goldberg MH, Hupp JR, eds. *Oral and Maxillofacial
Infections*. Ed 4. Philadelphia, PA, Saunders, 2002, p 359

9. Chodak GW, Plaut ME: Use of systemic antibiotics for prophylaxis
in surgery. A critical review. *Arch Surg* 112:326, 1977

10. Stone HH, Haney BB, Kolb LD, et al: Prophylactic and preventive
antibiotic therapy. Timing, duration and economics. *Ann
Surg* 189:691, 1979

11. Guiglimo BJ, Hohn DC, Koo PJ, et al: Antibiotic prophylaxis in
surgical procedures: A critical analysis of the literature. *Arch
Surg* 118:943, 1983

12. Kaiser AB: Medical intelligence. *Drug Therapy*. Antimicrobial
prophylaxis in surgery. *N Engl J Med* 315:1129, 1986

13. Paterson JA, Curdo VA, Stratigos GT: An examination of antibiotic
prophylaxis in oral and maxillofacial surgery. *J Oral Surg*
28:753, 1970

14. Peterson L: Antibiotic prophylaxis against wound infection in oral
and maxillofacial surgery. *J Oral Maxillofac Surg* 48:617, 1990