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Current perspective on the duration of antibiotic usage: Mandibular fracture and the clinical usage of antibiotics

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Abstract

Mandibular fractures are the most prevalent type of fracture in the maxillofacial region, as indicated by a 2012 study that involved multiple centres and individuals from European populations. This was established by the study's results. Fractures in the dentate region of the mandible are the most likely to lead to infections due to the possibility of contamination with the oral flora. This is due to the potential for infection. Consequently, it would seem that the administration of antibiotics as a preventative measure is a critical element of the treatment of mandibular fractures.

Previous research has shown that there is no evidence to support the use of prolonged antibiotic prophylaxis in addition to perioperative antibiotic therapy for the surgical treatment of mandibular fractures. This is the case in the context of the surgical treatment of mandibular fractures. With the exception of the condylar portion of the mandible, they determined that the most effective approach to reducing inflammation and infections is a single-dose or one-day prophylactic antibiotic therapy for the treatment of mandibular fractures. Conversely, there has yet to be a consensus that has been successfully adapted for our routine clinical practice guidelines.

Keywords: Duration, antibiotic, mandibular fracture

Introduction

According to a 2012 study that involved numerous centres and individuals from European populations, mandibular fractures are the most prevalent type of fracture in the maxillofacial region. Fractures in the dentate region of the mandible are the most susceptible to infection due to the potential for contamination by the oral flora. Consequently, it seems that the administration of prophylactic antibiotics is a critical aspect of the treatment of mandibular fractures ^[1].

Previous research has shown that there is no evidence to support the use of prolonged antibiotic prophylaxis in addition to perioperative antibiotic therapy when it comes to the surgical treatment of mandibular fractures. With the exception of the condylar portion of the mandible, they determined that the most effective approach to reducing inflammation and infections is a single-dose or one-day prophylactic antibiotic therapy for the treatment of mandibular fractures ^[2]. The administration of antibiotics after surgery does not have a statistically significant advantage over either preoperative or perioperative antibiotic therapy (or both) in terms of reducing the rates of surgical site infections (SSI).

It is conceivable that the absence of antibiotic guidelines and protocols will lead to a substantial degree of variation in the practices of antibiotic use. By reducing the quantity of antibiotics administered, the development of antimicrobial resistance, a global issue, can be significantly reduced ^[3].

It appears that the use of antibiotics as a preventative measure is mandatory as part of the surgical management of mandibular fractures. This is particularly true in the dentate region of the mandible, where there is a risk of contamination by oral microbes. Nevertheless, there is no established protocol for the administration of antibiotics as a preventative measure. According to prior research, surgeons frequently administer prophylactic antibiotic courses that exceed the current body of literature's recommendations for the surgical treatment of mandible fractures ^[1, 2]. Cephalosporins, penicillins, and aminopenicillins were the most frequently used antibiotics in the systematic review. In contrast, the surgeon's discretion was exercised in the selection of the antibiotic regimen in a number of the studies that were incorporated into the literature review.

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This could potentially lead to the prescription of antibiotics to patients who are presumed to be at a higher risk of infection, resulting in a skewed interpretation of the results^[4].

Antibiotic for perioperative use

Perioperative antibiotics have previously been shown to produce positive outcomes. The number of infections that occur is reduced by recommending antibiotic prophylaxis for a brief period as part of the treatment for compound mandibular fractures, according to a systematic review. After observing a reduction in infection rates that was approximately four times lower than before, a single dose or a single day of prophylactic antibiotic therapy was recommended. The majority of surgeons reported prescribing antibiotics for the period prior to surgery, in addition to administering them during the perioperative period, as part of the current investigation^[2, 5].

No evidence suggests that patients who are awaiting surgery would be at a higher risk of developing postoperative infections if antibiotic treatment were discontinued. Surgeons' desire to safeguard their patients by prescribing an extended antibiotic regimen to prevent postoperative infections is not unexpected, despite this. Revision surgery and a more comprehensive surgical approach may be necessary due to the severity of these infections. An extended period of antibiotic administration should be reserved for patients who are at risk of developing infection-related complications. Numerous variables may influence the probability of complications. A person is susceptible to infections and delayed healing due to a variety of factors, such as a history of smoking, alcohol abuse, poor oral hygiene, systemic illness, or an infected tooth in the vicinity of the fracture^[6].

It is crucial to recognise that the sole legitimate justifications for prompt treatment are to stabilise the mobile and frequently painful fracture and to expedite the recovery process, despite the fact that postoperative infection risk is not significantly elevated by postoperative treatment delays.

Using a mouth rinse containing chlorhexidine prior to oral surgery is advantageous in preventing bacteremia. Thus, chlorhexidine rinsing is also beneficial preoperatively, which may be especially appropriate for a fracture population in which oral cleansing may be inadequate prior to fracture surgery^[7].

Conclusion

The surgical treatment for non-complicated and non-comminuted mandibular fractures of the dentate region should include the administration of prophylactic antibiotics during the perioperative and one-day postoperative periods. Furthermore, antibiotic treatment may be required prior to surgery, particularly in the event of mandibular angle fractures.

Despite the ongoing debates, it is essential to conduct a multidisciplinary discussion to ascertain the appropriate duration of antibiotic treatment in this specific case.

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