“Alveolitis Sicca Dolorosa – An Unpleasant Experience in Exodontia”
Review on Management and Prevention

Dr. Nitesh Chhikara¹, Dr. Sarah Shaik²

¹MDS, Oral & Maxillofacial Surgeon, Consultant, Rohtak, Haryana, India
²BDS, Dental Surgeon, Bangalore, India

ABSTRACT

Dry socket is a severely painful post-operative condition after dental extractions which is debilitating and is relatively a common complication seen in exodontias. It accounts for approximately 0.5 to 5 % for all routine extractions and can be present over 35% for impacted mandibular third molars. Interestingly in 95-100 % cases the onset is seen on 3rd post extraction day. The etiology varies depending upon various host and technical factors but the main mechanism is traumatic or infective fibrinolysis of the primary blood clot in the socket after extractions. The main motive of the treatment is to avail pain reduction, which is the observed to be the chief complaint of the patients.

Key words: alveolar osteitis, fibrinolysis, alveolitis sicca dolorosa, management.

INTRODUCTION

Definition and Terminology

“Alveolitis Sicca Dolorosa” which is more commonly known as Dry Socket or alveolar osteitis, was first time described by Crawford in 1986. Definition – According to Blum (2002)¹ alveolar osteitis is defined as the post operative pain inside and around the extraction site, which increases in severity at any time between 2nd to 4th days after extraction, accompanied by partial or, total disintegrated blood clot within the alveolar socket with or without halitosis.³ Many other terms have been used such as “alveolar osteitis”, “alveolitis”, “localized osteitis”, “localized alveolar osteitis”, “fibrinolytic alveolitis”, “septic socket”, and “alveolalgia”, among others²,⁴,⁵.

Incidence

a. Routine dental extractions- approximately⁶, (0.5-5)%
b. Impacted 3rd molars (mostly mandibular)⁷,⁸- (1-37)%

ETIOPATHOGENESIS

There are two main hypotheses to explain the origin of dry socket in extraction sockets-

1. Birn’s hypotheses
2. Nitzan’s hypotheses

Birn’s hypotheses- principle explanation refers to the increased fibrinolysis leading to the disintegration of the primary clot in the extraction socket which is a result of activation of the plasminogen pathway activated by either direct or indirect activators¹⁰ (figure-1).
Figure 1: Simplified flow chart representation of Birn's hypotheses

Nitzan’s hypotheses explains that major role in activation of fibrinolysis is played by “Treponema Denticola” bacterium.\textsuperscript{14}

**RISK AND CONTRIBUTING FACTORS**

I. **Local factors include**- surgical trauma, mandibular extractions, difficulty in extractions, smoking, physical dislodgement of the primary clot, bacterial infection, excessive curettage of the socket, single extraction versus multiple extractions and improper post extraction instructions.\textsuperscript{12, 13}

II. **Systemic factors include**- oral contraceptives, uncontrolled diabetes mellitus, hypertension, immune-compromised patient, osteoporosis etc.

According to sweet and butler females have more incidence of dry socket than males especially post menopausal because of the estrogen activity which has high fibrinolytic activity leading to activation of plasminogen pathway and hence lyses of blood clot.\textsuperscript{12} Similarly, smokers have 4-5 times higher risk and on the day of extraction smoking leads to dry socket in approximately 40-45\% of cases. In diabetes mellitus the actual mechanism of the dry socket is failure or poor chemo taxis of neutrophils leading to growth of bacteria and inability to tackle the inflammatory pathway in the socket after extraction. Also, single tooth extraction that too in posterior region of the mandible has more risk of dry socket about 7-7.5\% than multiple extractions (less than 4\%) because of the fact that the pain threshold and tolerance levels are low while experiencing a single extraction.\textsuperscript{11}

**SIGN, SYMPTOMS AND DIAGNOSIS**

The major part and the most important role in diagnosis of dry socket is the history dental extraction(s). Pain remains the major and the chief complain in all the cases of dry socket and usually start after or on 3rd post extraction day. Pain is dull, gnawing, continuous, insidious and radiating to whole lower jaw and ear on the affected site with difficulty in eating and sometimes associated with trismus. On clinical examination, a bare socket with exposed bone is seen. The socket may be filled with a mixture of saliva and food debris. The adjacent gingiva tends to be red, inflamed, tender and edematous. The patient may experience fever and lymphadenopathy.\textsuperscript{8}
MANAGEMENT

Management of the dry socket aims at reducing the pain and inducing fresh bleeding and increasing vascularity of the dried socket. It includes debridement of the socket along with surgical curettage for removal of the necrotic slough over bare bone and irrigation with the help of betadiene solution or warm saline. Irrigating solutions include heated saline solution, powdered sodium perborate, gauze with iodoform, the prescription of codeine and subsequent irrigation with a concentrated solution of sodium perborated has been proposed in 1929. Further obtundent dressing/ pack of zinc oxide eugenol and other medicaments like bismuth subnitrate and iodoform paste (BIPP) on ribbon gauze and metronidazole and lidocaine ointment can be placed in the socket. Alvogyl is a mixture of butamben (anesthetic), eugenol (analgesic/obtundent) and iodoform (antimicrobial) can be used and allows socket healing along with pain relief. For pain management analgesics like NSAIDS can also be effectively used.

Ticlopine solution of 0.5 ml when given intramuscularly reduces platelet aggregation and benefits in improving the flow of blood to the ischemic socket hence reducing the dryness of the socket.

<table>
<thead>
<tr>
<th>Topical and systematic antibiotics</th>
<th>Chlorhexidiene- 0.12%</th>
</tr>
</thead>
<tbody>
<tr>
<td>PHBA (para-hydroxybenzoic acid) (antifibrinolytic agent- APERNYL)</td>
<td>Tranexamic acid</td>
</tr>
<tr>
<td>Steroids + oxy-tetracycline mixture</td>
<td>Polylactic acid (supports primary clot)</td>
</tr>
<tr>
<td>9- Aminoacridine (antiseptic agent)</td>
<td>Adequate lavage during bone drilling (175-350 ml of normal saline per tooth) Sweet and Butler criteria</td>
</tr>
</tbody>
</table>

Figure 2- Preventive Measures

Recent advances
1. Biodegradable polymers- oxidized cellulose.
2. PRF (platelet rich fibrin)

CONCLUSION

Dry socket is an unavoidable event which can easily be dealt with and can be prevented by adequate and copious use of irrigation, antibiotics and maintenance of oral hygiene. Although there is no specific treatment for dry socket, eugenol dressings and curettage reduce the incidence of it. Further investigations and well-designed studies can be helpful to draw firm conclusions and reducing the incidence of this common complication.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interests regarding the publication of this paper.

REFERENCES


[10]. **Lily GE, Oshon DB, Rael Em, Samuels HS, Jones JC.** Alveolar osteitis associated with mandibular third molar extractions. JADA 1974; 88:802-6.


