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Original Research

Incidence, clinical features and predisposing factors of dry socket: A prospective study

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ABSTRACT:

Background: Dry socket is a global phenomenon. The purpose of the study was to investigate the incidence of dry socket in Department of Oral Surgery GDC Srinagar. **Methods:** Patients who were referred for dental extractions were included in the study. The case files of patients were obtained and information retrieved included biodata, indication for extraction, number and type of teeth extracted, oral hygiene status, compliance to oral hygiene instructions, and development of dry socket. **Results:** 1500 teeth were extracted during the one year period of the study were analyzed, out of which 1.4% teeth developed dry socket. The mean age (SD) was 35.2 (16.0) years. Most of the patients who presented with dry socket were in the fourth decade of life. Mandibular teeth were affected more than maxillary teeth. Molars were more affected. Retained roots and third molars were conspicuous in the cases with dry socket. **Conclusion:** The incidence of dry socket in our centre was lower than previous reports. Oral hygiene status, lower teeth, and female gender were significantly associated with development of dry socket. Treatment with normal saline irrigation and ZnOeugenol dressings allowed relief of the symptoms.

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INTRODUCTION

Exodontia is the commonest procedure in oral surgery and dentistry [1].Dry socket, also referred to as alveolar or fibrinolyticosteitis, is a major complication that follows extraction of tooth/teeth in oral surgery [2]. There is mild swelling and redness of the gingival, halitosis, bone exposure, and severe tenderness on examination. It is an acute inflammation of the alveolar bone around the extracted tooth and it is characterized by severe pain, breakdown of the clot formed within the socket making the socket empty (devoid of clot), and often filled with food debris [3].

Most patients have to contend with moderate to severe pain over varying periods from not only the indications of these extractions but also the fear of pain from having an extraction which might have been avoided. Occasionally, fears of such patients actually result in real or perceived pain during extraction depending on the skill of the clinician. Some may also have severe pain immediately postoperatively and this may continue for several days after the procedure.

By the third day postextraction, pain due to extraction is expected to have subsided appreciably, but when such pain becomes worse and continues through one week after the procedure and the socket does not appear to be healing, the occurrence of dry socket can be established.

INCIDENCE

Incidence of dry socket has been reported in literature to be about 0.5–5.6% and following surgical extraction of third molars, it has been found to be up to 30% [4–8]. Several factors have been reported in literature to be responsible for the occurrence of dry socket; these include traumatic, difficult and prolonged extraction, pre- and postoperative infection at the site, smoking, oral contraceptives, bone disorders and underlying pathologies, irradiation, systemic illness such as diabetes mellitus, clotting problems, and failure to comply with postextraction instructions [9–12]. Other possible risk factors include periodontal diseases and previous dry socket with past extractions [13]. This is the first time a research on this disease will be conducted in the 12 years of establishment of our dental center and it will be relevant in order to contribute to existing literature

and also to see any recent changing trend. Therefore, the aim of this study was to clinically investigate the incidence of dry socket complicating exodontias in our center.

METHODS

Case files of all patients that attended the dental center and had extractions of their tooth/teeth from January 2018 to December 2019 were obtained from the records oral and maxillofacial department GDC Srinagar about oral hygiene status, systemic factors, diagnoses and indications for teeth extraction, teeth extracted, antibiotics prescribed and dosage of antibiotics, compliance to postextraction instructions, and occurrence of dry socket during follow-up. All types of extractions (routine surgical, retained root whole tooth deciduous tooth impacted tooth) were included. Approval to conduct the research was given by the hospital ethics and research committee. Dry socket was diagnosed based on the presence of severe pain from the socket and the absence of clot in the socket.

RESULTS

A total of 1500 patients with 1200 extracted teeth were reviewed within the 1 year study, out of which males were 400 (39.4%) and females were 1100(60.6%). Age range was 16–55 years and means (SD) was 35.2 (16.0) years. Hypertension was the commonest systemic illness 116 (9.8%) followed by allergies to various drugs and sickle cell disease was the least. Majority (49.0%) of the patients had fair or poor oral hygiene. Only a total of 6% had good oral hygiene while status of the oral hygiene was not stated in a total of 38%. A total of 1100(89%) patients had extraction of single tooth and 400(11%) patients had multiple extractions.

Molars constituted the highest number of extracted tooth 1100 (79.3%) with the first molars contributing the highest figure. Lower teeth removed in each year were more than upper teeth. For 2018 and 2019, more right teeth were extracted than left teeth. The total of retained roots and impacted teeth extracted in each year was less than 13% for each year. A total of 200 (3.8%) of the extractions were surgical (44 of which involved third molar), 1300 extractions (96.2%) were done by routine method with or without elevators. Figures for compliance to oral hygiene instructions were also reflected

For mostly all the patients , acute apical periodontitis was the commonest indication for extraction 100(44.4%), followed by irreversible pulpitis 152, Failed root canal treatments, cervical lesions, tooth displacements/malposition, periodontal abscess, and chronic apical periodontitis (apical abscess, granuloma, and cysts) were among the least indications.

Antibiotics were routinely prescribed following all extrac- tions; on the whole and for each year, the combination of amoxicillin (500mg 8hrly and metronidazole 400mg 8 hrly for 5 days) constituted the highest figure followed by amoxicillin/clavulanic acid (Augmentin 625 mg 8 hrly for 5 days)

A total of 19 patients had dry socket (1.4%). More female patients had dry socket than males (36.8%) but no significant relationship with dry socket, □> 0.05, 0.393, and most of the patients (47.4%) were in the fourth decade. There was significant relationship between fair/poor oral hygiene with dry socket, □< 0.05, and 0.035. A total of 14 (73.7) patients had nonsurgical extractions and most of these also involved the lower molars, with significant relationship, □< 0.05, 0.013. The side distribution was more on the right, 11 (57.8%). Also, there was almost equal distribution of indications for exodontias amongst the cases with no strong relationship with any of the reasons. Seven (36.8%) patients with dry socket did not comply with oral hygiene instruction regarding the thorough use of warm salt mouth bath. Same number of patients did not comply and they also had dry socket, but in 5 cases with dry socket, compliance was not stated. Alternate day normal saline irrigation and ZnOeugenol dressings were our mainstay of treatment.

DISCUSSION

The exact etiology and mechanism of dry socket are not exactly known but several factors have been associated. Careful analysis into the pathophysiology of dry socket (DS) stated that poor oral hygiene, vasoconstrictors, and reduced blood supply are important factors but reports have placed emphasis on trauma from difficult exodontias causing fibrinolysis and release of pain inducing chemical substances [14, 15].

There were more females (63.2%) that presented with dry socket than males and most of the patients were in the fourth decade; these findings corroborate other reports [3, 16, 17] but in Lagos [17], the ratio gap was much higher, 1 : 4.4, and age was more in third decade. Eighty-nine percent had extraction of single tooth and this was similar to the study of Upadhyaya and Humagain [16]. Reasons may be hormonal, coupled with the use of contraceptives by some women which is another major factor; but such histories were not retrieved and we could not ascertain a relationship of dry socket with such drugs; however, one hypertensive, 1 pregnant patient, and 2 cases of peptic ulcer disease had dry socket but there was no strong link with these diseases. No patient with diabetes mellitus had dry socket in our study in contrast to few other reports [1, 15].

Also, there were more in mandibular teeth (68.4%) than maxillary teeth and this was similar to other studies [16–18]. Dry socket occurred in only 2 cases with multiple extrac- tions involving two and three teeth; the specific tooth/teeth involved were not specified but it was notable that in both cases, all the five teeth removed were retained roots. In addition,

amongst cases of dry socket, last molars were more involved. There were no cases of dry socket from exodontias deciduous teeth and all these supported the fact that difficult extraction which was experienced with most retained roots and some last molars is a major contributor to dry socket [14, 18].

Overall incidence in this study was 1.4% and much less than figures documented in most reports outside Nigeria and the 5.6% in the study of Houston et al. [14–19]. Relationship of dry socket was statistically significant with lower teeth and oral hygiene. Removal of debris is poorer in lower sockets than upper teeth and this may be contributory. Of the total cases of dry socket, only 36.8% were noncompliant with oral hygiene instructions; information was not available from other studies on compliance to oral hygiene instructions.

One major factor that has been documented in literature that predisposes to dry socket is smoking [20]; avoidance of smoking within the period of healing is a component of the postextraction instructions, but the level of compliance to such specific instruction was ambiguous, again; pre-extraction plasma/tissue levels of nicotine and other nitrous amines might also possibly enhance the occurrence of dry socket; in this study, the smoking status of most of the patients with dry socket was not directly stated but almost all had a fair or poor oral hygiene. In the study from Lagos, 11.1% of those with dry socket were smokers [16], and we also recorded 10.5%.

Acute apical periodontitis was the commonest indication for exodontias; this was closely similar to figures from other reports [7, 13]. Indication for extraction was not stated in about 13% of cases and this involved the cases with multiple teeth; this was probably due to the fact that it was only one main tooth that was causing severe pain that brought patient to the hospital. Such pains are commonly due to acute pulpitis/irreversible pulpitis, acute apical periodontitis, and dentoalveolar abscesses. Other teeth indicated for extraction were incidental probably due to the mobility of tooth/teeth from chronic periodontitis or grossly carious painless teeth with pulp necrosis.

Operator technique and skill are essential factors in the occurrence of dry socket [11, 16]; however, we could not eval- uate this very important factor because of the retrospective nature of the study; In our center, surgical exodontias are usually performed by resident doctors and routine exodontias are performed by house officers or final year students under supervision of the consultants or residents, and considering the low incidences from this study, it may be deduced that appropriate techniques were utilized for these procedures to a large extent. Antibiotics were routinely given to all patients following exodontias in our center and this prob- ably may have contributed to the low incidences. We used mostly amoxicillin and metronidazole followed by amoxi-cillin/clavunate and clindamycin. Most mixed infections are susceptible to these antibiotics and systematic reviews have proved that prophylactic antibiotics and chlorhexidine (0.12% or 0.2%) rinses or gel (0.2%) in the sockets of extracted teeth minimized dry socket, but use of Surgicel gauze pack has been found to increase the incidence [21–25].

In conclusion, acute apical periodontitis was the highest reason for exodontias in our study. Our overall incidence was 1.4%. The factors associated with dry socket were lower teeth, molars, female gender, and patients with inadequate oral hygiene. We had a larger sample size and our study reflected lower annual incidences compared to earlier studies in literature and this might be related to emphasis placed on meticulous and appropriate techniques of extraction, use of antibiotics and compliance to oral hygiene instructions.

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