Research Article

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Pericoronitis its Complication and Standard of Care in Emergency Given by Dentists in Bihar: A Cross-Sectional Study

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ABSTRACT

Background: Pericoronitis mean inflammation of the soft tissue in relation to the crown of an incompletely erupted tooth, including the gingiva and the dental follicle. However, pericoronitis is very common, there is no evidence-based standard-of-care for handling of emergency patients with acute pericoronitis.

Material and method: For the study a questionnaire was formulated and was sent to total of 218 dentists. An invitation letter that explained the purpose and expected outcomes of this survey upfront before taking the survey was included in the questionnaire form, frequency of third molar extraction, and patient satisfaction.

Results: A total of 218 dentists participated in our study 144 (66.1%) submitted the survey complete, 46 (21.1%) submitted the survey incomplete, and 28 (12.8%) submitted the survey empty with no answers. We decided to focus our analysis on the 144 completed surveys to provide consistent statistical power to answers of each category.

Keywords: Gingivitis; third molar; emergencies.

INTRODUCTION

Pericoronitis means inflammation of the soft tissue in relation to the crown of an incompletely erupted tooth, including the gingiva and the dental follicle. The term pericoronitis originates from the Greek word, peri means "around", Latin word, corona means "crown" and itis means "inflammation." It is also known as operculitis. The soft tissue covering over a partially erupted tooth is known as pericoronal flap or gingival operculum. Maintenance of oral hygiene in such area is very difficult to achieve by normal methods of oral hygiene [1]. Pericoronitis is prompted by an buildup of food debris beneath the operculum that overlaps and surrounds the partially erupted tooth, which propagates an ecological niche for a incredible variety of polymicrobial flora, primarily comprising of anaerobic pyogenic bacteria [1,2].

A bacterial type which are principally seen in pericoronitis of erupting mandibular third molars are Streptococcus, Actinomyces and Propionibacterium species. Apart with these, there is also an indication of existence of β-lactamase producing bacteria such as Prevotella, Bacteroides, Fusobacterium, Capnocytophaga and Staphylococcus sp. It is demonstrated that the microbial flora of pericoronitis are predominantly anaerobic. Pericoronal flap inhabits the same bacterial species which are seen in tonsillitis and

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periodontitis. Leung et al states that microbiota of pericoronitis resembles that of gingivitis, periodontitis and detected P. gingivalis in 100% of the samples. Rajasuo et al detected P. gingivalis in 9.1% of the illustrations while Mombelli et al found in 20% of healthy third molar pericoronal pockets. [3,4].

Chronic pericoronitis can be characterised by a dull pain with slight discomfort lasts for a day or two, with remission lasting for many months. A part of ulceration may be linked with chronic pericoronitis which may look like necrotizing ulcerative gingivitis. Patient may also complain of a bad taste. Pregnancy and fatigue are associated with an increased occurrence of pericoronitis. [5]. Difficulties that furthermost healthcare providers fear regarding this infection linked with impacted third molars are predominantly focused on spread of the infection toward fascial spaces of the neck and thoracic region, which could lead to trismus, airway obstruction, mandibular nerve injuries, and life-threatening diseases like Ludwig's angina and sepsis [2,4–6]. highest poverty rates and lowest education makes the population group that suffers the most detrimental oral health, resulting in limited access-to-care [7].

A history of pericoronitis is associated with the incidence of post-extraction mandibular fracture following third molar removal was shown to be highly associated with and local pathological bone alterations in males over thirty-five years-old [8]. However, such post-extraction problems are very rare (less than 0.005%) [8], this illustrates the potentially serious consequences of pericoronitis and the need to find the most affordable and effective treatments for this disease. The null hypothesis of the current study is that there is no chosen treatment modality for acute pericoronitis. Therefore, the main objective of the present study is to survey the preferred treatment plans for patients with acute pericoronitis, a very common disease of the oral cavity representing about 6–9% of emergency patients annually [9], by using statistical data on treatment options obtained from our questionnaire survey.

MATERIALS AND METHODS

For the study a survey form was created and was sent to total of 218 dentists. No patient clinical past history was asked from the participants in the study. dentist participated in this study irrespective of their gender, background and location. The survey form did not necessitate the participants to provide any distinguishable data of the treated patients with acute pericoronitis.

There was no risk related with this study related to the participants and their identities. Dentist taking part in the study were voluntary, and they did not receive any direct benefit from this study. The occurrence of acute pericoronitis and current treatment plans for emergency patients were explored, By the best standard-of-care for patients depending upon high quality peer-reviewed publications, the main aim of the study was to investigate the ideal treatment modality for acute pericoronitis and patient gratification with the received treatment for this disease.

A statistical analysis was done for the data collection using chi-square p-values. The analysis of variance among the survey categories was considered significant if a p-value was less than _ 0.05. If participants responded to more than one choice for a given question, the multiple answers were included for analysis if not contradictory (i.e., "refer to a specialist" and "antibiotics immediately followed by extraction of affected tooth").

RESULTS

A total of 218 dentists participated in our study 144 (66.1%) submitted the survey complete, 46 (21.1%) submitted the survey incomplete, and 28 (12.8%) submitted the survey empty with no answers. We decided to focus our analysis on the 144 completed surveys to provide consistent statistical power to answers of each category. The data showed that the majority of the participants (43.1%) were practicing in academic settings, with most (52.8%) general dentists, and the majority of participants (66.7%) in our study having more than 15 years of experience, as shown in Table 1.

Table 1: Descriptive frequency of answers for selected questions in the survey.

Variables	No (144)	%tage
Specialty		
General	76	52.8%
Oral Surgery	42	29.2%
Pedodontics	12	8.3%
Endodontics	8	5.6%
Other	6	4.2%
How often do you perform third molar extraction		
Never	60	41.7%
<1 per week	44	30.6%
1–2 per week	16	11.1%
3–5 per week	6	4.2%
>5 per week	18	12.5%
Practice setting		
Academic	62	43.1%
Private	24	16.7%
Hospital	56	38.9%
others	2	1.4%
Number of years in practice		
<5 years	20	13.9%
5–10 years	18	12.5%
10–15 years	10	6.9%
15+ years	96	66.7%

In contrast, 41.7% of the dentist participating in our study had never performed a third molar extraction before, which raised concern about one of the common treatment options for pericoronitis (Table 1). The outline of answers by the dentists in this survey with no preponderance of a preferred treatment modality exemplifies and supports our null hypothesis for a lack of standard-of-care for pericoronitis. Remarkably, the pattern of answers did not alter even when the partially completed questionnaires were considered in the plotting of patients chosen treatment plans. Regarding which treatment options had met the patient's gratification, 25% of the clinicians participating in our study reported that prescribing antibiotics and scheduling a follow up visit was the treatment modality preferred by their patients. The next choice was prescribing antibiotics followed by operculectomy vs. the extraction of impacted tooth after two-to-three days in 46.6% of the patients. Our results showed that 56% of dentists preferred prescribing antibiotics at the initial visit and scheduling a follow-up visit in two-to-three days for extraction, which was the second most common option that satisfied their patients' expectations. About 20.8% of patients who were referred to an oral surgeon exhibited gratification, while 18.1% of those who chosen scaling and root planning as well as prescribing over the counter pain medications with offering a follow up visit if no symptoms relief stated that this treatment modality fulfilled their expectations. The data collected in this study attested to the null hypothesis of this study and drew attention to the importance of developing a treatment protocol for acute pericoronitis that can meet the patient's expectations while harmonizing with the preferred choice by our dentists based on high levels of scientific evidence.

It is of note that the answers provided in this study were contributed mainly by general dentists (52.8%) compared the remaining clinicians, The skewed proportion of responses given by general dentists with a *p*-value of 0.005 may have contributed to the variable pattern of answers

related to the preferred treatment protocol for patients with acute pericoronitis in this survey (Table 2). In addition, the high percentage of not performing third molar extraction by participants could be explained by the large percentage of general dentists who contributed to this study, with a *p*-value < 0.001.

DISCUSSION

Pericoronitis, also known as operculitis, is defined as an inflammation of the soft tissue surrounding the crown of an impacted or semi-impacted tooth. The soft tissue covering a partially erupted tooth is known as an operculum in clinical terms. Pericoronitis mainly refers to the inflammation of the soft tissue surrounding third molars as it is quite infrequent to occur elsewhere. Though, the handling of pericoronitis varies among dentists, and no evidence-based standard of care has been established to minimize the lengthy period of oral pain and other associated complications [1–4]. The present paper pursued to determine whether patient favourite and the chosen type of treatment for patients with acute pericoronitis are impacted by the specialty of dentists, their educational contextual, clinical practice setting, and the number of years in dental practice. Treatment choices included in the survey form were as follows: Advising an antibiotic, scaling and root planning of the affected area, surgical removal of operculectomy, over the counter pain medication, and removal of the impacted third molar. Remarkably, the eclectic range of techniques provided as selections in the survey implies the general lack of a standard approach or plan of action when the various specialties are confronted with this one type of infection. Third molars are the most frequently impacted teeth, and their surgical extraction is one of the most common surgical procedures performed by oral and maxillofacial surgeons and general dentists [1,10].

Impacted 3rd molar can cause the inflammation and ulceration of the gingiva around them, damage to the roots of second molars, the decay of adjacent second molars, gum and bone ailment around second molars, and the progression to life-threatening diseases such as Ludwig's angina and sepsis [4–6]. Generally the removal of non-restorable third molars is suitable if signs or symptoms of disease related to these teeth are present [1,4,6]. Very few reports have studied the effect of administration of nonsteroidal anti-inflammatory drugs (NSAIDs) and post-operative swelling after third molar extractions [11]. Previous studies have shown a noteworthy reduction of trismus and facial edema when NSAIDs were used alone. The postoperative intake of ibuprofen does seem to reduce pain, facial swelling and trismus after the removal of an impacted lower third molar when compared to aceclofenac [12].

The data collected in this study enhance the underlying message of the lack of a reliable protocol-of-care for acute pericoronitis. Our results showed that 41.7% of oral health professionals had "never" performed third molar extractions, and a total of 77.8% preferred antibiotic treatment and debridement while also referring to a specialist for acute pericoronitis. Based on the responses provided by the dentist, the survey outcomes showed that the most preferred treatment by patients was antibiotic treatment with a follow-up, and the second was antibiotic prescription with follow-up in two-to-three days for extraction after the initial visit. On the other hand, the preferred treatment by dentist was antibiotic prescription with a follow-up in two-to-three days after the initial visit, and the second was to refer to a specialist. Referral to a specialist should not be considered as a preferred treatment option, since it does not entail any treatment procedure. Besides, specialists might have a dissimilar opinion than simply accepting pericoronitis cases. The data collected in this study indicate there was some degree of alignment between the treatment modality favored by the participating dentists and patient satisfaction. However, a major limitation for this conclusion is the fact that the patient responses were provided by the clinicians themselves based on their experience treating patients with acute pericoronitis.

Regrettably, other alternatives for this study were hard to put up in order to collect data directly from the patients themselves. If the patient insists upon treatment considered by the dentist to be harmful to the patient, the dentist should decline to provide treatment." According to our study results, prescribing antibiotics and scheduling a follow-up appointment was reported to be the most common treatment option; however, the follow-up timeline varied between providers. Around 26.4% of our

providers scheduled the patient for surgery two-to-three days post-initial appointment, while immediate extraction without antibiotic was not as popular among the participants in this study, with only 4.2% of respondents choosing this option.

The second most common recommendation was to refer the patient to a specialist (20.8%), which suggested that dentists did not follow evidence from previous studies for odontogenic maxillofacial infections. It was determined that extraction of the offending tooth is associated with a faster clinical and biological resolution of the infection [4]. Thus, when the contributing tooth is non-restorable, it should be extracted without delay. The timing of the follow up appointment after prescribing antibiotics may be a factor in lowering the number of complications and cultivating the outcomes for patients experiencing pain or discomfort [2]. Thirty-three percent of our patients were scheduled for follow up after three-to-four days. The most common complication encountered in patients who had received antibiotics and were scheduled for a follow up (13.9%) was non-compliance, followed by deteriorating of infection. One of the limitations of this study is the small sample size of participating health professionals (Table 1). Only 144 of the participants completed the questionnaire survey; however, they are critically important in showing that there was no consensus for treatment of pericoronitis. Of the 144 (66.1%) of participants who completed the survey, 52.8% were general dentists, of which 43.1% practiced in an academic setting. An analysis of the composed data signifies a crooked perspective through which students may be being taught to treat this inflammatory infection that is caused by a mesio- or vertically-impacted, partially erupted third molar [13,14].

Several studies have shown a trend of a growing uncertainty for dental students surrounding the rather broad scope of oral and maxillofacial procedures, including but not limited to third molar extraction, operculectomy, and placing sutures after tooth extractions [15,16]. This addresses the issue of not obtaining adequate training due to the respondents not having sufficient preparedness or expertise to perform surgical extractions and leading to skewed cognitive for treating pericoronitis [17]. These studies suggestively correlate with our findings regarding the statistical factor (144.3%) of having never or having only performed one third molar extraction(s) per week. This demonstrates that issues such as inflammatory disease recurrence, an extended period of oral pain, or an increase of associated cost for such infection may also be contributing factors. Hence, evolving an evidence-based treatment plan for such a common health problem will help guide incoming aspiring oral health practitioners in optimizing their techniques, their calibration, and their training programs. Based on recent peer-reviewed studies with high quality evidence, it can be suggested that this could be achieved by investing in new innovative equipment and instruments or completing continuing education courses, enabling the clinician to perform curative treatment both comfortably and safely.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

REFERENCES

1. McNutt M, Partrick M, Shugars DA. Impact of Symptomatic Pericoronitis on Health-Related Quality of Life. J Oral Maxillofac Surg. 2008;66:2482–2487.

2. Gelesko, S.; Blakey, G.H.; Partrick, M.; Hill, D.L., Jr.; White, R.P., Jr.; O_enbacher, S.; Phillips, C.; Haug, R.H. Comparison of periodontal inflammatory disease in young adults with and without pericoronitis involving mandibular third molars. J. Oral Maxillofac. Surg. **2009**, 67, 134–139.

3. Peltroche-Llacsahuanga H, Reichhart E, Schmitt W. Investigation of Infectious Organisms Causing Pericoronitis of the Mandibular Third Molar. J Oral Maxillofac Surg. 2000;58:611–616. 4. Mombelli A, Buser D, Lang NP, Berthold H. Suspected periodontopathogens in erupting third molar sites in peridontally healthy individuals. J Clin Periodontol 1990;17(1):48-54.

4. Moloney J, Stassen LF. The relationship between pericoronitis, wisdom teeth, putative periodontal pathogens and the host response. J Ir Dent Assoc. 2008;54:134–7.

5. Marciani RD. Is there pathology associated with asymptomatic third molars? J Oral Maxillofac Surg. 2012;70:S15–9.

6. Magraw, C.B.; Golden, B.; Phillips, C.; Tang, D.T.; Munson, J.; Nelson, B.P.; White, R.P., Jr. Pain with pericoronitis a_ects quality of life. J. Oral Maxillofac. Surg. **2015**, 73, 7–12.

7. Pires, W.R.; Bonardi, J.P.; Faverani, L.P.; Momesso, G.A.; Munoz, X.M.; Silva, A.F.; Panzarini, S.R.; Bassi, A.P.; Ponzoni, D. Late mandibular fracture occurring in the postoperative period after third molar removal: Systematic review and analysis of 124 cases. Int. J. Oral Maxillofac. Surg. **2017**, 46, 46–53.

8. Petersen, P.E. The World Oral Health Report 2003: Continuous improvement of oral health in the 21st century—The approach of the WHO Global Oral Health Programme. Community Dent. Oral Epidemiol. **2003**, 31 (Suppl. 1), 3–46.

9. Khaleeq Ur, R. Emergency dental services: Review of the Community Health NHS Trust Service in Birmingham between 1997 and 2000. Prim. Dent. Care **2003**, 10, 93–96.

10. Isola, G.; Matarese, M.; Ramaglia, L.; Cicciù, M.; Matarese, G. Evaluation of the e_cacy of celecoxib and ibuprofen on postoperative pain, swelling, and mouth opening after surgical removal of impacted third molars: A randomized, controlled clinical trial. Int. J. Oral Maxillofac. Surg. **2019**.

11. Jain, N.; Maria, A. Randomized double blind comparative study on the e_cacy of Ibuprofen and aceclofenac in controlling post-operative sequelae after third molar surgery. J. Maxillofac. Oral Surg. **2011**, 10, 118–122.

12. Goyal, S.; Verma, P.; Raj, S.S. Radiographic Evaluation of the Status of Third Molars in Sriganganagar Population—A Digital Panoramic Study. Malays. J. Med. Sci. **2016**, 46, 103–112.

13. Brand, H.S.; van der Cammen, C.C.J.; Roorda, S.M.E.; Baart, J.A. Tooth extraction education at dental schools across Europe. BDJ Open **2015**, 1, 15002.

14. Magraw CB, Golden B, Phillips C, Tang DT, Munson J, Nelson BP. Pain with pericoronitis affects quality of life. J Oral Maxillofac Surg. 2015;73:7–12.

15. Al-Dajani, M. Dental students' perceptions of undergraduate clinical training in oral and maxillofacial surgery in an integrated curriculum in Saudi Arabia. J. Educ. Eval. Health Prof. **2015**, 12, 45.

16. Ghaeminia, H.; Perry, J.; Nienhuijs, M.E.; Toedtling, V.; Tummers, M.; Hoppenreijs, T.J.; Van der Sanden, W.J.; Mettes, T.G. Surgical removal versus retention for the management of asymptomatic disease-free impacted wisdom teeth. Cochrane Database Syst. Rev. **2016**.

17. Vlcek, D.; Razavi, A.; Kuttenberger, J.J. Antibiotics in third molar surgery. Swiss Dent. J. **2028**, 124, 294–302.