

Non-third molar related pericoronitis in a sub-urban Nigeria population of children

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Abstract

Background: The study will report on the prevalence, clinical presentation, diagnosis, and management of non-third molar related pericoronitis seen in children below the age of 15 years who report at the Pediatric Dental Clinic, Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife over a 4½ year period.

Materials and Methods: This is a prospective study of cases of pericoronitis affecting any tooth exclusive of the third molar diagnosed in the pediatric dentistry out-patient clinic in Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife between January 2008 and June 2012. Pericoronitis was diagnosed using the criteria described by Howe. Information on age, sex, history malaria fever, upper respiratory diseases, tonsillitis, and evidence of immunosuppression were taken. Radiographs were taken in all cases to rule out tooth impaction and information on treatment regimen was also collected.

Results: The prevalence of non-third molar related pericoronitis was 0.63%. More females (63.6%) were affected. Chronic pericoronitis was the most common presentation (73.3%). No case was reported in the primary dentition and the premolar. No case was associated with tooth impaction and the tooth most affected was the lower right second permanent molar (35.7%). Bilateral presentation was seen in 36.4% patients. Herpetic gingivostomatitis was reported in association with one case. Chronic pericoronitis resolved within 3 days of management with warm saline mouth bath (WSMB) and analgesics, while acute/subacute resolved within 10 days of management with antibiotics, analgesics, and WSMB.

Conclusions: The prevalence of non-third molar related pericoronitis is the low. The most prevalence type is chronic pericoronitis affecting the lower right second permanent molar.

Key words: Children, management, Nigeria, pericoronitis, prevalence, teething

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Introduction

Pericoronitis is defined as inflammation of the oral soft tissues surrounding the crown of an erupted or partially erupted tooth. The word is often used in relation to inflammation of the operculum associated with the mandibular third molars as it is rarely diagnosed elsewhere.^[1-3]

Data on the prevalence of pericoronitis is limited. Worse still, availability of data and information on the occurrence of pericoronitis associated with other teeth beyond the mandibular third molar is rare.

The diagnosis of pericoronitis is mainly clinical with three distinct diagnostic categories recognised: (1) Acute pericoronitis, (2) sub-acute pericoronitis, and (3) chronic pericoronitis. These classifications are empirically derived based on how individual cases arbitrarily fall into the three distinct clinical categories.^[1]

The diagnosis of acute pericoronitis is predominantly based on the complaint of limited range of mouth opening, intermittent or continuous pain associated with the local

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inflammatory process and exacerbated during mastication. Pain may disturb sleep. There is discomfort during swallowing, and extra-oral swelling.^[1] Clinical examination may reveal lymphadenitis involving the deep cervical lymph nodes, facial/cervical edema, edema and tenderness of the operculum surrounding the affected tooth, malaise, bad taste/breath, purulent exudates (expressed upon palpation), and occasionally loss of appetite. There may also be associated fever.^[1,4,5]

Subacute pericoronitis is also associated with the report of pain associated with the local inflammatory process. However, the individual does not have limited mouth opening. This is a distinguishing feature from acute pericoronitis. Associated pain is most often described as continuous, dull, and is occasionally sharp and/or throbbing. Unlike acute attacks, radiation of painful symptoms into adjacent muscles is rare.^[5] There is rarely a report of fever, and lymphadenitis is typically limited to the submandibular nodes.^[1]

Chronic pericoronitis is diagnosed based on a history of temporary dull aching low grade pain that typically lasts only 1-2 days. Signs include palpable non-tender submandibular lymph nodes and macerated buccal tissue consistent with cheek biting.^[1]

Pericoronitis in young patients is often associated (about 80% of acute diagnoses) with vertically positioned third molars that have erupted to the occlusal plane, in the absence of clinically detrimental alveolar bone loss. These findings are corroborated by several other studies.^[5-8] Where pericoronitis is assumed to be a chronic inflammatory condition, the only viable treatment is to alter or eliminate the associated biofilm with its resident pathogens by removal of third molars. Evidence suggests that the management of acute pericoronitis by surgical extraction can be associated with adverse life outcomes and has a negative impact on health related quality of life.^[9] Meurman *et al.* demonstrated that extraction of a third molar as a result of pericoronitis may precipitate upper respiratory tract infection.^[10] It is therefore important to generate more information on pericoronitis such that the data can help improve patient management.

While there are available literature discussing the epidemiology and management of third molar associated pericoronitis, there is very little written about pericoronitis in other teeth besides the third molar. This study will report on the cases of non-third molar related pericoronitis managed at the Paediatric Dental Unit of the Obafemi Awolowo University teaching hospital over a 4½ year period. The study will report on the prevalence, diagnosis and management of non-third molar related pericoronitis seen in children below the age of 15 years seen over the study period. It will also discuss and highlight differences in clinical

observations and management of pericoronitis associated with other teeth when compared to the management of pericoronitis affecting the third molar.

Materials and Methods

This is a prospective study of all consecutive cases of pericoronitis affecting any of the teeth exclusive of the third molar diagnosed in the pediatric dentistry out-patient clinic of in Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife over a 4½ year period (January 2008 to June 2012). The paediatric dental clinic offers oral health-care to children aged 0 days to 15 years. For the period of the study, 1,739 patients were seen in the pediatric dentistry out-patient clinic.

Pericoronitis was diagnosed using the criteria described by Howe^[11] and previously used by Owotade *et al.*^[12] Signs and symptoms that point to a diagnosis of pericoronitis include a history of spontaneous pain, localized swelling, and purulence or drainage, affecting at least one erupting tooth, lymphadenopathy of any of the cervical group of lymph nodes, discomfort with mastication, dysphagia, halitosis, limited mouth opening, facial swelling/cellulitis, with or without a fever. A diagnosis of acute, subacute or chronic pericoronitis was made based on the clinical presentation. Acute pericoronitis is characterized by severe throbbing intermittent pain, which is exacerbated by chewing, interferes with sleep and frequently radiates to adjacent areas. Trismus and extra oral swelling may be present. Subacute pericoronitis is characterized by dull ache, which radiates infrequently; there may be jaw stiffness and intra oral swelling with an unpleasant taste. Chronic pericoronitis is characterized by a dull pain or mild discomfort lasting for one or more days.^[11]

Demographics, which were recorded were age and sex. The patients were evaluated for known pre-disposing diseases for pericoronitis such as malaria, upper respiratory diseases, tonsillitis, and evidence of immunosuppression such as malnutrition, human immunodeficiency virus infection, chronic renal failure, and the use of immunosuppressive therapy. These involved taking a history, conducting a systemic review and clinical examinations to rule out the presence of these diseases. Periapical radiographs were taken in all cases to rule out tooth impaction. The regimen prescribed for all cases management was also recorded and analysed.

Results

A total of 11 patients with pericoronitis involving teeth other than the third molar were managed during the study period. The prevalence of non-third molar related pericoronitis in patients who presented at the paediatric dentistry out-patient department was therefore, 0.63%.

Table 1 shows the socio-demographic profile of the patients with pericoronitis seen during the study period and the mean age of the patients was 8.45 + 2.70 years. There were more females (63.6%) giving a male to female ratio of 1:1.7.

Table 2 shows the distribution of the teeth affected by pericoronitis in the study population. Fifteen teeth were affected in the 11 patients seen. Bilateral presentation was seen in four (36.4%) patients: two cases of bilateral lower first permanent molar pericoronitis and two cases of bilateral lower second permanent molar pericoronitis. In all, the most commonly affected tooth was the lower right second permanent molar (33.3%). Eleven of the 15 teeth had chronic pericoronitis (73.3%) making it the most common clinical diagnosis.

There was no case associated with a history of respiratory tract infection, tonsillitis, malaria, emotional stress or immunosuppression. One case was associated with a 1 week

Table 1: Socio-demographic and clinical characteristics of patients with pericoronitis

Characteristics	Sex		P value	Total (%)
	Male (%)	Female (%)		
Age in years				
5	1 (25.0)	1 (14.3)		2 (18.2)
6	0 (0.0)	1 (14.3)		1 (9.1)
7	1 (25.0)	1 (14.3)		2 (18.2)
8	1 (25.0)	0 (0.0)		1 (9.1)
10	0 (0.0)	2 (28.6)		2 (18.2)
11	0 (0.0)	2 (28.5)		2 (18.2)
13	1 (25.0)	0 (0.0)		1 (9.0)
Total	4 (100.0)	7 (100.0)		11 (100.0)
Type of pericoronitis				
Acute	1 (33.3)	1 (12.5)		2 (18.2)
Subacute	0 (0.0)	2 (25.0)		2 (18.2)
Chronic	2 (66.7)	5 (62.5)		7 (63.6)
Total	3 (100.0)	8 (100.0)		11 (100.0)

Table 2: Sex distribution of teeth affected by pericoronitis

Type of tooth affected	Sex		Total (%)
	Male (%)	Female (%)	
Lower right molar first permanent molar	1 (14.3)	1 (12.5)	2 (13.3)
Lower left molar first permanent molar	2 (28.5)	2 (25.0)	4 (26.7)
Lower right molar second permanent molar	1 (14.3)	4 (50.0)	5 (33.3)
Lower left molar second permanent molar	1 (14.3)	1 (12.5)	2 (13.3)
Upper right molar first permanent molar	1 (14.3)	0 (0.0)	1 (6.7)
Upper left molar first permanent molar	1 (14.3)	0 (0.0)	1 (6.7)
Total	7 (100.0)	8 (100.0)	15 (100.0)

history of fever managed as malaria by parents, however, confirmed to be herpetic gingivostomatitis based on the clinical presentation (oral ulcers were found during oral examination).

On radiographic evaluation, none of the teeth involved were impacted and all were partially erupted. There was no radiographic anomaly found associated with the affected teeth.

All three patients with acute and subacute pericoronitis were treated with antibiotics (amoxicillin), analgesic (paracetamol), and warm saline mouth bath (WSMB) to be used 8 times a day. All chronic lesions were treated with analgesic (paracetamol) and WSMB to be used 8 times a day.

Six cases (54.5%) were lost to follow-up. These included four cases of chronic pericoronitis, one case of subacute pericoronitis and one case of acute pericoronitis. Three cases of chronic pericoronitis seen on the third day after review were discharged following the review visits. The other two cases (one case of subacute pericoronitis and one case of acute pericoronitis) were reviewed again 1 week after the first recall visit and were discharged after review.

Discussion

The prevalence of pericoronitis in molars other than the third molar is low. This study reports a hospital based prevalence of 0.63%, which is much lower than the prevalence of 1.8-22.8% reported for pericoronitis associated with the third molar in rural and urban populations^[13-16] among 16-25 year olds in Nigeria.^[17]

Pericoronitis is often associated with impaction of the affected teeth and it is frequently associated with impacted third molar resulting more often from tooth tissue discrepancy.^[18] There has been very few publications on the prevalence of pericoronitis in first and second molars compared to third molar because these teeth are rarely impacted. None of the teeth involved in the cases reported were impacted. Yamalik and Bozkaya^[19] study did point to the possibility of pericoronitis being associated with unimpacted third molar. All cases of pericoronitis however, had partial or full soft-tissue coverage of the tooth crown. In most cases however, coverage was partial. Partial soft-tissue coverage was therefore, a predictor of pericoronitis. Unfortunately, this study did not assess for the level of soft-tissue coverage of the crown of the affected tooth.

Furthermore, effective tooth brushing can be carried out on these teeth compared to third molar because of their position thereby reducing the possibility of food impaction under the operculum.

Again, Spirochaetes, one of the bacteria prevalent in all stages of pericoronitis^[20] are established late in the oral flora

of children around the post-pubertal group.^[21] Other bacteria most commonly detected are α -hemolytic streptococci and the genera *Prevotella*, *Veillonella*, *Bacteroides*, and *Capnocytophaga*, all of which can be detected in the gingival crevice surrounding third molars or adjacent teeth.^[21] The low prevalence of these micro-organisms in the oral flora of children may also account for the lower prevalence of pericoronitis in them.

This study observed a high prevalence of bilateral pericoronitis (36.4%); a prevalence much higher than had been reported in pericoronitis associated with third molar (12.0-17.7%).^[16,22] The high prevalence of bilateral pericoronitis in these children may be because tooth eruption exhibits precise timing and bilateral symmetry.^[23] Hence, if one side is affected, the probability of the other being affected is high since they erupt within same period.

Pericoronitis involving the upper third molar is rare. This is because of the favoured topography of the maxillary third molars: they often deviate buccally and are often seen directly beneath the mucosa or covered only by a paper thin layer of bone over the crown.^[24] However, unlike what is observed in third molars, 2 cases (14.2%) were reported in the maxilla: both cases affected the first permanent molars.

During the period of this study, we did not observe any case of pericoronitis involving the primary teeth. Despite the hordes of myths and misconception about teething in the study environment,^[25] there was no case report on difficulty with eruption of the primary molar nor was there a case on pericoronitis associated with the primary molar. Neither was there any case of pericoronitis associated with the premolars. The prospect of having pericoronitis associated with the premolars is extremely low as these teeth are seen in the mouth 0-6 days after the exfoliation of the primary molars.^[26] Thus, there is little or no soft-tissue overlying the crown of the premolars at the time of exfoliation of the primary molars.

There was only a single case of pericoronitis (9.1%) occurring concurrently with systemic diseases (herpetic gingivostomatitis). Systemic diseases are said to be pre-disposing factors for pericoronitis. Owotade *et al.*^[12] showed that about 19.7% of cases with third molar pericoronitis were associated with malaria. Rajasuo *et al.*^[27] noted that tonsillitis increased the risk of lower third molar pericoronitis with there being similarities in morphologic microbiota of pericoronitis and tonsillitis. Upper respiratory tract infection and stress were also identified as predisposing factors for third molar pericoronitis.^[28] None of these systemic disorders were reported in this study cohort.

All the cases of pericoronitis managed resolved without surgical intervention. Antibiotic therapy is needed for

cases of acute and subacute pericoronitis while WSMB was adequate for the management of chronic pericoronitis. Chronic pericoronitis resolved by the 3rd day after the initial review while the cases of acute and subacute pericoronitis took about a week to resolve.

Conclusion

The prevalence of non-third molar related pericoronitis in this study population is low and not associated with tooth impaction. It can occur in the maxilla and present bilaterally with higher frequency that observed in third molar related pericoronitis. Chronic pericoronitis was the most common presentation. The most commonly affected tooth was the lower right second permanent molar. No case of pericoronitis was reported in the primary dentition and the premolars. The occurrence of systemic diseases in association with pericoronitis was very low. Management of acute and subacute pericoronitis entailed the use of antibiotics while WSMW was adequate for the management of chronic pericoronitis.

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