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Review Article

Clinical picture, risk factors and management of pericoronitis in children

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ABSTRACT

Pericoronitis is an inflammatory condition of the soft tissues surrounding a partially erupted tooth, commonly associated with the eruption of permanent molars. While it is more frequently reported in adolescents and adults, children are not exempt from its occurrence, particularly during the mixed dentition phase. In pediatric patients, the clinical presentation can vary widely, ranging from mild gingival discomfort to more severe symptoms such as swelling, trismus and lymphadenopathy. These manifestations are often misinterpreted as routine teething issues or gingivitis, leading to delayed recognition and management. The unique anatomical and behavioral factors present in children significantly influence the risk profile for pericoronitis. Immature gingival tissue, limited space for erupting molars, poor oral hygiene and uncoordinated brushing habits all contribute to the accumulation of debris and bacterial plaque beneath the operculum. Dietary habits rich in fermentable carbohydrates and insufficient caregiver awareness further heighten the risk. In some cases, systemic health conditions or immunosuppression may alter the inflammatory response, complicating diagnosis and prolonging healing. Management strategies in children must account for their developmental stage, level of cooperation and overall health. Conservative treatments such as irrigation, improved oral hygiene and analgesics are commonly effective in early cases. In more advanced or recurrent presentations, antibiotics or minor surgical interventions like operculectomy may be necessary. Laser-assisted procedures offer advantages in pediatric settings by minimizing discomfort and improving healing. Across all treatment options, preventive care and caregiver education are vital to reducing recurrence and improving outcomes. Understanding the clinical diversity, risk factors and treatment responses in children is essential for early detection and effective management of pericoronitis. Pediatric-focused approaches that integrate preventive strategies, timely intervention and interdisciplinary care can significantly reduce the burden of this condition during critical stages of dental development.

Keywords: Children, Eruption disorders, Operculectomy, Pediatric oral health, Pericoronitis

INTRODUCTION

Pericoronitis is an inflammatory condition affecting the soft tissues surrounding the crown of a partially erupted tooth. Although commonly associated with third molar eruption in late adolescence and early adulthood, it can also occur in younger patients during the eruption of permanent molars. In children, the condition is often overlooked or misdiagnosed, yet it can cause significant discomfort, disrupt oral function and increase the risk of

secondary infections. Pediatric pericoronitis presents unique diagnostic and management challenges due to differences in eruption patterns, oral hygiene behaviors and tissue responses compared to adults. The etiology of pericoronitis involves the entrapment of food particles, plaque and bacteria beneath the operculum, a gingival flap that covers part of the erupting tooth. This leads to localized inflammation and potential microbial invasion by anaerobic organisms. The confined space under the operculum creates a favorable environment for bacterial proliferation, which may result in pain, swelling, halitosis and in some cases, fever or restricted mouth opening. In pediatric patients, the eruption of first or second permanent molars may provoke similar responses, especially when oral hygiene is suboptimal or when there is crowding that impedes proper eruption.[1]

Several risk factors contribute to the development of pericoronitis in children. These include poor oral hygiene, dietary habits that promote plaque accumulation, eruption disturbances and local trauma from opposing teeth. Behavioral factors, such as limited cooperation with brushing and lack of awareness of oral discomfort, may delay recognition of symptoms. In some cases, systemic conditions that alter immune function can predispose a child to recurrent or severe pericoronitis. Malpositioned molars, especially those erupting in a partially horizontal orientation, further exacerbate the problem by increasing operculum retention and food impaction.[2] The clinical presentation of pericoronitis varies, but common signs include localized gingival redness, swelling, tenderness and difficulty in chewing. Some children may experience referred pain to the ear or jaw. Trismus and lymphadenopathy are signs of more severe progression. In early stages, the inflammation may mimic simple gingivitis, while in advanced stages, it may resemble a localized abscess or cellulitis. As such, differential diagnosis is essential, especially in mixed dentition stages where multiple teeth are erupting simultaneously.[3]

Management strategies for pediatric pericoronitis must be tailored to the child's age, symptom severity and cooperation level. Mild cases may be managed with saline irrigation, improved oral hygiene practices and analgesics. Topical or systemic antibiotics may be indicated in the presence of spreading infection or systemic involvement. In recurrent cases or where the operculum is persistently inflamed, surgical intervention such as operculectomy may be warranted. However, treatment planning should consider the child's developmental stage and long-term dental needs, including the potential for orthodontic evaluation.[4]

REVIEW

Pericoronitis in children, though less commonly reported than in adolescents or adults, presents distinct diagnostic and therapeutic challenges. The mixed dentition stage, coupled with incomplete eruption of permanent molars, creates an environment conducive to food impaction and bacterial colonization. Clinicians must differentiate between pericoronitis and other inflammatory gingival conditions that are common during tooth eruption, such as eruption cysts or localized gingivitis. Misdiagnosis or delayed intervention can lead to the spread of infection and unnecessary discomfort in pediatric patients.[5] The management of pericoronitis in children requires an age-appropriate, minimally invasive approach. Early-stage cases often respond well to conservative methods such as saline irrigation, improved oral hygiene and analgesics. However, in recurrent or more advanced cases, surgical interventions like operculectomy may be considered. These procedures must be balanced against the child's level of cooperation, growth stage and future orthodontic needs. Importantly, the role of caregiver education cannot be overstated, as awareness of oral hygiene and early symptom recognition significantly impacts outcomes. Preventive strategies, including regular dental check-ups and timely orthodontic referrals, can reduce the incidence of pericoronitis and its complications in this population.[5,6]

Variability in clinical presentation and diagnostic challenges

Pericoronitis in pediatric patients shows a wide clinical spectrum, often depending on the stage of tooth eruption, oral hygiene levels and the child's individual response to inflammation. Unlike in older populations, where third molars are the primary site, children typically experience symptoms during the eruption of first or second permanent molars. Swelling of the gingival tissues overlying erupting molars, discomfort when chewing and localized tenderness may be subtle, leading caregivers to assume these signs are part of normal teething. However, persistent inflammation and accumulation of food beneath the operculum may cause localized infection, even in early mixed dentition.[7] Pain from pericoronitis is not always confined to the affected site. In younger children, pain may radiate toward the ear or jaw, sometimes resulting in misdiagnoses such as otitis media or temporomandibular joint issues. When paired with vague symptoms like irritability or disturbed sleep, diagnosis becomes even more challenging. Younger children may not clearly verbalize their discomfort and signs like refusal to eat or brushing avoidance on one side of the mouth are sometimes the only indicators. Dentists must be skilled in pediatric behavioral observation to detect such cases during routine visits.[3,8] Clinical examination must account for both visible signs and subtle behavioral responses. A visibly inflamed operculum may not always indicate the severity of the infection. In cases where the inflammation is confined to soft tissue without exudate or obvious swelling, practitioners must rely on palpation and history. Radiographs may help assess the angle and positioning of the erupting molars but are often difficult to obtain in uncooperative patients or during emergency visits. As a result, diagnosis is often based on exclusion and experience, especially when systemic symptoms such as low-grade fever or malaise are present.[9] Atypical

presentations may also be influenced by systemic health and access to oral healthcare. Children with chronic conditions or those on immunosuppressive therapies may present with less pronounced local symptoms despite ongoing infection. Environmental factors like limited caregiver awareness, sugary diets or irregular brushing habits contribute to inflammation and increase the risk of misinterpreting symptoms as transient. Even in areas with good dental access, pericoronitis is often mistaken for general teething discomfort, delaying timely intervention and increasing the risk of progression to cellulitis or abscess.[10]

Pediatric-specific risk factors and their interactions

The onset and severity of pericoronitis in children are influenced by a range of biological and behavioral risk factors that differ substantially from those observed in adults. Eruption timing plays a central role. In pediatric patients, the transition from primary to permanent dentition introduces anatomical vulnerabilities, particularly around erupting molars. The gingival tissue in this phase tends to be more reactive and the presence of an operculum covering part of a molar creates a sheltered space where food debris and bacteria collect. Incomplete eruption, especially in crowded arches, increases the duration that soft tissue remains exposed to bacterial colonization, leading to inflammation and infection in a way that is often prolonged and difficult to detect in early stages.[11] Oral hygiene habits among children tend to be inconsistent and often ineffective, especially around posterior teeth. The posterior location of erupting molars makes them difficult to access with standard brushing techniques and this inaccessibility is compounded when children have not yet developed the dexterity or discipline required for thorough oral cleaning. Additionally, children are less likely to recognize the importance of persistent pain or gingival discomfort and caregivers may attribute signs of early pericoronitis to harmless teething or minor irritation. These gaps in daily care and symptom recognition form a critical behavioral component of risk, influencing both the onset and escalation of the condition.[12]

Dietary patterns during childhood further contribute to the inflammatory risk environment in the oral cavity. Frequent consumption of fermentable carbohydrates, especially sticky snacks or sweetened beverages, provides an ideal substrate for plaque accumulation. When food is trapped beneath the operculum, bacterial metabolism produces acids and toxins that exacerbate tissue irritation. This process is typically accelerated when sugar intake is high and brushing habits are inadequate. Moreover, children from socioeconomically disadvantaged backgrounds may have less access to preventive dental care, fluoridated toothpaste or caregiver supervision, increasing their overall exposure to risk factors without effective mitigation.[13] Beyond hygiene and diet, the morphological characteristics of developing teeth and jaws also affect susceptibility. In children with delayed eruption, tilted molar positioning or limited arch space, the soft tissue may remain folded over the occlusal surface of molars for extended periods. The resulting flap creates a stagnation zone that is highly susceptible to trauma from opposing teeth or food impaction. This mechanical irritation, combined with microbial insult, can initiate a cycle of acute inflammation followed by periods of remission, often confusing caregivers and delaying diagnosis. Children undergoing orthodontic evaluation may exhibit even more complex anatomical presentations, where erupting teeth are deflected into abnormal paths, further complicating the clinical picture.[14]

Comparative efficacy of current management strategies in children

Managing pericoronitis in children requires consideration of age-specific anatomy, behavior and healing response. Conservative treatment remains the frontline approach, with irrigation of the operculum using saline or antiseptic solutions often yielding positive outcomes. In pediatric patients with early-stage inflammation, this method tends to reduce microbial load and ease soft tissue swelling, particularly when combined with improved brushing routines. Chlorhexidine gluconate has demonstrated antimicrobial effectiveness in gingival infections, but its taste and potential for staining limit compliance in children. In clinical settings, lower-concentration rinses have been preferred for young patients, although evidence for optimal dosing in children remains scarce.[15]

Pain control frequently becomes the determining factor in whether a child tolerates treatment. Nonsteroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen are commonly used due to their dual analgesic and anti-inflammatory properties. Ibuprofen has shown greater efficacy in reducing both pain and swelling when compared with paracetamol in pediatric dental pain scenarios. However, tolerability varies and dosing adjustments are essential based on weight. Over-reliance on medication without addressing the mechanical source of inflammation, such as food impaction under the operculum, often leads to temporary relief without resolution. Long-term improvement is linked more closely to mechanical debridement and hygiene than to pharmacologic treatment alone.[16] When local infection extends or when systemic symptoms appear antibiotics may be introduced as adjuncts. Amoxicillin remains the most prescribed antibiotic in pediatric dental infections due to its broad spectrum and favorable safety profile. In cases of penicillin allergy, macrolides such as azithromycin are considered, though they carry a higher risk of gastrointestinal disturbance. Importantly, antibiotic use should follow clinical indicators and not serve as a default response. Inappropriate prescription has contributed to rising antimicrobial resistance, a concern especially relevant in children who may experience multiple infections over their developmental years. Studies suggest that when antibiotics are used without local intervention, recurrence rates are significantly

higher, underscoring the need for mechanical cleaning and patient education.[17]

Surgical interventions are considered for recurrent or advanced cases. Operculectomy, the removal of the gingival flap covering the molar, is often effective in eliminating the trap where food and bacteria accumulate. In pediatric patients, laser operculectomy has emerged as a favorable technique due to reduced bleeding, minimal postoperative discomfort and improved cooperation during the procedure. Compared to scalpel-based methods, laser excision appears to enhance both clinician control and patient acceptance. Despite its advantages, access to laser equipment and training limits its widespread use in general practice. Additionally, long-term follow-up is necessary to ensure that tissue does not regrow and cover the tooth again, especially if the molar has not fully erupted. For children with repeated episodes and severe crowding, referral for orthodontic evaluation is often warranted to assess eruption pathways and space availability for molar accommodation.[18]

CONCLUSION

Pericoronitis in children presents with distinct clinical patterns, influenced by developmental, anatomical and behavioral factors. Accurate diagnosis requires careful assessment of symptoms often masked by overlapping pediatric conditions. Effective management depends on timely intervention using both conservative and surgical strategies tailored to the child's needs. Emphasis on prevention, caregiver education and regular monitoring remains essential to reducing recurrence and complications.

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