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## Oral manifestations of Crohn's disease in Pediatric patient

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### Abstract

Crohn's disease is one of the inflammatory bowel diseases. The primary site of involvement of Crohn's Disease is mainly gastrointestinal tract, but many pediatric patients present with extraintestinal oral manifestations as a first presenting sign which has been supported by several recent studies. The clinical signs and symptoms of Crohn's Disease can differ from individual to individual and depend primarily on the site and behavior of the lesions, disease severity and activity, and also the involvement of extraintestinal sites such as oral cavity. Early recognising such oral lesions by dental professionals and further performing a biopsy, may expedite the diagnosis of Crohn's Disease.

**Keywords:** Crohn's disease, oral manifestations, oral medicine, periodontics

### Introduction

In the developed world inflammatory bowel disease is among the most common gastrointestinal disease affecting pediatric patients. Inflammatory bowel disease includes crohn's disease, ulcerative colitis and indeterminte colitis. The diagnosis of inflammatory bowel disease can be done based on endoscopic and imaging features and further classification into crohn's disease or ulcerative colitis. Finally the definitive diagnosis is done by histological findings along with clinical history of each patint. The primary site of involvement of Crohn's Disease is mainly gastrointestinal tract, but many pediatric patients present with extraintestinal oral manifestations as a first presenting sign which is also been supported by several recent studies. Among oral manifestations of Crohn's Disease in pediatric patients one study suggests that oral findings are seen in around 50-80% of cases, of which nearly 30% involves the oral cavity first. Recognizing such oral lesions and further performing a biopsy, may expedite the diagnosis of Crohn's Disease. In this report we describe a 12 years old male patient who presented with oral findings of gingival enlargement and swelling of upper and lower lip along with the subsequent investigations which further triggered the testing for Crohn's Disease. We highlight the importance of recognizing oral manifestations along with history taking in early diagnosis of Crohn's Disease.

### Materials and Methods

A 12 years old male patient visited Government Dental College & Hospital, Patiala, Periodontology department with a chief complaint of swelling of upper and lower lips. Patient also complained of bleeding gums and pain while chewing food. Patient seemed malnourished and mentioned loss of appetite. On clinical intraoral examination there was erythematous gingiva with nodular hyperplasia, angular cheilitis, extraoral examination revealed orofacial granulomatosis involving upper and lower lip. Orofacial granulomatosis or swelling of the orofacial area is suggestive of Crohn's Disease and typically appears without accompanying intestinal symptoms. History of the patient was taken on the first visit to rule out any familial involvement and supragingival scaling was done to remove any local irritating factors. On the next visit biopsy of the involved gingival lesion on the right side in first and second molar region of the oral cavity was taken.

Histological section demonstrated hyperplastic parakeratinized stratified squamous epithelium along with underlying granuloma formation. Melanin inconsistency was seen. High power view showed aggregates of non-caseating granuloma, which is typically small consisting of macrophage cells surrounded by scattered lymphocytes and plasma cells. Few multinucleated giant cells were also seen. The patient was referred to gastroenterologist where further diagnosis of Crohn's Disease was made.

## Results

An organised close collaboration between gastroenterologist and dental professional should be done when addressing the early diagnosis and appropriate management pediatric patients with Crohn's disease.

## Figure format



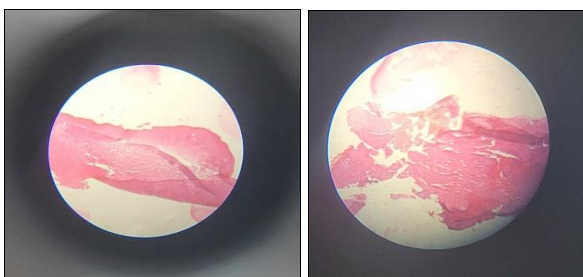
**Fig 1:** 12 years old male patient with swelling of right half of the face



**Fig 2:** Swelling of upper and lower lip



**Fig 3:** Intraoral images showing gingival enlargement mainly involving first and fourth quadrant.



**Fig 4:** Histological images showing noncaseating granuloma suggestive of Crohn's disease



**Fig 5:** OPG

## Discussion

Crohn's Disease is a chronic inflammatory bowel disease which is thought to manifest because of interplay of genetic, immunologic, and environmental factors [1, 2]. Although gastrointestinal tract is the first site of involvement in Crohn's Disease, many pediatric patients present with non-intestinal manifestations, including oral lesions as first sign of disease. Along with oral findings pediatric patients often also present with delayed growth, weight loss or failure to thrive [3]. Oral lesions can occur prior, concurrently, or after the onset of abdominal symptoms, although synchronous observations is most commonly observed. Failure to include Crohn's Disease on the differential for oral manifestations can lead to delay in definitive diagnosis and management for patients and unnecessary extensive workup [4].

In the pathogenesis of Crohn's disease certain environmental factors have been implicated which include sociodemographic factors such as rises in income levels, residence in urban areas and economic growth [5, 6]. Many geographic factors such as exposure to northern climates and lifestyle factors such as use of oral contraceptives, diet, and psychological stress which leads to increased cortisol levels and excessive chronic tobacco smoking, [5].

Immunologic mechanisms have been proposed in studies to be involved in manifestation of Crohn's Diseases. Proposed mechanisms include impairment of the innate immune system, leading to a sustained proinflammatory environment in the intestines [7]; excessive differentiation and activation of T-cell subsets against mucosal antigens [8,9]; and aberrant cytokine secretion [10,11]. In particular, studies suggest that cytokine IFN- $\gamma$  appears to play a primary role in maintaining the inflammatory milieu in the intestine [11]. Keeping such findings in mind more targeted Crohn's Disease therapies can be developed [11]. Further advances in DNA sequencing have lead to the identification of more than 200 risk loci which are estimated to explain only 25% of the inheritability of IBD.

Factors such as reduced dietary intake or nutrient leakage from the gastrointestinal tract arising from poor nutritional status and growth retardation, represents the hallmarks of pediatric crohns disease [12]. Nutritional status represents one of the foremost determinants of both clinical and surgical outcomes for patients affected by Crohn's disease. From this perspective, the identification, prevention and correction of nutritional deficiency can be considered a therapeutic intervention as crucial as the choice of adequate pharmacological strategies [13]. Even with all this advances and studies happening with keeping the diagnosis of Crohn's disease in mind, still the definitive diagnosis of inflammatory bowel disease is challenging in pediatric patients, especially due to often atypical symptoms at presentation and also due to particularities regarding disease location.

The clinical symptoms of Crohn's Disease can differ from patient to patient and depend primarily on the site and behavior of the lesions, disease severity and activity, and also the involvement of extraintestinal sites such as oral cavity [4]. A wide variety of disease specific oral lesions has been described in patients with intestinal Crohn's disease these include swelling of lips, buccal mucosal swelling or cobblestoning, mucogingivitis, deep linear ulcerations (usually in the buccal sulci), and mucosal tags [14]. Apart from these persistent submental lymphadenopathy, perioral erythema with scaling, recurrent buccal abscess, and angular

cheilitis can also be found.

Oral manifestations of Crohn's disease are usually asymptomatic and does not cause any problem and may not need specific oral treatment <sup>[15]</sup>. In fact, most often oral lesions resolve over time without and medical intervention. On the other hand, patients with orofacial granulomatosis and the more florid manifestations of crohn's disease may have very troublesome symptoms which usually require medical intervention.

Despite being as a multifactorial disease, onset and maintenance, treatment of crohn's disease remains focused on immune suppression (such as corticosteroids, methotrexates, thiopurine and biologic agents anti-tumour necrosing factor alpha <sup>[16]</sup>). Some authors prefer food exclusion, particularly exclusion of foods containing certain additives like cinnamaldehyde and benzoate. This approach is supported by the findings of a recent open non randomised study of patients with orofacial granulomatosis who appear to have achieved considerable reduction in inflammation using this method.

In a study of patients with Crohn's Disease, non-caseating granulomas were found in 100% of the oral biopsy specimens taken from the oral lesions <sup>[14]</sup>. As this patient's histological finding was that of non-caseating granuloma the patient was referred to gastroenterologist to make definitive diagnosis of Crohn's Disease. The patient of Crohn's Disease may first visit dentist for oral symptoms; as a dental practitioner we should be aware of all the oral manifestations of Crohn's Disease so that the patient can be referred to gastroenterologist for early diagnosis, as extra intestinal manifestations may present itself earlier than intestinal manifestations.

### Conclusion

As most patients particularly pediatric population shows extraintestinal manifestations (particularly in oral cavity) even before intestinal manifestations, a dental professional should know of all the signs and symptoms of Crohn's Disease. Recognizing such oral lesions in the pediatric population and acquiring a biopsy of the accessible lesion and/or the superficial ulcers may help expedite the diagnosis of Crohn's Disease. Patients with severe intestinal involvement will require help from gastroenterologist. So a close collaboration between gastroenterologist and dental professional is useful when addressing the diagnosis and appropriate management of these patients.

### Conflict of Interest

Not available

### Financial Support

Not available

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