DOI: 10.7860/JCDR/2026/84596.23928

Case Report

Dentistry Section

Dental Manifestations in a Child with Atopic Dermatitis: A Case Report

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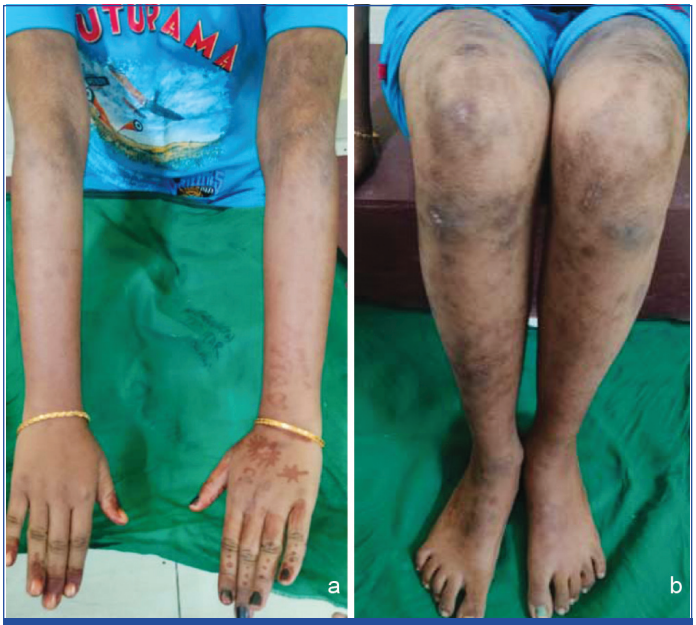
ABSTRACT

Atopic Dermatitis (AD) is a chronic inflammatory disorder commonly affecting children and is characterised by immune dysregulation and epidermal barrier dysfunction. Although AD primarily involves the skin, it is increasingly recognised as a systemic disease, and long-term pharmacologic therapy may adversely influence oral health. This case report describes the dental findings and management of an 11-year-old female diagnosed with AD, who presented during the mixed dentition period with multiple retained deciduous teeth, dental caries, gingivitis, root stumps, and delayed eruption of permanent teeth. The patient also exhibited markedly elevated serum immunoglobulin E levels and was under regular dermatologic care. Comprehensive clinical and radiographic evaluation revealed extensive oral disease requiring multidisciplinary management. Dental treatment included oral prophylaxis, extraction of retained deciduous teeth and root stumps, restorative procedures, preventive strategies, and dietary counselling, all performed during a stable phase of the dermatologic condition. Follow-up visits demonstrated improvement in oral hygiene status and reduction in gingival inflammation. This case highlights the association between AD and increased susceptibility to oral diseases, possibly related to immune imbalance, xerostomia, and prolonged medication use. Early dental evaluation and co-ordinated medical-dental care are essential to reduce oral complications and improve quality of life in paediatric patients with AD.

Keywords: Dermatology, Dental caries, Eczema, Gingivitis, Oral health, Serum immunoglobulin E, Skin infections, Tooth eruption

CASE REPORT

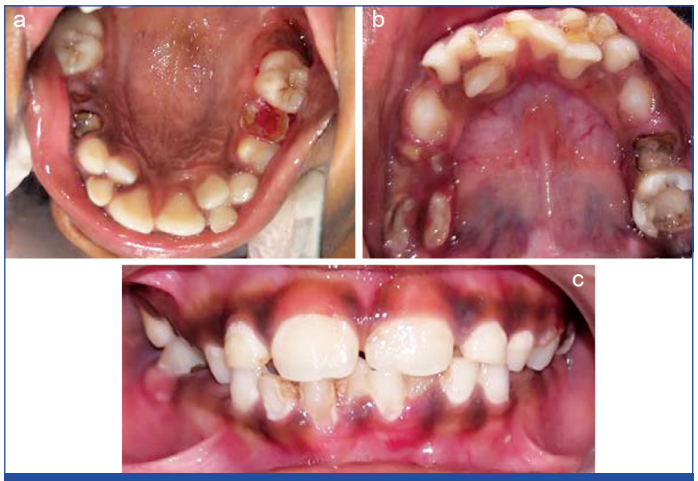
An 11-year-old female patient reported to the dental clinic with a chief complaint of irregularly arranged teeth for the past six years. The patient had a known history of AD and had been receiving regular dermatologic care for the past two years. She was provisionally diagnosed with hyper-IgE syndrome based on markedly elevated serum immunoglobulin E levels (16,591 IU/mL), recurrent skin infections, and chronic eczematous lesions. Elevated IgE levels are commonly associated with moderate to severe extrinsic AD [1,2]. General examination revealed patchy hypopigmented lesions with surrounding ill-defined hyperpigmentation on the hands, associated with severe pruritus. Similar lesions measuring approximately 2×2 cm were observed on the knees and lower limbs [Table/Fig-1a,b].



[Table/Fig-1a,b]: Extraoral clinical photograph showing hypopigmented eczematous lesions with hyperpigmented borders involving the hands and knees.

Yellowish-black discolouration was present on the nails, along with widespread cutaneous involvement of the trunk and extremities.

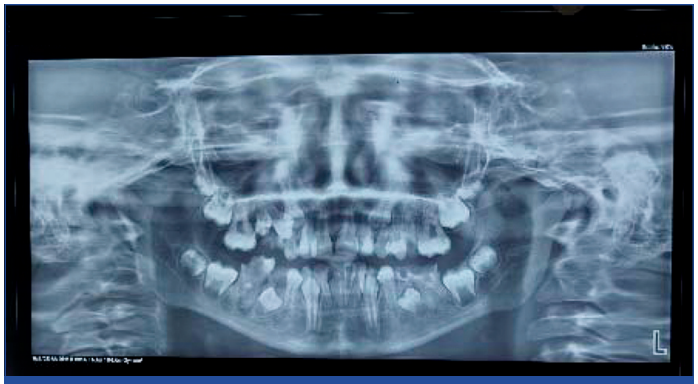
Intraoral examination during the mixed dentition period revealed a total of 31 teeth present. Multiple retained deciduous teeth were noted in relation to 52, 62, 71, 72, 81, and 82. Gingival examination showed generalised inflammation with bleeding on probing and moderate to heavy calculus deposition. Dental caries was present in relation to 16, 26, 23, and 83, with grossly decayed tooth 46. Root stumps were identified in relation to 54, 55, 64, 36, 75, and 85 [Table/Fig-2a-c].



[Table/Fig-2a-c]: Intraoral photograph showing multiple retained deciduous teeth, dental caries, root stumps, and generalised gingival inflammation during the mixed dentition period.

Radiographic evaluation using an orthopantomogram confirmed the presence of retained deciduous teeth and unerupted permanent teeth in relation to 33 and 43, suggestive of delayed eruption [Table/Fig-3].

Based on clinical and radiographic findings, the patient was finally diagnosed to have Dental manifestations secondary to



[Table/Fig-3]: Orthopantomogram demonstrating retained deciduous teeth and delayed eruption of permanent mandibular canines.

AD, including multiple retained deciduous teeth, dental caries, generalised gingivitis, root stumps, and delayed eruption of permanent teeth.

The treatment plan focused on elimination of infection and improvement of oral hygiene. Oral prophylaxis was performed, followed by extraction of retained deciduous teeth and root stumps. Restorative procedures were completed using biocompatible dental materials, and dietary counselling along with oral hygiene instructions was provided. All dental procedures were carried out during a stable phase of the dermatologic condition in consultation with the treating dermatologist. Follow-up visits demonstrated satisfactory healing, improved oral hygiene, and reduced gingival inflammation.

DISCUSSION

Atopic dermatitis is a chronic, relapsing inflammatory disorder with an increasing global prevalence, particularly among children [3-5]. Once considered a disease confined to the skin, it is now recognised as a systemic inflammatory condition with significant implications on overall health [6].

AD is multifactorial in origin, resulting from the interaction of genetic predisposition, immune dysregulation, epidermal barrier dysfunction, and environmental factors. Mutations in the *Filaggrin* (FLG) gene lead to impaired epidermal barrier function, increased transepidermal water loss, and enhanced penetration of allergens and micro-organisms [6,7]. Immunologically, AD is characterised by a Th2-dominant immune response with increased levels of interleukins such as IL-4, IL-13, and IL-31, contributing to chronic inflammation and pruritus [6]. Environmental triggers including allergens, pollution, stress, and dietary habits further influence disease severity [1].

In a study by Dhar S et al., the prevalence of AD was noted as 0.55% [8]. Oral manifestations are reported more frequently in children with moderate to severe disease, particularly during the mixed dentition period [9].

Defective epidermal barrier function facilitates colonisation of *Staphylococcus aureus*, which produces toxins and superantigens that exacerbate inflammation [10]. Systemic immune dysregulation may influence oral tissues by altering salivary flow, impairing mucosal immunity, and modifying oral microbiota composition [11]. Long-term corticosteroid and antihistamine therapy may aggravate xerostomia, delay wound healing, and increase susceptibility to dental caries and gingivitis [12,13].

Although no single laboratory marker is diagnostic of AD, elevated serum immunoglobulin E levels are observed in patients with extrinsic AD and are often associated with early onset and severe disease [1,2]. Peripheral eosinophilia, thymus and activation-regulated chemokine levels, and elevated lactate dehydrogenase levels may serve as supportive indicators of disease activity [1].

Children with AD have been reported to exhibit a higher prevalence of dental caries, gingivitis, xerostomia, oral candidiasis, geographic tongue, and altered tooth eruption patterns [14,15]. In the study by Volosovets TM et al., it was found that children with AD have a higher risk of dental caries than healthy children [15]. These findings are consistent with the present case.

Dental management of paediatric patients with AD should emphasise preventive care, early caries risk assessment, fluoride therapy, dietary counselling, and the use of biocompatible dental materials [13]. Dental treatment should preferably be performed during stable phases of the dermatologic condition, with co-ordination between dental and medical professionals [13,16].

CONCLUSION(S)

The AD is a systemic inflammatory condition that may significantly compromise oral health in children. The present case demonstrates significant dental and periodontal involvement in a child with AD, including multiple retained deciduous teeth, caries, gingivitis, and delayed eruption of permanent teeth. These findings underline the importance of routine dental screening in children with chronic dermatologic conditions. Early intervention and preventive care can reduce oral morbidity and improve overall quality of life.

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PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: Oct 23, 2025
- Manual Googling: Mar 20, 2026
- iThenticate Software: Mar 24, 2026 (3%)

ETYMOLOGY: Author Origin

EMENDATIONS: 7

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. Yes

Date of Submission: **Sep 29, 2025**
Date of Peer Review: **Dec 14, 2025**
Date of Acceptance: **Mar 26, 2026**
Date of Publishing: **Jul 01, 2026**