



Clinical Implications of Nickel Allergy in Pediatric Dentistry: A Case Report

Kaitlyn Mullin, DDS | Allison C. Scully, DDS, MS, FAAPD

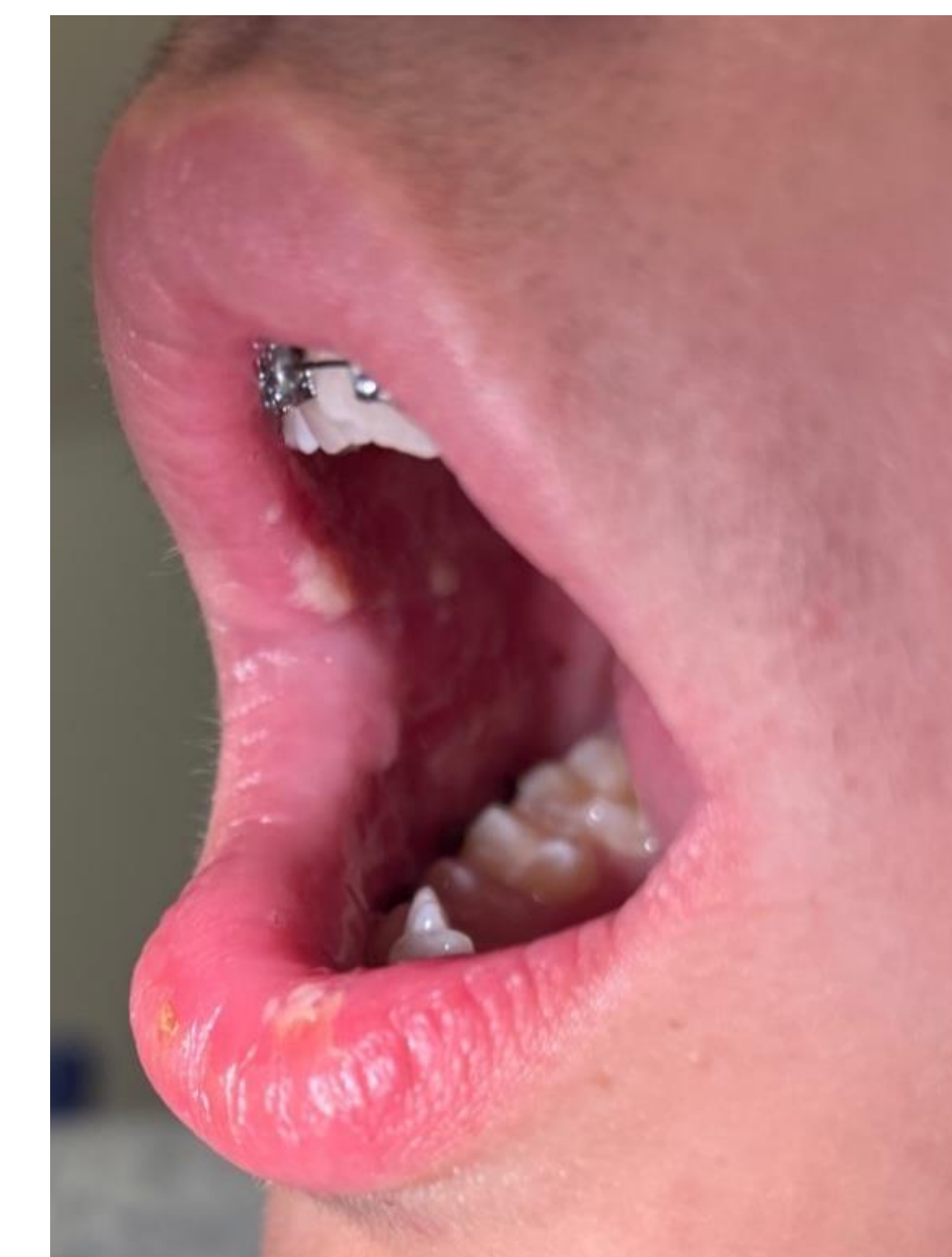
Indiana University School of Dentistry, Indianapolis, Indiana – Riley Hospital for Children

BACKGROUND

- **Nickel** is a common contact hypersensitivity in children
 - Important implications in pediatric dentistry due to the widespread use of nickel-containing dental materials.
 - e.g. Orthodontic appliances, stainless steel crowns
- May cause **localized or systemic allergic reactions**
 - Clinical manifestations: oral mucosal erythema, ulceration, gingival inflammation, and perioral dermatitis
 - Complicates dental treatment
 - Affects patient comfort and compliance.
- Reactions may mimic other oral pathologies-diagnostic challenge
- **Early identification** is critical to prevent prolonged patient discomfort and interruption of dental treatment.

CLINICAL PRESENTATION

- A **13-year-old previously healthy male** presented to the emergency department at Riley Hospital for Children
- Chief Complaint: Painful oral lesions
- Dental History: Orthodontic brackets and wires placed 1 day prior.
- History of Present Illness: Onset of sores within hours of appliance placement
 - Progressive worsening resulting in inability to eat or sleep due to pain.
- Extra-oral Examination: Inflamed, fissured lips with crusted ulcerations.
- Intra-oral Examination: White, elevated, plaque-like lesions along the labial and buccal mucosa of the maxillary and mandibular arches.
 - Lesions distributed in a distinct **vertical pattern**
 - Corresponding to the position of the orthodontic wires
 - Symmetrically mirrored



DIFFERENTIAL DIAGNOSES

- Lesions included on the differential include:
 1. Allergic contact stomatitis secondary to nickel hypersensitivity
 2. Traumatic ulcerations from orthodontic appliances
 3. Chemical/contact mucositis
 4. Primary herpetic gingivostomatitis
 5. Aphthous stomatitis
 6. Erythema multiforme
- **Allergic contact stomatitis** was most consistent with the clinical presentation
 - Rapid onset following orthodontic placement
 - Distribution of lesions corresponding directly to wire contact.

TREATMENT / MANAGEMENT

- **Immediate management**: Remove of all orthodontic brackets and wires
 - Eliminates the suspected allergen.
- Topical corticosteroid therapy (triamcinolone acetonide 0.1% in dental paste)
 - Apply 2-4 times daily, with instructions to avoid eating or drinking for 30 minutes after use and to limit duration to no more than 14 days.
- Over-the-counter NSAIDs were recommended for pain management.
- Caregiver advised to follow up with the orthodontist
 - Removal of residual adhesive
 - discuss future treatment with nickel-free alternatives.
- Coordination with the orthodontic provider was initiated to ensure continuity of care and prevent re-exposure.
- **Early intervention allowed for prompt removal of the offending agent and initiation of symptomatic treatment to support healing.**

REFERENCES

- Silverberg NB, Pelletier JL, Jacob SE, Schneider LC; Section on Dermatology, Section on Allergy and Immunology. Nickel allergic contact dermatitis: identification, treatment, and prevention. *Pediatrics*. 2020;145(5):e20200628.
- Götz L, Papageorgiou SN, Jäger A. Nickel hypersensitivity and orthodontic treatment: a systematic review and meta-analysis. *Contact Dermatitis*. 2015;73(1):1-14.