Synthetic Hair-Associated Scalp Pruritus Independent of Allergic Contact Dermatitis

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Introduction: Synthetic hair extensions, wigs, and installation products are common styling exposures among African American women and girls. Pruritic dermatitis may involve the scalp, hairline, ears, and neck. Reports emphasize allergic contact dermatitis (ACD), although fibers, finishes, adhesives, and mechanical forces may contribute. Itch chronicity, severity, and measurement remain poorly characterized.

Objectives: To map clinical presentations and proposed mechanisms of synthetic hair-associated scalp pruritus and assess chronicity and itch-specific measurement.

Methods: PubMed and Embase were searched from inception through September 2026. Uniform criteria applied; database records were screened in Rayyan. Overlapping reports were linked. Eligible reports described pruritus or inflammatory or mechanical complications of wigs, extensions, braids, implants, or installation products. Installation products and natural or unspecified hair provided indirect evidence. Presentation, mechanism, duration, and assessment were charted from full texts and abstracts. Chronic itch required documented itch lasting ≥6 weeks, per IFSI criteria.

Results: Of 80 records (PubMed, 26; Embase, 54), 9 duplicates were removed, leaving 71 unique records; 22 met criteria, plus 1 identified during full-text retrieval, totaling 23 reports (1979–2026): 12 focused on nonallergic complications or physical exposures, 9 on allergy, and 2 on mixed or unconfirmed mechanisms. Ten atopic South African women had pruritic neck dermatitis diagnosed as irritant contact dermatitis; relevant patch tests were negative. All cleared after synthetic-extension removal; 5 received topical treatment. A 9-year-old African American girl developed scalp pruritus 3 days after synthetic braiding; ulceration was attributed to traction-related ischemia. A wig-adhesive ACD case documented 3 months of pruritic hairline dermatitis. A 41-patient implant series documented 6 months of scalp pruritus in 3 patients, attributed to retained synthetic fragments. In a

59-participant randomized trial of medical wigs for chemotherapy-induced alopecia, week-13 erythema was lower with the modified wig (44.8% versus 86.7%; P < .01), whereas itching did not differ significantly

(58.6% versus 56.7%; P = .88). Itch was binary; Skindex-16 assessed skin-related quality of life. No dedicated validated itch instrument was identified. A narrative review characterized direct fiber allergy as rare and implicated dyes, finishing agents, and adhesives; fiber-specific effects remained uncertain.

Conclusions: Hair-associated itch warrants evaluation for irritation, mechanical injury, and foreign-body reactions alongside allergy. Evidence for chronic nonallergic itch from conventional styling remains insufficient, and implant findings may not generalize. Clinicians should distinguish fiber contact from processing agents, adhesives, and tension, and assess itch directly because improvement in dermatitis does not demonstrate itch relief.

Keywords: scalp pruritus; synthetic hair; hair extensions; wigs; contact dermatitis; chronic pruritus

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