Dermatologic Effects of Testosterone Therapy: A Clinical Review

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Background

For a hormone so deeply implicated in skin biology, testosterone remains relatively underrepresented in dermatologic discourse. The association of testosterone with acne and alopecia is well established, but the literature describing the dermatologic sequelae associated with clinical modulation of this androgen is sparse. The recent surge of TTh as a therapeutic intervention and as a cultural phenomenon has highlighted the need for further exploration of its cutaneous effects.

Testosterone therapy has proliferated across all age groups and genders with the introduction of novel delivery systems and the rise of direct-to-consumer online platforms rapidly expanding access.[1–6] NHS-based data from the UK shows monthly prescriptions of testosterone gel for women have expanded roughly ten-fold from 2015–2022, far outpacing the modest 33% rise in men.[5] In the US, a cross-sectional analysis of prescription-drug-monitoring data showed a 27% relative increase in TTh users (+439,659) between 2018 and 2022, with prevalence increasing 120% in people aged ≤24 and 86% in those 25–34.[6] Mirroring these spikes, the global testosterone therapy market reached $2.03 billion in 2024 and is projected to climb to $2.73 billion by 2033.[7]

Testosterone administration has evolved from solely intramuscular injections to include formulations such as transdermal gels, subdermal pellets, intranasal formulations, buccal tablets, and oral capsules. Each of these preparations offers a distinct pharmacokinetic profile, patient adherence profile, and unique dermatologic fingerprint. Dermatologists will increasingly encounter the cutaneous manifestations of testosterone and associated adjunctive therapies as its use becomes more common.

Though limited, the current literature supports the dermatologic duality of testosterone. In some contexts, it destabilizes the epidermal environment by exacerbating seborrhea or accelerating follicular miniaturization. However, in others, it may reduce disease severity in patients with inflammatory skin conditions and promote wound healing through revascularization. The same hormone that fuels cystic acne in one patient may blunt inflammatory cytokines in another. TTh is usually initiated in patients outside of supervision by a dermatologist. As such, dermatologists must be positioned to anticipate and manage the skin sequelae of androgen modulation. Despite the increasing prevalence of TTh, dermatologic literature addressing evaluation and management of these patients is lacking. This review aims to synthesize current evidence surrounding testosterone therapy as it pertains to the skin. Topics include cutaneous physiology of androgens, potential therapeutic applications and adverse events of TTh, and influence of administration route.

Methods

- We conducted a literature search in PubMed, Embase, and Cochrane for articles reporting dermatology-related outcomes in TTh-treated individuals to synthesize current evidence on the cutaneous physiology, therapeutic potential, and adverse effects of TTh, with emphasis on formulation-specific considerations relevant to dermatologic practice. No date or language restrictions were applied, and included published articles were reviewed for relevance by the authors.
- Systematic reviews, meta-analyses, randomized controlled trials, cohort studies, and informative cases reporting on dermatological outcomes of TTh and key mechanistic investigations were included.

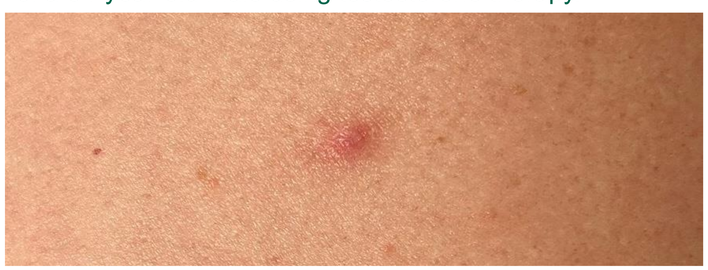
Potential Therapeutic Uses of TTh in Dermatology

- Psoriasis Management
- Wound Healing
- Skin Atrophy

Adverse Derm Effects of TTh

- Acne and Seborrhea
- Androgenetic Alopecia (AGA)
- Hirsutism and Hypertrichosis
- Cutaneous Application-Site Allergic and Irritant Reactions

Figure 1 (below): Resolving acneiform papule on the back of a 54-year-old male using testosterone therapy.



Conclusions

- Dermatologists must stay abreast of the trends in hormone therapy to be able to recognize both the beneficial and adverse cutaneous effects of testosterone therapy.
- Given the risk of known dermatologic side effects, patients should undergo regular lab monitoring to avoid supraphysiologic levels.
- Patients should undergo TTh with providers who are well-trained in hormone supplementation and prioritize patient safety, not profit.

- The relative dermatologic risks and benefits of TTh warrant further high-quality investigation with prospective randomized trials. Controlled studies evaluating TTh versus placebo in TD men with psoriasis are lacking; such trials should measure PASI, CRP, and patient-reported outcomes. Large-scale clinical trials comparing anabolic therapeutic regimens to placebo in TD patients with chronic nonhealing wounds could define therapeutic windows and optimize care.
- Genomic and microbiome profiling could identify patients predisposed to either therapeutic benefit or adverse flares, enabling precision counseling.
- Consensus guidelines are needed for baseline hormone screening, interval dermatologic monitoring, and algorithmic management of TTh-related cutaneous events.

- Dermatologists should recognize the common adverse effects and apply evidence-based management strategies.
- Concurrently, preliminary data suggest therapeutic benefits for wound healing and psoriasis in TD patients, meriting further exploration.
- Multidisciplinary collaboration is essential to optimize patient outcomes

Figure 2 (right): image of a 68-year-old woman with advanced male-pattern recession associated with years of testosterone therapy use.