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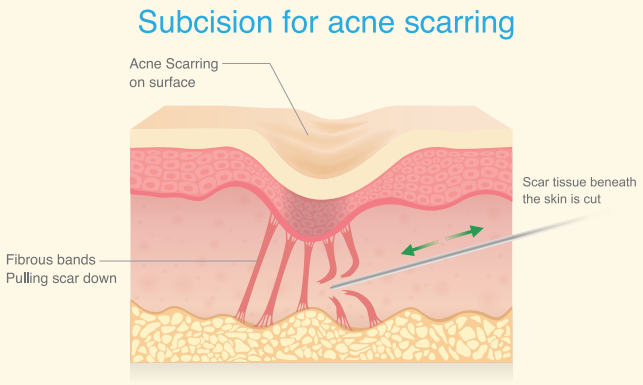
Research Highlights

Subcision for Atrophic Acne Scars: Evidence from Clinical Trials and Combination Approaches

Acne is a chronic, inflammatory, and multifactorial condition. Managing both truncal and facial acne requires early intervention to reduce long-term physical and psychological impact. The UK Acne Working Group reviewed and expanded on the 2021 NICE guidelines, integrating new evidence, expert insights, and real-world experience.



BACKGROUND

- Atrophic acne scars-particularly rolling, boxcar, and icepick types-stem from fibrotic tethering of the dermis to deeper tissue and affect >80% of scar presentations.
- Subcision is a minimally invasive technique where a needle or blunt cannula is swept beneath the scar to sever fibrotic bands, triggering new connective tissue formation and scar elevation.

KEY FINDINGS

1. **Cannula-Based vs Needle-Based Subcision**
   - **Efficacy:** Both approaches demonstrated comparable improvements in scar depth and texture.
   - **Safety & Patient Comfort:** Cannula-based subcision caused fewer complications (e.g., less bleeding, bruising, hyperpigmentation, nodules) and resulted in higher patient and physician satisfaction compared to needle-based methods.
2. **Combination Therapies Enhance Outcomes**

   Combining subcision with other interventions consistently improved efficacy:

   Autologous agents:
   - **PRP (platelet-rich plasma):** Subcision + PRP had better scar improvement (approx. 32%) compared to subcision alone (≈8%), especially notable in rolling scars.
   - **Plasma gel:** Comparable to PRP when combined, and superior outcomes at 6-month follow-up.

   Synthetic fillers:
   - **Hyaluronic acid (HA):** When paired with subcision, achieved ~94% improvement vs. ~67% with subcision alone; better than polylactic acid (PLA) threads (~82%).
   - **Plain catgut sutures:** No significant added benefit; avoid due to bruising risk.

   Energy-based and mechanical adjuncts:
   - **Microneedling:** Subcision + microneedling outperformed microneedling alone (100% vs. 77% improvement).
   - **Fractionated microneedle radiofrequency (RF):** Combined with subcision, produced significantly better results than RF alone, though less satisfying in darker skin types.
   - **Cryoroller vs Dermaroller:** Subcision + cryoroller (−20 °C) trended toward better improvement (57% vs 40%), though not statistically significant.
   - **Suction/microdermabrasion:** Daily post-subcision suction improved both patient- and physician-rated outcomes (~81% vs ~62%; ~65% vs ~33%).

   Other emerging combinations:
   - Comparisons with TCA CROSS (chemical reconstruction) favored subcision in scar depth reduction; however, TCA CROSS incurred pigmentation issues.
   - Pneumatic injection (needle-free saline) showed similar scar reduction to subcision over three sessions, but subcision was more uncomfortable and resulted in longer-lasting bruising.

Hydration & barrier-supporting agents [2]

- **Aquaxyl® (xylitylglucoside, anhydroxylitol, xylitol):** Enhance epidermal hydration, restores skin barrier function, and optimizes water circulation ("water lock" effect).
- When used with subcision and resurfacing therapies, Aquaxyl may support faster recovery, reduce transepidermal water loss (TEWL), and improve scar remodeling outcomes by creating a favorable healing microenvironment.

Noted constraints:
- Limited number of rigorous, high-quality trials (low Jadad scores).
- Language and publication bias (non-English studies excluded).
- Heterogeneous protocols across studies precluded definitive comparisons.

DISCUSSION & LIMITATIONS

- Subcision remains an effective, low-cost intervention for atrophic scars, particularly rolling type.
- Cannula-based subcision is favored for reduced procedural trauma and side effects without sacrificing efficacy.
- Utilizing combination therapies amplifies clinical outcomes and may reduce recurrence by addressing multiple pathogenetic mechanisms.
- **Hydration-enhancing agents like Aquaxyl may complement subcision outcomes by improving skin barrier resilience and promoting balanced dermal remodeling**

CONCLUSION

- Subcision is a safe and effective modality for atrophic acne scars.
- Modified techniques (e.g., cannula use) enhance safety and patient satisfaction.
- **Adjunctive therapies—autologous (PRP, plasma gel), synthetic (HA), mechanical, energy-based, or hydration-enhancing (Aquaxyl)—consistently boost treatment efficacy.**
- Further well-designed, high-quality clinical trials are needed to establish optimal protocols and combinations.

Moisturizers in Acne: Constituents and Clinical Considerations[3]

BACKGROUND & RATIONALE

Acne is a chronic inflammatory condition of the pilosebaceous unit, often intensified by topical treatments like benzoyl peroxide, retinoids, and salicylic acid, which can disrupt the skin barrier and compromise adherence. Moisturizers are recommended as adjunctive therapy to restore barrier integrity and independently alleviate acne symptoms.

METHODS

The study systematically analyzed 52 acne-specific moisturizers, focusing on their active ingredients and functional properties - including occlusive, humectant, emollient, anti-inflammatory, and oil-reducing actions.

KEY FINDINGS

Functional Properties -

- Nearly 92% (48 out of 52) of the products featured anti-inflammatory activity in addition to classic moisturizing functions.
- Over 50% included dimethicone and/or glycerin, key humectant and occlusive-emollient agents that effectively hydrate skin without a greasy feel.
- Common occlusives: petrolatum, lanolin, mineral oil, paraffin, and silicone derivatives (e.g., cyclomethicone), noted for their barrier-sealing effects PMC.
- Frequent humectants: glycerin, sodium/ammonium lactate, hyaluronic acid, sorbitol, urea, and AHA.
- Emollients included esters and long-chain alcohols (e.g., isopropyl isostearate, cetyl/cetearyl alcohol, propylene glycol, octyl stearate); dimethicone offered dual action as emollient plus occlusive.

Anti-Acne and Botanical Agents

- Among moisturizers with anti-inflammatory effects, salicylic acid appeared in 35%, benzoyl peroxide in 10%, and retinol in 8%.
- Around 46% (22 products) incorporated other anti-inflammatory agents without classic anti-acne drugs.
- Notable botanical ingredients: aloe vera, witch hazel, green tea, ginkgo biloba, allantoin, licochalcone, bisabolol, and chamomile - valued for soothing and anti-inflammatory effects.

- Botanical extracts such as aloe vera (inhibits cyclooxygenase) and witch hazel (astringent via tannins) add anti-inflammatory and soothing benefits; aloe vera should be ≥10% concentration for efficacy.

Clinical Implications -

- **Dimethicone** stands out as a noncomedogenic, hypoallergenic option for acne-prone and sensitive skin. It reduces transepidermal water loss effectively without greasiness.
- Moisturizers containing salicylic acid can ease comedones via comedolytic and anti-inflammatory effects, but may induce peeling at ≥2% concentrations — moisturizers mitigate this irritation.

Role of Aquaxyl (xylitylglucoside, anhydroxylitol, xylitol)[4]:

Aquaxyl is a patented hydrating complex that enhances the skin's natural water reserves by stimulating synthesis of ceramides and hyaluronic acid while reducing transepidermal water loss. It improves barrier integrity and reinforces the "NMF" (natural moisturizing factors), making it suitable for acne-prone and sensitive skin where barrier disruption is common.[3]

Functional Category	Key Ingredients
Occlusive	Petrolatum, lanolin, mineral oil, silicones (dimethicone,cyclomethicone)
Humectant / Barrier-Supportive	Glycerin, lactate salts, hyaluronic acid, urea, sorbitol, Aquaxyl (xylitylglucoside, anhydroxylitol, xylitol)
Emollient	Dimethicone, cetyl/cetearyl alcohol, esters, propylene glycol
Anti-Acne Agents	Salicylic acid, benzoyl peroxide, retinol
Botanical Extracts	Aloe vera, witch hazel, green tea, chamomile, bisabolol, allantoin, licochalcone, ginkgo biloba

CONCLUSION

- **Acne-friendly moisturizers are formulated with multifunctional actives combining barrier repair, hydration, anti-inflammatory, and mild anti-acne properties.**
- Selection should favor noncomedogenic humectants/occlusives (e.g., dimethicone, glycerin), soothing botanicals, and gentle anti-acne agents where appropriate (e.g., low-concentration salicylic acid).
- These formulations improve skin comfort, reduce irritation from acne medications, and enhance overall treatment adherence - especially in patients with

Managing Acne in Skin of Colour: Clinical Insights and Strategies[5]

BACKGROUND & SIGNIFICANCE

Acne is prevalent across all skin types but poses unique challenges for individuals with skin of colour (SOC)—Fitzpatrick types III–VI—due to an elevated risk of post-inflammatory hyperpigmentation (PIH), which often impacts self-esteem and quality of life more than acne itself.

EVIDENCE REVIEW & TREATMENTS

- Topical therapies such as retinoids, benzoyl peroxide, azelaic acid, and antibiotics are effective for SOC when appropriately formulated and administered.
- Newer formulations and combination regimens show promise for reducing active acne while minimizing the risk of PIH, and may even help to diminish existing PIH.

SUPPORTIVE INTERVENTIONS

- Moisturizer use, dose titration, and patient education are pivotal strategies to reduce irritation, enhance adherence, and preserve treatment effectiveness.

- **Aquaxyl® (xylitylglucoside, anhydroxylitol, xylitol)[2]: a patented sugar-derived complex shown to optimize epidermal hydration by stimulating ceramide synthesis, reinforcing skin barrier lipids, and reducing transepidermal water loss (TEWL).**
- **Helps maintain barrier resilience during topical acne therapy, reducing dryness, peeling, and irritation that often worsen PIH in SOC.**
- **Creates a balanced hydration environment that supports treatment adherence and overall skin quality.**
- **Sun protection (sun avoidance and regular SPF application) is essential to prevent new PIH formation or worsening of existing pigmentation.**

SYSTEMIC OPTIONS & PROCEDURAL ADJUNCTS

- Systemic treatments-oral antibiotics, isotretinoin, oral contraceptives, and spironolactone-can be highly effective in severe or refractory acne in SOC populations, although dedicated studies in SOC are limited.
- Chemical peels have shown dual benefit, improving both acne lesions and PIH concurrently.

CONCLUSION

- Although acne treatments largely mirror those used in lighter skin types, SOC requires tailored strategies—emphasizing early and aggressive intervention, gentle yet effective topical approaches, skin barrier protection, and sun avoidance.
- **Hydration-enhancing agents like Aquaxyl® can play a supportive role by minimizing treatment-related irritation, strengthening barrier function, and helping reduce PIH flares.**
- Proper use of moisturizers, sunscreen, patient instruction, and thoughtful combination regimens help reduce PIH risk and improve treatment success.
- There is a pressing need for more robust, SOC-specific clinical studies, particularly regarding systemic therapies to refine care protocols and solidify evidence-based guidelines.

GUIDING CLINICAL PRINCIPLES

1. Early, effective intervention is key to reducing inflammation and the subsequent risk of PIH.
2. Combination topical regimens outperform monotherapy in both efficacy and tolerability.
3. For SOC patients, initiate systemic treatment earlier when appropriate, given the heightened risk for PIH and keloid scarring.
4. Avoid prolonged oral antibiotic use; if used, pair with benzoyl peroxide to mitigate resistance risks.
5. Isotretinoin remains an important tool for nodulocystic or treatment- resistant acne and also shows benefits for PIH management.

Case Challenge[6]

A 14-year-old boy, suffering for about a year from acne treated with tetracyclines and rupatadine, presented due to intensiving ankle and knee joint pain persisting for 2 weeks. There was no report of fever. Clinical examination revealed significant inflammatory changes on the face and milder changes on the upper back. The worsening of acne symptoms was accompanied by escalation in joint pain. USG of facial lesions and knee joints showed no signs of inflammation. However, both right and left ankle joints exhibited swelling of fatty tissue around the lateral malleolus, without increased fluid within joint. Orthopedic causes of joint pain were ruled out after consultation. Laboratory tests upon admission revealed abnormal WBCs, Hb, creatinine, ferritin level (235.5 ng/mL), hematocrit (36.1%), fibrinogen (5.54 g/L), & elevated C-reactive protein levels (69.4–17.9 mg/L).

- Choose an optimal treatment plan for acne treatment based on evidence-based guidelines.

- Provide expert commentary explaining the best approach.

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