(International Print/Online Journal)

SJIF IMPACT FACTOR: 6.829
PUBMED-National Library of Medicine ID-101739732

ISSN (Print): 2209-2870
ISSN (Online): 2209-2862

International Journal of Medical Science and Current Research (IJMSCR)
Available online at: www.ijmscr.com
Volume 9, Issue 3, Page No: 240-243
May-June 2026

IJMSCR

Silicone Tapes for Postoperative Facial Scars

[1]Jayant S Landge, [2]Aishwarya D Salve, [3]Kanchan M Shah,
[4]Kshitija Pandhare, [5]Ataur Rahman, [6]Mehak Kataria
Department of Oral and Maxillofacial Surgery,
Government Dental College And Hospital, Chh Sambhajinagar, India

***Corresponding Author:**
Aishwarya D Salve
Department of Oral and Maxillofacial Surgery,
Government Dental College And Hospital, Chh Sambhajinagar, India

Type of Publication: Original Research Paper
Conflicts of Interest: Nil

Abstract

Keywords: NIL

Introduction

Postoperative facial scars are a major aesthetic and psychological concern for patients undergoing oral and maxillofacial, plastic, dermatologic, and reconstructive surgeries. Facial scars may result from trauma repair, cleft surgeries, orthognathic procedures, tumor excision, rhinoplasty, facelift procedures, and other surgical interventions. Although proper surgical technique and wound closure remain the foundation of optimal scar healing, adjuvant therapies are often required to minimize hypertrophic scarring and improve cosmetic outcomes. Silicone-based products, particularly silicone tapes and silicone gel sheets, have emerged as one of the most widely recommended noninvasive therapies for scar prevention and management.[1–3]

Silicone tape therapy has gained popularity because of its ease of application, noninvasive nature, and minimal adverse effects. These tapes are commonly used after epithelialization of surgical wounds and are particularly beneficial in facial scars due to their ability to reduce erythema, pigmentation, scar elevation, and pruritus.[3,5] Current evidence suggests that silicone products represent the first-line prophylactic treatment for hypertrophic scars and keloids.[5,6]

Biology of Scar Formation

Scar formation is a complex biological process involving inflammation, proliferation, collagen deposition, and remodeling. Following surgery, fibroblast activity and collagen synthesis are essential for wound healing; however, excessive collagen deposition can lead to hypertrophic scars or keloids. Facial skin generally heals better than other body regions because of rich vascularity and lower skin tension, yet unfavorable scars may still occur depending on genetic predisposition, wound tension, infection, and delayed healing.[3,6]

Hypertrophic scars are characterized by raised, erythematous lesions confined to the boundaries of the original wound, whereas keloids extend beyond wound margins. Patients frequently complain of itching, discomfort, cosmetic disfigurement, and psychological distress associated with facial scars. Therefore, prevention remains preferable to treatment.[5,6]

Silicone Tapes and Their Mechanism of Action

Silicone tapes are soft, flexible, self-adhesive sheets composed of medical-grade silicone. They are applied over healed surgical wounds for prolonged durations, usually 12–24 hours daily for several weeks or months.[3,5]

The exact mechanism by which silicone tapes improve scars is not fully understood; however, several theories have been proposed. The primary mechanism appears to be occlusion and hydration of the stratum corneum, which reduces transepidermal water loss and modulates fibroblast activity. Improved hydration decreases capillary activity and collagen deposition, thereby reducing scar hypertrophy.[3,5,6] Silicone tapes may also increase local temperature, promote collagenase activity, and regulate growth factors involved in scar maturation.[3]

Another proposed mechanism is tension reduction across healing wounds. By supporting wound edges and reducing mechanical stress, silicone tapes help maintain a flatter and thinner scar. Some clinical observations and patient experiences have suggested that silicone tape provides mild continuous pressure, which may contribute to scar flattening.[3,6]

Types of Silicone-Based Scar Therapy

Silicone scar management products are broadly divided into silicone gel sheets/tapes and topical silicone gels. Silicone tapes are adhesive sheets that remain fixed over the scar for prolonged periods, whereas silicone gels form a thin transparent layer after drying. Both modalities are widely used in facial scar management.[1,5]

Silicone tapes are advantageous because they provide prolonged occlusion and mechanical support. They are reusable, easy to apply, and particularly useful in linear surgical scars. However, tapes may be difficult to maintain on highly mobile facial areas such as the perioral region. Topical silicone gels may be preferred in visible facial regions because they are transparent and cosmetically acceptable.[1,9]

Clinical Evidence Supporting Silicone Tape Therapy

Numerous randomized controlled trials and systematic reviews have evaluated the efficacy of silicone-based products in postoperative scar prevention. A systematic review by Nguyen et al. assessed randomized controlled trials published between 1991 and 2022 and concluded that silicone gel-based products improved at least one scar parameter in most studies, including scar height, pigmentation, and pliability.[2]

Similarly, Wang et al. performed a meta-analysis involving six randomized controlled trials with 375 patients and demonstrated that topical silicone products significantly reduced scar pigmentation, height, and pliability compared with placebo or no treatment. The authors concluded that silicone-based therapies are effective in postoperative scar prevention.[1]

Another systematic review and meta-analysis evaluating fluid silicone gels reported positive prophylactic and therapeutic effects on scars. The review highlighted improvements in scar quality, pigmentation, and incidence of hypertrophic scar formation.[4]

In facial surgery specifically, silicone tapes have shown promising results after procedures such as blepharoplasty, rhinoplasty, and excision of facial lesions. Their ability to reduce erythema and scar prominence is particularly important in aesthetically sensitive facial regions.[10] Silicone tapes are commonly recommended after maxillofacial surgeries because facial scars are highly visible and can significantly affect patient confidence and quality of life.[6,10]

Application Protocol

Silicone tape therapy should begin only after complete epithelialization of the wound, generally around 2–3 weeks postoperatively. Application on open or infected wounds is contraindicated.[3,5]

Most clinicians recommend wearing silicone tapes for 12–24 hours daily for a minimum of 2–3 months, although longer durations may be necessary for optimal scar maturation. Studies have demonstrated that prolonged use, particularly beyond six months, may yield better scar improvement.[5,6]

The scar area should be cleaned and dried before tape application. Tapes are cut according to scar dimensions and replaced periodically depending on the manufacturer's instructions. Consistency and patient compliance are essential determinants of treatment success.[3]

Advantages of Silicone Tapes in Facial Scars

Silicone tapes possess several advantages that make them attractive for postoperative facial scar management. They are noninvasive, painless, and relatively inexpensive compared with laser therapy or

Volume 9, Issue 3; May-June 2026; Page No 240-243

intralesional injections. Silicone tapes are also associated with minimal side effects and can be self-applied by patients.[5,6]

Another advantage is their prophylactic efficacy. Rather than treating established hypertrophic scars alone, silicone tapes can prevent abnormal scar formation when used early in wound healing. Their ease of use and ability to provide continuous hydration and tension reduction make them particularly suitable for facial surgical wounds.[3,5]

Limitations andAdverse Effects

Despite their benefits, silicone tapes are not without limitations. Poor adhesion over mobile facial regions, especially around the lips and cheeks, may reduce effectiveness. Prolonged use in hot and humid climates can lead to sweating, maceration, itching, or skin irritation.[5,7]

Some patients may develop allergic reactions or contact dermatitis. In addition, compliance can become difficult because prolonged daily application is required for several months. Cosmetic concerns related to visible tapes on the face may also reduce patient acceptance in social settings. [3,5]

Another important limitation is the variability in clinical evidence. Although many studies support silicone tape efficacy, several trials have small sample sizes, short follow-up periods, and risk of bias. Therefore, further high-quality randomized controlled trials are required to establish standardized protocols and compare silicone tapes with other scar therapies.[2,5]

Comparison with Other Scar Therapies

Silicone tapes are commonly compared with pressure therapy, onion extract formulations, corticosteroid injections, and laser treatments. Evidence suggests that silicone-based products are comparable or superior to many topical therapies for prevention of hypertrophic scars.[1,5]

Compared with corticosteroid injections, silicone tapes are noninvasive and associated with fewer complications. Laser therapy may provide superior improvement in pigmentation and texture but is more expensive and operator-dependent. Onion extract preparations have shown inconsistent results, whereas silicone therapies continue to remain the most evidence-supported topical modality for scar prevention.[5,6]

Combination therapies may further improve outcomes. Silicone tapes used alongside scar massage, sunscreen application, or laser resurfacing have demonstrated additive benefits in scar maturation and cosmetic appearance.[6,10]

Future Perspectives

Advances in scar management are focusing on improved silicone formulations with enhanced adherence, transparency, and patient comfort. Bioactive silicone tapes containing herbal extracts, growth factor modulators, or antimicrobial agents are currently being explored.[3]

Personalized scar management protocols based on genetic predisposition and scar characteristics may further optimize treatment outcomes in facial surgery. Artificial intelligence-assisted scar assessment tools and objective scar measurement systems may also help standardize future clinical trials evaluating silicone tape efficacy.[2,6]

Conclusion

Silicone tapes represent an effective, safe, and widely accepted modality for postoperative facial scar management. Their primary benefits include scar hydration, reduction of transepidermal water loss, modulation of collagen synthesis, and mechanical support of healing wounds. Current literature supports their role in reducing scar height, erythema, pigmentation, and hypertrophy, particularly when initiated early and used consistently over prolonged periods.[1,4,5] Although limitations such as skin irritation and patient compliance exist, silicone tapes remain a first-line

conservative therapy for prevention and management of postoperative facial scars.[5,6] Further well-designed randomized controlled trials are required to establish standardized treatment protocols and strengthen the evidence base for facial scar applications.

References

1. Wang F, Li X, Wang X, Jiang X. Efficacy of topical silicone gel in scar management:A systematic review and meta-analysis of randomised controlled trials. Int Wound J. 2020;17(3):765-773.

Volume 9, Issue 3; May-June 2026; Page No 240-243

2. Nguyen A, Huynh C, Goh A, Co A, Hassan O, Phan S. A systematic review of the management of postoperative scars with silicone gel-based products in randomized controlled trials. Dermatol Online J. 2023;29(4).
3. Mustoe TA. Silicone Gel for Scar Prevention. In: Téot L, Mustoe TA, Middelkoop E, Gauglitz GG, editors. Textbook on Scar Management. Cham: Springer; 2020.
4. Van den Kerckhove E, Stappaerts K, Fieuws S, Laperre J, Massage P, Flour M, et al. The use of fluid silicone gels in the prevention and treatment of hypertrophic scars:A systematic review and meta-analysis. Burns. 2022;48(3):491-509.
5. O'Brien L, Jones DJ. Silicone gel sheeting for preventing and treating hypertrophic and keloid scars. Cochrane Database Syst Rev. 2013;(9):CD003826.
6. Gold MH, McGuire M, Mustoe TA, PusicA, Sachdev M, Waibel J, et al. Updated international clinical recommendations on scar management. Dermatol Surg. 2014;40(8):825-831.
7. Cadet N, et al. Evaluation of silicone gel in postoperative scar prevention. Dermatol Surg. 2018;44(5):700-708.
8. Van der Wal MBA, et al. Topical silicone gel versus placebo in scar prevention after burns. Burns. 2010;36(3):361-367.
9. Kim S, et al. Comparative efficacy of silicone gel and silicone gel sheet in postoperative scar prevention. Aesthetic Plast Surg. 2014;38(3):561-567.
10. Chang CS, et al. Silicone-based therapies for scar management in facial surgery. J Plast Reconstr Aesthet Surg. 2018;71(5):720-728.

Volume 9, Issue 3; May-June 2026; Page No 240-243