A Systematic Review of Polydioxanone Thread Lifts for Facial Rejuvenation: Outcomes and Complications

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Abstract

Background: Polydioxanone (PDO) thread lifts offer a minimally invasive alternative to surgical rhytidectomy for facial rejuvenation, with shorter recovery and lower procedural burden.

Objective: To evaluate aesthetic outcomes, patient satisfaction, and complications associated with PDO thread lifts.

Methods: A systematic review of Medline, Embase, and Cochrane Library identified studies evaluating PDO thread lifts for facial rejuvenation. Thirty-one studies met inclusion criteria.

Results: Among 1,717 patients, pooled physician- and patient-reported GAIS scores were both 3.7 ± 0.2. Overall, 92.0% of patients reported satisfaction. The most common complications were swelling/ecchymosis (27.6%), pain (14.1%), and dimpling/skin irregularities (11.3%). Major complications were rare.

Conclusion: PDO thread lifts provide high short-term patient satisfaction and aesthetic improvement with predominantly transient minor complications. However, results are temporary compared with surgical rhytidectomy, emphasizing the importance of appropriate patient selection and counseling.

Introduction

- Surgical rhytidectomy remains the gold standard for long-lasting facial rejuvenation.[1,2,3]
- Minimally invasive alternatives have gained popularity due to shorter recovery times and lower procedural burden.[4,5]
- PDO thread lifts use absorbable sutures to provide mechanical tissue repositioning while stimulating collagen production.[5]
- Compared with permanent nonabsorbable threads, PDO threads offer an absorbable and potentially lower-risk approach.[6]
- However, reported outcomes and complications vary across studies.[6]
- **Objective:** Systematically evaluate the efficacy, patient satisfaction, and complication profile of PDO thread lifts for facial rejuvenation.

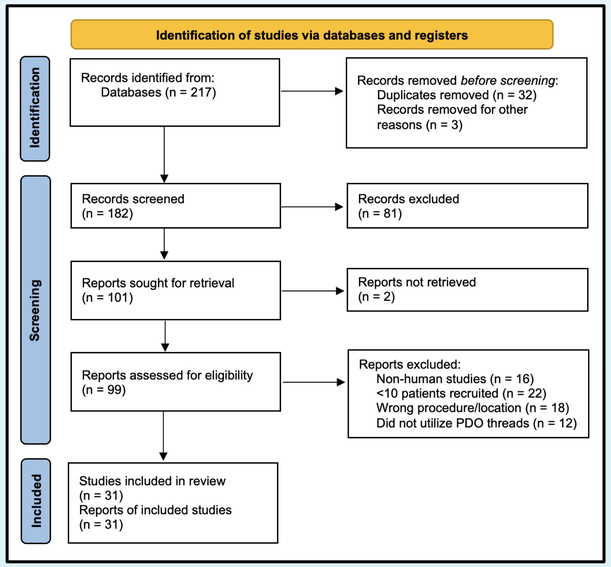
Please scan this QR Code for the full list of the articles included and analyzed in our systematic review.

Methodology

Databases: Medline, Embase, and Cochrane Library
Search period: Database inception through July 2025
Search yielded: 217 studies
Final inclusion: 31 studies, 1,717 patients
Inclusion criteria:
- Human subjects
- ≥10 patients
- English-language publication
- PDO thread intervention for facial rejuvenation
- Original efficacy and/or complication data

Study designs: Retrospective and prospective cohorts, comparative studies, and randomized controlled trials
Primary outcomes: Physician- and patient-reported Global Aesthetic Improvement Scale (GAIS)
Secondary outcomes: Patient satisfaction and adverse events
Analysis: Pooled descriptive statistics; formal meta-analysis was not performed because of heterogeneity in study designs, populations, and outcome reporting. PRISMA guidelines were followed.

Figure 1. Flow diagram depicting our search strategy and criteria for study inclusion.



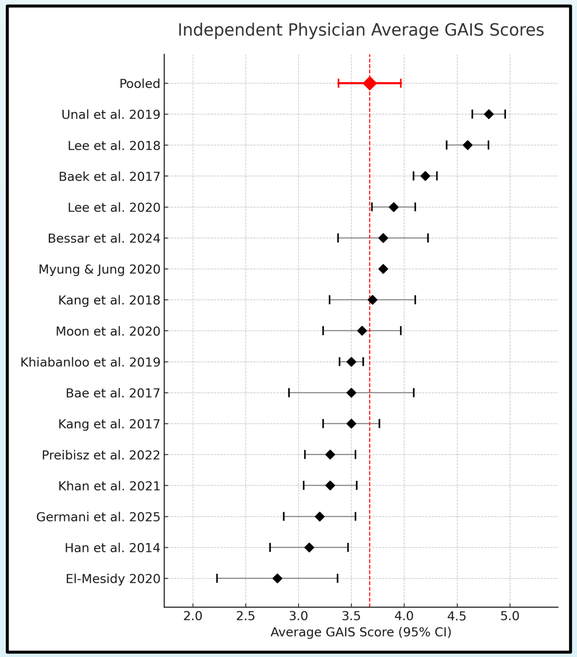
Results

31 studies | 1,717 patients
Mean age: 47.4 ± 7.2 years
Female: 89.1%
Most common treatment areas: midface (83.7%), lower face (43.9%), upper face (12.5%), neck (2.6%)

Aesthetic Outcomes
- Physician GAIS: 3.7 ± 0.2 (n = 648)
- Patient GAIS: 3.7 ± 0.2 (n = 603)
- Both correspond to "improved" to "much improved"
- Binary patient satisfaction: 92.0%

Complications
- Swelling/ecchymosis: 27.6%
- Pain: 14.1%
- Dimpling/skin irregularities: 11.3%
- Thread extrusion, thread breakage, and superficial displacement/ulceration occurred in less than 1% of patients.
- Major complications were rare, and no facial nerve injuries were reported.

Figure 2. Box-and-whisker plot showing the average GAIS scores and 95% confidence intervals of n = 16 studies that reported GAIS scores in their outcomes. The pooled average GAIS for all studies was 3.7 ± 0.2.



Conclusion

- PDO thread lifts demonstrate high rates of aesthetic improvement and patient satisfaction.
- Most adverse events are minor, transient, and managed conservatively. Major complications appear to be rare.
- Benefits are temporary and generally decline over time. Peak satisfaction is reported post-operatively. The level of lift discernable by patients declines to below half at six months and is non-existent at 12 months post-operative follow up. This decline distinguishes PDO threads from surgical rhytidectomy.
- PDO thread lifting may be a useful option for appropriately selected patients seeking less invasive facial rejuvenation with shorter recovery.

Recommendations & Future Directions

- Select patients carefully based on degree of facial ptosis, treatment goals, and expectations regarding longevity.
- Discuss the potential for swelling, bruising, pain, and skin irregularities during recovery.
- Set realistic expectations regarding the magnitude and longevity of aesthetic improvement.
- Conduct prospective, randomized studies with standardized outcome measures.
- Incorporate objective measures of facial lifting and tissue change alongside subjective GAIS scores.
- Evaluate outcomes across diverse ethnicities, Fitzpatrick skin types, and degrees of facial ptosis.

References

1. Barrett DM, Casanueva FJ, Wang TD. Evolution of the rhytidectomy. *World J Otorhinolaryngol Head Neck Surg.*2016;2(1):38-44. doi:10.1016/j.wjorl.2015.12.001
2. Skoog T. *Plastic Surgery: New Methods and Refinements.* Philidelphia, Pa: WB Saunders Co; 1974.
3. Yang AJ, Hohman MH. Rhytidectomy. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 Jan–. Updated August 29, 2022. Available from: https://www.ncbi.nlm.nih.gov/books/NBK564338/
4. Sulamanidze MA, Fournier PF, Paikidze TG, et al. Removal of facial soft tissue ptosis with special threads. *Dermatol Surg.* 2002;28:367-71. doi:10.1046/j.1524-4725.2002.01297
5. Abraham RF, DeFatta RJ, Williams EF 3rd. Thread-lift for facial rejuvenation: assessment of long-term results. *Arch Facial Plast Surg.* 2009;11(3):178-183. doi:10.1001/archfacial.2009.10
6. Tong LX, Rieder EA. Thread-lifts: a double-edged suture? A comprehensive review of the literature. *Dermatol Surg.* 2019;45(7):931-940. doi:10.1097/DSS.0000000000001921