MEDVIX PUBLICATIONS

Journal of Surgery Research
Review Article | Open Access | Volume 01 | Issue 01

Incisions And Prevention of Stigmata Related to Deep Plane Rhytidectomy: A Systematic Scoping Review

Jorge Alberto Espinosa Reyes MD[1]*, Juan Fernando Muñoz MD[2], Roxana Cobo Sefair MD[3], Nicolas Heredia Combariza MD[4], Gabriela Maria Menjivar Huezo MD[5], Juan Gabriel Camacho Triana MD[6], Juan Carlos Ochoa Álvarez MD[7]

[1]ENT, Facial Plastic Surgeon, Calle 127a # 7- 53 cons 3005 (INO), Bogotá, Colombia, ORCID: 0009-0008-7673-586x

[2]ENT, Facial Plastic Surgery fellowship – The Face & Nose Institute. Bogotá, Colombia, ORCID: 0000-0002-0158-1623

[3]ENT, Facial Plastic Surgeon, Cali, Colombia, ORCID: 0000-0002-3658-6256

[4]ENT, Professor in Facial Plastic Surgery Fellowship, Bogotá, Colombia, ORCID: 0000-0002-7691-1746

[5]ENT, Facial Plastic Surgery fellowship – The Face & Nose Institute. Bogotá, Colombia, ORCID: 0009-0004-7764-6050

[6]ENT, Facial Plastic Surgery fellowship – The Face & Nose Institute. Bogotá, Colombia, ORCID: 0000-0001-9974-4162

[7]ENT, Facial Plastic Surgery fellowship – The Face & Nose Institute. Bogotá, Colombia. ORCID: 0009-0003-5224-0663

Received date: 02 September 2025; **Accepted date:** 19 September 2025; **Published date:** 30 September 2025

Corresponding Author: Jorge Alberto Espinosa-Reyes, MD, ENT, Facial Plastic Surgeon Calle 127a # 7- 53 cons 3005 (INO), Bogotá, Colombia, ORCID: 0009-0008-7673-586x

Citation: Jorge Alberto Espinosa Reyes MD, Juan Fernando Muñoz MD, Roxana Cobo MD, Nicolás Heredia MD, Gabriela Menjivar MD, Juan Gabriel Camacho Triana MD, Juan C. Ochoa MD. Incisions And Prevention of Stigmata Related to Deep Plane Rhytidectomy: A Systematic Scoping Review. Journal of Surgery Research 1(1). https://doi.org/10.61615/JSR/2025/SEPT027140930

Abstract

Rhytidectomy has evolved since 1990, when Hamra described the deep plane approach to elevate the midface soft tissue and improve the nasolabial folds. Since then, this technique has changed how facial rejuvenation is approached worldwide. The experience exposed in books and articles was evaluated through a systematic scoping review to show interventions and preventive measures described in the deep plane rhytidectomy. PROSPERO has not registered any systematic review related to stigmata in facelift. We aim to describe incisions and preventive strategies to minimize postoperative stigmata in deep-plane rhytidectomy. Therefore, the following databases: PubMed, Web of Science, Scopus, and The Cochrane Library were searched from January 1990 to January 2023.

In conclusion, this systematic scoping review synthesizes information related to the incisions, stigmata, and preventive strategies in the deep plane rhytidectomy, providing an easy categorization.

Keywords: Rhytidectomy, Facelift, Rhytidoplasty, tell-tale signs, Stigmata, Face rejuvenation.

Introduction

When patients consult for aesthetic plastic surgery, they usually look for natural-appearing outcomes, which is why one of the questions during their first visit is about scars. Each detail about incision planning must be considered when a rhytidectomy is being planned, and the experience of each facial plastic surgeon has excellent value, making a difference in the long-term satisfaction and fulfillment of patient expectations.

Rhytidectomy has evolved since 1990, when Hamra described the deep plane approach to elevate the midface soft tissue and improve the nasolabial folds[1]. Since then, this technique has changed the way we approach facial rejuvenation around the world. It is well known that with the deep-plane approach, there is a significant amount of flap mobilization, and additionally, the tension is not transferred to the skin. We aim to describe incisions and preventive strategies to minimize postoperative stigmata in deep-plane rhytidectomy. This will be achieved by conducting a scoping review of reports from 1990 to 2023. Given the lack of controlled trials on this topic, the review will include books and articles.

Methods

Protocol and Registration

This study was designed as a systematic scoping review due to the necessity to evaluate different medical literature sources and the limited number of clinical trials on the topic. A protocol was used, but not formally registered. The Preferred Reporting Items for Systematic Reviews and Meta-Analysis extension for Scoping Reviews (PRISMA-ScR) guideline was considered[2]. This review could not be registered in PROSPERO because they do not accept scoping reviews.

Eligibility Criteria

The review included articles and book chapters discussing incisions and preventive strategies to avoid stigmata during deep-plane rhytidectomy. Gray literature was not included, and only publications written in English were considered.

Information Sources

From January 1990 to January 2023, the following bibliographic databases were searched: PubMed, Web of Science, Scopus, and The Cochrane Library. The search strategy was designed by an author with formal education in systematic reviews.

Search

The electronic search strategy included the keywords Facelift, Face-lift, Rhytidectomy, rhytidoplasty, and deep plane as follows:

((((face lift[Title/Abstract]) OR (facelift [Title/Abstract])) OR (rhytidectomy[Title/Abstract])) OR (rhytidoplasty[Title/Abstract])) AND (deep plane)

Selection of Sources of Evidence

All reviewers screened the same number of publications and discussed the results. Two reviewers with the most experience in deep-plane rhytidectomy worked in pairs and evaluated the full-text publications. When disagreement on study selection was presented, it was resolved by consensus.

Data Charting Process and Data Items

Two reviewers jointly developed a data-charting form to determine which qualitative variables to extract. The two reviewers worked independently and discussed the results.

Data on: incisions description according to superficial anatomy at the temple-temporal, preauricular, lobule, postauricular, and mastoid-occipital areas, besides the author's preventive strategies and stigmas prevented.

Synthesis of Results

We organized the incision information, categorizing them by five skin areas (temple/temporal, preauricular, lobule, postauricular, and mastoid-occipital) and summarizing them with a figure. Based on the authors ' opinions in each report, one table presents the relationship between preventive strategies and stigmata prevented.

Results

A total of 1164 records were retrieved from database searches. After removing duplicates, 1147 abstracts were screened for eligibility. Thirty-three records were excluded because they were related to cadaveric descriptions, animal studies, neck lifts without facelifts, or procedures without an aesthetic purpose. Subsequently, 1133 reports were assessed in full text. Of these, 1109 reports were excluded because incisions were not described or deep plane rhytidectomy was not mentioned. Other sources included two additional articles to confirm the authors' incisional approach. Finally, 26 reports, including original articles and book chapters, were included **[3-29]**. No clinical trials were found.

Characteristics of Incision Design

Information about incisions performed during deep plane rhytidectomy. **Figure 1**.

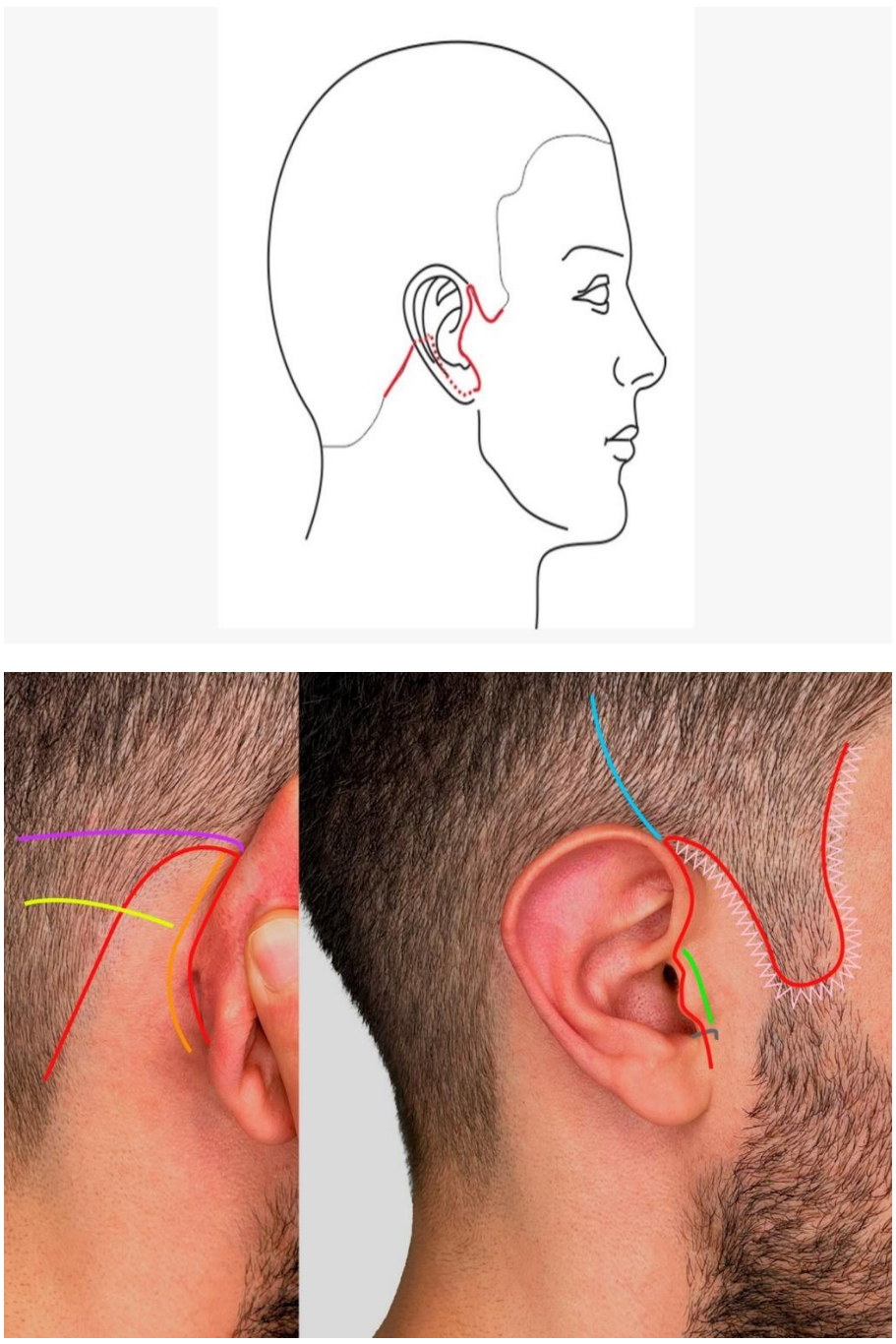

Figure 1. Deep Plane Rhytidectomy Incisions

Citation: Jorge Alberto Espinosa Reyes MD, Juan Fernando Muñoz MD, Roxana Cobo MD, Nicolás Heredia MD, Gabriela Menjivar MD, Juan Gabriel Camacho Triana MD, Juan C. Ochoa MD. Incisions And Prevention of Stigmata Related to Deep Plane Rhytidectomy: A Systematic Scoping Review. Journal of Surgery Research 1(1). https://doi.org/10.61615/JSR/2025/SEPT027140930

Results of Stigmata and Prevention Strategies

For each original article or book chapter, stigmata information was extracted, along with strategies recommended by the authors to prevent their development.

Table 1.

Table 1. Techniques Advocated to Reduce the Risk of Stigmata of Deep Plane Facelift

Stigma Prevented	Techniques Advocated to Reduce the Risk of Stigma	Bibliographic Reference
Dog ear deformity or extra wrinkles	• Anterior extension created in a natural lateral orbital skin crease onto the temple. • Vertical extension of incision through the temporal hairline.	1,17, 20, 26
Temporal alopecia Temporal visible scar Temple visible scar Step off sideburn	• Creating a curvilinear incision along the posterior edge of the tuft. • Avoid a beveled trichophytic incision. • Avoid incision around the anterior aspect, sideburn, temporal hair tuft, or into the pretemporal hairline. • Incision inferior to the sideburn tuft if it is at the helical insertion level. • If the distance between orbital rim and hairline is longer (> 4 cm), the incision has to be along the hairline. • Excising a triangle of non-hair-bearing skin inferior to the temporal hair prior to closure.	3,4,24 7,12,20 3,4,9,23,24 3,11,19,21,23
Unnatural shifts of the hair. Root of the helix with a wide appearance Blunt tragus Outwardly protruding tragus Unnatural skin contouring of the tragus or loss pretragal crease Transplanting hair-bearing skin onto the tragus the pinching of the incisura antitragus hair-bearing skin into the external auditory canal	• Avoid starting incising at the superior attachment of the auricle and tracing superior and posterior. Therefore, an anterior and superior incision must be performed. • Avoid incision at the anterior edge of the helical crus cartilage; it should be placed at the natural highlight. • Incision along the posterior edge of the tragus, but not on its inner surface • Avoid excessive cheek flap tension and a retrotragal incision. • Tragal flap is thinned. • Pre-tragal incision in men or whether retrotragal incision. Hair follicles are transected. • A small step in the incision is placed at the inferior tragus to preserve its natural depression. • The incision should extend anteriorly 5 mm at the inferior limit of the tragus before turning 90 degrees inferiorly to descend to the attachment of the lobule. • Pre-tragal incision in men or whether retrotragal incision. Hair follicles are transected.	22 7,12,20 7,10,12,20 27 22,24 8,13,14,19 7,12, 13, 20, 22 23
Pixie ear deformity	• The incision should continue 1- 2 mm inferior to the lobule cheek junction. • Excess of skin flap is cut on the outer curve of the helix, two-thirds of the distance to the interior lobule.	7, 11,12,20,26
Posterior auricular visible scar	• The incision continues a few millimeters onto the posterior concha cartilage rather than directly in the postauricular crease.	7,12,16,20

Disturbance of the natural mastoid hairline Mastoid visible scar Step-off occipital-mastoid hairline	• Incision design behind and paralleling the postauricular hairline. • With the hairline as reference, extend the incision 45 degrees that veers off overlying the mastoid. • Use a w-plasty incision. • Posterior transverse incision to the mastoid should not exceed 2cm in bald men to let the posterior edge of the helix cover it. • Incision must continue along the edge of the hairline superiorly before entering it. • This is extended in a wavy line into the hair-bearing scalp approximately 4 cm. The appropriate amounts of scalp and postauricular flap skin are removed by excising the superior flap edge to match the wavy, undulating line within the scalp from the posterior apex of the incision into the hairline	11,2 23 16,17 24,27

Synthesis of Results

Information divided by zones Temple/Temporal (T), Preauricular (P), Lobule (L), Postauricular (PA), Mastoid-Occipital (MO) showed:

T: A temporal hairline incision **[7,8,10-12,16,18-20,25,26]** vs. in the temporal tuft and extension just superior to the helical root **[3-6,9,11,13,14,21,22,23,24]** including bald men17. The first incision was recommended because an excess skin flap was generated, and the second one was considered for cases where temporal lifting is desired. A low-lying sideburn was considered **[3,4,21,24]**.

P: Incision should follow the natural highlight, keeping the width of helical crus intact **[7,12,15,18,20,25]**; afterward, it may be retrotragal in women and pretragal in men **[3-12, 14-28]**. An inferior step under the anterior tragus could be designed **[7,12,15,18,20,25]**

L: A peri-lobular incision. A distance of 2 mm inferior to the lobule cheek junction is recommended. **[7,12,13,15,18,25].**

PA: Incision continues over the posterior concha, a few millimeters from the retroauricular sulcus 3-8,10-28 even. Some recommend continuing into the sulcus **[9,21]**. With transition placed with an acute or obtuse angle to the mastoid area (10, 19, 28) at the superior portion of the concha, external auditory canal[14] or triangular fossa **[7,12,13,15,18,25]**.

MO: Incision into the hair of the scalp with curve transition **[3-5,13,21,22,26]** or following the occipital hairline inferiorly **[7,12,15,18,20,25]**, depending on the amount of flap advanced posteriorly. Some advocate for a W-plasty incision **[16]**.

Incision descriptions, preventive strategies, and stigmata that could be prevented through categorization into four groups were considered, as shown in **Figure 2.**

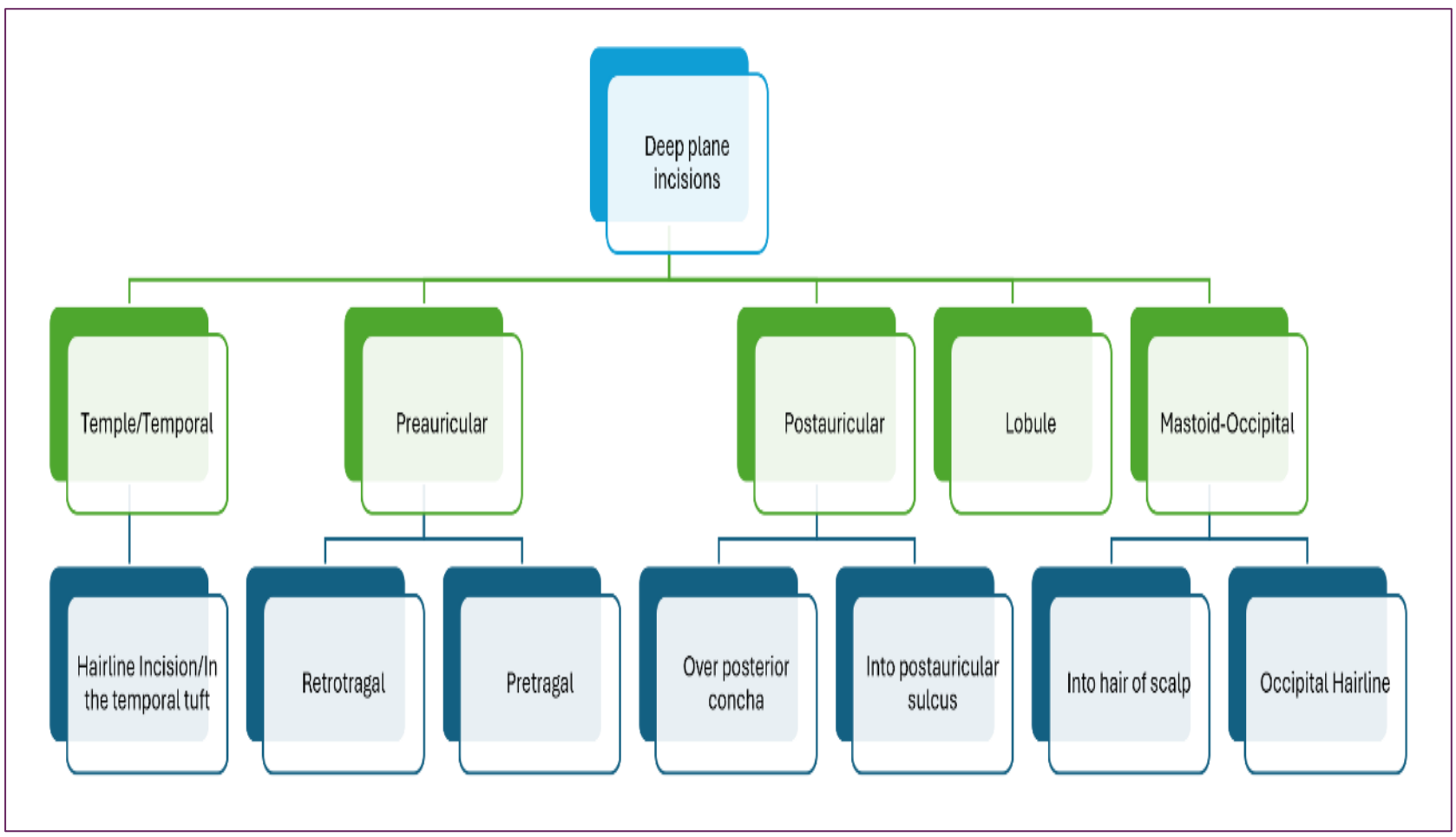

Figure 2. Categorization Proposal Stigmata Based on the Scoping Review.

In the first group, Visible scar, Temporal alopecia, Temporal visible scar, Temple visible scar, Mastoid visible scar, and posterior auricular visible scar. The second group, Skin or Hair with unnatural appearance: Dog ear deformity or extra wrinkles, Step sideburn, Unnatural shifts of the hair, Root of the helix with wide appearance, Disturbance of the natural mastoid hairline, Step-off occipital-mastoid hairline. The third group is the distortion

of the *earlobe*: pixie ear deformity. And the fourth group, Distortion *of or around the tragus: Blunt tragus, outwardly protruding tragus, Unnatural skin contouring of the tragus or loss of* pretragal crease, transplanting hair-bearing skin onto the tragus, the pinching of the incisura antitragus, hair-bearing skin into the external auditory canal. **Figure 3A and 3B.**

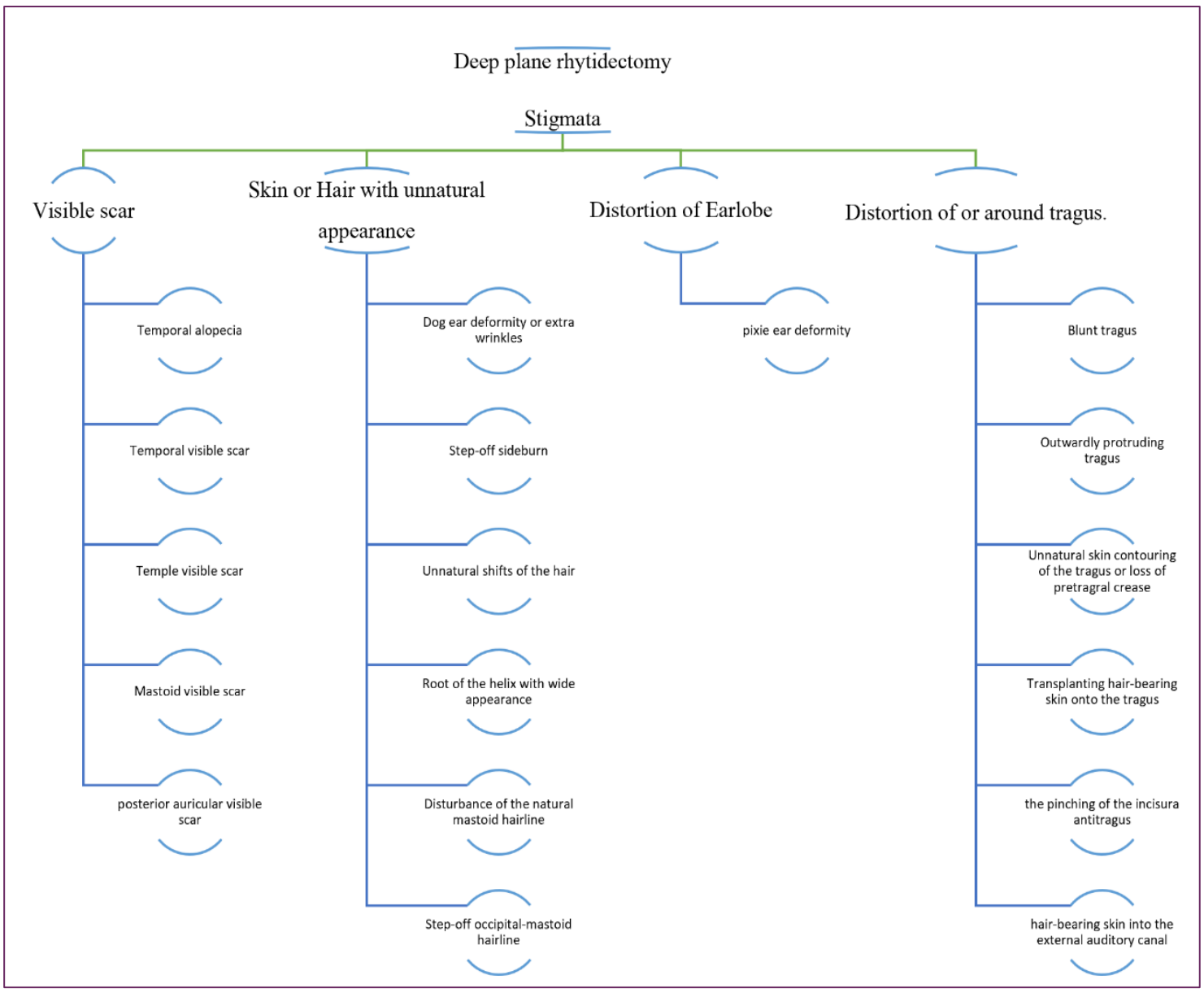

Figure 3: Categorization proposal of stigmata based on the scoping review

Figure 4A: Face Stigmata Posterior to Rhytidectomy on the Right Side

Figure 4B: Face Stigmata Posterior to Rhytidectomy on the Left Side

Citation: Jorge Alberto Espinosa Reyes MD, Juan Fernando Muñoz MD, Roxana Cobo MD, Nicolás Heredia MD, Gabriela Menjivar MD, Juan Gabriel Camacho Triana MD, Juan C. Ochoa MD. Incisions And Prevention of Stigmata Related to Deep Plane Rhytidectomy: A Systematic Scoping Review. Journal of Surgery Research 1(1). https://doi.org/10.61615/JSR/2025/SEPT027140930

Natural Outcomes Without Visible Scar Malposition

Representative Case Illustrating a Favorable Outcome

Discussion

In this systematic scoping review, we considered 26 articles and book chapters **[3-28]**, examining various incisions and stigmata, or "tell-tale signs." These were subsequently illustrated and categorized. Each report detailed the authors' approaches to preventing facelift stigmata and provided preventive strategies.

Patients seeking facial rejuvenation surgery are often unaware of stigmata. Therefore, it is crucial for the surgeon to be knowledgeable about their prevention and treatment. The surgeon must also clearly communicate the risks associated with different types of incisions. Proper patient selection for deep-plane rhytidectomy is essential, and the subsequent step is identifying the most suitable incision for each patient.

Traditional deep plane approach through long incisions has evolved for some patients who could benefit from short access with a vertical lift, like the MADE vertical face-lift described by Jacono, which does not require a postauricular occipital scalp limb**[16]**. Another description, by Mani, involves an endoscopic approach avoiding the preauricular scar by a tunnel that connects the temporal incision with the lower preauricular area subcutaneously, with the subsequent excess of skin that could be minimized with a more vertical vector of fixation **[27]**. This is a probe of how an excellent aesthetic result can be achieved with a shorter incision and a changing facelift vector. However, not all patients are candidates for these approaches.

All facelift procedures will have some scar that could be more or less important depending on the patient's perspective. Therefore, even the less visible scar could benefit from how the surrounding tissue gives camouflage. All creases through preauricular and postauricular skin must be considered, as well as hair density or baldness. In one observational study, minimized incisions were described by Pascali, in bald men as next: at the temple, an incision between 2-4 cm with an angle of 120 degrees and posteriorly within occipital extension no more than 2 cm, with the posterior edge of the helix as a limit to achieve better scar camouflage **[17]**.

On the other hand, the difference between men and women requires choosing between a pretragal visible scar or transplanting hair-bearing skin onto the tragus. The last one will need ancillary techniques like intraoperative follicular unit resection versus posterior laser therapy. According to an expert's opinion, 75% of men prefer incision camouflage with a retrotragal incision **[12]**.

A survey studying surgeons comparing preferences according to incisions showed that for temporal incisions, 87% of doctors preferred "in the hairline," whereas 13% chose the "pre-hairline." For mastoid incisions, 20% preferred "in the hair," and 80% chose "at the hairline." No correlation was found between preauricular incision preferences and the years of medical practice **[30]**. Our results did not yield a quantitative effect that could provide a specific recommendation, as no comparative studies or new surveys are available on this topic.

There are limited articles related exclusively to stigmas. Describing them as "operated face signs" is an easy way to explain them, and no classification is well defined; even recommendations are performed independently of the

facelift approach **[31]**. This scoping review achieves what we termed preventive strategies according to the evidence available from experienced surgeons.

Limitations

With all the information reviewed, no article included a comparison between incisions and the evaluation of preventive strategies. According to the evidence, this scoping review provides a valuable piece of medical literature if we consider that, for ethical purposes, clinical trials cannot be designed.

Another limitation related to language due to the restriction on the English language. Finally, the last limitation was that the articles were unavailable for authors to review.

Conclusion

This systematic scoping review synthesizes information related to the incisions, stigmata, and preventive strategies in deep plane rhytidectomy, providing an easy categorization. This promotes a change in how facial surgeons approach the procedure, aiming for better aesthetic results that could bring consensus between surgeons in the future.

Conflicts of Interest

All authors declared that there are no conflicts of interest.

References

1. Hamra ST. (1990). The deep-plane rhytidectomy. Plast Reconstr Surg. 86: 53–61; discussion 62–63.
2. Tricco AC, Lillie E, Zarin W. (2018). PRISMA Extension for Scoping Reviews (PRISMAScR): Checklist and Explanation Ann Intern Med. 169(7): 467-473.
3. Perkins SW. (2000). Achieving the “natural look” in rhytidectomy. Facial Plastic Surgery. 13: 269-282.
4. Perkins SW, Patel A. (2009). Extended Superficial Muscular Aponeurotic System Rhytidectomy: A Graded Approach. Facial Plast Surg Clin N Am. 17(4): 575–587.
5. Alsarraf R, Johnson CM. (2000). The facelift: technical considerations. Facial Plast Surg. 16(3): 231–238.
6. Alsarraf R, Johnson CM. (2003). The deep plane facelift. Facial Plast Surg. 19(1): 95-105.
7. Jacono A, Bryant LM. (2018). Extended Deep Plane Facelift: Incorporating Facial Retaining Ligament Release and Composite Flap Shifts to Maximize Midface, Jawline, and Neck Rejuvenation. Clin Plast Surg. 45(4): 527-554.
8. Raggio BS, Patel BC. (2023). Deep Plane Facelift. In: StatPearls [Internet]. 2023, Apr 3. Treasure Island (FL): StatPearls Publishing. 31424861.
9. Pastorek N, Bustillo A. (2005). Deep plane face-lift. Facial Plast Surg Clin North Am. 13(3): 433-449.
10. Gordon NA, Tower JI, Paskhover B. (2020). From the Deep-Plane Rhytidectomy to the Vertical Platysma Advancement. Facial Plast Surg Clin North Am. 28(3): 311-330.
11. Sykes JM, Liang J, Kim JE. (2011). Contemporary deep plane rhytidectomy. Facial Plast Surg. 27(1): 124-132.
12. Jacono AA. (2020). A Novel Volumizing Extended Deep-Plane Facelift: Using Composite Flap Shifts to Volumize the Midface and Jawline. Facial Plast Surg Clin North Am. 28(3): 331-368.
13. Quatela V, Montague A, Manning JP, Antunes M. (2020). Extended Superficial Musculoaponeurotic System Flap Rhytidectomy. Facial Plast Surg Clin North Am. 28(3): 303-310.
14. Kamer FM, Mingrone MD. (2005). Deep plane rhytidectomy: a personal evolution. Facial Plast Surg Clin North Am. 13(1): 115-126.
15. Jacono AA, Rousso JJ. (2013). The modern minimally invasive facelift: has it replaced the traditional access approach? Facial Plast Surg Clin North Am. 21(2): 171-189.
16. Starkman SJ, Mangat DS. (2020). Less Invasive Superficial Musculoaponeurotic System Approaches in Rhytidectomy: How, When, and Why. Facial Plast Surg Clin North Am. 28(3): 273-283.
17. Pascali M, Botti C, Botti G. (2020). Face Lifting in Bald Male Patients: New Trends and Specific Needs. Plastic and Reconstructive Surgery. 145 (1): 60 – 69.
18. Jacono, AA, Parikh, SS. (2011). The Minimal Access Deep Plane Extended Vertical Facelift. Aesthetic surgery journal. 31(8): 874-890.
19. Gordon NA, Sawan TG. (2020). Deep-Plane Approach to the Vertical Platysma Advancement: Technical Modifications and Nuances over 25 Years. Facial plastic surgery. 36(4): 358-375.
20. Jacono AA, Talei B. (2014). Vertical Neck Lifting. Facial plastic surgery Facial Plast Surg Clin North Am. 22(2): 285-316.
21. Botti, C, Botti G. (2015). Facelift 2015. Facial plastic surgery. 31(5): 491-503.
22. Calvin J, Murphy M. (2017). The deep plane facelift. Master Techniques in Facial Rejuvenation. 173-190.
23. Barrett D.M, Gerecci D, Wang T. (2016). Facelift Controversies. Facial Plastic Surgery Clinics of North America. 24(3): 357-366.
24. Rodriguez-Bruno K, Papel I.D. (2011). Rhytidectomy: Principles and practice emphasizing safety. Facial Plastic Surg. 27(1): 98-111.
25. Jacono A.A, Malone M.H. (2017). Deep Plane Rhytidectomy Modifications Master Techniques in Facial Rejuvenation. 191-210.
26. Holck D.E.E, Foster JA, Kalwerisky K. (2015). Ten tips for a reliable and predictable deep plane facial rhytidectomy. Pearls and Pitfalls in Cosmetic Oculoplastic Surgery second edition. 605-612.
27. Walden J.L, Aston S.J. (2010). Rhytidectomy. Plastic Surgery Secrets Plus. 504-515.
28. Gordon N, Adam S. (2014). Deep plane facelifting for facial rejuvenation. 30(4): 394-404.
29. Mani M. (2023). Endoscopic, “Scarless” Composite Flap Face and Neck Lift. Facial plastic surgery.
30. Matarasso, A, Elkwood, A, Rankin, M, Elkowitz, M. (2000). National Plastic Surgery Survey: Face Lift Techniques and Complications. Plastic and Reconstructive Surgery. 106(5): 1185-1195.
31. Franco, T. (1985). Face-Lift Stigmas. Annals of Plastic Surgery. 15(5): 379–385.