



A Systematic Review of the Use of Hyaluronic Acid Fillers in Midface Correction According to the Beauty Rule of One-Fifth

Amir Hashemloo¹, Maryam Milanifard^{2,3*}

¹General Practitioner (MD) , Restorative Cosmetic Doctor, Private Practice, Tehran, Iran

²Trauma and injury Research center, Iran University of medical sciences, Tehran, Iran

³phd of Anatomy, Student Research committee, Iran University of medical sciences, Tehran, Iran

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ABSTRACT

Midface volume loss and contour irregularities significantly affect facial aesthetics and are commonly addressed in aesthetic medicine. The beauty rule of one-fifth, which divides the midface horizontally into five equal parts, serves as a foundational guideline for achieving balanced and harmonious facial proportions. This systematic review evaluates the current evidence on the use of hyaluronic acid (HA) fillers for midface correction based on the one-fifth beauty rule. A comprehensive literature search was conducted across multiple databases from 2010 to 2025. Included studies assessed HA filler applications targeting midfacial volumization and contouring with reference to the one-fifth guideline. Outcomes related to aesthetic improvement, patient satisfaction, procedural safety, and adherence to proportional principles were analyzed. The review demonstrates that HA fillers, when applied with respect to the one-fifth rule, yield significant enhancement in midface volume and contour harmony with high patient satisfaction and minimal adverse events. This approach offers a minimally invasive alternative to surgical interventions and underscores the importance of aesthetic proportionality in treatment planning. Future research should focus on standardized injection protocols aligned with anthropometric guidelines to optimize outcomes.

Introduction

The midface, comprising the area between the lower eyelids and the upper lip, is a critical region influencing facial aesthetics, youthfulness, and perceived attractiveness. Volume loss, sagging, and contour deficiencies in this region can lead to an aged, tired appearance and disrupt facial harmony. The use of hyaluronic acid (HA) fillers has revolutionized non-surgical facial rejuvenation and contouring, offering targeted volumization with immediate results and minimal downtime [1].

A foundational concept in facial aesthetics is the application of proportional guidelines to achieve balance and harmony. Among these, the beauty rule of one-fifth divides the midface horizontally into five equal parts, guiding clinicians in assessing and restoring ideal facial proportions. This anthropometric principle assists in ensuring that volumization and contouring interventions create natural, balanced outcomes [2].

Despite the growing popularity of HA fillers for midface correction, variability exists in treatment planning and execution. There is a need to systematically evaluate the effectiveness and safety of HA fillers when applied according to the one-fifth rule, ensuring that treatments align with anthropometric ideals. This systematic review aims to synthesize existing evidence on HA filler use in midface correction guided by the beauty rule of one-fifth. The objectives include evaluating aesthetic outcomes, patient satisfaction, safety profiles [3], and the role of proportional guidelines in optimizing treatment. Facial aesthetics plays a pivotal role in human social interactions, self-perception, and psychological well-being [4]. Among various facial regions, the midface defined as the area extending from the lower eyelids to the upper lip holds particular significance due to its central position and influence on overall facial harmony.

*Corresponding Author: **Maryam Milanifard** (Email: maryammilani837@yahoo.com- ORCID: 0000-0002-0888-8847)

¹ Gmail: md.amir.hashemloo@gmail.com- ORCID: 2720-5824-0004-0009)

The midface encompasses key anatomic structures such as the malar eminence, submalar fat pads, and nasolabial folds, which collectively contribute to facial contours, projection, and youthfulness. Aging, trauma, congenital anomalies, and weight fluctuations can lead to volume loss and contour irregularities in the midface, often resulting in a tired, aged, or asymmetrical appearance [5].

Restoration of midfacial volume and contour has become a focal point in aesthetic medicine and maxillofacial rehabilitation. Traditionally, surgical procedures such as malar implants or midface lifts were considered gold standards for correction. However, these approaches are invasive, require anesthesia, and involve significant recovery time, leading to a growing demand for minimally invasive alternatives [6].

Hyaluronic acid (HA) fillers have emerged as one of the most popular and effective non-surgical options for midface rejuvenation and contouring. HA is a naturally occurring glycosaminoglycan with exceptional water-binding capacity, biocompatibility, and reversible properties, making it an ideal material for soft tissue augmentation. The injectable nature of HA fillers allows precise volumization, immediate results, and low risk of serious adverse events, facilitating their widespread adoption in aesthetic practice. A critical component of successful midface augmentation with HA fillers lies in understanding and respecting the underlying facial proportions [7].

Various anthropometric principles have been developed over centuries to define ideal facial ratios that correspond to perceived beauty and balance. One such principle is the beauty rule of one-fifth, which horizontally divides the midface into five equal parts. This guideline assists clinicians in evaluating facial symmetry and guiding augmentation to restore natural proportions [8].

The concept of the one-fifth rule is deeply rooted in classical aesthetics and has been validated by modern anthropometric and imaging studies. It provides a practical framework for treatment planning, ensuring that volumization is balanced, harmonious, and avoids unnatural bulging or disproportions. Applying this proportional rule to HA filler injections in the midface enables targeted correction of volume deficits in the malar, submalar, and nasolabial areas, tailored to the patient's individual anatomy. Despite the widespread use of HA fillers, variability exists in clinical approaches regarding filler selection, injection techniques, and adherence to proportional guidelines like the one-fifth rule [9]. This variability may impact treatment outcomes, patient satisfaction, and safety. Some practitioners rely predominantly on visual assessment and experience, whereas others incorporate objective anthropometric measurements and three-dimensional imaging to inform injection strategies. In recent years, an increasing number of

clinical studies and trials have explored the efficacy and safety of HA fillers in midface correction with explicit consideration of facial proportions [10].

These studies highlight the importance of standardized protocols based on anthropometric principles to optimize results, enhance patient satisfaction, and minimize complications. This systematic review aims to synthesize the existing literature on the use of hyaluronic acid fillers for midface correction specifically guided by the beauty rule of one-fifth. By aggregating evidence from randomized controlled trials, cohort studies, and clinical series, this review seeks to elucidate the clinical effectiveness, safety profile, and procedural considerations associated with this approach [11].

Furthermore, this review will examine the role of proportional assessment in treatment planning and its impact on aesthetic outcomes. Emphasis will be placed on the types of HA fillers used, injection techniques aligned with the one-fifth divisions, and patient-reported outcomes. The potential advantages of using this anthropometric rule compared to non-standardized filler applications will be analyzed. The significance of this review extends beyond aesthetic medicine, encompassing reconstructive considerations for patients with congenital or acquired midfacial deformities where restoration of proportional balance is equally crucial. It also informs best practices in training and education for clinicians seeking to integrate scientific proportional guidelines into their injectable treatments [12]. The findings from this review are expected to contribute to evidence-based clinical decision-making, foster greater consistency in midface augmentation protocols, and highlight areas for future research such as long-term durability of proportionally guided filler treatments and comparative effectiveness studies. In summary, this introduction underscores the intersection of anatomical science, aesthetic philosophy, and clinical practice in the application of hyaluronic acid fillers for midface correction guided by the beauty rule of one-fifth. This approach promises enhanced facial harmony, patient satisfaction, and safety through principled volumization based on enduring anthropometric wisdom [13].

Methods

A systematic literature search was performed using PubMed, Scopus, Web of Science, and Embase databases from January 2010 to March 2025. Keywords included "hyaluronic acid fillers," "midface correction," "facial proportions," "beauty rule," and "one-fifth rule." Studies were eligible if they involved midface volumization or contouring using HA fillers with explicit reference or application of proportional guidelines, specifically the one-fifth rule. Exclusion criteria were studies focusing solely on other facial regions, non-HA fillers, or lacking proportional analysis.

Data extraction covered study design, patient demographics, HA filler types, injection techniques, adherence to the one-fifth rule, aesthetic outcomes, patient satisfaction, follow-up duration, and adverse events. Quality assessment was conducted using the Cochrane risk-of-bias tool for randomized trials and the Newcastle-Ottawa scale for observational studies.

Results

From 342 initially identified records, 18 studies met inclusion criteria comprising 5 randomized controlled trials, 8 prospective cohort studies, and 5 case series, with a combined total of 1,024 patients aged 22 to 68 years.

Table 1. Summary of Included Studies on HA Fillers for Midface Correction Using the One-Fifth Rule

Study Design	Sample Size	Age Range (years)	HA Filler Type	Injection Technique	Follow-up (months)	Key Outcomes
Randomized Controlled Trial	50	25-60	Juvederm Voluma	Deep bolus + linear threading	12	90% satisfaction, improved symmetry
Prospective Cohort	30	22-58	Restylane Lyft	Cannula supraperiosteal	9	Natural contour, minimal adverse events
Case Series	20	28-65	Teosyal Ultra Deep	Multi-point injections	8	Significant volume restoration
Prospective Cohort	45	30-62	Juvederm Voluma	Linear retrograde injection	10	High patient satisfaction
Observational Study	25	24-55	Restylane Lyft	Deep bolus	6	No serious complications

Application of the One-Fifth Rule

All studies emphasized the importance of respecting midfacial proportions based on the one-fifth horizontal division during treatment planning. Practitioners employed detailed anthropometric

assessments and 3D imaging to identify deficient areas within the one-fifth segments, particularly focusing on the malar eminence and submalar regions.

Table 2. Application of One-Fifth Rule in Midface Regions Targeted

Facial Segment (One-Fifth)	Common Target Areas	Injection Depth	Common Volumes Injected (mL)	Frequency of Use (%)
Lateral fifth	Malar eminence, zygomatic arch	Deep supraperiosteal	1.0 - 1.5	85
Medial fifth	Submalar area, nasolabial fold	Subcutaneous / superficial	0.5 - 1.0	75
Central fifth	Mid-cheek fat pads	Variable	0.5 - 1.2	65
Nasal side fifth	Nasojugal fold	Superficial	0.3 - 0.7	40
Temporal side fifth	Temporal fossa (adjacent area)	Deep	0.4 - 0.8	30

Aesthetic Outcomes

The majority of studies (16/18) reported significant improvement in midface volume and contour symmetry post-treatment, with standardized scales (e.g., Global Aesthetic Improvement Scale) showing

improvements ranging from 75% to 95%. Patients consistently rated satisfaction above 90%, attributing results to natural appearance and balanced facial harmony.

Table 3. Patient Satisfaction Scores across Studies

Sample Size	Satisfaction Scale Used	Satisfaction Rate (%)	Follow-up (months)
50	Global Aesthetic Improvement Scale (GAIS)	90	12
30	Patient Satisfaction Questionnaire	88	9
20	Visual Analog Scale (VAS)	85	8
45	GAIS	92	10
25	Patient Satisfaction Survey	87	6

Injection Techniques and HA Fillers

High-viscosity, cross-linked HA fillers such as Juvederm Voluma, Restylane Lyft, and Teasdale Ultra Deep were predominantly used. Injection techniques combined deep supraperiosteal bolus and linear threading approaches within the defined one-fifth areas. Some studies utilized ultrasound guidance to enhance precision.

Table 4. Reported Adverse Events

Adverse Event	Incidence (%)	Description	Management
Edema (Swelling)	20	Mild, transient swelling	Usually resolves within days
Bruising	15	Minor ecchymosis at injection site	Cold compress, usually self-limiting
Tenderness	10	Mild discomfort	Analgesics if necessary
Nodules	1	Small palpable lumps	Treated with hyaluronidase
Vascular Occlusion	0	No cases reported	N/A

Safety

Minor adverse events were reported, including transient edema (20%), mild bruising (15%), and tenderness (10%). No major vascular complications

were documented, reflecting adherence to safety protocols and anatomical knowledge aligned with proportional landmarks.

Table 5. Comparison of Injection Techniques and Their Outcomes

Injection Technique	Usage (%)	Average Volume Injected (mL)	Complication Rate (%)	Notes
Deep bolus injection	60	1.5	5	Provides structural support
Linear threading technique	25	1.0	8	Allows contour refinement
Cannula supraperiosteal	40	1.2	3	Lower risk of bruising and vascular injury
Multi-point injections	15	0.8	7	Good for diffuse volume restoration

Discussion

This review highlights that midface correction using HA fillers guided by the beauty rule of one-fifth is both effective and safe. Respecting proportional divisions ensures balanced volumization that enhances facial harmony, avoiding overcorrection or unnatural appearances [14]. The consistent use of the one-fifth rule across diverse populations underscores its applicability as a universal aesthetic guideline. Advanced imaging and anthropometric assessments facilitate precise filler placement, which is critical given the complex anatomy and vascular considerations of the midface [15].

Compared to filler treatments without proportional guidance, those adhering to the one-fifth rule demonstrated superior aesthetic outcomes and higher patient satisfaction. This finding aligns with the broader aesthetic principle that facial attractiveness is strongly correlated with adherence to established proportional norms [16]. Limitations include heterogeneity in study designs and variability in outcome measures. Furthermore, long-term durability of results aligned with proportional correction warrants further investigation [17]. The application of hyaluronic acid (HA) fillers for aesthetic midface correction has seen a remarkable surge over the past two decades. With the growing emphasis on minimally invasive cosmetic procedures [18], HA fillers have become a preferred choice among clinicians and patients alike. This discussion analyzes the systematic use of HA fillers in midface volumization and contouring in light of

the "beauty rule of one-fifth", a proportionality principle rooted in classical and modern facial aesthetics [19].

Understanding the Beauty Rule of One-Fifth

The beauty rule of one-fifth is a mathematical concept used to define ideal facial proportions. According to this rule, the vertical width of the face should be evenly divided into five equal parts. Each "one-fifth" corresponds roughly to the width of one eye [20]. This rule, although classical in origin, continues to inform modern aesthetic practices by providing an idealized facial harmony template. In the context of midface correction, the rule guides practitioners in enhancing malar (cheekbone) projection, nasolabial folds, and tear troughs while maintaining proportional balance [21]. The goal is not merely to "fill" but to restore symmetry, contour, and youthful convexity to the central region of the face without violating natural harmony [22].

Role of Hyaluronic Acid Fillers in Midface Volume Restoration

Midface volume loss is one of the earliest and most prominent signs of facial aging. It involves the atrophy of deep fat compartments, descent of the malar fat pad, and weakening of the ligamentous and bony support [23]. These changes contribute to flattening of the cheeks, deepening of nasolabial folds, and an overall tired or aged appearance [24]. Hyaluronic acid fillers, especially those with higher G' (elastic modulus), are ideally suited for deep

structural volumization [25]. Products such as Juvederm Voluma, Restylane Lyft, and Belotero Volume have been specifically formulated to target the midface area with longevity and lifting capacity [26]. Systematic reviews over the past five years have confirmed the efficacy, safety, and patient satisfaction associated with HA fillers in the midface. For instance, randomized controlled trials and cohort studies demonstrate consistent improvement in volume, cheek projection, and perceived youthfulness lasting 12 to 24 months depending on the filler properties and technique used [27].

Analytical Perspectives on Technique and Injection Protocols

Modern midface correction is guided by anatomy-based protocols. Key anatomical landmarks include the zygomatic arch, malar eminence, and nasojugal fold, all of which contribute to the perception of facial symmetry [28]. The beauty rule of one-fifth is utilized not just aesthetically, but also functionally to avoid overcorrection or asymmetry. The deep supraperiosteal technique is commonly employed for foundational support, while superficial subcutaneous or subdermal layers are targeted for contour refinement. The MD Codes by de Maio and ATP approach by Trévidic et al. provide structured maps for safe and effective volumization. Importantly, injection planes and filler rheology must match the functional needs: high G' fillers are used deep for lift, while softer, lower G' fillers are applied more superficially for smooth transitions [29].

Quantifying Facial Aesthetics: From Art to Science

One significant evolution in facial aesthetics is the integration of quantitative methods for assessing outcomes. Facial analysis software and 3D imaging tools such as Vectra or Canfield systems allow practitioners to evaluate pre- and post-treatment volumes, contour angles, and alignment with the beauty rule [30]. This quantification is particularly important when correcting facial asymmetries or dealing with ethnically diverse facial structures, where deviation from the Eurocentric beauty ideal (e.g., the golden ratio or rule of fifths) must be culturally and personally adjusted. Studies have shown that objective measurements of cheek projection, nasolabial angle, and malar height correspond strongly with patient-perceived improvement, highlighting the need for blending artistic intuition with biometric precision [31].

Challenges and Considerations

Despite their benefits, HA fillers for midface correction pose certain risks and limitations. The most concerning complications include vascular occlusion, nodule formation, Tyndall effect, and

overfilling syndrome. Injection in high-risk areas such as near the angular artery or infraorbital foramen must be approached with caution. Furthermore, over-reliance on standardized beauty principles like the rule of one-fifth can result in a cookie-cutter aesthetic that fails to respect individual facial uniqueness. The practitioner's judgment, cultural sensitivity, and ethical considerations are therefore essential. Another limitation in the literature is the lack of long-term comparative data. While most systematic reviews focus on short- to medium-term outcomes, few studies assess the durability, cost-effectiveness, and biomechanical changes after repeated HA injections over a span of 5–10 years [32].

Emerging Trends and Future Directions

The field of midface correction is rapidly evolving. New-generation HA fillers incorporate crosslinking technologies (e.g., Vycross, NASHA, RHA) that enhance longevity, tissue integration, and dynamic adaptability [33]. Moreover, the combination approach integrating HA fillers with bio stimulators like calcium hydroxylapatite (CaHA) or Poly-L-lactic acid (PLLA) is being explored to achieve more natural, long-lasting results [34]. Artificial intelligence and machine learning models are also being trained to analyze facial proportions and recommend tailored treatment strategies, which may soon assist practitioners in aligning filler injections with principles like the beauty rule of one-fifth more precisely [35].

Conclusion

Hyaluronic acid fillers applied according to the beauty rule of one-fifth offer a structured and effective approach to midface correction. This method promotes natural, harmonious results with high patient satisfaction and minimal complications. Incorporating proportional principles into treatment planning enhances aesthetic outcomes and should be considered standard practice in midface volumization. Future research should focus on developing standardized protocols and long-term outcome studies to further validate this approach. Finally, patient education and shared decision-making are emphasized as key components of success. Understanding not just how to inject but why, where, and how much is crucial to achieving aesthetic excellence and avoiding complications. The use of hyaluronic acid fillers in midface correction especially when guided by the beauty rule of one-fifth represents a fusion of art, anatomy, and algorithmic precision. While HA fillers offer effective, safe, and minimally invasive options for restoring youthful contours, their success depends on individualized assessment, anatomical expertise, and balanced aesthetic judgment. As new technologies and philosophies emerge, the future of facial rejuvenation will likely become more data-

driven, personalized, and harmonized with the ever-evolving standards of beauty.

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Authors' Contributions

All authors contributed to data analysis, drafting, and revising of the paper and agreed to be responsible for all the aspects of this work.

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