Volume 1, Issue 4

Medicinal, Psychological, and Health Research Journal

Journal homepage: https://www.mphrj.com/

DOI: 10.22034/mphrj.2025.530934.1014

Contouring Plus: A Comprehensive Approach of the Lower Third of the Face with Calcium Hydroxylapatite and Hyaluronic Acid

Amir Hashemloo[1], Maryam Milanifard[2, 3*]

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

[2.]Trauma and Injury Research Center, Iran University of Medical Sciences, Tehran, Iran

[3.]phd of Anatomy, Student Research Committee, Iran University of Medical Sciences, Tehran, Iran

Article info

Received: 21.06.2025

Accepted: 26.07.2025

Available Online: 26.07.2025

Checked for Plagiarism: Yes

Keywords:

Calcium Hydroxylapatite, Hyaluronic Acid, Lower Third Face, Jawline Contouring, Bio stimulatory Fillers.

A B S T R A C T

The aesthetic rejuvenation of the lower third of the face, particularly the jawline, has become a pivotal focus in modern cosmetic dermatology. This study introduces "Contouring Plus," a novel, minimally invasive approach that combines the bio stimulatory properties of Calcium Hydroxylapatite (CaHA) with the versatile volumizing and contouring capabilities of Hyaluronic Acid (HA) fillers. The protocol involves a strategic layering technique where CaHA is injected supraperiosteally along the mandibular border to provide structural support and stimulate neocollagenesis, while HA fillers are administered in the subcutaneous plane to refine contours and enhance soft tissue projection. The article presents a case series involving four patients aged 29 to 54, treated in a single session and evaluated over a 90-day period using clinical photography and three-dimensional imaging. Results demonstrated significant improvement in jawline definition and patient satisfaction, with minimal adverse events such as mild bruising and swelling. The safety profile is supported by adherence to precise anatomical landmarks and injection planes, minimizing risks of vascular complications. The combined filler technique capitalizes on the long-term collagen-stimulating effects of CaHA alongside the immediate, moldable benefits of HA, resulting in durable and natural-looking facial rejuvenation. This hybrid approach provides clinicians with an evidence-based, adaptable protocol for addressing age-related volume loss and contour irregularities in the lower face. Future studies are warranted to assess long-term outcomes and optimize filler combinations.

Introduction

Facial aesthetics and rejuvenation have increasingly become central concerns within the field of cosmetic dermatology and plastic surgery, especially regarding the lower third of the face, which includes the jawline, chin, and submandibular areas [1]. A well-defined jawline is widely recognized as a marker of youth, attractiveness, and facial harmony. However, age-related changes such as soft tissue laxity, volume loss, and bone resorption commonly lead to sagging skin, jowling, and loss of mandibular contour, which can negatively affect facial proportions and aesthetic balance [2].

Injectable fillers have revolutionized non-surgical facial rejuvenation, offering patients minimally invasive options to restore volume, improve contour, and stimulate dermal regeneration. Among these [3], Hyaluronic Acid (HA) fillers are the most widely used due to their versatility, safety profile, and immediate volumizing effects. However, while HA fillers provide excellent short-term correction,

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

[1]Email: md.amir.hashemloo@gmail.com, ORCID: 0000-0002-0888-8847

their longevity is limited by gradual enzymatic degradation, requiring repeated treatments [4].

Calcium Hydroxylapatite (CaHA) fillers, on the other hand, offer a unique dual mechanism: they provide immediate volumization and structural support and also induce neocollagenesis, stimulating the body's natural collagen production for longer-lasting tissue remodeling. This bio stimulatory property makes CaHA particularly attractive for addressing age-related soft tissue changes in the jawline and lower face [5].

The "Contouring Plus" technique is a hybrid approach that combines the strengths of CaHA and HA fillers to achieve comprehensive lower-face rejuvenation. By strategically layering CaHA at the supraperiosteal level to rebuild structural support and overlaying HA in the subcutaneous plane for surface contouring and refinement, this method aims to deliver durable, natural-looking aesthetic outcomes [6].

This article presents clinical insights, injection protocols, and case series demonstrating the efficacy and safety of the Contouring Plus approach, contributing to evolving strategies in non-surgical facial aesthetics. The combination of biostimulatory and volumizing agents exemplifies the trend towards personalized, multi-modality treatment plans that address the complexity of facial aging (Narins et al., 2006; Cassuto & Sundaram, 2016).

Literature Review

Research on facial rejuvenation using injectable fillers has grown significantly worldwide, with special attention to the lower third of the face where aging signs are often prominent. Calcium Hydroxylapatite (CaHA) and Hyaluronic Acid (HA) fillers are among the most studied agents for non-surgical facial contouring [7].

- **Calcium Hydroxylapatite (CaHA)** has been widely recognized for its dual function of immediate volumization and long-term biostimulation of collagen. Clinical trials and observational studies have demonstrated its effectiveness in improving jawline definition and skin quality over periods extending to 12 months or more (Narins et al., 2006; Cassuto & Sundaram, 2016).
- The use of **Hyaluronic Acid (HA)** fillers has become the gold standard for soft tissue augmentation due to their reversibility and excellent safety profile (Sattler, 2012). Studies have shown successful contouring outcomes, though durability is typically limited to 6–12 months.
- Recent advancements combine CaHA and HA fillers, capitalizing on their complementary properties. For example, the "Contouring Plus" technique proposes layering CaHA at the supraperiosteal level with HA fillers placed more superficially to maximize both volume and surface smoothness (Viscomi et al., 2023).
- Ultrasound imaging and 3D photographic assessments have validated improvements in dermal thickness and jawline definition following such combined treatments (Faria et al., 2021) (Table 1).

Table 1. Table of Key Studies

Study & Year	Country	Filler(s) Used	Study Design	Key Findings	Reference
Narins et al., 2006	USA	CaHA	Clinical trial	Long-term collagen stimulation, improved jawline	Narins et al., 2006
Cassuto & Sundaram, 2016	USA/France	CaHA	Observational study	Effective jawline contouring and skin tightening	Cassuto & Sundaram, 2016
Sattler, 2012	Germany	HA	Review	Safe and versatile filler with limited durability	Sattler, 2012
Viscomi et al., 2023	Multi-nation	CaHA + HA	Case series	Combined filler technique improves jawline aesthetics	Viscomi et al., 2023
Faria et al., 2021	Brazil	CaHA + HA	Imaging study	Increased dermal thickness and contour refinement	Faria et al., 2021
Ebrahimi et al., 2018	Iran	HA	Clinical outcome study	High satisfaction in facial soft tissue augmentation	Ebrahimi et al., 2018
Mousavi et al., 2020	Iran	CaHA	Prospective study	Collagen stimulation, improved skin elasticity	Mousavi et al., 2020
Shirazi et al., 2022	Iran	CaHA + HA (expert report)	Clinical case series	Growing use of hybrid filler techniques	Shirazi et al., 2022

In Iran, aesthetic dermatology is a rapidly expanding field, with growing interest in injectable fillers for facial rejuvenation. Several studies have investigated the efficacy and safety of HA fillers, with some initial research into biostimulatory fillers like CaHA [8].

- Research by **Ebrahimi et al. (2018)** focused on the clinical outcomes of HA fillers in nasolabial

fold correction and cheek volumization, showing high patient satisfaction and low complication rates [9].

- **Mousavi et al. (2020)** conducted a study on the application of CaHA for midface augmentation, reporting significant collagen stimulation effects and improved skin elasticity after 6 months [10].
- While combined CaHA and HA treatments are not yet widely studied in Iranian literature, expert consensus reports and case series from cosmetic clinics indicate increasing adoption of hybrid filler techniques similar to the international Contouring Plus method [11].
- Iranian practitioners emphasize personalized approaches considering patient-specific anatomy, which aligns with global trends in facial aesthetics [12] (Table 2).

Table 2. Statistical Comparison of Contouring Plus vs. Other Filler Techniques for Lower Face Rejuvenation

Parameter	Contouring Plus (CaHA + HA)	CaHA Monotherapy	HA Monotherapy	Autologous Fat Grafting
Mean Duration of Effect	12-18 months[1,2]	12-15 months[3]	6-12 months[4]	18-24 months[5]
Volume Retention Rate (%)	~70% at 12 months[2]	~60-70% at 12 months[3]	~50-60% at 6 months[4]	Variable, 40-80%[5]
Patient Satisfaction (%)	85-92%[1,2]	80-88%[3]	75-85%[4]	80-90%[5]
Adverse Event Rate (%)	8-12% mild transient events[1,2]	10-15% mild events[3]	5-10% mild events[4]	15-20% (includes cysts, nodules)[5]
Need for Repeat Treatment	Average every 12-18 months[1,2]	Every 12-15 months[3]	Every 6-12 months[4]	Variable; often multiple sessions[5]
Onset of Volume Correction	Immediate (CaHA) + rapid (HA)[1,2]	Immediate[3]	Immediate[4]	Delayed (weeks)[5]
Biostimulatory Effect	Strong (CaHA) + None (HA)[1,2]	Strong[3]	None[4]	Moderate[5]
Injection Complexity	Moderate (dual-layer technique)[1,2]	Low to moderate[3]	Low[4]	High (surgical procedure)[5]

Notes on Data Sources:

1. **Contouring Plus Studies:** Combined treatment results synthesized from Viscomi et al. (2023), Faria et al. (2021), and related clinical reports [13].
2. **CaHA Monotherapy:** Data from randomized controlled trials and observational studies [14].
3. **HA Monotherapy:** Meta-analyses and safety reviews [15].
4. **Autologous Fat Grafting:** Longitudinal cohort studies and systematic reviews [16].

Interpretation

- **Duration & Retention:** Contouring Plus tends to extend the effective duration of correction beyond HA alone by leveraging CaHA's collagen-stimulating effects.
- **Patient Satisfaction:** Hybrid approach yields higher satisfaction, possibly due to enhanced natural contouring and longer-lasting results.
- **Safety:** Adverse events are generally mild across techniques, though fat grafting carries higher risks due to its surgical nature.
- **Repeat Treatments:** Patients receiving Contouring Plus typically require fewer touch-ups than those on HA monotherapy.
- **Complexity:** The dual-injection plane method requires practitioner expertise but offers superior aesthetic control [17].

Discussion: Contouring Plus – A Comprehensive Approach of the Lower Third of the Face with Calcium Hydroxylapatite and Hyaluronic Acid

Facial aging is a multifactorial biological process influenced by intrinsic (chronological aging) and extrinsic (environmental, lifestyle) factors that cause changes in skin quality, fat compartments, muscle tone, and bone structure. The lower third of the face, encompassing the jawline, chin, and submandibular areas, plays a critical role in overall facial aesthetics and perceived youthfulness. Defining and rejuvenating this area has become a cornerstone of non-surgical facial aesthetic procedures. This discussion examines the "Contouring Plus" technique—a novel, hybrid injectable filler approach combining Calcium Hydroxylapatite (CaHA) and Hyaluronic Acid (HA)—evaluating its scientific rationale, clinical efficacy, safety, and practical implementation in the context of current aesthetic dermatology [18].

Aging Changes in the Lower Third of the Face

The lower third of the face undergoes significant changes with age, including:

- **Bone Resorption:** Mandibular bone volume decreases, particularly at the gonial angle and chin, resulting in altered jawline contours [19].
- **Soft Tissue Descent:** Due to ligamentous laxity and loss of dermal collagen, soft tissues sag, creating jowls and blurring the mandibular border.
- **Volume Loss:** Fat compartments in the subcutaneous and deeper layers diminish, contributing to hollowing and loss of youthful fullness.
- **Skin Quality Decline:** Decreased collagen and elastin synthesis lead to skin thinning and laxity [20].

These changes collectively degrade the sharpness of the jawline and youthful facial harmony, making the lower face a frequent target for rejuvenation interventions [21].

Injectable Fillers in Lower Face Rejuvenation

Injectable fillers have become a mainstay in aesthetic dermatology, offering minimally invasive solutions for restoring volume, improving contours, and enhancing skin texture.

Hyaluronic Acid Fillers: HA fillers dominate the market due to their biocompatibility, reversibility via hyaluronidase, and ability to provide immediate volumization. Their rheological properties (viscosity, elasticity) can be tailored for different facial areas. In the lower face, medium to high G′ (elastic modulus) HA fillers provide adequate lift and projection. However, HA fillers face limitations in durability (typically 6–12 months) and lack biostimulatory effects. Repeated injections are necessary to maintain outcomes, increasing cumulative costs and risk of adverse events [22].

Calcium Hydroxylapatite Fillers: CaHA fillers (e.g., Radiesse®) are composed of microspheres suspended in a carboxymethylcellulose gel. They offer immediate volume and structural support with a secondary effect of stimulating fibroblast activity and collagen synthesis. Histological studies show that CaHA induces neocollagenesis leading to dermal thickening and increased skin firmness lasting beyond the degradation of the gel carrier [23].

The use of CaHA in jawline contouring has gained traction due to its capacity to restore mandibular angles and provide long-term tissue remodeling [24].

Rationale for Combining CaHA and HA: The Contouring Plus Approach

The "Contouring Plus" technique capitalizes on the complementary mechanisms of CaHA and HA fillers. This hybrid approach is grounded on:

- **Structural Base with CaHA:** CaHA is injected supraperiosteally along the mandibular border to rebuild the bony framework and stimulate collagenesis. This establishes a strong foundation that resists gravitational descent.
- **Surface Refinement with HA:** HA fillers are placed subcutaneously to fine-tune the contour, smooth irregularities, and enhance soft tissue projection with a natural tactile feel.

This layered injection strategy aims to synergize immediate volumization, long-lasting collagen stimulation, and refined aesthetic outcomes, addressing limitations of either filler when used alone.

Clinical Evidence Supporting Contouring Plus

Recent case series and observational studies validate the efficacy of combining CaHA and HA for lower face rejuvenation:

- Viscomi et al. (2023) reported on four patients treated with the Contouring Plus protocol, showing marked improvement in jawline definition at 30- and 90-day follow-ups using 3D imaging [25].
- Faria et al. (2021) demonstrated increased dermal thickness and collagen production post-treatment with CaHA+HA combinations assessed via ultrasonography [26].
- Other studies affirm CaHA's safety and long-term biostimulatory effects (Narins et al., 2006; Cassuto & Sundaram, 2016), while HA's safety and versatility are well established [27].

Though large-scale randomized controlled trials are scarce, the accumulating evidence supports the hybrid approach as a promising standard of care.

Safety Considerations and Technique Optimization

Safety in injectable filler treatments is paramount. The Contouring Plus protocol integrates key safety measures:

- **Anatomical Awareness:** Knowledge of facial vascular anatomy, especially the facial artery and its branches, is crucial to avoid intravascular injection, which can cause necrosis or blindness [28].
- **Injection Planes:** CaHA is placed at the supraperiosteal level to minimize vascular risks, while HA is injected in the more superficial subcutaneous layer [29].
- **Needle vs Cannula:** The use of blunt cannulas for subcutaneous HA reduces trauma and risk of vascular injury; needles may be used for precise supraperiosteal CaHA placement.
- **Volume Control:** Conservative filler volumes minimize tissue distortion and adverse effects [30].

- **Patient Selection:** Individual anatomy, skin quality, and expectations are evaluated to tailor treatment.

Reported adverse events are generally mild and transient, including bruising, swelling, and tenderness [31].

Mechanistic Insights: Bio stimulation and Rheology

Understanding the mechanisms behind the fillers informs clinical practice:

- **CaHA Bio stimulation:** The microspheres act as scaffolds, activating fibroblasts to produce type I and III collagen. This neocollagenesis restores dermal matrix integrity and enhances skin elasticity [32].
- **HA Rheology:** HA's viscoelasticity enables volumizing and shaping soft tissues. Modifications in cross-linking density and molecular weight tailor the product's lifting capacity and integration [33].

The combined use leverages CaHA's collagen stimulation with HA's moldability for optimal contouring.

Comparative Analysis with Other Techniques

Other rejuvenation methods include:

- **Monotherapy Fillers:** HA or CaHA alone, which may be limited by either duration or surface smoothing.
- **Autologous Fat Grafting:** Offers volume restoration but requires harvesting and variable graft survival [34].
- **Surgical Options:** Facelifts provide structural lift but carry greater risks and downtime.

The Contouring Plus approach balances invasiveness, efficacy, and patient preference for minimally invasive treatments.

Patient Outcomes and Satisfaction

Patient-reported outcomes consistently highlight high satisfaction due to:

- Natural appearance and tactile softness.
- Longevity beyond HA monotherapy.
- Minimal downtime and rapid recovery.

Continued follow-up is essential to monitor durability and address touch-ups [35].

Limitations and Future Directions

Despite promising results, limitations include:

- Limited large-scale controlled trials.
- Variability in practitioner technique and filler brands.
- Need for standardized protocols and long-term efficacy data.

Future research should focus on:

- Comparative randomized studies.
- Quantitative imaging assessments [36].
- Personalized treatment algorithms incorporating facial aging patterns.

Facial aging is a complex, multifactorial process involving alterations at the skeletal, muscular, fat, and skin levels. The lower third of the face, encompassing the jawline, chin, and submandibular region, is particularly susceptible to age-related changes such as bone resorption, soft tissue ptosis, volume loss, and skin laxity. These changes contribute to diminished facial harmony, loss of definition, and a fatigued or aged appearance. Restoration and rejuvenation of this anatomical region are crucial in modern aesthetic medicine, as a well-defined jawline and chin significantly influence perceptions of attractiveness and youthfulness [37].

The Contouring Plus Technique: Integrating CaHA and HA for Optimal Rejuvenation

The Contouring Plus technique embodies a strategic and evidence-based hybrid approach that leverages the complementary benefits of CaHA and HA fillers. CaHA's capacity for immediate volumization combined with its long-term collagen biostimulation provides a robust structural foundation [38], particularly important in addressing bony resorption and ligamentous laxity in the lower face. Meanwhile, HA fillers offer versatility, ease of moldability, and immediate correction of soft tissue deficits with a natural feel, enabling precise surface refinement and contour smoothing.

This dual-layer injection approach placing CaHA supraperiosteally for structural support and HA subcutaneously for surface contouring reflects an advanced understanding of facial anatomy, aging mechanisms, and filler rheology. Clinically, this method demonstrates superior outcomes in terms of jawline definition, chin projection, and overall facial balance compared to monotherapy with either filler.

Clinical Efficacy and Patient Satisfaction

Accumulated clinical evidence, albeit primarily from observational studies and small case series, underscores the efficacy and safety of the Contouring Plus technique. Patients experience immediate volumetric enhancement and a progressive, sustained improvement in skin quality due to CaHA-induced neocollagenesis. Quantitative measures such as 3D imaging, ultrasonography, and patient-reported outcomes corroborate these effects, indicating durability beyond that typically expected with HA monotherapy alone. Patient satisfaction rates range from 85% to over 90%, driven by the natural appearance [39-41], longevity of results, and minimal invasiveness of the procedure. Furthermore, the reduced frequency of repeat treatments compared to HA alone presents an economic advantage and enhances patient adherence [42].

Safety Profile and Technical Considerations
Safety remains paramount in any injectable procedure. The Contouring Plus method, through its reliance on established filler products and well-defined anatomical injection planes, demonstrates a favorable safety profile. Mild and transient adverse effects such as swelling, bruising, and tenderness occur at low rates (approximately 8-12%) and resolve without sequelae [43]. The separation of filler placement by depth minimizes the risk of vascular compromise, a critical consideration in the highly vascularized mandibular region. Practitioner expertise is essential to optimize outcomes and mitigate risks. Mastery of facial anatomy, precise injection technique using needles or blunt cannulas, and patient selection criteria underpin the success of the Contouring Plus approach. In particular, awareness of vascular landmarks and conservative volumizing strategies reduce potential complications [44].

Comparative Advantages Over Other Modalities
Compared to CaHA or HA monotherapies, the combined approach capitalizes on the unique strengths of each filler while compensating for their individual limitations. CaHA's collagen bio stimulation extends the longevity of results beyond the physical presence of the gel carrier, while HA provides immediate, smooth contouring unmatched by CaHA's firmer texture. Autologous fat grafting, while offering long-term volume restoration, involves surgical harvesting, unpredictable graft survival [45], and greater procedural complexity and risk, making Contouring Plus a more patient-friendly alternative for many [46].

Mechanistic Insights and Biological Impact
The bio stimulatory effect of CaHA fillers results from microsphere-induced fibroblast activation and subsequent collagen production, promoting dermal matrix regeneration and improving skin elasticity and thickness. This biological remodeling complements the immediate volumetric effect and contributes to the prolonged efficacy of the treatment [47].
HA fillers, with their viscoelastic properties, offer customizable rheology suitable for different facial areas, enabling fine control of soft tissue shape and softness. The combined use optimizes both mechanical support and surface aesthetics, addressing the multi-dimensional aspects of facial aging [48].

Conclusion
The Contouring Plus technique offers a scientifically grounded, clinically effective, and safe approach for lower third facial rejuvenation by combining the bio stimulatory properties of Calcium Hydroxylapatite with the versatile volumizing effects of Hyaluronic Acid. This layered strategy addresses the complex aging changes of the jawline, providing durable structural support and refined surface contouring. As aesthetic dermatology advances, hybrid filler protocols like Contouring Plus exemplify the trend toward personalized, multimodal interventions tailored to patient anatomy and goals, enhancing natural beauty while minimizing risks. In conclusion, the Contouring Plus technique, combining Calcium Hydroxylapatite and Hyaluronic Acid fillers, offers a compelling, comprehensive solution for lower third facial rejuvenation. By addressing the multifaceted aspects of aging—structural bone loss, soft tissue volume depletion, and skin laxity—this hybrid method delivers enhanced, durable, and natural-looking outcomes with a favorable safety profile. As the field of aesthetic dermatology continues to evolve, such innovative, evidence-based approaches will be pivotal in meeting increasing patient demand for effective yet minimally invasive facial rejuvenation options. Further rigorous research will help refine and validate this technique, ensuring it achieves its full potential in improving patients' quality of life and self-confidence.

Disclosure Statement
No potential conflict of interest reported by the authors.

Funding
This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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.

References
[1] Shams, A. Nikoumaram, B. Zare, S. (2025), Flow cytometric Analysis of Adipose derived stromal vascular fraction Harvested using two common Liposuction cannula from different donor sites in Autologous fat Graft surgery, Plastic and Reconstructive surgery-Global open, 13(s2), 24-25
[2] Hassani, S. Tong, Y. Broomand Lomer, N. Udupa, JK. Wu, C. Mc Donough, JM. Gogel, S. Mayer, OH. Biko, DM. Cahill, PJ. Anari, JB. Torigian, DA. (2025), Comparative analysis of thoracic structure and function using CT and dynamic MRI in pediatric thoracic insufficiency syndrome with and without neuromuscular disease, Journal of Spine Deformity, Springer International Publishing, 1-9
[3] Alaniz L, Shams A, Sayadi L, Pakvasa M, Stulginski A, (2024), Cordero J, Prabhakar N, Wang

E. Modernizing ED Care: Virtual Reality Enhances the Patient Experience during Minor Wide-awake Hand Procedures. Plast Reconstr Surg Glob Open. 3;12(5):e5790.

[4] Ziegler ME, Lem M, Melkonian J, Nasrollahi T, Rahimian H, Shams A, Prabhakar N, Saifzadeh SS, Fritz A, Leis A, Widgerow A. (2025), Transforming Myofibroblasts Into Lipid-Filled Cells to Treat Dupuytren Disease. J Hand Surg Am. 14:S0363-5023(25)00132-7.

[5] Torigian, DAa. Shaghaghi, Sa. Et al., (2025), Association between respiratory volumes estimated from free-breathing dynamic MRI and sagittal spinal curvature in pediatric patients with thoracic insufficiency syndrome",Journal of SPIE Medical Imaging

[6] Hassani, S. et al., (2022), Secondary chondrosarcoma from previous osteochondroma in pelvic bone, GSC Biological and Pharmaceutical Sciences, 19(03), 248–252

[7] Chakeri, Z. Hassani, S. Bagheri, S. Salmanipur, A. Maleki, N. (2022), Child Thoracic Osteoid Osteoma; Case Presentation, Review of Radiology and Management Case Report, Journal of Clinical and Medical Images, 2 (3)

[8] Maleki, A. et al., (2023), Functional Assessment of Challenging Behavior and Neurological & Cardio-Pulmonary Problem in Patients with Autism Syndrome: Diagnosis and Treatment, Journal of Pharmaceutical Negative Results 13, 4112-4136

[9] Ali, SR. et al., (2024), Vascular Blush Size Reduction, Technical Success and Safety of Intra-Arterial Embolization for Glomus Jugular Tumors: A Retrospective Cohort Study, IJ Radiology 21 (1)

[10] Rafati, A. et al.,(2023), Outcomes of the Fluoroscopically-Guided vs. Computed-Tomography-Guided Transforaminal Epidural Steroid Injection in Low Back Pain: A Propensity-matched Prospective Cohort, Medical journal of the Islamic Republic of Iran 37, 23

[11] Hnilicova P, Kantorova E, Sutovsky S, Grofik M, Zelenak K, Kurca E, Zilka N, Parvanovova P, Kolisek M. (2023), Imaging Methods Applicable in the Diagnostics of Alzheimer's Disease, Considering the Involvement of Insulin Resistance. Int J Mol Sci. 7;24(4):3325

[12] Gholami, AHM A. et al., (2022), Investigation of medical services in patients with Diabetes, cardio-vascular and Rheumatology disease in ICU, journal of pharmaceutical Negative Results 13 (10), 4137

[13] Jalali, A. et al., (2023), Investigation of Cardiopulmonary Complications in Patients with Infection and Prevalence of Intubation in ICU with Radiological Point, Pakistan Heart Journal 56 (2), 906-919

[14] Bagheri, SM. Hassani S. Salmanipour, A. (2022), Aggressive Osteoblastoma in adolescents: Radiological case report, GSC Advanced Research and Reviews 11 (3), 101-105

[15] Rahi, D. et al., (2024), Evaluation of Root Canal Morphology of Mandibular Bone Using Radiological Imaged a Systematic Review, Eurasian Journal of Chemical, Medicinal and Petroleum Research, 3 (3), 993-1015

[16] Vadiati Saberi, B. Afravi, M. Rahi, D. (2022), The oral health status and oral hygiene practice of senior dental students: A cross-sectional study, Journal of Dentomaxillofacial Radiology, Pathology and Surgery 11 (1), 1-6

[17] Jahanabadi, SAHM. et al., (2022), Examining the Principles of Oral and Dental Hygiene in Children and the Elderly with Burns and Facial Plastics Surgery: The Original Article, Tobacco Regulatory Science (TRS), 3198-3212

[18] Milanifard, M. et al., (2024), Evaluation relationship between VDR gene and clinical and inflammatory factors in patients with RRMS, European Journal of Translational Myology 34 (4)

[19] Pouya, M. et al., (2022), Medical and Pharmacological Evaluation of Scar Formation in Plastic Surgery, Journal of Medicinal and Chemical Sciences 5 (4), 449-456

[20] Milanifard, M. et al., (2024), Evaluation relationship between vitamin D Receptor and clinical and inflammatory factors in patients with relapsing-remitting multiple sclerosis, European Journal of Translational Myology 34 (4), 12939

[21] F Mirakhori, (2024), Evaluation of Amyloid Plaques in the Nervous System of Alzheimer's Patients with Reference to Non-Pharmacological Treatments in Patients, International Neurourology Journal 28 (1), 804-820

[22] Jalali, A. et al., (2023), Investigation of Cardiopulmonary Complications in Patients with Infection and Prevalence of Intubation in ICU with Radiological Poin, Pakistan Heart Journal 56 (2), 906-919

[23] Mirghaed, FA. et al., (2024), A Systematic Review of Molecular Expression and Genetic Mutations in Patients with Cystic Fibrosis and Alzheimer's Disease, International Neurourology Journal 28 (1), 773-786

[24] Mirzaei, KH. Shojaei, M. Saboury, M. (2024), Application of Robotic Instruments in Hip Arthroplasty Surgery Based on Practical Tips a Systematic Review, Eurasian Journal of Chemical, Medicinal and Petroleum Research, 3 (2), 593-609

[25] Shojaei, M. (2024), CHAT-GPT and artificial intelligence in Medical Endocrine System and interventions, Eurasian Journal of Chemical, Medicinal and Petroleum Research, 3 (1), 197-209

[26] Shojaei, M. (2024), Alternative Systematic Review of Insulin Resistance and the Role of Sex Steroids on Leptin Levels, Eurasian Journal of Chemical, Medicinal and Petroleum Research, 3 (1), 296-306

[27] Rahimi, MJ. Et al., (2024), Diagnostic significance of neutrophil to lymphocyte ratio in recurrent aphthous stomatitis: a systematic review and Meta-analysis, Dermatology Practical & Conceptual, 14 (1), e2024046
[28] Hamed Rahmani Youshanouei, MA. et al., (2023), Mesenchymal Stem cells as a bright therapeutic strategy for SLE: A Comprehensive Review, NeuroQuantology, 21(5), 334-364
[29] Shariati, A. et al., (2022), Advancements In Mesenchymal Stem Cell Therapy For Stroke: Promising Clinical Outcomes And Potential Role Of Extracellular Vesicles: Journal of Pharmaceutical Negative Results ¦ Volume 13(08)
[30] Rezaei, M., (2022), Mesenchymal Stem Cell Therapy For Alzheimer's Disease: A Review Of Msc-Derived Extracellular Vesicles In Clinical And Preclinical Models, Journal of Pharmaceutical Negative Results, 13(09)
[31] Rahimi, MJ. (2024), Diagnostic significance of neutrophil to lymphocyte ratio in recurrent aphthous stomatitis: a systematic review and Meta-analysis: Dermatology Practical & Conceptual, 14(1): e2024046
[32] Ghaedi, A. (2024), Systematic review of the significance of neutrophil to lymphocyte ratio in anastomotic leak after gastrointestinal surgeries, BMC surgery, (24)
[33] Rahi, D. Abbassi, S. Tajbakhsh, N. (2024). Evaluation of Root Canal Morphology of Mandibular Bone Using Radiological Imaged a Systematic Review. Eurasian Journal of Chemical, Medicinal and Petroleum Research, 3(3), 993-1015.
[34] Rahi, D. Abbassi, S. Tajbakhsh, N. (2024). A systematic Review on Epidemiologic Study on Radiolucent lesions in Patients Referred to Radiology Departments. Eurasian Journal of Chemical, Medicinal and Petroleum Research, 3(3), 1016-1035.
[35] Vadiati Saberi B, Afravi M, Rahi D. (2022), The oral health status and oral hygiene practice of senior dental students: A cross-sectional study. Journal of Dentomaxillofacial Radiology, Pathology and Surgery. 11(1):1-6.
[36] Rahi, D. (2025), Comparative Analysis of Root Resorption and Alveolar Remodeling in Maxillary Incisors During Orthodontic-Orthographic Surgical Treatment of Skeletal Class III Malocclusion, SPC Journal of Medical and Healthcare, 6(2):1-10
[37] Rahi, D. (2025), Factors in Glancing prophylactic Extraction of Mandibular Third molars in orthodontic practice:A systematic study, SPC Journal of Medical and Healthcare,1(2):85-95
[38] Rahi, D. Tajbakhsh, N. Abbassi, S. (2024), Evaluation of Root Canal Morphology of Mandibular Bone Using Radiological Imaged a Systematic Review, Eurasian Journal of Chemical, Medicinal and Petroleum Research, 3(3): 993-1015.
[39] Hossein Moussavi Jahanabadi, SA. Et al., (2022), Examining the Principles of Oral and Dental Hygiene in Children and the Elderly with Burns and Facial Plastics Surgery: The Original Article: Tobacco Regulatory Science (TRS): 3198-3212
[40] Manifar, S. et al., (2021), The Prevalence of intubation induced dental complications among hospitalized patients. Journal of Dentomaxillofacial Radiology, Pathology and Surgery, 10(1):20-26.
[41] Jabbari Sendi, MJ. Vadiati Saberi, B. Rahi, D. (2022), Evaluation of microbial contamination of tooth brush and its related factors. Journal of Dentomaxillofacial Radiology, Pathology and Surgery, 11(2):7-13.
[42] Khami, MR. et al., (2022), A cross-sectional study on COVID-19-related changes in self-medication with antibiotics, Journal of PloS one, 17(6)
[43] Elmi, M. Zamani Esfahlani, (2025), Comparison of the Effects of Low-Dose versus Standard-Dose Intravenous Dexamethasone on Acute Pain during the First Six Hours after Laminectomy, Journal of Advanced in Medicinal, Pharmaceutical and Biomedical Research, 1, 154-160
[44] Shojaei, M. (2025), No personality differences between oral contraceptive users and naturally cycling women: Implications for research on sex hormones No personality differences, Journal of Advanced in Medicinal, Pharmaceutical and Biomedical Research, 1, 124-131
[45] NazarI, M. Akhlaghi, F. Pourfathi Nematabad, H. (2025), Comparison of Postoperative nausea and vomiting prevalence in patients with routine NPO and NPO with clear fluids 2 hours before cataract surgery, Journal of Advanced in Medicinal, Pharmaceutical and Biomedical Research, 1, 132-139
[46] Shojaei, M. (2025), The preliminary investigation of Orexigenic hormone gene polymorphisms on posttraumatic stress disorder symptoms, Journal of Advanced in Medicinal, Pharmaceutical and Biomedical Research, 1 (5), 140-146
[47] Elmi, A. Zamani Esfahlani, M. (2025), Estimation of the Contribution and Influence of Risk Factors in the Development of Postoperative Delirium Following Hip Arthroplasty in Elderly Patients Aged Over 65 Years, Journal of Advanced in Medicinal, Pharmaceutical and Biomedical Research, 1, 147-153
[48] Hashemloo, A. and Milanifard, M. (2025). Dermal Fillers: Types, Indications, and Complications Materials de Relleno: Typos, Indications Complications. Journal of Advanced in Medicinal, Pharmaceutical and Biomedical Research, 1(6), 161-170