

# A Scoping Review of the Role and Limitations of Surgical Versus Non-Surgical Management of Dentofacial Deformities

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Received: 2023-11-15

Accepted: 2023-12-18

Published Online: 2023-12-18

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## ABSTRACT

**Objectives:** The amount of dermal filler procedures is increasing. Some patients opt to undergo dermal fillers instead of orthognathic surgery to treat unesthetic complaints from dentofacial deformities. The aim of this work is to carry out a literature review with regard to a comparison of role and limitations between aesthetic indications of orthognathic surgery and dermal fillers.

**Methods:** A scoping review was performed according to the PRISMA-ScR guidelines on Pubmed, Web of Science and Google Scholar. A second search was conducted to highlight topics very close subjects to the main subject: the importance of social media and measures to avoid litigation in facial aesthetics.

**Results:** Literature on the subject is very rare. Clinical facial analysis is fundamental to both procedures. Although patients wishes are important issues, facial analysis cannot be neglected due to its objectivity. Body dysmorphic disorder is considered a contraindication for both procedures. Social media is important in patient decision-making, but should not influence treatment planning by experts. Preventing litigation or reducing financial and reputational damage can be accomplished with a few simple steps.

**Conclusions:** A helpful list of indications and particularly contraindications for orthognathic surgery and dermal fillers was drawn up. Dermal fillers must not substitute orthognathic surgery. Further studies are urgently needed to discuss this contemporary issue.

**Keywords:** Aesthetics; Dermal Fillers; Facial analysis; Orthognathic Surgery; Scoping Review

## INTRODUCTION

The attractiveness of the face is important to many people around the world. From experienced surgeons trough digital beauty influencers to many laypeople. Canons of proportionality and symmetry are keen on mankind for centuries [1]. Surgical and nonsurgical procedures are constantly evolving to achieve the “perfect face”; since the perfect face was attainable.

Orthognathic surgery, which used to be considered strictly functional surgery, plays an important role as an aesthetic intervention. Some articles report the search for orthognathic surgery as the main aesthetic procedure [2]. This can be explained by digital planning technology and the ability to more accurately simulation of the end results [3]. A non-surgical aesthetic

procedure is on the rise is winning the world, dermal fillers. The reversibility, low complication rate, efficacy and safety become dermal fillers one of the most frequently performed aesthetic procedures worldwide [4]. Due to financial and personal issues, dermal fillers substitute orthognathic surgery in some regions. Against this background some important questions arise: When should one or the other be selected? Personal opinion and experience are important or is there an algorithm in the selection? Depending on the patient's desire, is there any difference in selecting one of them?

The literature on the cosmetic refinement of orthognathic surgery is limited. Therefore, we conducted a scoping review comparing the aesthetic importance, indications and limitations of orthognathic surgery and dermal fillers. The purpose was to examine the extent, range and nature of the existing literature on the aesthetic field in order to summarize the results and to visualize the range of material available to date on the subject to date, in order to identify research gaps that further research could answer. An evidence-based protocol proposal for the optimal choice of each patient was performed.

## MATERIALS AND METHODS

This study has followed the PRISMA-ScR guidelines (Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews) for reporting scoping reviews [5]. Ethical approval and patient consent were not required because this article assess previously published studies. The PubMed, Web of Science (WS) and Google Scholar (GS) databases were searched using the following strategy: (“facial aesthetics” OR

“facial esthetics”) AND (orthognathic surgery OR dermal filler OR hyaluronic OR polycaprolactone OR hydroxyapatite) NOT review). Due to novelty of the dermal fillers topic, only articles from 2010 onwards were included. No restriction on language and country of origin were applied. Results were checked for duplicates, and titles, abstracts and full texts were evaluated to exclude irrelevant articles.

Inclusion criteria were (1) assessment of facial aesthetics, (2) clinical or tomographic analysis of the face, (3) orthognathic surgery, dermal fillers, or both. Exclusion criteria were (1) syndromic, cleft lip/palate or a head and neck pathology patients, (2) facial impairment due to trauma, (3) reviews, editorials, letters, commentaries, (4) poly-L-Lactic acid filling due to its non volumization properties, (5) comparison between first-surgery and conventional approaches, (6) orthodontic camouflage, (7) animal studies.

Two authors (RG and AMB) independently extracted data from each included study according to the selection criteria. Any disagreements between reviewers were mediated by a third author (MAB). The search was conducted through May 2022. Factors included in the analysis were: author, year of publication, country of origin, patient sample, type and region of filling, other cosmetic procedures involved. Studies on aesthetics with orthognathic surgery or dermal fillers to elucidate some questions on the topic. A second manual search was conducted to answer two key questions on this topic: the importance of social media in making facial cosmetic decisions and avoiding litigation.

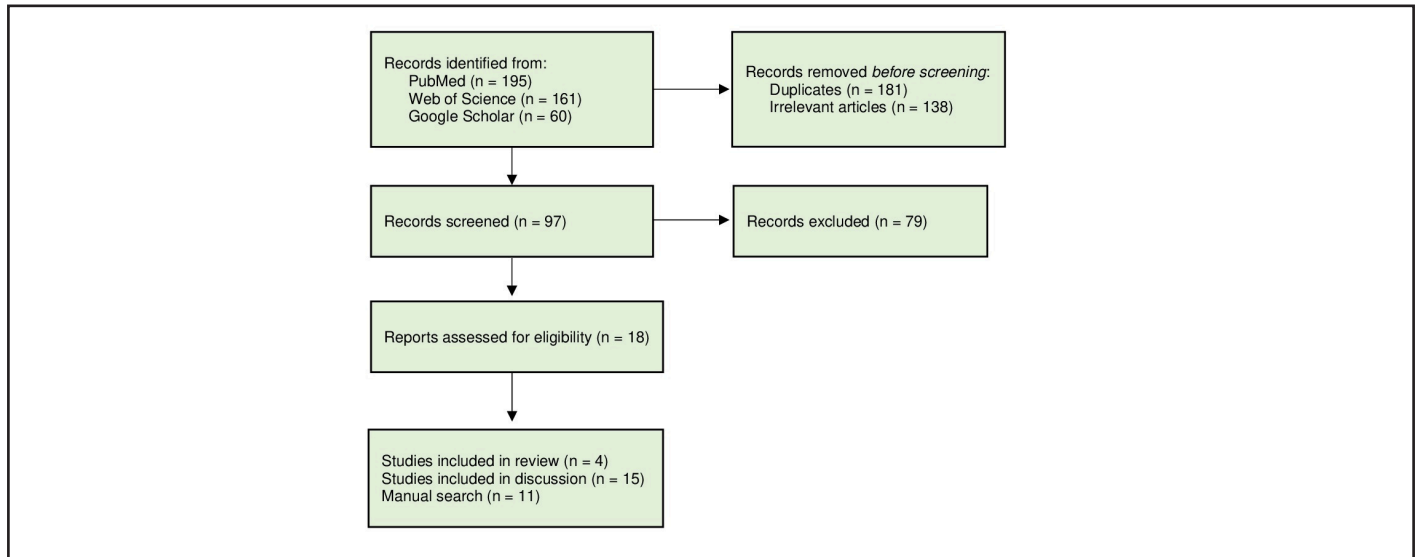
## RESULTS

Searching databases identified 416 articles, 319 of which were duplicate or irrelevant articles. All 97 articles were screened by title and abstract. The reviewers have identified only four articles that met the inclusion criteria in this review. Fifteen of these articles were added to highlight the discussion (Figure 1).

An Italian retrospective study by Raffaini et al [6], examined patient satisfaction with a secondary orthognathic surgery. Aesthetic results have been discussed and the authors report three basic steps to achieve them: patient selection, three-dimensional diagnostics and planning, as well as appropriate intra-operative maneuvers. It was recommended to use a test to detect body dysmorphic disorders. Lipofilling has been described as an excellent alternative to correct some minimal unaesthetic results after orthognathic surgery.

### Main Points;

- This review assesses aesthetic aspects, indications, and limitations of orthognathic surgery and dermal fillers, proposing an evidence-based protocol.
- Orthognathic surgery evolves for aesthetics; dermal fillers gain popularity. Limited literature prompts exploration; an algorithm for procedure selection is proposed.
- A personalized algorithm suggests choosing between procedures based on facial concerns, emphasizing individualized planning and patient preferences.
- Beyond procedures, the review addresses social media impact, psychological assessments, litigation concerns, and the need for further research on refining facial aesthetics.



**Figure 1.** Flowchart of included studies

In a case report by Dall’Magro et al, [7] the authors affirm the importance of multidisciplinary functional and aesthetic outcomes achieved through orthognathic surgery combined with dermal fillers. The same was reported by Wollina and Goldman [8] who discussed lip filling after orthognathic surgery.

Grillo et al [9] in a 2022 case series involving three patients undergoing orthognathic surgery, discuss the need for aesthetic refinement in some cases. Although the functional outcomes of orthognathic surgery is an important goal, aesthetic concerns should not be neglected. Maxillofacial surgeons should understand the importance and must use or recommend botulinum toxin, dermal fillers and facial threads to achieve greater patient satisfaction. Table 1 summarizes these articles.

Fifteen articles from the first search related to the topic have been added. Seven studies [10–16] discussing the importance of the esthetic indication in orthognathic surgery were included. Despite

the functionality of orthognathic surgery, the aesthetic impact on the patient’s quality of life must not be ignored. Six studies reporting facial reshaping using dermal fillers and cosmetic outcomes of this procedure were included [17–22]. Three studies have discussed alloplastic implants to improve facial aesthetics [20,23,24]. There are several articles associating dermal fillers to rejuvenation, but very few refer to the improvement of cosmetic surgical procedures, particularly orthognathic surgery.

A second search added two update questions on facial aesthetics. First, patient searches on social media to gather information about these two procedures [18,25–29]. The strategy used was the following: ((orthognathic OR dermal filler) AND social media). Secondly, the prevention of litigation related to orthognathic surgery and non-surgical cosmetic procedures using written consent [10,30–35]. The strategy used was the following: ((orthognathic OR dermal filler) AND litigation).

**Table 1.** Orthognathic surgery and dermal fillers refinement included articles.

Reference	Origin	Type of Study	Patient Sample	Type of Filling	Region Filling	Other Procedures
Dall’Magro et al, 2021	Brazil	case report	1	HA	Lip	bichectomy, gingival plastic surgery, tooth bleaching
Raffaini et al, 2018	Italy	retrospective study	70	fat	Face	
Grillo et al, 2022	Brazil	case series	3	HA	Lip	botulinum toxin, facial threads
Wollina, Goldman, 2017	Germany	case series	3	HA	Lip	botulinum toxin

Legend: HA: hyaluronic acid

**DISCUSSION**

Rustemeyer et al. [10] released a very important statement on facial cosmetic procedures. Although judging facial beauty is subjective, judging facial proportions is objective. Despite massive differences in cultural and ethnic features worldwide, facial harmony is a cornerstone [12,14,16,22,23,36,37]. Clinical facial analyses, complemented by imaging studies, are basilar to achieve a more proportionate face and achieve a more attractive face, without leaving aside functional outcomes [10,14].

Orthognathic surgery is responsible for enhanced aesthetic and functional outcomes [12,15]. It is considered a very unique surgery since as it achieves an amazing balance between hard and soft facial tissues [13]. Patients reports quality of life, satisfaction and self-confidence could reaching a level never imagined by their own. Sinko et al [12] reported that Class III patients look smarter after orthognathic surgery. In the case of unaesthetic complaints, a reoperative orthognathic surgery must be very evaluated very carefully. The second orthognathic surgery is usually more difficult and more extensive, increasing the risk of a poor outcome and achieving the desired results [6].

In the case of unaesthetic defects and functionally positive results, a facial filling must be used [6,7]. Some indications for dermal fillers on cosmetic refinement include facial reshaping, volume restoration and increase of symmetry [7,9,17–19,22]. Overuse of dermal fillers should be avoided, which could lead to unsatisfactory effects [19,21,38]. Although the volume of fillers is low, there is no algorithm that follows the anatomic region and the amount of fillers used. Despite this affirmation, lip filling is a popular non-surgical procedure associated with orthognathic surgery [7–9]. It adds volume to the lips, eliminates flatness, and enables for a more pleasing facial profile. The relationship between the size of the lips and the chin in profile view can be used as a guide [21]. Extremely caution must be taken into the nasolabial and paranasal regions aesthetic planning and treatment because of their importance in overall facial aesthetics [11,14–16,20,23,36]. For larger volumes, procedures other than dermal fillers such as alloplastic implants must be discussed and planned with the patient [20,23]. There is no magic formula, each treatment must be individually planned and tailored [7,10,22].

Important issues relate to the costs and the need for constant repetition of the procedure due to its long duration [20,24]. Although dermal filling is considered a safe and effective procedure [8], patients must make the choice to have this

procedure based on a few factors including cost, duration, and expectations. A paramount issue when it comes to orthognathic surgery and dermal fillers is digital planning. While virtual planning on orthognathic surgery is a feasible and common step with a high accuracy rate, dermal filling still lacks software with the same accuracy and predictability.

Orthognathic surgery is a viable procedure to achieve aesthetic results, but refinement can enhance these results, leading to higher patient satisfaction. Unusual orthognathic surgical steps could be added to achieve better facial aesthetics, such as malarplasty, mandibular angle reduction and corticectomy [13]. Several aesthetic procedures can be combined synergistically with orthognathic surgery to improve the end result, such as botulinum toxin, facial threads, filling, bichectomy, liposuction, and alloplastic implants [9–11,18,23,24,37]. An algorithm regarding indications and contraindications for both procedures was proposed according to the existing literature on the subject (Table 2).

**Table 2.** Indications and contraindications for orthognathic surgery and dermal fillers due to aesthetic discomfort

	<b>Indications</b>	<b>Contraindications</b>
<b>Orthognathic surgery</b>	<ul style="list-style-type: none"> <li>- skeletal discrepancies</li> <li>- functional concerns (i.e. chewing, breathing, speaking, obstructive sleep apnea)</li> <li>- massive aesthetic complains</li> <li>- oblique and sagittal smiling profile alterations</li> </ul>	<ul style="list-style-type: none"> <li>- body dysmorphic disorders</li> <li>- poor residual aesthetic outcomes (reoperation)</li> </ul>
<b>Dermal fillers</b>	<ul style="list-style-type: none"> <li>- rejuvenation</li> <li>- facial reshaping without functional issues</li> <li>- poor residual aesthetic outcomes on orthognathic surgery (reoperation)</li> </ul>	<ul style="list-style-type: none"> <li>- body dysmorphic disorders</li> <li>- midfacial augmentation</li> <li>- mandibular prognathism</li> <li>- maxillary protrusion</li> <li>- functional concerns</li> </ul>

The assessment of psychological features must be mandatory in cases of suspicion. Body dysmorphic disorder is associated with up to 15% of patients requiring a reoperative aesthetic treatment [6,10] and orthognathic surgery as dermal fillers need to be incorporated into this list. Cases of heightened aesthetic concerns, repetitive behaviors, camouflage, functional impairment, and other psychological comorbidities should undergo a mental

health evaluation before any cosmetic treatment [6,10].

The impact of social media on the decision to undergo cosmetic procedure is increasing, independently of orthognathic surgery [6,10,25–28] or dermal fillers [18,29]. This internet material is considered to be of poor quality and lacking in information [26,28,29]. Despite some social media groups on this topic encourage patients, they should not influence the planning and treatment carried out by professionals, which could lead to an increase in orthognathic reoperations [27,28].

The patient's aesthetic dissatisfaction is a factor that causes some discomfort but does not constitute malpractice [30]. Professionals may face litigation if patients have not signed appropriate written consent [31,32]. Cultural adjustments with written consent are recommended, as cultural patterns lead to disobedient behaviors [33,39]. Tailored written consent could be crucial to avoiding litigation or preventing major financial harm due to significant cultural differences [34,35,39].

Although several articles on orthognathic surgery have discussed facial aesthetics, very few are related to cosmetic refinement of orthognathic surgery, regardless of the procedure used. There is a lack of available evidence on the topic. Further studies using dermal fillers to improve facial aesthetics after orthognathic surgery are needed. Patient satisfaction, mental health assessments and indications for these adjunct procedures need to be evaluated.

## CONCLUSIONS

A proposed algorithm for choosing between these two procedures could help maxillofacial surgeons, especially with contraindications for each procedure. Dermal fillers must not be overused to solve cosmetic and notably functional questions only for reasons of greater technical viability. Orthognathic surgery must be relentlessly discussed with the patients as one of the most feasible options to achieve facial harmonization. Further studies evaluating the association between orthognathic surgery and dermal fillers refinement are needed.

**Funding:** No source of funding

**Competing interests:** Authors declare that they have no conflicts of interest to disclose.

**Ethical approval:** Not applicable.

**Author's contribution:** All authors contributed equally to this manuscript, with substantial contributions to conception and design, acquisition of data, or analysis and interpretation of data. All authors drafted and critically revised the content. All authors read and approved the final version of the manuscript.

## REFERENCES

- [1] Bashour M (2006) History and current concepts in the analysis of facial attractiveness. *Plastic and Reconstructive Surgery*. 118:741–56. <https://doi.org/10.1097/01.prs.0000233051.61512.65>
- [2] Mugnier J, Ibrahim B, Bouletreau P, Sigaux N (2020). The influence of orthognathic surgery on the perception of personality traits: A scoping review. *Int J Oral Maxillofac Surg*. 49:1294–302. <https://doi.org/10.1016/j.ijom.2020.03.017>
- [3] Xia J, Ip H, Samman N, Wang D, Kot C, Yeung R, et al. (2000) Computer-assisted three-dimensional surgical planning and simulation: 3D virtual osteotomy. *Int J Oral Maxillofac Surg*. 29:11–7.
- [4] Liu MH, Beynet DP, Gharavi NM (2019) Overview of Deep Dermal Fillers. *Facial Plast Surg*. 35:224–9. <https://doi.org/10.1055/s-0039-1688843>
- [5] Tricco AC, Lillie E, Zarin W, O'Brien KK, Colquhoun H, Levac D, et al. (2018) PRISMA extension for scoping reviews (PRISMA-ScR): Checklist and explanation. *Annals Internal Med*. 169:467–73. <https://doi.org/10.7326/M18-0850>
- [6] Raffaini M, Pisani C, Conti M (2018) Orthognathic surgery “again” to correct aesthetic failure of primary surgery: Report on outcomes and patient satisfaction in 70 consecutive cases. *J Craniomaxillofac Surg*. 46:1069–78. <https://doi.org/10.1016/j.jcms.2017.09.026>
- [7] Dall'Magro AK, Dogenski LC, Dall'Magro E, Figur NS, Trentin MS, De Carli JP (2021) Orthognathic surgery and orthodontics associated with orofacial harmonization: Case report. *Int J Surg Case Rep*. 83:106013. <https://doi.org/10.1016/j.ijscr.2021.106013>
- [8] Wollina U, Goldman A. Botulinum toxin A and/or soft tissue fillers for facial rehabilitation. *Wien Med Wochenschr*.

- 2017;167:92–5. <https://doi.org/10.1007/s10354-016-0512-8>
- [9] Grillo R, Borba AM, Lima APCB, Pitta MC, Veronesi R, Jodas CRP. Use of non-surgical aesthetic refinement after orthognathic surgery: Case studies. *J Taibah Univ Med Sci.* 2022;17:320–5. <https://doi.org/10.1016/j.jtumed.2021.08.006>
- [10] Rustemeyer J, Eke Z, Bremerich A. Perception of improvement after orthognathic surgery: The important variables affecting patient satisfaction. *Oral Maxillofac Surg.* 2010;14:155–62. <https://doi.org/10.1007/s10006-010-0212-2>
- [11] Rauso R, Tartaro G, Tozzi U, Colella G, Santagata M. Nasolabial changes after maxillary advancement. *J Craniofac Surg.* 2011;22:809–12. <https://doi.org/10.1097/SCS.0b013e31820f3663>
- [12] Sinko K, Jagsch R, Benes B, Millesi G, Fischmeister F, Ewers R. Facial aesthetics and the assignment of personality traits before and after orthognathic surgery. *Int J Oral Maxillofac Surg.* 2012;41:469–76. <https://doi.org/10.1016/j.ijom.2011.10.026>
- [13] Choi JY, Lee SH, Baek SH. Effects of facial hard tissue surgery on facial aesthetics: Changes in facial content and frames. *J Craniofac Surg.* 2012;23:1683–6. <https://doi.org/10.1097/SCS.0b013e3182670009>
- [14] Faverani L, Ramalho-Ferreira G, Jardim E, Goiato M, Pereira F, Pastori C, et al. Controversies in the Satisfaction of Surgeons and Orthodontists on Facial Aesthetics after Orthognathic Surgery. *Craniofac Trauma Reconstr.* 2013;6:43–8. <https://doi.org/10.1055/s-0032-1332209>
- [15] Islam S, Aleem F, Ormiston IW. Subjective assessment of facial aesthetics after maxillofacial orthognathic surgery for obstructive sleep apnoea. *Brit J Oral Maxillofac Surg.* 2015;53:235–8. <https://doi.org/10.1016/j.bjoms.2014.11.018>
- [16] Ghorbani F, Gheibollahi H, Tavanafar S, Eftekharian HR. Improvement of Esthetic, Functional, and Social Well-Being After Orthognathic Surgical Intervention: A Sampling of Postsurgical Patients Over a 10-Year Period From 2007 to 2017. *J Oral Maxillofac Surg.* 2018;76:2398–403. <https://doi.org/10.1016/j.joms.2018.04.034>
- [17] Iorio ML, Stolle E, Brown BJ, Christian CB, Baker SB. Plastic surgery training: Evaluating patient satisfaction with facial fillers in a resident clinic. *Aesth Plast Surg.* 2012;36:1361–6. <https://doi.org/10.1007/s00266-012-9973-3>
- [18] Muhn C, Rosen N, Solish N, Bertucci V, Lupin M, Dansereau A, et al. The evolving role of hyaluronic acid fillers for facial volume restoration and contouring: a Canadian overview. *Clin Cosmet Investig Dermatol.* 2012;5:147–58. <https://doi.org/10.2147/CCID.S30794>
- [19] Fagien S, Cassuto D. Reconstituted injectable hyaluronic acid: Expanded applications in facial aesthetics and additional thoughts on the mechanism of action in cosmetic medicine. *Plast Reconstr Surg.* 2012;130:208–17. <https://doi.org/10.1097/PRS.0b013e318254b3f6>
- [20] Dhir K, Binder W. Solid midfacial implants: When fillers are not enough. *Facial Plast Surg.* 2016;32:480–7. <https://doi.org/10.1055/s-0036-1587596>
- [21] De Maio M, Wu WTL, Goodman GJ, Monheit G. Facial assessment and injection guide for botulinum toxin and injectable hyaluronic acid fillers: Focus on the lower face. *Plast Reconstr Surg.* 2017;140:393E-404E. <https://doi.org/10.1097/PRS.0000000000003646>
- [22] Farolch-Prats L, Nome-Chamorro C. Facial Contouring by Using Dermal Fillers and Botulinum Toxin A: A Practical Approach. *Aesthetic Plast Surg.* 2019;43:793–802. <https://doi.org/10.1007/s00266-019-01361-1>
- [23] Da Silva De Menezes JD, Moura LB, Martins RP, Hochuli-Vieira E. Porous polyethylene implant as aesthetic complement in orthognathic surgery. *J Craniofac Surg.* 2016;27:E790–1. <https://doi.org/10.1097/SCS.0000000000003131>
- [24] Lutz JC, Assouline Vitale LS, Graillon N, Foletti JM, Schouman T. Standard and Customized Alloplastic Facial Implants Refining Orthognathic Surgery: Outcome Evaluation. *J Oral Maxillofac Surg.* 2020;78:1832.e1-1832.e12. <https://doi.org/10.1016/j.joms.2020.05.009>
- [25] Patel R, Tseng CC, Choudhry HS, Lemdani MS, Talmor G, Paskhover B. Applying Machine Learning to Determine Popular Patient Questions About Mentoplasty on Social Media. *Aesth Plast Surg.* 2022;46:2273-2279. <https://doi.org/10.1007/s00266-022-02273-2>

- [org/10.1007/s00266-022-02808-8](https://doi.org/10.1007/s00266-022-02808-8)
- [26] Hegarty E, Campbell C, Grammatopoulos E, DiBiase AT, Sherriff M, Cobourne MT. YouTube™ as an information resource for orthognathic surgery. *J Orthod.* 2017;44:90–6. <https://doi.org/10.1080/14653125.2017.1319010>
- [27] Coleman O, Walker TWM, Kerai A, Van Der Valk R, Thomas SJ. #JawSurgery: Analysis of social media use in orthognathic surgery patients. *Brit Dent J.* 2018;224:638–4. <https://doi.org/10.1038/sj.bdj.2018.266>
- [28] Buyuk SK, Imamoglu T (2019) Instagram as a social media tool about orthognathic surgery. *Health Prom Perspect.* 9:319–22. <https://doi.org/10.15171/hpp.2019.44>
- [29] Patel AA, Mulvihill L, Jin A, Patel A, Galiano RD (2022) Websites or Videos: Which Offer Better Information for Patients? A Comparative Analysis of the Quality of YouTube Videos and Websites for Cosmetic Injectables. *Plastic Reconst Surg.* 149:596–606. <https://doi.org/10.1097/PRS.00000000000008827>
- [30] Kwon JW, Park BY, Kang SR, Hong SE (2017) Analysis of the legal effect of settlement agreements prepared in medical litigation following plastic surgery in Korea. *Arch Plast Surg.* 44:283–92. <https://doi.org/10.5999/aps.2017.44.4.283>
- [31] Arlette JP, Froese AL, Singh JK (2021) Soft Tissue Filler Therapy and Informed Consent—A Canadian Review. *J Cutaneous Med Surg.* 26:50–56. <https://doi.org/10.1177/12034754211032542>.
- [32] Tsui J (2020) Strategy for starting BoNT treatment (written consent, initial dose and subsequent doses, interval, follow-up). *Toxicon.* 176:44–6. <https://doi.org/10.1016/j.toxicon.2020.01.014>
- [33] Strandås M, Wackerhausen S, Bondas T (2019) Gaming the system to care for patients: a focused ethnography in Norwegian public home care. *BMC Health Serv Res.* 19:121. <https://doi.org/10.1186/s12913-019-3950-3>
- [34] Ruiz-Casares M (2014) Research ethics in global mental health: Advancing culturally responsive mental health research. *Transcult Psychiatry.* 51:790–805. <https://doi.org/10.1177/1363461514527491>
- [35] Ruiz-Casares M (2014) Mental health: Tailor informed-consent processes. *Nature.* 513:304–304. <https://doi.org/10.1038/513304a>
- [36] O’Ryan F, Lassetter J (2011) Optimizing facial esthetics in the orthognathic surgery patient. *J Oral Maxillofac Surg.* 69:702–15. <https://doi.org/10.1016/j.joms.2010.11.012>
- [37] Grillo R, de la Puente Dongo JL, Moreira L de M, dos Santos Queiroz AG, Teixeira RG (2022) Effectiveness of bandage in the incidence of major complications on bichectomy: literature review and case series of 643 bichectomies. *Oral Maxillofac Surg.* 26:511–7. <https://doi.org/10.1007/s10006-021-01008-z>
- [38] Grillo R (2021) Bibliometric trending analysis of complications related to facial non-surgical aesthetic procedures: a retrospective study. *Prosthodontics.* 71:228–33. <https://doi.org/10.5114/ps/140080>
- [39] Grillo R, Brozoski MA, Naclério-Homem M da G (2023) The importance of written informed consent in facial cosmetic surgery litigation. *J Craniomaxillofac Surg.* 51:403–6. <https://doi.org/10.1016/j.jcms.2023.08.007>

#### *How to Cite;*

Grillo R, Meireles Borba A, Slusarenko da Silva Y, Aparecida Brozoski, M (2024). A Scoping Review of the Role and Limitations of Surgical Versus Non-Surgical Management of Dentofacial Deformities. *Eur J Ther.* 30(1):75-81. <https://doi.org/10.58600/eurjther1933>