

# Ophthalmic Complications Following Facial Autologous Fat Graft Injection: A Systematic Review and Meta-Analysis

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- Authors declare no conflict of interest.



# Introduction

- With the recent increase in interest in using autologous fat (AF) filler injections to enhance aesthetic facial appearance, there is a noticeable increase in the complications such as vascular compromise and blindness.



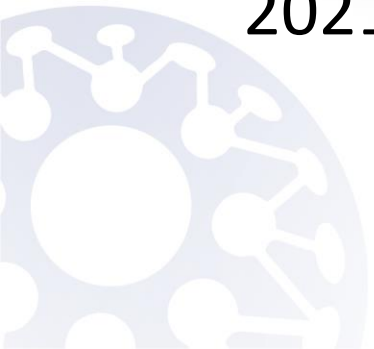
# Aim

- This systematic review and meta-analysis **aim** to provide a more comprehensive recognition of the most frequent symptomatology of ophthalmic complications related to AF facial injections for cosmetic purposes and to understand the underlying etiology, management options, and outcomes reported after developing such complications.



# Methods

- This review was conducted according to the International Prospective Register of Systematic Reviews (PROSPERO) guidelines.
- We performed a systematic review of available literature using the following electronic databases: Cochrane, MEDLINE, and EMBASE.
- Our search was limited to the published studies between 2000 and 2021.



# Methods: Study Selection

- All included studies in our systematic review met the following criteria:
  1. Published between January 2000 and November 2021
  2. Studies of the following study designs (RCT, case–control, cohort studies, case reports, or case series)
  3. Adult population ([18 years old)
  4. Patients undergoing injections to any of the following: nose (nasal bridge, root, dorsum, and tip), scalp, temple area, forehead, glabella, eyebrows, periorbital, periocular, midface, cheek, chin, jawline, and lips
  5. Reported the outcome of any of the following: blindness, blurry vision, ptosis, orbital pain, diplopia, ophthalmoplegia, and dryness
  6. Injection of autologous fat graft
  7. Studies were in English.

# Results

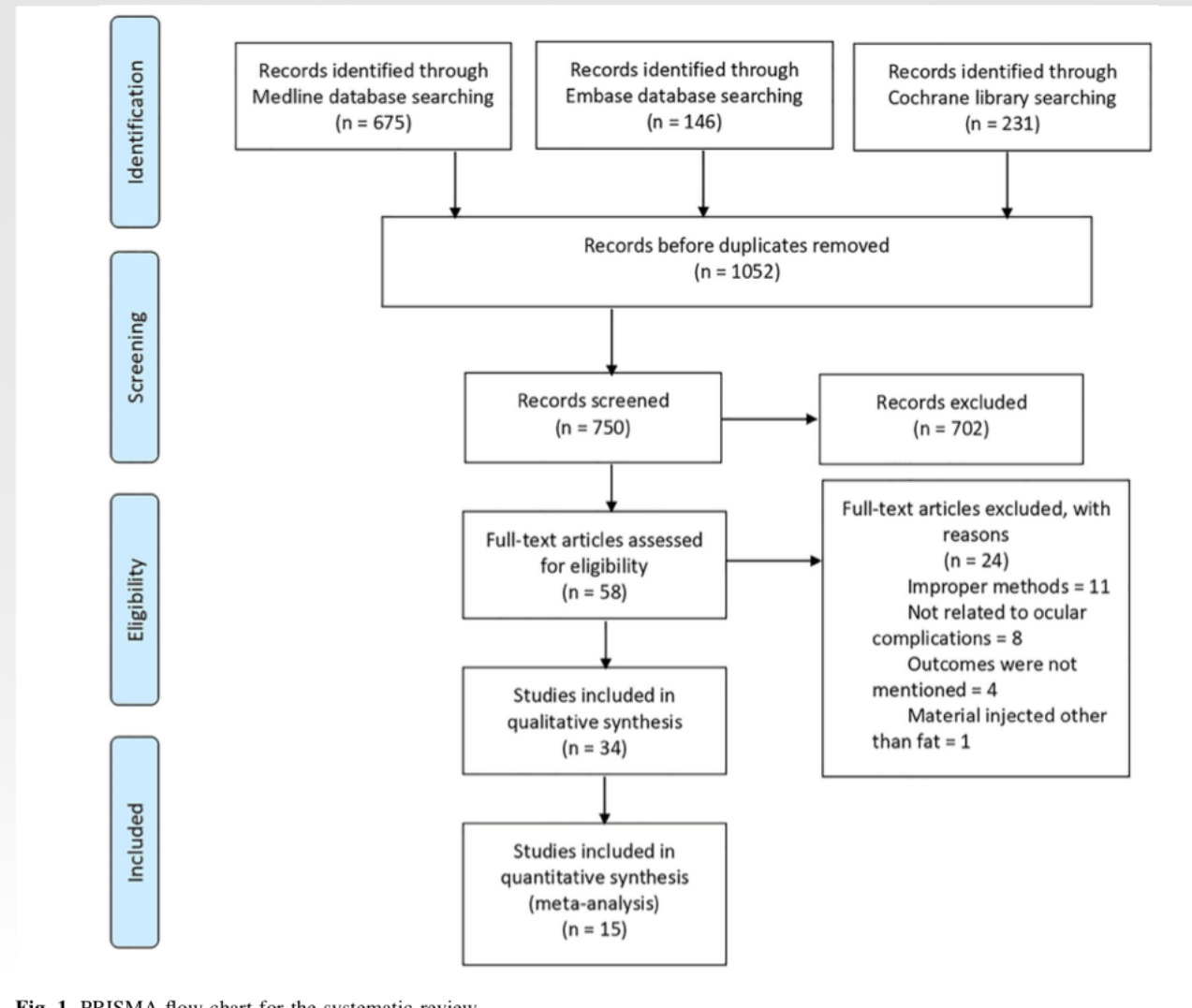


Fig. 1 PRISMA flow chart for the systematic review

# Results

- Twenty case reports, two case series, one prospective cohort study, and eleven retrospective studies were evaluated.
- The majority of the studies were conducted in Korea (n = 15) followed by China (n = 8).





# Results

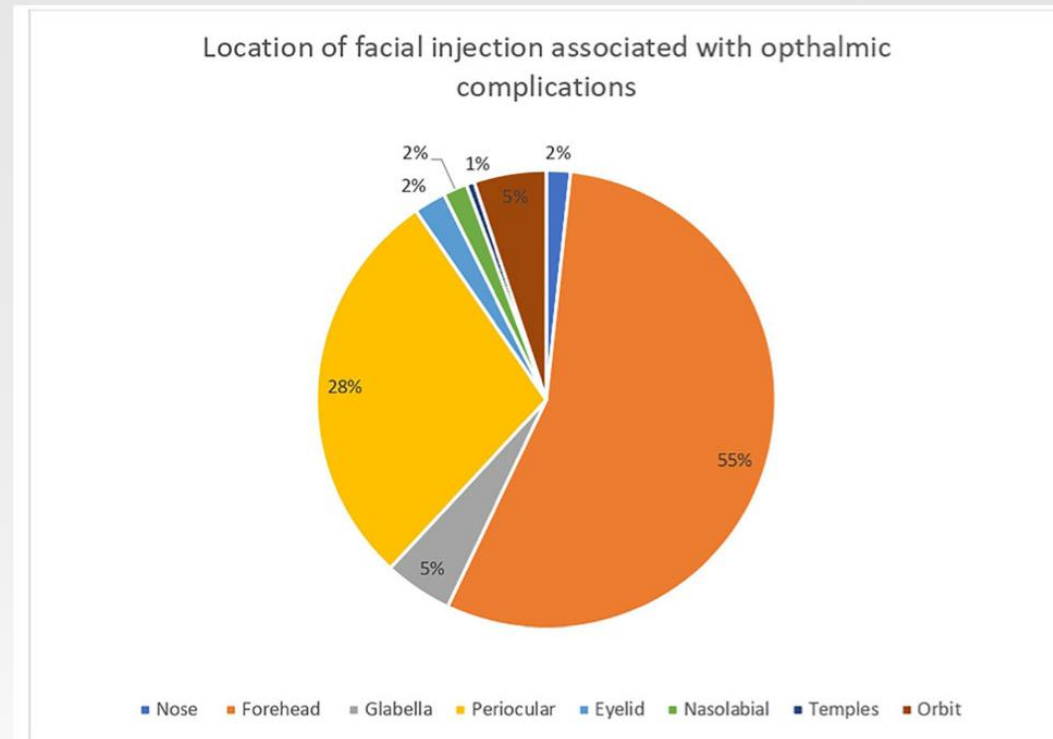
- Out of the 561 patients, the majority were female (n = 331; 59%).
- Age range (19 – 65) years.
- Fourteen published papers mentioned the specialty of the injecting physician, of which the majority were by a plastic surgeon (n = 404), followed by an oculoplastic surgeon (n = 4).



- A single anatomical area was chosen as the injection site in a majority of the patients (n = 354, 65.43%).
- For some of the studies, two or more anatomical regions were chosen (n = 187, 34.56%).



# Results: Study Characteristics Related to the Studies



**Fig. 2** Patients post AF injection complication distributed by anatomical area

# Results: Complications

- In regard to patients who received fat injection in two or more anatomical regions, the forehead and temple area were the sites most commonly associated with complications (n = 177, 94.65%).
- When the AF injection is used in the lower face, such as the lip, chin, or jawline, there have never been any reports of ophthalmic problems.



		N (%)
The interval time between the injection and initial symptom	Immediate symptoms	33 (12.74)
	3 and 14 days	167 (64.47)
	2–12 months	38 (7.18)
Management	No intervention	278 (51.38)
	Oral antibiotics and NSAIDs	168 (31)
Outcome	Complete improvement	423 (80.57)
	No improvement	33 (6.34)

# Meta-Analysis: Characteristics of Studies and Patients in the

- We included studies that included two patients or more.
- Accordingly, 15 studies that recruited 547 patients were analyzed



# Meta-Analysis: Characteristics of Studies and Patients in the

- Initial Symptoms

<b>Periorbital swelling</b>	<b>92.7%</b>
Visual loss	72.8%
Ptosis	48.8%
Ocular Pain	34.9%



# AF Injection-Related Complications

- Based on the existing evidence, we found that the pooled overall prevalence of:
  - Ophthalmic artery occlusion was 50.4%
  - Central retinal artery occlusion occurred in 29.1% of patients.





# Limitations

- None of the included studies were randomized clinical trials
- Omitted data on variables might potentially affect the development of ophthalmic complications ( amount of material injected, rate of injection, and the characteristics of the injecting instruments).
- Generalizability of the results to non-Asian populations might be difficult as most of the articles originated from South Korea and China.

# Conclusion

- All the included articles in this review reported ophthalmic complications almost exclusively after injections to the upper and middle parts of the face.
- Most patients managed conservatively in our analysis and had visual improvement after developing symptoms, but this can be attributed to periorbital swelling being the most frequent complication.
- None of the treatment modalities used in the reviewed cases to manage vision loss was associated with an improved overall outcome.



Thank you

