Feb 26, 2021

Efficacy, safety and complications of autologous fat grafting to the eyelids and periorbital area: A systematic review and meta-analysis

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1 Works for me dx.doi.org/10.17504/protocols.io.bstqnemw

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ABSTRACT

Background: In recent years, autologous fat grafting (AFG), also known as fat transfer or lipofilling, has been widely performed for periorbital rejuvenation and defect correction, although the evidence regarding its efficacy and safety is still lacking. Besides, with respect to the periorbital region, it is invariably the earliest appearance area of the facial aging phenomenon. Therefore, a systematic review and meta-analysis is needed to evaluate the efficacy and safety of this technique.

Methods: A literature search was performed in PubMed, Embase, and the Cochrane library databases on November 11, 2020, adhering to the PRISMA guidelines, to identify all relevant articles. Then, a data extraction and standardization process was performed to assess all outcome data. Ultimately, the data were assessed using a random effects regression model with comprehensive meta-analysis software.

Results: Thirty-six studies consisting of four cohorts and 32 case series with a total of 3997 cases were included. The mean follow-up was 1.5 years. Meta-analysis revealed a relatively high satisfaction rate of 93.7% (95% CI, 89.6%–96.2%). Frequent complications in 3997 patients receiving AFG were edema, chemosis, and contour irregularity, with an overall complication rate of 7.7% (95% CI, 4.3%–13.3%).

Conclusion: This systematic review and meta-analysis showed that AFG for rejuvenation of eyelids and periorbital area provided a high satisfaction rate and did not result in severe complications. Therefore, AFG might be performed safely for periorbital rejuvenation and reconstruction.

THIS PROTOCOL ACCOMPANIES THE FOLLOWING PUBLICATION

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DOI

dx.doi.org/10.17504/protocols.io.bstqnemw

PROTOCOL CITATION

Fan Yang 2021. Efficacy, safety and complications of autologous fat grafting to the eyelids and periorbital area: A systematic review and meta-analysis. **protocols.io** https://dx.doi.org/10.17504/protocols.io.bstqnemw

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Citation: Fan Yang (02/26/2021). Efficacy, safety and complications of autologous fat grafting to the eyelids and periorbital area: A systematic review and meta-analysis. https://dx.doi.org/10.17504/protocols.io.bstqnemw

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KEYWORDS

Eyelid, Periorbital area, Fat grafting, Adipose-derived stem cell, Facial rejuvenation

CREATED

Feb 26, 2021

LAST MODIFIED

Feb 26, 2021

PROTOCOL INTEGER ID

47696

GUIDELINES

The protocol was written according to the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA)

MATERIALS TEXT

Search strategy

The research objectives were to identify, assess, and synthesize the evidence examining the efficacy and safety of AFG in the periocular area. This review was performed in accordance with the PRISMA guidelines. This comprehensive, reproducible, and electronic search was performed via the combination of PubMed, Embase, and Cochrane Library databases. The following keywords were used: [("fat grafting" OR "lipograft" OR "lipoinjection" OR "lipotransfer" OR "fat transfer" OR "fat transplant" OR "lipostructure" OR "lipofilling" OR "fat injection" OR "lipomodeling" OR "fat transplantation") AND ("eyelid" OR "periocular")]. A systematic database search was carried out before November 11, 2020. There were no restrictions with respect to language.

Inclusion and exclusion criteria

Selected studies met the following criteria: (1) clinical trials of all designs, from the highest level of evidence from randomized trials (if available) to prospective or retrospective observational studies (case series: at least five cases) involving patients receiving AFG for periorbital rejuvenation and reconstruction; (2) the treatment used for periorbital rejuvenation and reconstruction was stated clearly; (3) the study stated the concrete data of postoperative effects; (4) studies with complete follow-up (at least 3 months). Exclusion criteria were as follows: (1) patients with a history of other eyelid surgery or treatment; (2) reviews, letters, commentaries, reply, discussion, and so on; (3) studies with incomplete or ambiguous or overlapped data; (4) studies not related to the objective of this review.

Data collection

Two independent reviewers scrutinized the titles, abstracts, and full text of the retrieved articles. If there was any disagreement between the two reviewers, another independent investigator was consulted to reach a consensus. Moreover, a blinded method was used to ensure quality. Data extracted from the eligible articles included the following parts: authors, date of publication, place of study, number of patients, ages of patients, indications, AFG techniques, follow-up time, study design, evidence level, complications, anesthetic evaluation, and satisfaction rates. Then a data extraction sheet was set in Excel (Microsoft, Redmond, Washington, USA). Additionally, each article was assessed for the risk of bias in accordance with the methodological standards listed in the non-comparative case series checklist (for case series) and Ottawa-Newcastle Scale (for cohort studies), respectively (https://www.ncbi.nlm.nih.gov/books/NBK35156/) (Table S1, Table S2).

DISCLAIMER:

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1 We will search the PubMed, Cochrane library, and Embase databases for articles published prior to November 11, 2020.

2 We will scrutinize the titles, abstracts, and full text of the retrieved articles and screen out articles that do not meet the inclusion and exclusion criteria.

3 We will perform meta-analysis by a comprehensive meta-analysis software (CMA), version 2.2.050 (Biostat, Englewood, NJ, USA). A random-effects meta-analysis will be conducted to analyze all the evidence.

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