A systematic review of autologous fat transfer for breast augmentation

Authors' objectives
To assess the literature on the procedure of autologous fat transfer (AFT) for breast augmentation, and to make recommendations on the safety and efficacy of the technique compared with saline and cohesive silicone gel implants.

Searching
MEDLINE, EMBASE, HealthSTAR, Current Contents and the Cochrane Library were searched; the search terms were provided. Papers in any language were considered, but priority was given to those reported in English.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs) and controlled clinical trials were eligible for the review. Case series and case reports on AFT were also eligible, as were case series from multicentre trials on saline and cohesive silicone gel implants. Conference material, letters, comments and discussions were included as background papers.

Specific interventions included in the review
Surgery involving AFT for breast augmentation compared with saline or cohesive silicone gel implants were the interventions of interest. Hydrogel implants, tissue expanders, inflatable implants and silicone gel implants were not considered.

Participants included in the review
Studies performed in humans and animals were eligible for the review. The participants had to be undergoing breast augmentation for aesthetic reasons.

Outcomes assessed in the review
The review considered mortality and morbidity rates, mammographic issues, and psychosocial effects including patient satisfaction. The effectiveness of the enhancement was also studied using measures of fat reabsorption, scarring and durability of enhancement. Further outcomes considered were the cost-effectiveness and the failure of operations.

The review presented data on the mortality and morbidity rates, all reported complications after treatment, capsule formation, deflation in implants, reoperation rate and radiological measures. The efficacy demonstrated in the included studies was reported in terms of breast enhancement measures and patient satisfaction measures.

How were decisions on the relevance of primary studies made?
According to the authors, reasons had to be given for excluding studies. Other than that, the authors did not state how the papers were selected for the review, or how many reviewers performed the selection.

Assessment of study quality
The experimental methods, i.e. exclusion criteria, quality of reporting and possible confounding variables, were evaluated and placed in a hierarchy of evidence. The authors did not state how the papers were assessed for validity, or how many reviewers performed the validity assessment.

Data extraction
The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction.
Methods of synthesis

How were the studies combined?
The results of the studies were tabulated and synthesised narratively in the text.

How were differences between studies investigated?
Differences between the study results were highlighted in the text, but they do not seem to have been investigated systematically.

Results of the review

Sixteen studies, providing data from at least 6,775 patients (one study did not report the number of participants), met the inclusion criteria. Of these studies, 15 were graded as evidence level IV (case series, post-test or pre-test post-test); only one multicentre cohort study was graded higher (level III-3). Eight studies were case reports.

None of the included studies compared fat injection directly with other techniques for breast augmentation. Three available case series suggested that 20 to 100% of the injected fat was reabsorbed. According to the authors, there were little data available to assess the safety of the procedure and a comparison with saline implants was not possible.

Authors' conclusions

The evidence base for AFT for breast augmentation was poor and, therefore, safety and efficacy could not be determined.

CRD commentary

This was a review that retrieved little evidence for formulating any conclusions on the safety and efficacy of AFT for breast augmentation. The review focused on English language papers; conference material was only included as background information for the review. The restriction to published studies and English language papers made the review vulnerable to publication bias, possibly overestimating the effects of the intervention in the included studies.

Studies on animals and human participants were eligible for the review, but there was no real differentiation between them in the 'Results' and 'Discussion' sections of the review.

The inclusion criteria for the review were clearly stated, but there was little information on the review process itself, i.e. how many reviewers selected the studies and extracted the data, and whether there were any procedures to minimise selection bias and mistakes. Similarly, the review assessed the quality of the primary studies, but provided little detail, i.e. whether the studies were assessed independently by more than one reviewer to reduce subjectivity in the assessment.

It is unclear how rigorous the inclusion criteria for the review have been applied: the protocol makes the distinction between eligible studies and background information, but this does not seem to have been carried through (one of the 16 included studies seemed to be a letter to a journal which, according to the protocol, was eligible as background information only).

The quality of the studies that met inclusion criteria was low. Half of the included studies presented data for three or less patients.

The cross-reference of studies in the report was sparse, making it difficult for the reader to identify and evaluate the primary source of the information.

The authors' cautious conclusions appear to be justified given the lack of evidence.

Implications of the review for practice and research

Practice: The authors did not state any explicit implications for practice.
Research: The authors stated that, owing to the lack of evidence regarding patient gain from the procedure of AFT for breast augmentation, in conjunction with the theoretical dangers of obscuring carcinoma of the female breast, the collection of data within Australia for this procedure could not be endorsed.

Bibliographic details

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Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.