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In their article, Groen et al conduct a systematic review of autologous fat grafting (AFG) for cosmetic breast augmentation.1 They focus on radiological safety, complications, volume retention, and patient/surgeon satisfaction. The science and practice of AFG is generating a lot of interest. It is a highly active research front with significant discussion occurring at most international plastic surgical meetings. Rohrich et al have classed it as number three in the list of top innovations in plastic surgery.2 Our own group recently published a systematic review and meta-analysis of this topic with respect to breast reconstruction.3

Groen et al focus on cosmetic breast augmentation and define two broad research questions: (1) to determine the safety and efficacy of AFG either alone or in combination; and (2) to identify knowledge gaps in the current literature. They searched four databases (PubMed, Embase, Cochrane Library, and Web of Science) from inception to February 20, 2016. There were 22 articles that met their inclusion criteria, which reported on 3565 patients with a mean follow up of 28.8 months (range, 12-136 months). They conclude that AFG is a promising method of autologous cosmetic breast augmentation with satisfactory retention and satisfaction rates and with a complication and radiological profiles comparable to that of implant-based augmentation. Future directions they feel should focus on oncological safety, grafting method, and the use of auxiliary procedures to identify factors leading to better outcomes in terms of volume retention as well the development of objective patient satisfaction questions.1

The authors are to be congratulated on their contribution to the aesthetic surgery literature. The research questions are important and address relevant knowledge gaps. Whilst similar reviews have been conducted before, it is important to provide periodic updates in a fast moving field. It would have been useful for the authors to more directly compare their review with older ones using AMSTAR criteria, as our group.4 The methodology deployed is appropriate to answer those questions. The databases searched covered the majority of literature in this area and the search strategy was appropriate to the task. The inclusion/exclusion criteria were appropriate as was the independent study selection by two reviewers. However, only one reviewer was utilized in data extraction, although their work was checked by a second reviewer. The majority of studies were level IV evidence (19 level IV and 3 level III), 12 out of 22 had a prospective design and the majority had a moderate risk of bias according to

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the ACROBAT-NRSI tool. The complication and radiological abnormality rates were broadly similar to that seen in other reviews of AFG. With respect to AFG technique, the review cannot draw firm conclusions on what is optimal, since it simply reports what people are doing and comparing different techniques was not the focus of the review or of the included studies. In addition, substantial heterogeneity prevents a fair comparison. Much smaller cohorts measured volume retention using MRI and/or 3D measuring systems (mean volume retention, 62.4%; mean follow-up, 16.6 months; \( n = 523 \)), patient (92%; \( n = 529 \)), and surgeon (89%; \( n = 463 \)) satisfaction. Satisfaction was measured using a 3 to 5 point Likert scale but these scales had not been objectively verified. The inclusion of studies utilizing BRAVA is useful but again, conclusions could not be drawn due to the lack of comparative studies and heterogeneity.

The authors include a discussion on the limitations of their work some of which we have already summarized above. These include the lack of data on oncological outcomes, study heterogeneity, and validated outcomes to assess patient reported outcomes. Work towards improving the reporting of literature in this area has already begun with the VOGUE or Validated Outcomes in the Grafting of Autologous Fat to the Breast Study. This will provide a core outcome set that every study in this area must report, facilitating study synthesis and comparison. More general reporting criteria for case series are also underway.

Like the authors we call for higher levels of evidence, more prospective studies, longer follow-up, validated outcome measures, and better methodological and reporting quality in AFG and aesthetic surgery more broadly.

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