Autologous Fat Transfer for Thumb Carpometacarpal Joint Osteoarthritis: A Prospective Study

Sir,

The publication "Autologous Fat Transfer for Thumb Carpometacarpal Joint Osteoarthritis: A Prospective Study"[1] presents a new surgical treatment for base of thumb osteoarthritis (OA). The associated commentary hails it as a potential breakthrough.

We believe there are methodological flaws that warrant attention. First, it was presented as a 'pilot study' building on a previous case series of five patients. However, there was no a priori sample size calculation, statistical analysis plan or published protocol. The authors even acknowledge it was not powered for statistical analysis but go on to statistically analyze the data and draw conclusions from the results. It would be better described as an IDEAL Collaboration stage 2A development study.

As a non-randomised study, there were inherent risks of bias. Additional risk of bias came from the small sample sizes, particularly for the Eaton Glicker stage IV, and lack of intention to treat analysis. Patients who failed the fat grafting were excluded from analysis.

The lack of a comparator and use of subjective pain scores puts the study at high risk of the placebo effect. Although the authors mention a previous study demonstrating the effect, they do not adequately address the problem. There are relatively few placebo-controlled trials in surgery but they can be both feasible and ethical[3]. The authors state it is unethical to subject patients to placebo liposuction but they are currently subjecting patients to fat injections without a plausible mechanism of action or robust clinical evidence of efficacy.

The natural history of OA will often have a painful phase, which subsequently settles. Patients with stage II disease might have been earlier in this phase, explaining their apparent greater benefit. As time progressed, they might have improved irrespective of the surgical intervention.

The authors suggest the fat might act as a 'spacer'. We agree that mechanical factors play a significant role in joint homeostasis and the development of OA. This is established in a mouse model of OA and joint distraction of the first carpometacarpal joint in humans is in a pilot phase. However, it is unlikely fat would survive in the joint space. Artificial phosphatidylcholine liposomes show promise as ultra-efficient boundary lubricants that are able to withstand the highest physiological pressures experienced in synovial joints[5.] But it is unclear whether components of adipose fat would create this effect.

Finally, Osteoarthritis Research Society International (OARSI) guidelines recommend the use of outcome measures validated for OA, such as the AusCan Score. These provide validated outcome measures that are then comparable across studies. For this technique we believe a three arm placebo-controlled trial is feasible and urge caution in the adoption of this procedure before a plausible mechanism and robust clinical data is available.

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