Guest editorial

We need less (but better) research

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Simultaneously with this Guest Editorial, *Acta Orthopaedica* is publishing a summary of the updated and enlarged Cochrane Review on interventions for proximal humeral fractures, which includes 47 randomized controlled trials conducted in 18 countries involving 3,179 patients (1). The review concludes that surgery does not result in a better outcome compared with non-surgical treatment, and surgery may increase the need for subsequent surgery. However, 23 trials compared 2 methods of surgery: 10 compared different surgical interventions and 13 compared different methods of performing a surgical intervention. Among the 30 ongoing trials described in the review, 19 are comparing different surgical methods.

Although the Cochrane review is the most comprehensive systematic review of randomized trials in the field, it only represents a very small part of the published literature. A PubMed search on "Shoulder Fractures" [Mesh] reveals 3,931 references. Countless clinical series on new surgical implants or slightly modified procedures have been conducted. Some of these are likely to be for career purposes, driven by commercial interests or by a strong belief in the benefits of surgery.

A scoping review reported that uncontrolled case series accounted for 48% of the papers on proximal humeral fractures while only 3% were randomized trials (2). It was further reported that 67% of the papers concerned operative treatments while only 4% included nonoperative treatments. This seems paradoxical, as no randomized trial has yet demonstrated superiority of surgical treatment compared with non-surgical treatment.

When comparative studies, randomized or non-randomized, are published, they often study minor differences in effect between closely related implants or procedures. These studies do not add much value to patient care. If surgery is not superior, or worse than, no surgery, the appropriate comparator is not another implant or procedure, but no surgery.

This point is illustrated by publications on reverse total shoulder arthroplasty for primary treatment of proximal humeral fractures. Experiences from uncontrolled cohort studies look promising and several comparative studies have reported superiority to hemiarthroplasty and locking plates. However, only 1 randomized trial of reverse arthroplasty with non-surgical treatment as comparator has been published so far. It reported no difference in functional score or quality of life between the groups (3).

The reasoning behind implementation of the reverse arthroplasty seems to be: (i) reverse arthroplasty is better than hemiarthroplasty; (ii) reverse arthroplasty is better than a locking plate; thus (iii) let's use reverse arthroplasty. However, the Cochrane Review reports that neither reverse arthroplasty, hemiarthroplasty, nor locking plates have been found to be superior to non-surgical treatment in the majority of patients with displaced 2-, 3-, and 4-part fractures. Crucially, the widespread use of reverse arthroplasty has not been preceded by well-conducted randomized trials demonstrating superiority of the implant with non-surgical treatment as a comparator.

As succinctly stated by the late professor Doug Altman:

"We need less research, better research, and research done for the right reasons" (4).

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3. **Lopiz Y, Alcobía-Díaz B, Galán-Olleros M, García-Fernández C, Picado A L, Marco F.** Reverse shoulder arthroplasty versus nonoperative treatment for 3- or 4-part proximal humeral fractures in elderly patients: a prospective randomized controlled trial. J Shoulder Elbow Surg 2019; 28: 2259-71. doi: 10.1016/j.jse.2019.06.024.
4. **Altman D G.** The scandal of poor medical research. BMJ 1994; 308: 283-4. doi: 10.1136/bmj.308.6924.283.

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