



## No beneficial effects of joint distraction on early microscopical changes in osteoarthrotic knees

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## Correspondence

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Sir—In the recent publication of Karadam et al. (2005) entitled “No beneficial effects of joint distraction on early microscopical changes in osteoarthrotic knees; a study in rabbits,” the crucial statement is made in the last sentence: “Studies with longer follow-up are necessary because distraction treatment requires up to a year before substantial clinical benefit may be achieved.”

The title and the way the data are interpreted in the above article suggest that the clinical benefit of joint distraction in treatment of osteoarthritis (Marijnissen et al. 2002, Ploegmakers et al. 2005) is not caused by repair of osteoarthrotic cartilage. However, we feel that this cannot be concluded on the basis of the study reported. The effects of joint distraction on papain-induced osteoarthritis in rabbits were solely based on histochemistry of the cartilage evaluated directly after treatment. There was no follow-up after treatment. In our previous study (Van Valburg et al. 2000) using canine ACLT as a model of osteoarthritis, identical results with respect to histochemistry were found when cartilage was evaluated directly after treatment. We reported: “Effects of joint distraction on the histological changes were insignificant.” We even demonstrated in a limited number of animals—in complete accordance with the data of Karadam—that cartilage from a non-articulated distraction group had an even worse histochemical appearance when compared to the untreated osteoarthrotic controls. Thus, Karadam and colleagues are misleading the reader by writing: “Contrary to our results, Van Valburg et al. (2000) found no difference between histology of the cartilage of distracted and non-distracted knees”. Their statement (directly based on their results) that “articulated distraction had no statistical significant effect on the osteoarthrotic

cartilage” is especially confusing. Indeed, a histological score of 11.5 (3–26) cannot be considered different from 14 (13–15).

What the authors conceal is something of major importance, that we found a statistically significant beneficial effect on the cellular activity of the chondrocytes. Turnover of proteoglycans (synthesis, retention, and release) were completely normalized as a result of joint distraction (Van Valburg et al. 2000). We therefore concluded from our study that “The change in chondrocyte metabolism, assumed to be beneficial, may need a successive follow-up period with normal joint use to actually result in repair of the tissue.” Only the latter—tissue repair—can be detected by simple immunohistochemistry. “In the human treatment it indeed required months to a year before significant clinical benefit was achieved; clinical improvement was experienced gradually after treatment” (Marijnissen et al. 2002). In this respect, it is just a way of looking at your results. The data of Karadam do not contradict our statement that “clinical benefit of joint distraction might be accompanied by actual repair of cartilage”. However, prolonged follow-up after transient distraction is needed to prove this concept. Although we suggested that such prolonged follow-up studies are required, the authors have missed the chance of explaining “the mechanism behind the clinical benefit of joint distraction in treatment of osteoarthritis” (as they suggested), by using such a study set-up.

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*Sir*—Although experimental studies are not always directly applicable to clinical work, they provide a basis for explanation of clinical results. So the results of an experimental study should be evaluated objectively and within the limits of the data obtained in the study. Such an approach will prevent any possible bias caused by the way of looking at a problem.

Certainly, our statements were directly based on our results. In our study (Karadam et al. 2005), non-articulated distraction worsened the results ( $p = 0.001$ ) whereas articulated distraction had no significant effect ( $p = 0.1$ ), although the results were worse than the control group. With these data, it is impossible to reach any conclusion other than “there is no beneficial effect of joint distraction on early microscopical changes in osteoarthrotic knees in rabbits, but non-articulated distraction worsens the results”.

Additionally, we compared our results with those of van Valburg et al. (2000)—but only on a histological basis, not on an immunohistochemical basis, because we had performed only a histological study. Careful re-reading of the article of van Valburg et al. (2000) reveals no statement of significant difference on histological evaluation.

In our opinion, it is possible to obtain different results in different studies due to several different variables such as the evaluation criteria, production

of the disorder etc. An accumulation of such studies will help to give a better understanding of the problem and will consequently help to solve it.

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