Is nerve regeneration after reconstruction with collagen nerve conduits terminated after 12 months? the long-term follow-up of two prospective clinical studies.

Abstract:
Long-term follow-up data of digital nerve reconstructions with nerve conduits are limited. Furthermore, it is not known whether nerve regeneration after tubulization is terminated after 12 months, or whether improvement can be expected after this period of time. Therefore, we present the long-term follow-up of two prospective clinical trials. We invited 45 patients who were enrolled in two prospective clinical trials for long-term follow-up. All patients underwent digital nerve reconstruction with conduits made from bovine collagen I due to a gap length of ≤26 mm. Sensibility was assessed using static and moving two-point discrimination and monofilament testing. Follow-up data of 1 week, 3, 6, and 12 months, and the current examination were available. Improvement of sensibility was investigated by comparison of the American Society for Surgery of the Hand classification score at 12-month follow-up with the score raised at current examination. We examined 20 reconstructed nerves in 16 patients with a mean follow-up of 58.1 months (range, 29.3-93.3 months). We found an improved sensibility at current follow-up compared with the 12-month follow-up in 13 cases. Three cases had the same values whereas four cases had worsened sensibility. Improvement of sensibility was associated with a significantly shorter
nerve gap length with significantly better results if the gap length was< 10 mm. Our results provide evidence that the long-term recovery of sensibility after digital nerve tubulization depends on the nerve gap length with better results in those< 10 mm. Nerve regeneration after tubulization seems not to be terminated after 12 months.