



Mid- and long-term outcome after treatment with the Woven EndoBridge (WEB)

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The Woven EndoBridge device (WEB), approved both in Europe and in the USA, has, together with other similar devices [1, 4], provided the neurointerventional community with another strategy to treat intracranial aneurysms, not least those defined as broad-based. It has been proven safe and effective for both ruptured [5] as well as unruptured [7] aneurysms, at least in the shorter, 6–12 months, perspective. For instance, 683 patients were retrospectively included in the WorldWideWEB Consortium study showing 57.8% complete occlusion, 85.7% adequate occlusion, 7.8% retreatment rate, and 7.5% thromboembolic complication rate, as documented on the last follow-up after a *median of 11 months* [2].

Good short-term results are also nicely shown in a recent interesting paper in Acta Neurochirurgica, where the outcomes after WEB-treatment were evaluated in a large North American cohort. But what is really needed today, at least in my mind, are solid mid- and long-term data on technical, radiological, and clinical outcome after aneurysm treatment with the WEB. Is WEB-treatment as reliable in the *long term* as coiling and/or clipping? In the mentioned Acta-study, the analysis, including the multivariate logistic regression analysis, is based on the 12-month follow-up, despite that only 67 of the 103 patients successfully treated with a WEB were available for follow-up at 1 year, and even less, 22 patients, were available for follow-up after 24-months. With 35% and almost 79% of the patients missing, respectively, I find it hard to view these presented data as trustworthy mid- and long-term results. It must, however, be pointed out that this phenomenon, a high percentage of patients lost to follow-up, seems to be a persistent theme in many studies reporting outcome after WEB-treatment [8].

In this context, it may be preferential to *at least* wait until the 12-month mark has passed and all patients have had the chance to be investigated before performing the analysis. And perhaps, if patient compliance is a problem, conduct the study in a health care system in which patients are likely to show up for follow-up investigations, a strength of, for instance, several Finnish studies on brain-AVMs [6]. My personal opinion is that conclusions drawn regarding adequate occlusion at 12 and 24 months with a more than significant drop-out rate are simply incorrect. If you want to make a clear statement on 12- and 24-month outcome, you must make sure that you have a sufficient number of patients, or you make your analysis on 6-month follow-up and say nothing on mid- and long-term results.

But is not 6 months enough time to say that a perfect, or at least an acceptable, radiological and clinical patient outcome after WEB-treatment will remain stable? In my personal experience, I have indeed seen *late* aneurysm recurrences, WEB-compactions, and clinical deteriorations, something that have also been described in the literature. For instance, in one of the few studies reporting on what at least could be regarded as a “reasonable” long-term outcome after WEB-treatment, the retreatment rate was 19.5% after a mean follow-up time of 15.3 months [3].

What is most needed today in relation to WEB-treatment is, in my opinion, solid and reliable mid- and long-term results, as there is already a substantial number of reports on short-term efficacy and safety. I strongly believe that an analysis should always be focused on time points for which there is sufficient data, without extrapolating to something that more resembles wishful thinking.

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