Reviewer's report

Title: Different tissue reaction of oesophagus and diaphragm after mesh hiatoplasty: Results of an animal study.

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Reviewer: Dirk Weyhe

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The presented paper describes the results of an experimental study comparing the foreign body reaction of different synthetic meshes after their implantation in the region of the esophageal hiatus.

The aim of the study is clearly defined: it was focused on the question whether the implantation of a semiresorbable light mesh had any advantages regarding the process of wound healing and the procedure-related complications. The authors used an established animal model, following the experimental protocol of an earlier published study. The methods of histological and histochemical analysis were also appropriate and some of them already reported by the same authors in earlier studies.

In the methods section (table 1) the surface weight of the Prolene® mesh is stated to be 25 g/m². However, the commercially available mesh of that type is almost 4 times heavier. Was a kind of a test-implant used? According to Ethicon, the Ultrapro® weight is 55 g/m² and not the mentioned 50 g/m² before resorption, and respectively 28 g/m² and not 25 g/m² after resorption of the monocryl ingredient. These details should be corrected.

In the results section (page 8) the loss of 3 animals in the Prolene-group (PP), and one animal in the Ultrapro-group (PP-PG) not related to the operation was described, so that the further analysis had to compare two differently large samples of animals (7 PP vs. 9 PP-PG). Table 2 shows extreme standard deviations pertaining to the proliferation and apoptosis rates in the PP-PG group compared to the PP group. The authors should rather present these results as a figure in order to prove that those results were not statistically influenced by single animals due to the different size of the compared groups.

The discussion section is focused on the observed more distinct perifilamentary foreign body reaction in case of PP-PG (page 9). Table 2 reveals significantly lower rates of proliferation and apoptosis in the PP group. Figure 2 shows the higher rate of apoptosis after diaphragmatic implantation of a PP-PG. The authors are strongly encouraged to explain how a more expressed tissue response leads to a better integration of the implant. Does the more effective tissue response observed with PP-PG (page 9) correlate to the theory of a weaker foreign body reaction due to the use of light meshes?

The influence of the pore size on the formation of collagen should be discussed.
in the paragraph on the collagen I/III ratio (Greca et al. The influence of porosity on the integration of two polypropylene meshes for the treatment of abdominal wall defects in dogs. Hernia 2007 Sep. 7).

The already published data of this study show a prolonged passage of the contrast in all operated animals (page 10). Is this true for the animals in the PP-PG group too? According to the authors an esophageal erosion was observed in 85% (6/7) of the PP group, and in 56% (5/9) of the animals of the PP-PG group.

Because of the different sample sizes, the unclear discussion on the problem of foreign body reaction, as well as the already published data of unacceptably high rates of erosion, the repeatable statement of the authors that a stronger tissue response leads to a better mesh incorporation seems quite inappropriate.

The authors should make it clear in the conclusion that their experimental results do not support the use of any of the two studied meshes for the purposes of hiatal augmentation.

Unable to decide on acceptance until the authors have responded to the major compulsory revisions.

This is an article of importance in its field with acceptable written English.

The manuscript does not need to be seen by a statistician.

I declare that I have no competing interests.