Journal of Trauma and Acute Care Surgery, Publish Ahead of Print
DOI: 10.1097/TA.0000000000002993

Response to Letter to the Editor by Robert Martindale

Manuel O. Jakob[1,2], Tobias Haltmeier[1], Guido Beldi[1]

[1] Department of Visceral Surgery and Medicine, University Hospital, Bern, Switzerland

[2] Department of Microbiology, Infectious Diseases and Immunology, Charité Universitaetsmedizin Berlin, Germany

Corresponding author and address for reprints: Guido Beldi, MD. Department of Visceral Surgery and Medicine, Bern University Hospital, Bern, Switzerland. Office: 0041 316328275. guido.beldi@insel.ch

E-mail addresses of authors: Manuel Jakob: manuel.jakob@insel.ch, Tobias Haltmeier: tobias.haltmeier@insel.ch, Guido Beldi: guido.beldi@insel.ch

Disclosure: The authors of this manuscript have no conflict of interest to disclose.

Financial support: The authors received financial support by Strattice™, Allergan.

Response to Letter to the Editor by Robert Martindale

To the editorial board of Journal of Trauma

We acknowledge the critizism raised by this author.

The patients included in the current study all underwent open emergency abdominal surgery (1). Such patients are not treated with a minimal invasive approach and the abdominal wall is entered through a midline laparotomy. Thus, incision size as a confounding factor is unlikely. Wound issues are reported in Table 2 as surgical site infections. Duration of operation and previous abdominal surgery are reported in Table 1. Regarding the experience of the surgeons who performed the emergency abdominal procedures, we kindly refer to our last response to the letter to the editor by Dr. Gachabayov. Intra-abdominal mesh placement is routinely performed both, in emergency and elective procedures at the Bern University Hospital. The implantation of intra-abdominal meshes has not been shown to be associated with specific complications in previous studies published by our department (2-6).

The results clearly reveal the potential hazards associated with biologic mesh implantation in the infected abdominal cavity. The letter of Dr. Martindale refers to retrospective studies with known selection biases whereas our study was a propective randomized-controlled clinical trial. It is of importance to note that the studied cohort consists of patients with acutely inflamed and infected abdomen which is not present in elective or emergency hernia repair. The Strattice mesh seem not to fit the needs for such challenging situations. We acknowledge that the current study is indeed limited by its sample size to make conclusions about the primary endpoint. However, continuing such a study would not have been in line with good clinical practice guidelines

because of ethical concerns in the light of the observed complications.

In our experience, synthetic mesh implantation in patients undergoing emergency abdominal surgery leads to an important foreign body reaction and scarring about two weeks after synthetic mesh implantation. Because of the reported properties of biologic meshes, potentially this reaction seems to be delayed. The situation as observed in the patient in fig. 2 has not been observed upon synthetic mesh placement at our department. The patient in fig. 3 had a nearly complete loss of the mesh and intestinal contents were visible. The adhesion formation per se was not the main issue in the situation shown in fig. 4 but rather the mesh infection.

As shown in table 2 of the article, abdominal wall complications were frequent in both groups and not statistically different (p=1.000). However, within the group of patients with abdominal wall complications (denominator), serious complications requiring revisional surgery were significantly more frequent in the mesh group.

In our study, the implantation of expensive biologic Strattice meshes were associated with increased direct costs for the mesh and indirect costs because of complications. Taking into account the significant increase in serious abdominal wall complications already after inclusion of a limited number of patients, it is unlikely that a potential reduction of incisional hernias is of economic relevance.

Your Sincerely,

Manuel Jakob, MD Tobias Haltmeier, MD Guido Beldi, MD

Disclosure: The authors of this manuscript have no conflict of interest to disclose.

Financial support: The authors received financial support by Strattice™, Allergan (1).

Authors contributions: Jakob M.O., Haltmeier T., Beldi G.: Writing of the manuscript.

References:

1. Jakob MO, Haltmeier T, Candinas D, Beldi G. Biologic mesh implantation is associated with serious abdominal wall complications in patients undergoing emergency abdominal surgery - a randomized-controlled clinical trial. *J Trauma Acute Care Surg*. 2020.

2. Jakob MO, Schwarz C, Haltmeier T, Zindel J, Pinworasarn T, Candinas D, Starlinger P, Beldi G. Mesh-augmented versus direct abdominal closure in patients undergoing open abdomen treatment. *Hernia*. 2018;22(5):785-92.

3. Jakob MO, Spari D, Zindel J, Pinworasarn T, Candinas D, Beldi G. Prophylactic, Synthetic Intraperitoneal Mesh Versus No Mesh Implantation in Patients with Fascial Dehiscence. *J Gastrointest Surg*. 2018.

4. Kohler A, Lavanchy JL, Lenoir U, Kurmann A, Candinas D, Beldi G. Effectiveness of Prophylactic Intraperitoneal Mesh Implantation for Prevention of Incisional Hernia in Patients Undergoing Open Abdominal Surgery: A Randomized Clinical Trial. *JAMA Surg*. 2019;154(2):109-15.

5. Scholtes M, Kurmann A, Seiler CA, Candinas D, Beldi G. Intraperitoneal mesh implantation for fascial dehiscence and open abdomen. *World J Surg*. 2012;36(7):1557-61.

6. Kurmann A, Barnetta C, Candinas D, Beldi G. Implantation of prophylactic nonabsorbable intraperitoneal mesh in patients with peritonitis is safe and feasible. *World J Surg*. 2013;37(7):1656-60.