Acellular dermal matrix and short bowel syndrome

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Short bowel syndrome has puzzled surgeons for a long time and the curative effect are unsatisfactory. In recent years, acellular dermal matrix (ADM) has been used in many fields for tissue regeneration or scarless healing. A research group in China evaluated the efficacy of acellular dermal matrix for intestinal elongation in animal model. It seemed that ADM was not suited to using alone as a scaffold for the intestinal elongation.

Acellular dermal matrix (ADM) is a dermal biomaterial in which all of the cellular elements have been removed. The biologic properties of ADM, including its ability to support tissue regeneration repopulation with fibroblasts, revascularization, new collagen deposition and eventual absorption and replacement with native tissue permit its use in tissue reconstruction. A few studies for intestinal elongation have been performed, but the results are uncertain.

The research, led by Professor Wang from Department of General Surgery of Beijing Chaoyang Hospital, will be published on April 28,2010 in World Journal of Gastroenterology. The study was designed to use both the home-made and commercial acellular dermal matrix materials to investigate the efficacy of acellular dermal matrix for intestinal elongation. Different species were transplanted with the allograft materials respectively. Severe adhesions were found between the graft and surrounding intestine. The grafts were completely absorbed within postoperative two or three months except one. Histological observation showed inflammation in the grafts with fibrinoid necroses,

infiltration of a large amount of neutrophils and leukomonocytes, and the degree varied in different stage. The neointestine with well-formed structures wasn't observed in the study.

It is believed that the ADM can be used as a scaffold for tissue regeneration with the normal morphology of the mucosa, submucosa, muscle and serosa layers. But it is not always the truth. In this study, the grafts were almost completely absorbed in two or three months. Pus could be seen in the lumens of ADM and histological examination showed the inflammatory exudates of neutrophils and pus cells. The authors presumed inadequate blood supply and the rapid absorption perhaps were the most likely reasons.

This study was well designed according to previous work, but it showed a different result. The authors gave some possible reasons, which were worthy of in-depth study. Perhaps ADM can be used for intestinal elongation, but this study showed that some reforms were necessary.

More information: Xu HM, Wang ZJ, Han JG, Ma HC, Zhao B, Zhao BC. Application of acellular dermal matrix for intestinal elongation in animal models. World J Gastroenterol 2010; 16(16): 2023-2027, www.wjgnet.com/1007-9327/full/v16/i16/2023.htm

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