脱细胞猪小肠黏膜下层与猪脱细胞真皮基质作为真皮支架的对比研究

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[摘要]目的：应用脱细胞猪小肠黏膜下层与猪脱细胞真皮基质作为真皮替代物与SD大鼠自体刃厚皮片进行复合移植，修复SD 大鼠全层皮肤缺损，比较两者优劣性，为临床提供更理想的真皮替代物。方法：以36只SD大鼠为动物模型，随机区组法随机 分为两组，每组18只，在其背部造成2.5 cm×2.5 cm的全层皮肤缺损，实验组应用脱细胞猪小肠黏膜下层+自体刃厚皮 移植修复，对照组应用猪脱细胞真皮基质+自体刃厚皮移植修复，移植后2周对移植皮片成活率分析研究，移植后4周、 8周、12周取材进行一般观察、组织学观察和收缩率的计算。结果：术后2周，实验组植皮存活率大于对照组，差异有 统计学意义（P＜0.05）。于术后4周、8周、12周动态观察，实验组植皮区收缩率较对照组低，但组间比较差异无统计学意 义（P＞0.05）。HE染色组织学观察，术后4周，两组植入材料与移植皮片融合度均很好，植入材料内及其周围均有大量的成 纤维细胞和新生毛细血管长入，并有炎症细胞浸润；术后8周，两组植入材料内及其周围均有成纤维细胞和新生毛细血管长 入，炎症细胞较术后4周时少，两组植入材料的原有胶原纤维结构尚清晰，出现疏松；术后12周，两组植入材料基本被新生 胶原纤维替代，新生胶原纤维排列规则有序，与表皮面基本平行，血管非常丰富。结论：脱细胞猪小肠黏膜下层能有效修复 大鼠皮肤缺损，在促进创面愈合和防止创面收缩方面的效果较猪脱细胞真皮基质有一定的优势性。

[关键词]脱细胞猪小肠黏膜下层；皮片移植；自体刃厚皮；猪脱细胞真皮基质；对比研究

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**Comparative Study of Acellular Porcine Small Intestine Submucosa and Porcine Acellular Dermal Matrix as Dermal Scaffold**

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**Abstract: Objective** The purpose of this study is to compare the advantages and disadvantages of using porcine small intestinal submucosa and porcine acellular dermal matrix as the dermal substitute with SD rats autologous split-thickness skin to repair the SD rat full-thickness skin defect. **Methods** We employed 36 SD rats as animal model, dividing into 2 groups according to the randomized block method randomly, with 18 rats in each group, with 2.5 cm×2.5 cm full-thickness skin defect on the back, acellular porcine small intestinal submucosa+autologous split-thickness skin one-step transplantation was used in the study group, the decellularized dermal matr ix+autologous split-thickness skin one-step transplantation was used in the control group. The survival rate of transplanted skin grafts was analyzed at 2 weeks after transplantation. General observations analysis of histological observation (HE) and contraction rate were performed at 4 weeks, 8 weeks, and 12 weeks after transplantation. **Results** Two weeks after operation, the survival rate of skin grafting in the study group was higher than that in the control group, the difference was statistically significant (P＜0.05). At 4th, 8th, and 12th weeks after operation, the shrinkage rate in the skin graft area of the study group was significantly lower than that of the control group, but there were no statistical difference between groups (P＜0.05). At 4 weeks after surgery, structural and antigenic analysis were preformed via HE stain and scanning electron microscopy. The implanted material and the grafted skin of the two groups were well mixed, and there were a large number of fibroblasts and new capillary growth in and around the implant material, and inflammatory cells infiltrate. At 8 weeks postoperatively, fibroblasts and new capillary capillaries were found in and around the implanted material, and the inflammatory cells were less than 4 weeks after surgery. The original collagen fiber structure of the two groups of implant materials was clear and loose. At 12 weeks after surgery, the implant materials of the two groups were basically replaced by new collagen fibers. The new collagen fibers were arranged in an orderly manner, which was basically parallel to the epidermis and the blood vessels were very rich. **Conclusion** Decellularized porcine small intestinal submucosa can effectively repair rat skin defects, and it has certain advantages in promoting wound healing and preventing wound contraction compared with acellular porcine dermal matrix.

**Key words:** acellular porcine small intestine submucosa; skin graft; autologous split-thickness skin; porcine acellular dermal matrix; contrastive study