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主编特约/综述

组织工程在食管修复重建外科中的应用

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摘要:

食管替代术是很多食管疾病的常用治疗手段。采用自身组织进行食管替代创伤大, 术后并发症多, 而现有的人工食管很难满足食管替代的要求。利用组织工程技术进行食管的替代研究, 为解决这些问题带来了希望。本文就组织工程在食管修复重建外科中的应用及前景进行综述。

关键词: 组织工程 食管 修复重建 应用

Tissue Engineering Applications in Esophagus of Reparative and Reconstructive Surgery

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Abstract:

Esophageal replacement has been widely used for esophageal diseases. Replacement with autograft leads to great damage and complications. The existing artificial esophagus, however, cannot match the demands of esophageal replacement. The study of tissue engineered esophagus gives hope to solve these problems. This article reviews the progression of tissue engineered esophagus.

Keywords: Tissue engineering Esophagus Reparative and reconstructive surgery Application

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参考文献:

1. Lambert R, Hainaut P. The multidisciplinary management of gastrointestinal cancer. Epidemiology of oesophagogastric cancer. Best pract res, 2007, 21: 921~945
2. D'Journo XB, Martin J, Ferraro P, Duranteau A. The esophageal remnant after gastric interposition. Dis Esophagus, 2008, 21: 377~388
3. Ferahkose Z, Bedirli A, Kerem M, Azili C, Sozuer E, Akin M. Comparison of free jejunal graft with gastric pull-up reconstruction after resection of hypopharyngeal and cervical esophageal carcinoma. Dis Esophagus, 2008, 21: 340~345
4. Doki Y, Okada K, Miyata M, Yamasaki M, Fujiwara Y, Takiguchi S, Yasuda T, Hirao T, Nagano H, Monden M. Long-term and short-term evaluation of esophageal reconstruction using the colon or the jejunum in esophageal cancer patients after gastrectomy. Dis Esophagus, 2008, 21: 132~138
5. Gallo A, Cha C. Updates on esophageal and gastric cancers. World J Gastroenterol, 2006, 12: 3237~3242
6. Shinhar R, Finaly A, Niska A, Mares J. The use of collagen-coated vicryl mesh for reconstruction of

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- the canine cervical esophagus. *Pediatr Surg Int*, 1998, 13: 84~87
7. Langer R, Vacanti J. *Tissue engineering*. *Science*, 1993, 260: 920~926
8. Sato M, Ando N, Ozawa S. A hybrid artificial esophagus using cultured human esophageal epithelial cells. *ASAIO J*, 1993, 39: 554
9. Sato M, Ando N, Ozawa S. An artificial esophagus consisting of cultured human esophageal epithelial cells, polyglycolic acid mesh, and collagen. *ASAIO J*, 1994, 40: 389
10. Miki H, Ando N, Ozawa S, Sato M, Hayashi K, Kitajima M. An artificial esophagus constructed of cultured human esophageal epithelial cells, fibroblasts, polyglycolic acid mesh, and collagen. *ASAIO J*, 1999, 45: 502~508
11. Grikscheit T, Ochoa E, Srinivasan A. *Tissue-engineered esophagus: Experimental substitution by onlay patch or interposition*. *J Cardiovasc Surg*, 2003, 126: 537~544
12. Priyadarshini M, Chian K. Long-term culture of porcine esophageal epithelial cells without use of feeder layers. *Cell Biol Inter*, 2007, 31: 433~437
13. Saxena AK, Baumgart H, Komann C, Ainoedhofer H, Soltysiak P, Kofler K, Höllwarth ME. Esophagus tissue engineering: In situ generation of rudimentary tubular vascularized esophageal conduit using the ovine model. *J Pediatric Surg*, 2010, 45: 859~864
14. Marzaro M, Vigolo S, Oselladore B, Conconi MT, Ribatti D, Giuliani S, Nico B, Perrino G, Nussdorfer GG, Parnigotto PP. In vitro and in vivo proposal of an artificial esophagus. *J Biomed Mater Res A*, 2006, 77: 795~801
15. Hayashi K, Ando N, Ozawa S, Kitagawa Y, Miki H, Sato M, Kitajima M. A neo-esophagus reconstructed by cultured human esophageal epithelial cells, smooth muscle cells, fibroblasts, and collagen. *ASAIO J*, 2004, 50: 261~266
16. Saxena AK, Komann C, Ainoedhofer H, Michael E. Esophagus tissue engineering: Hybrid approach with esophageal epithelium and unidirectional smooth muscle tissue component generation in vitro. *J Gastrointest Surg*, 2009, 13: 1037~1043
17. Zhu YB, Ong WF, Chan WY, Li YY, Liu YX. Construct of asymmetrical scaffold and primary cells for tissue engineered esophagus. *Mater Sci Eng C*, 2010, 30: 400~406
18. Ohki T, Yamato M, Murakami D. Treatment of oesophageal ulcerations using endoscopic transplantation of tissue-engineered autologous oral mucosal epithelial cell sheets in a canine model. *Gut*, 2006, 55: 1704~1710
19. 谭波, 魏人前, 杨志明, 李秀群, 韩平, 智伟, 解慧琪, 任燕, 谭中侠. 口腔黏膜上皮细胞与猪小肠黏膜下层体外复合培养的实验研究. *华西口腔医学杂志*, 2010, 28(1): 176~180 Tan B, Wei RQ, Yang ZM, Li XQ, Han P, Zhi W, Xie HQ, Ren Y, Tan ZX. Experiment of oral mucosa epithelial cells cultured on small intestinal submucosa in vitro. *West China J Stomatol*, 2010, 28(1): 176~180
20. Wei RQ, Tan B, Tan MY, Luo JC, Deng L, Chen XH, Li XQ, Zuo X, Zhi W, Yang P, Xie HQ, Yang ZM. Grafts of porcine small intestinal submucosa with cultured autologous oral mucosal epithelial cells for esophageal repair in a canine model. *Exp Biol Med*, 2009, 234: 453~461
21. Jiang XX, Zhang Y, Liu B. Human mesenchymal stem cells inhibit differentiation and function of monocyte derived dendritic cells. *Blood*, 2005, 105: 4120~4126
22. Kanematsu A, Yamamoto S, Iwai-Kanai E, Kanatani I, Imamura M, Adam RM, Tabata Y, Ogawa O. Induction of smooth muscle cell-like phenotype in marrow-derived cells among regenerating urinary bladder smooth muscle cells. *Am J Pathol*, 2005, 166(2): 565~573
23. Zhang YY, Lin HK, Frimberger D, Epstein RB, Kropp BP. Growth of bone marrow stromal cells on small intestinal submucosa: An alternative cell source for tissue engineered bladder. *BJU Int*, 2005, 96(7): 1120~1125
24. 杨朋, 魏人前, 谭波, 李秀群, 王佳, 周昆鹏, 左潇, 李顺, 解慧琪. 上皮细胞条件培养液对BMSCs分化的影响. *中国修复重建外科杂志*, 2009, 23(5): 612~616 Yang P, Wei RQ, Tan B, Li XQ, Wang J, Zhou KP, Zuo X, Li S, Xie HQ. Effects of epithelial cell conditioned medium on differentiation of BMSCs. *Chin J Repar Reconstr Surg*, 2009, 23(5): 612~616
25. Oneida A. *Tissue engineering*. *Curr Opin Otolaryngol Head Neck Surg*, 2005, 13: 233~241
26. Takimoto Y, Nakamura T, Teramachi M, Kiyotani T, Shimizu Y. Replacement of long segments of the esophagus with a collagen-silicone composite tube. *ASAIO J*, 1995, 41: 605~608
27. Baleur YL, Gaujoux S, Bruneval P, Lambert B, Larghero J, Cattan P, Prat F. Self-expanding removable plastic stents for the protection of surgical anastomoses after esophageal replacement in a porcine model. *Gastrointest Endosc*, 2010, 72: 785~790
28. Becksteada BL, Pan S, Bhravn AD, Bratt-Leal AM, Ratner BD, Giachelli CM. Esophageal epithelial cell interaction with synthetic and natural scaffolds for tissue engineering. *Biomaterials*, 2005, 26: 6217~6228
29. Zhu YB, Ong WF. Epithelium regeneration on collagen (IV) grafted polycaprolactone for esophageal tissue engineering. *Materi Sci Eng C*, 2009, 29: 1046~1050
30. Kim MS, Ahn HH, Shin YN. An in vivo study of the host tissue response to subcutaneous implantation of PLGA- and/or porcine small intestinal submucosa-bases caffolds. *Biomaterials*, 2007, 28: 5137~5143
31. Badylak S, Meurling S, Chen M, Spievack A, Simmons-Byrd A. Resorbable bioscaffold for

- esophageal repair in a dog model. *Pediatr Surg*, 2000, 35: 1097~1103
32. Lopes MF, Cabrita A, Ilharco J, Pessa P, Paiva-Carvalho J, Pires A, Patricio J. Esophageal replacement in rat using porcine intestinal submucosa as a patch or a tube-shaped graft. *Dis Esophagus*, 2006, 19: 254~259
33. Lopes MF, Cabrita A, Ilharco J. Grafts of porcine intestinal submucosa for repair of cervical and abdominal esophageal defects in the rat. *J Invest Surg*, 2006, 19: 105~111
34. Kajitani M, Wadia Y, Hinds MT, Teach J, Swartz KR, Gregory KW. Successful repair of esophageal injury using an elastin based biomaterial patch. *ASAIO J*, 2001, 47: 342~345
35. Urita Y, Komuro H, Chen G. Regeneration of the esophagus using gastric acellular matrix: An experimental study in a rat model. *Pediatr Surg Int*, 2007, 23: 21~26
36. Ozeki M, Narita Y, Kagami H, Ohmiya N, Itoh A, Hirooka Y, Niwa Y, Ueda M, Goto H. Evaluation of decellularized esophagus as a scaffold for cultured esophageal epithelial cells. *Biomed Mater Res A*, 2006, 79: 771~778
37. Marzaro M, Vigolo S, Oselladore B, Conconi MT, Ribatti D, Giuliani S, Nico B, Perrino G, Nussdorfer GG, Parnigotto PP. In vitro and in vivo proposal of an artificial esophagus. *Biomed Mater Res A*, 2006, 77(4): 795~801
38. Bhrany AD, Beckstead BL, Lang TC. Development of an esophagus acellular matrix tissue scaffold. *Tissue Eng*, 2006, 12: 319~320
39. Badylak SF, Vorp DA, Spievack AR, Simmons-Byrd A, Hanke J, Freytes DO, Thapa A, Gilbert TW, Nieponice A. Esophageal reconstruction with ECM and muscle tissue in a dog model. *J Surg Res*, 2005, 128: 87~97
40. Isch JA, Engum SA, Ruble CA, Davis MM, Grosfeld JL. Patch esophagoplasty using AlloDerm as a tissue scaffold. *J Pediatr Surg*, 2001, 36: 266~268
41. Takimoto Y, Okumura N, Natsume T, Shimizu Y. Long term follow-up of the experimental replacement of the esophagus with a collagen-silicone composite tube. *ASAIO J*, 1993, 39: 736~739
42. Sakurai T, Miyazaki S, Miyata G, Satomi S, Hori Y. Autologous buccal keratinocyte implantation for the prevention of stenosis after EMR of the esophagus. *Gastrointest Endosc*, 2007, 66: 167~173
43. Hori Y, Nakamura T, Kimura D, Kaino K, Kurokawa Y, Satomi S, Shimizu Y. Effect of basic fibroblast growth factor on vascularization in esophagus tissue engineering. *Int J Artif Organs*, 2003, 26: 241~244
44. Basu J, Ludlow JW. Platform technologies for tubular organ regeneration. *Trends Biotechnol*, 2010, 28(10): 526~533
45. Zhu YB, Leong MF, Ong WF. Esophageal epithelium regeneration on fibronectin grafted poly(L-lactide-co-caprolactone) (PLLC) nanofiber scaffold. *Biomaterials*, 2007, 28: 861~868
46. Leong MF, Chian KS, Mhaisalkar PS, Ong WF, Ratner BD. Effect of electrospun poly(D,L-lactide) fibrous scaffold with nanoporous surface on attachment of porcine esophageal epithelial cells and protein adsorption. *J Biomed Mater Res A*, 2009, 89(4): 1040~1048

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- 张燕,王强斌.银纳米粒子的生物医学应用研究进展[J].生物物理学报, 2010, 26(8): 673-679
- 吴晨希,朱朝晖,李方,陈永辉,景红丽.分子影像: 转化医学的重要工具和主要路径[J].生物物理学报, 2011, 27(4): 327-334

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