

عنوان مقاله:

Function Assessment of a Fabricated Artificial Vascular Graft in Sheep Carotid Artery

محل انتشار:

مجله علمی پژوهشی دانشگاه علوم پزشکی زنجان، دوره 31، شماره 148 (سال: 1402)

تعداد صفحات اصل مقاله: 8

نویسندگان:

Gholamhossein Kazemzadeh - Vascular and Endovascular Surgery Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

Hosein Kazemi Mehrjerdi - Dept. of Clinical Sciences, Faculty of Veterinary Medicine, Ferdowsi University of Mashhad, Mashhad, Iran

Masoud Rajabioun - Dept. of Clinical Sciences, Faculty of Veterinary Medicine, Ferdowsi University of Mashhad, Mashhad, Iran

Seyed Ali Alamdaran - Dept. of Radiology, Faculty of Medical Sciences, Mashhad University of Medical Sciences, Mashhad, Iran

Davod Mohebbi-Kalhari - Dept. of Chemical Engineering, Faculty of Engineering, University of Sistan and Baluchestan, Zahedan, Iran

Nafiseh Jirofti - Dept. of Chemical Engineering, Faculty of Engineering, University of Sistan and Baluchestan, Zahedan, Iran

Samaneh Abolbashari - Antimicrobial Resistance Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

Reza Taheri - Vascular and Endovascular Surgery Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

خلاصه مقاله:

Background and Objective: In the field of vascular surgery, the use of tissue-engineered vascular grafts is advancing and new synthetic tissues are being utilized to replace damaged blood vessels. These synthetic vessels, made through tissue engineering techniques, must mimic the shape and mechanical properties of native vessels. This study was performed to assess the function of an artificial vascular graft in an animal model. **Materials and Methods:** The evaluation of artificial vessels was carried out on rat and sheep models. The artificial vascular scaffolds were made of Polyethylene terephthalate (PET), Polyurethane (PU), and Polycaprolactone (PCL) polymers. In the first phase, the fabricated scaffolds were implanted in rats and after ۴۵ days, the grafts were removed and evaluated pathologically. In the second phase, the structures were implanted into the carotid arteries of sheep. Doppler ultrasound and angiography imaging were done to assess changes in carotid blood flow. Eleven months later, the artificial grafts and surrounding tissues were removed and evaluated pathologically. **Results:** In the rat samples, no hypodermic infections, systemic inflammation, or fibrosis of adjacent tissues were observed. In the sheep samples, no local or systemic complications were reported one week after surgery. No complications were seen after ۱۱ months in the two sheep that received PCL/PU grafts. In contrast, ultrasound evaluation showed thrombosis in the two other sheep that received PET/PU/PCL grafts. **Conclusion:** This study shows that the implanted artificial vessel used in sheep carotid arteries has a favorable patency rate and satisfactory clinical results, and in terms of mechanical properties, it may be a good candidate for vascular replacement.

کلمات کلیدی:

(Artificial Vessel, Vascular Graft, Carotid, Sheep, Polyurethane (PU), Polycaprolactone (PCL), Polyethylene Terephthalate (PET

لینک ثابت مقاله در پایگاه سیویلیکا:

<https://civilica.com/doc/1949928>

