عنوان مقاله:

Laser Soldering of Rat Skin Using a Controlled Feedback System

محل انتشار:

مجله فیزیک پزشکی ایران, دوره 6, شماره 1 (سال: 1388)

تعداد صفحات اصل مقاله: 9

نویسندگان:

.Mohammad Sadegh Nourbakhsh - *PhD Student in Biomaterials, Amirkabir University of Technology, Tehran, Iran*

Mohammad Etrati Khosroshahi - *Associated Professor, Faculty of Biomedical Engineering, Amirkabir University of .Technology, Tehran, Iran*

.Sohrab Saremi - *M.Sc in Bioelectric Engineering, Islamic Azad University, Tehran, Iran*

Shahram Rabbani - *Assistant Professor, Tehran Heart Center, Tehran University of Medical Sciences, Tehran, Iran*

خلاصه مقاله:

Introduction: Laser tissue soldering using albumin and indocyanine green dye (ICG) is an effective technique utilized in various surgical procedures. The purpose of this study was to perform laser soldering of rat skin under a feedback control system and compare the results with those obtained using standard sutures. Material and Methods: Skin incisions were made over eight rats' dorsa, which were subsequently closed using different wound closure interventions in two groups: (a) using a temperature controlled infrared detector or (b) by suture. Tensile strengths were measured at 2, 5, 7 and 10 days post-incision. Histological examination was performed at the time of sacrifice. Results: Tensile strength results showed that during the initial days following the incisions, the tensile strengths of the sutured samples were greater than the laser samples. However, 10 days after the incisions, the tensile strengths of the laser soldered incisions were higher than the sutured cuts. Histopathological examination showed a preferred wound healing response in the soldered skin compared with the control samples. The healing indices of the laser soldered repairs (426) were significantly better than the control samples (340.5). Conclusion: Tissue feedback control of temperature and optical changes in laser soldering of skin leads to a higher tensile strength and better histological .results and hence this method may be considered as an alternative to standard suturing

کلمات کلیدی:

Laser soldering, Feedback control, Histopathology, tensile strength

لینک ثابت مقاله در پایگاه سیویلیکا: