No. 1.

Laser를 이용한 새로운 미세혈관 문합술의 실험적 연구

고려대학교 의과대학 성형외과학교실

조진환* · 임재호 · 박승하 · 김우경

미세혈관 문합술에 있어서, 혈류장애의 주요원인 혈관문합 부위의 혈전 생성을 줄이기 위해, 봉합사를 사용하지 않거나 최소의 봉합과 겸한 laser 를 이용한 혈관문합에 관한 연구가 최근 급속히 진행되고 있는 가운데, 국내에서는 laser를 이용한 혈관문합(laser-assisted-microvascular anastomosis, LAMA) 에 대한 연구가 전무한 상태이다.

저자들은 1064nm 파장의 Nd; YAG laser를 이용하여 백서에서 각각 40개씩의 동맥과 정맥을 문합시켜, 이를 일반적인 단순봉합과 문합시 소용된 시간, 혈관개통율(수술직후, 2일째, 술후 1주, 술후 4주), 병리조직학적 소견 등을 비교하였다.

실험에 이용된 혈관의 직경은 동맥은 0.5—0.8mm이었고, 정맥은 0.8—1.2mm정도 이었다. 단순봉합과 laser를 이용한 혈관의 문합에 걸린시간은 단순봉합에 있어서, 동맥은 20분 28초, 정맥은 27분 29초 이었고, laser에서는 동맥은 14분 5초, 정맥이 18분 34초 이었다. 술후의 혈관개통율은 술후직후에는 단순봉합에 있어서는 동맥이 100%, 정맥이 80% 였고, laser는 혈관개통율이 술후 직후에 동맥이 85%, 정맥이 80% 이었으며, 술후 4주째 단순봉합군은 동맥이 90%, 정맥이 75%, laser 군은 동맥이 82.5%, 정맥이 75%로 혈관개통율에 있어서 높은 성공율을 보였을 뿐 아니라, 장기 추적관찰 결과 단순 봉합술 결과와 유사한 문합개존율을 보였다.

결론적으로 Nd; YAG laser를 이용한 미세혈관 문합술(LAMA)은 문합시간의 단축과 높은 혈관개통율, 적은 이물반응을 나타내어 임상적으로 이용될 수 있는 혈관 문합술의 새로운 방법으로 문헌고찰과 함께 보고하는 바이다.

No. 2.

저분자량 헤파린이 쥐 서혜부 유리피편 이식술에 미치는 영향

전북대학교 의과대학 정형외과학교실. 병리학교실*

이준모 • 이강욱 • 이동근*

임상적으로 수술 현미경을 이용한 미세수술은, 동물실험과 함께 진일보하여 보편화되었으며, 높은 성공율을 보이는 많은 병원에서도 완벽한 수기 뿐만 아니라 술후 약물요법의 중요성이 널리 인식되어 있으며, 저분자량 헤파린은 항혈전 작용 및 섬유소 용해 작용을 하므로써 미세수술 영역에서 시행하는 효과적인 약물방법으로 알려져 있다[1].

저자들은 쥐의 우측 서혜부에서 유리 피판을 얻어, 평균 6 시간의 허혈후, 동일 공여부에 재접합하였으며, 실험군에서는 저분자량 헤파린을 주사한 후, 최초 24시간후 부터 최장 6주까지, 유리피판의 육안적 소견, 재접합 대퇴혈관의 개존성과 함께 조직학적 연구를 시행하여, 그 결과을 문헌고찰과 함께 보고하고자 한다.

No. 1.

Experimental Study of Laser Assisted Microvascular Anastomosis (LAMA) Using The Nd : Yag Laser Contact Laser

Joo Ho Lim, M.D., Jin Hwan Cho, M.D., Soung Ha Park, M.D., Woo Kyung Kim, M.D. and Chun Eun Chung, M.D.

Department of Plastic and Recconstructive Surgery, College of Medicine, Korea University

A Comparative study was undertaken to evaluate the contact Noodymium : yttrium aluminum garnot (Nd : YAG) laser system for vascular anastomosis of small caliber blood vessels (diametor 0.5−1.2mm) in the animal model.

In this study 40 femoral arteries and 40 femoral veins of Sprague Dawley rats were annstomosed by contact laser assisted microvascular anastomosis (LAMA) utilizing 3 slay sutures which were placed 120 degrees apart and the intervals welded with contact Nd : YAG laser unit, conventionally sutured anastomosis (CSA) served as controls.

The time needed for vascular anastomosis, patency rate (immediate postoperative, postoperative 2nd day, postoperative 1 week, postoperative 4 week), Gross and microscopic evaluations were compared to conventional microsurgical suture technique.

The results are as follows :

(1) Post-operative patency rate was 82.5% for femoral artery and 75% for femoral vein by contact LAMA technique compared to 90% and 75% by CSA technique at postoperative 4 weeks.

(2) Less time-consumed for arterial anastomosis by 6 minutes 23 seconds and venous anastomosis by 8 minutes 55 seconds with contact, LAMA technique compared to CSA technique.

(3) Grossly almost complete healing had taken place by post-operative 1 week by contact LAMA technique.

(4) Aneurysm formation was 5% for femoral artery and 15% for femoral vein by contact LAMA technique compared to 5% and 10% respectively by CSA technique.

(5) Microscopically, reendothelization was complete by post-operative 7th day by contact LAMA technique. There was less medial hypertrophy and hyperplasia and also less inflammatory response compared to CSA.

No. 2.

The Effect of LMWH on Groin Flap Transplantation in Rat

Jun-Mo Lee, M.D., Gang-Wook Lee, M.D. and Dong-Geun Lee, M.D.*

Department of Orthopedic Surgery and Pathology, Chonbuk National University Hospital, Chonju, Korea*

Free tissue transplantation is commonly performed with the brilliant achievements in microsurgery and anticoagulants and antithrombotic agents have been prescribed in the surgical field to improve the outcome of the delicate microsurgical procedures. However, there is no clean-cut indication as to which

agents would be more effective in every steps and final consequences.

Low molecular weight heparins inhibiting coagulation in platelect-rich plasma and acting on the vascular endothelium have antithrombotic and fibrinolysis action.

The experiment with rat groin free fasp transplantation after 6-hour ischemia and injection of the low molecular weight heparin was performed and the results between the injection and non-injection group were analysed.

No. 3.

Reconstruction of the Nose Using Free Flap Transfer

Bae Kun Park, M.D., Jong In Lee, M.D.,
Chul Hoon Chung, M.D. and Suk Joon Oh, M.D.

Department of Plastic and Reconstructive Surgery, College of Medicine, Hallym University

To reconstruction of nose due to trauma and tumor resection is required for aesthetic and functional purpose. In ancient literature there were several reports of nose reconstruction including indian flap and Tagliacozzi's arm flap. Recently Zhou and Cao reported free flap based on the branch of acromio-thoracic artery and P. Benmeir used dorsalis pedis artery free flap to reconstruct nose. Other authors have reported several kinds of free flaps for nose reconstruction ; latissimus dorsi free flap, forearm free flap, ear holical cartilage free flap. This free flap operation is ono stage procedure, thus patients feel more comfort and wound healing is rapid.

We have oxperienced 5 cases of total and subtotal nose reconstruction with free flap transfor. And the causes of nose defects were as follows ; 2 cases of trauma, 2 cases of malignant skin cancer, and 1 case of complication of radiation therapy. These cases have been treated with 5 various kinds of free flap and the results were promising.

No. 4.

Nonsuture Microvascular Anastomosis Using the Unilink Apparatus

Chung Soo Han, M.D., Myung Chul Yoo, M.D.,
Duke Whan Jung, M.D. and Gi Un Nam, M.D.*

Department of Orthopaedic Surgery, School of Medicine, Kyung Hee University, Seoul, Korea

Suture microvascular anastomosis is time-consuming and tedious and demands long and continuous training. The unilink instrument system is a fast and simple method to achieve high patency rates without long and continuous training in the anastomosis of small vessels. The author experimentally studied the carotid arteries and facial veins of 14 rabbits with an average weight of 1900 gm using the unilink apparatus.