No. 5

백서의 대망을 혈관경으로 이식하여 생성시킨 이차적 도서형 피판

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오늘날 미세수술의 눈부신 발전으로 유리피판술은 상당 수준 보편화되었고 많은 유리피판의 공여부가 기술되었다. 그러나 피판이 유리피판으로 활용되기 위하여서는 반드시 조직내 일정한 크기의 축혈관을 포함하여야 하며 또한 다양한 복합 조직이 필요할 경우 그 공여부는 상당한 제약을 받게 된다. 이러한 공여부로써의 한계를 극복하고 그 영역을 확대하기 위하여 피판의 축이 될 수 있는 혈관경을 원하는 조직에 이식하여, 이식한 혈관경을 통하여 새로운 혈행화를 유도함으로써 이차적 도서형 피판을 만들고자 하는 시도들이 있었다. 본 교실에서는 백서의 우측 위대망막혈관(right gastroepiploic vessel)을 혈관경으로 4x2.5cm의 대망 절편을 백서의 복부에 작성한 8x2.5cm크기의 피부판에 접목시켜 이 피판의 재혈행화를 유도, 이차적 도서형피판의 생성을 시도하였고 또한 이 피판의 혈행화 정도 및 생존율을 정량적으로 측정, 분석하였다. 목표 조직(abdomenal skin flap)과 혈관경(vascular carrier)의 접촉 제7일째 형광염색 지표는 평균 31.4 ±12.3, 생존율 80.5±9.6 이었으며 이중 피판과 혈관경과의 접촉 도가 100%일 경우 생존율은 99.1%였고 50%인 경우 72.1%로 형광염색 지표와 피판생존율 그리고 혈관경과 목표 조직의 접촉 면적과 피판생존율은 비례하였다. 이차적으로 생존시킨 도서형 복합피판의 대망 혈관내에 India ink주입후의 조직학적 검사를 통해 혈관 운반체인 대망과 목표 조직인 복부피판사이에 새로운 혈관계가 연결되어 복부 피판에도 새로운 혈행계가 형성되어 있음을 확인할 수 있었다. 이와 같은 연구를 통해 얇고, 적은 부피이면서도 왕성한 혈행을 가지고 있는 대망은 목표 조직을 재혈행화시키는데 유용하게 사용될 수 있으며 매우 이상적인 혈관 운반체임을 밝혔다.

No. 6

유리피판 이식에서 정맥이식의 임상적 의의

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20세기 후반부터 미세수술은 많은 학자들에 의해 동물실험과 사체해부등으로 발전되어 왔으며 임상적으로는 유리조직이식편이 성공된 이래 현재는 임상에 미세수술수기를 이용한 사지의 골 및 연부조직 결손의 치료에 많이 이용되며 최근에는 정맥이식편의 삽입을 통한 혈관문합술이 Buncke와 Miller, Grotting 및 Hallock 등에 의해 크게 발전되어왔다.

연부조직 결손시 재건술에 이용하는 유리피판 이식은 여러종류가 있으며 수술시 거상의 용이성, 혈관경의

No. 4

Experimental Study of Retrograde Arterial Flow Based Free Flap

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Microsurgical free-tissue transfer has allowed surgeons to salvage injured limbs but choosing appropriate healthy recipient vessels has proved to be a difficult problem.

Retrograde flow flaps are established in island flaps. Retrograde flow anastomosis could prevent the possible kinking and twisting of the arterial anastomoses. By not interruptiing the proximal blood flow to the fracture or soft tissue defect site, the compromise of fracture or wound healing might be prevented. We wished to estabilish an animal model in rat for a retrograde arterial flow based free flap.

Nembutal-anesthetized male rats;weighing 250 to 300 gm, were used. The femoral artery and common carotid artery were exposed and divided. The systemic and retrograde arterial pressure were quantitated by utilizing a parallel tubing system connected with peripheral arteral line. In this study, the retrograde flow was not pulsatile and the retrograde arterial pressure was 40 mmHg, with a systolic pressure of 100/46 mmHg. An epigastric skin flap, measuring 3 x 3cm, was raised with its vascular pedicle. The epigastric free flap was transfered in the same rat from femoral vessels to contralateral femoral or carotid vessels in end to end fashion. We anastomosed the donor arteries to the distal parts of the divided recipient arteries and the donor veins to the proximal parts of the recipient veins. Twenty experiments were performed and the transplantations succeeded in 70 percent of them. In the remaining 30 percent, the experiments failed due to thrombosis at the site of anastomosis, or other causes. This animal model represents an excellent example of retrograde arterial flow free flap transfer that is reliable.

No. 5

The Secondary Island flap using omental vascular carrier in rats

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The omental pedicle based on right gastroepiploic vessels is designed new experimental model for prefabrication (revascularization) of skin flaps in rats. A 2.5×4cm patch of omentum with right gastroepiploic vessels was trasnferred under a bipedicled panniculocutaneous flap which is 2.5x8cm size. At day 7, all four margin was divided and the flap was rasied as an secondary island flap connected only by its vascular pedicle, then the composite flap sutured back in place. The flap perfusion was examined by dermofluorometry and flap survival area was measured at day 12. The Secondary island flap demonstrated a dye fluorescence index(DFI%)

of 31.38±12.33 and survival rate 80.47±9.61. The survival rate was increased. An india ink injection and histologic examination provided visual evidence of revascularization. The omental pedicle is a promising and safe model for revascularization of other tissues.

No. 6

The Clinical Significance of Vein Graft in Free-Flap Transfer

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From January 1980 to May 1995, ninety-six patients had been treated by free-flap transfer for the soft tissue defects of the extremities. Ninety-eight cases of free-tissue transfer were reviewed to evaluate the clinical reliability in terms of survival and quality of long-time function after reconstructive surgery.

Among these 98 cases (27 cases in latissimus orsi myocutaneous flap, 25 in dorsalis pedis flap, 20 in forearm fasciocutaneous flap, 9 in groin flap, 7 in gracilis myocutaneous flap, 6 in lst web space flap of foot and 4 cases in tensor fascia lata flap), 92 cases of them were survived. 7cases were performed with vein grafts.

We have reported 98 cases of free-flap transfer which were treated at Korea University Hospital, and the following results were obtained :

1. 92 cases(93.9%) of the total 98 cases were successful and can be obtained the excellent results in soft tissue free-flap transfer.
2. While there were no clinically significant differences in survival rate of flaps transferred from different potential flap donor sites, 3 cases of 9 groin flaps were showed higher failure rate due to the complications such as arterial thrombosis, infection and anatomical variation of vessels.
3. Postoperative thrombectomy was performed in 10 cases to be occured in the arterial and venous thrombosis. The revision was failed in 2 cases due to persistent arterial thrombosis and infection, then treated with skin graft.
4. Vein graft was frequently required in severely compromised-soft tissue defects resulted from high-energy trauma. The vein graft was not statistically significant on the frequency of flap failure rate($P<0.04$).
5. Meticulous monitoring, careful planning, early revision and technical considerations will provide for a high clinical success of the free-flap transfer.