No. 25

Buried Free Tissue Transfer시 감시피판 (Monitoring Flap)의 효용성에 대한 연구

경북대학교 의과대학 성형외과학교실

이정형 · 조병채 · 백봉수

피판의 관류(persufion)를 관찰하는 방법으로 실제적으로 색깔, 온도 등을 통한 주관적인 방법과 이의 보완적인 방법으로 대사상태 측정, ultrasound Doppler를 이용한 혈류의 측정, 표면 온도 측정, 방사성 동위원소(radioactive isotope)을 이용한 혈류 측정, Laser Doppler flowmetry등이 이용되고 있다. 그러나 이러한 방법들은 buried type의 유리피판의 관찰에 적용이 힘들며 비록 differential thermometry등의 방법이 고안되어 있으나 실제 임상적용에는 어려운 점이 많다. 이에 본교실은 buried free tissue transfer시 monitoring flap을 통해 피판 관류 상태를 관찰하였고 그 임상적 효용성에 대해 분석해 보았다.

Radial forearm flap을 이용한 식도재건시 monitoring flap은 forearm flap 보다 proximal쪽에서 radial artery의 fasciocutaneous branch에 의해 혈액공급을 받는 작은 skin flap을 본 flap과는 분리하여 거상하여 체외로 노출시켜 monitoring flap으로 이용하였으며 공장(jejunal) flap을 통한 식도재건에는 superior mesenteric artery의 분지인 jejunal artery에서 지배받는 jejunum의 한 분절를 이용하였다.

Vascularized fibular graft는 주로 하악재건이나 대퇴골두(femur head)의 무혈성괴사(avascular necrosis)를 치료하는데 이용되었으며 비골동맥(peroneal artery)의 septocutaneous perforator를 혈관경으로 하는 island skin flap을 거상하여 monitoring flap으로 하였다.

본원에서는 1991년부터 1996년까지 실시한 bruied free flap을 대상으로 monitoring flap의 신뢰성 및 효과에 대하여 조사해 보았다.

총 65예의 buried flap을 수술하였으며 그중 free radial forearm flap을 이용한 식도재건이 28예, free jejunal flap을 이용한 식도재건 5예, vascularized fibular graft을 이용한 대퇴골두의 무혈성괴사 치료에 26예, 하악재건에 5예였다.

그중 monitoring flap의 이상 소견을 보여준 경우가 9예였으며 실제 확인 결과 혈관 연결 부위 이상으로 교정(revision)한 경우는 5예였으며 위양성(false positive)이 4예로 나타났지만 monitor flap에 이상이 없으면서 실제 혈관 연결 부위에 이상이 있는 위음성(false negative)은 한 예에서도 없었다.

이상의 결과로 보아 monitoring flap은 buried tissue transfer의 monitoring에 매우 민감(sensitive) 하나 그 특이성(specificity)에서는 떨어지며 그 신뢰도를 증가시키기 위해서는 신뢰성있는 perforator를 포함하는 위치 선정이 가장 중요하며 monitoring flap의 박리시 보다 세심한 주위를 기울여 혈관경 손상을 주지 말아야 겠으며 monitoring flap의 혈관경의 비틀림이나 압박되지 않도록 monitor flap 고정시나 그 위치 선정에 신중을 기하여야 할 것이다.

No. 24.

Reconstruction of the Limb using Latissimus Dorsi Free Flap

Joo Sung Kim, M.D.*, Goo Hyun Baek, M.D.,
Jun Mo Jung, M.D. and Moon Sang Chung, M.D.

Department of Orthopedic Surgery, Seoul National University
*College of Medicine, and Hyun Dae Hospital**

Latissimus dorsi(LD) muscle is the largest transplantable block of vascularized tissue. Since LD free flap was introduced in 1970's, this flap has been widely used for the reconstruction of large soft tissue defect of the limb. From 1981 to 1996, we had experienced 37 cases of LD free flap. Serratus anterior muscle was combined with LD in two of them whose defect was very large. The average age of the patients was 31(range:4-74 years), and thirty one patients were male. Trauma was cause of the tissue defect in every case. For the recipient sites, the foot and ankle was the mot common(22 cases);and the knee and leg(11 cases), the elbow and forearm(2 cases), the hand(2 cases) were the next. The duration of follow-up was averaged as 16 months(range:3 months-12 years). Thirty one cases(84%) out of 37 were successful transplantations. In one case the failure of the flap was due to heart attack and subsequent death of the patient. One failure was caused by sudden violent seizure of the patient who had organic brain damage. Immediate reexploration of the flap was performed in 4 patients, and the flap survived in three of them. There was a necrosis of the grafted split-thickness skin on the survived LD flap. LD free flap was considered as one of the good methods, for the reconstruction of the large soft tissue defect of the limb.

No. 25

Reliability of Monitoring Flap for the Reconstruction of the Buried Free Tissue Transfer

J.H. Lee M.D., B.C. Cho M.D., B.S. Baik M.D.

Department of Plastic & Reconstructive Surgery, Kyungpook National Unvierity Hospital,
Taegu, KOREA

The ability to monitor the status of flap perfusion or its viability is of critical importance in the prevention, recognition, and treatment of complications. Numerous tests, both subjective : color, capillary

blanching, warmth, bleeding from stab wounds and objective : ultrasound Doppler flowmetry, Laser Doppler flowmetry, are available to aid this endavor.

For the buried free tissue transfer such as esophageal or mandibular reconstruction, it is very difficult to monitor the status of the flap. We made an additional small flap to the main buried flap to monitor the main flap supplied by perforating branches or segmental branches of the main vessels as monitoring flap.

During 5 years, 65 buried free flap were operated. Among them, there are 28 radial forearm flap and 5 jejunal flap for the pharyngoesophageal reconstruction, 26 free fibular transfer for the treatment of avascular necrosis of femoral head and 5 free fibular transfer for the reconstruction of mandibular defects. We observed the status of the flap through the monitoring flap . We checked the color of the monitoring flap , capillary blanching and bleeding from the stab wounds. In case of suspicision, we performed the ultrasound Doppler flowmetry over the vascular pedicle and/or Laser Doppler flowmetry over the monitoring flap.

There were 9 monitoring flaps which showed abnormal conditions. Among them 5 true vascular occlusions were confirmed in the emergency operations. 8 monitoring flaps showed signs of venous occlusion and there were 4 true venous occlusions which means high rate of false positive but there was no false negative. This means monitoring flap is sensitive but not specific for monitoring the buried free tissue transfer. There was one case of arterial occlusion. 63 flaps survived and two flap were lost inspite of vascular revision.

For the better results, we recommand a little bit larger monitoring flap, do not skeletonize the perforating branches but add enough fasciocutaneous tissue, put the special care in positioning the pedicle of the monitoring flap to avoid kinking or compression by the surrounding soft tissue.