CO₂レーザーメスと電気メスの比較

I、ラット肝の微小血管に及ぼす熱損傷について

Comparative study of CO₂ Laser scalpel with electrosscalpel

I. Thermal damage against liver microvasculature

谷野隆三郎*、西村正樹*、宮坂 男*、山口ほづえ*
 中島 功*、森田泰鎮*、テイラユット・ニムサクン*、ルビン・サン デアコ *
 ナロン・ニムサクン*、正津 聡**、長田光博*

R. Tanino, M. Nishimura, M. Miyasaka, H. Yamaguchi,
 I. Nakajima, T. Morita, D. Nimsakul, R. Santiago, Narong Nimsakul
 A. Shohtsu, M. Osada,

東海大学医学部形成外科学教室
 東海大学医学部外科学教室

*TOKAI Univ, Hospital, Dept of Plastic Surgery

** TOKAI Univ, Hospital, Dept of Surgery

The most useful advantage of CO₂ Laser scalpel is its hemostatic effect which may enable the dry field operation, therefore, comparison with electrosscalpel is quite interesting, while their adverse effect of thermal damage against surrounding tissues cannot be ignored.

We performed the comparative study of thermal damage of rat liver minovasculature after cutting with these two instrments by means of total replacement of blood with India ink.

The results are as follow:

- (1) No characteristic patterns of histological damage of the surrounding tissues for each instrument were recognized.
- (2) Thermal damage by electrosscalpel against surrounding vasculature per 1mm incised depth was significantly greater than that by CO₂ Laser scalpel.
- (3) With CO₂ Laser scalpel, extent of damage in each case was generally stable and no remarkable increase of damage by alteration of power or speed was observed.
- (4) With electrosscalpel, cutting speed and power, both with high or low, remarkably influenced the extent of damage and selection of optimum condition for the particular tissue is very important.

In conclusion, technical factor influencing tissue damage is minimal with CO₂ Laser scalpel, while that with electro-scalpel is much greater.