Glaser

Abdominal Surgery Under Electroanesthesia

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Major abdominal surgery has been performed under electroanesthesia in ten unintubated stump-tail macaque monkeys (*Macaque speciosa*). Relaxation of somatic and visceral muscles was excellent. By all criteria, complete analgesia was achieved at optimal current levels. Simultaneous physiological monitoring of cardiovascular and respiratory systems showed no significant change.

Electroanesthesia was produced by rectangular currents of 7.0 ma and 2.5 msec duration biased 7.0 ma above zero. The currents were applied between inion and nasion at a rate of 70 to 100 Hz.

When analgesia, relaxation, and immobilization had been achieved, the laparotomy was done, the abdomen explored, and gastrostomy performed. There was no evidence of response to painful stimuli. Respiratory and cardiovascular functions were stable.

Respiration was continuously monitored with an impedance ventilometer. Slight irregularity occurred during induction, but at full current the rate was regular although approximately 10% slower. The average respiratory volume per minute remained constant. Arterial blood pH and the partial pressures of O_2 and CO_2 did not change.

Slight changes were observed in systolic and diastolic arterial blood pressures. The central venous pressure remained normal throughout electroanesthesia. The electrocardiographic data were analyzed on the LINC 8 computer (Digital Equipment Company program No. EKGL-82). Interval histograms showed no additional dispersion during electroanesthesia as compared with control data.

The physiological data and surgical observations suggest that electroanesthesia is safe and effective in monkeys.