evoked potentials of the brain stem and the facial nerve did not recover, became critical, showed abrupt decrease in blood pressure and died.

Thus, it is rationalized to conclude that the photic evoked responses in the brain stem and the facial nerve are one of good indicators to evaluate functions of the brain stem and vital prognosis.

5. Open Decompressive Craniotomy with Plastic Cap for Massive Cerebral Edema

Kenzo MATSUOKA M. D.

*1 st Department of Surgery, Osaka University
Medical School, Osaka*

In order to alleviate brain swelling, several methods of decompressive craniotomy have been instituted. Since all of these methods result in closure of the skin, the decompressive effect is restricted. I have attempted to establish a new method in order to get unlimited effect for massive cerebral edema.

The idea is as follows. A large bifrontal craniotomy is used, not only the dura and falx are incised but also the scalp remains open. The bulging brain is covered with a plastic cap to prevent it from drying up. The edge of the plastic cap is closely attached to the skull window with a special method. The cavity between the plastic cap and brain surface is filled with an artificial cerebrospinal fluid. The scalp is overlapped loosely on the cap. When brain swelling is reduced, the cap is removed and the dura, bone flap and scalp are restored.

Animal experiments show that polystyrene is suitable as a material for the cap. The longest survival period of the dog with the cap is sixty two days.

Clinically, this method was applied to a patient who had an arterio-venous malformation. Following the initial surgery to remove the malformation, severe intracranial high pressure occurred and breathing stopped. An emergency craniotomy revealed massive cerebral edema. The decompressive plastic cap was applied. Curiously enough the size of the pupils were not maximally dilated, blood pressure, pulse rate and blood electrolyte balance remained within normal range until sudden cardiac arrest. This indicated that the massive cerebral edema had not seriously affected the brain stem, as usually occurs in such cases. This suggested that the open decompressive craniotomy with plastic cap could be available for practical use.