Objective:
Clipping of aneurysms is routinely performed with SSEP and EEG. Aneurysms in major brain arteries, monitoring with motor (MEP) and sensory (SSEP) evoked potentials along with electroencephalogram (EEG) provides priceless first hand information of patient’s sensory and motor status hence reassuring the surgeon towards safer surgeries.

Case Report:
28 year old male presented in the ER with left hemiparesis; CT scan confirmed a right subarachnoid hemorrhage; upon further evaluation patient was diagnosed as having right Internal Carotid Artery blister aneurysm. Right Pterional Craniotomy was planned. A comprehensive neurophysiology setup was discussed with surgeon and anesthesiologist. Modalities performed in order of preference were MEP, SSEP and EEG.

SET UP:
2 Facial muscles, 2 upper limb and 2 lower limb muscles bilaterally for MEPs. (Deletis, 2002; Sala et al., 2004) 4 limb SSEP with Median and Posterior Tibial nerves bilaterally.
6 channel EEG

Significant events:
1) Base line before incision 7) EEG showing prolonged suppression @18:41pm
2) Bleeding event @18:28 pm 8) Bleeding controlled, ICA unclamped @18:53, confirm flow by Doppler
3) Data Stable @18:29 pm 9) ICA stayed clamped for 23 minutes
4) Right Internal carotid clamped @18:30pm 10) EEG started showing recovery @18:55pm
5) MEPs dropping after clamping @18:36pm 11) Reliable SSEP data started appearing @19:03pm
6) SSEPs dropping after MEPs @18:38pm 12) Reliable MEP data started appearing @19:07pm

Conclusion:
Effective IOM means prompt and reliable identification of a change which can assist surgeons in modifying their surgical steps in achieving better patient outcome. MEPs as shown above, provided unparalleled information to the surgeon during ischemia and re-appearance of signals assured him of better prognosis once hemostasis was restored.

Inferences:
Data illustrates MEP’s ability, to identify eloquent brain ischemia is greater than SSEP and EEG. (See significant events).
This data can be validated by the following reference where Ellenbogen and Rengachary demonstrated,
Cerebral blood flow = 55 to 60 ml/100 g brain tissue/min
Cerebral blood flow (gray matter) = 75 ml/100 g brain tissue/min
Cerebral blood flow (white matter) = 45 ml/100 g brain tissue/min

EEG changes at CBF 22ml/100 g brain tissue/min
(Florence G, Guerit JM, Gueguen B. Electroencephalography (EEG) and somatosensoryevoked potentials (SEP) to prevent cerebral ischaemia in the operating room. Neurophysiol Clin 2004;34:17–32.
This reference validates our EEG data (See EEG images)