

Limited Resources— Emergency Case- What to Do?

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Sir,

We, in India have vast range of medical centers varying from well equipped corporate hospitals to minimally equipped small setups. Sometimes we face difficulties in basic monitoring in view of limited supply of logistics. To go ahead with the case or to postpone is always a dilemma in these situations. We are discussing a case posted for emergency caesarian section. Technician informed that electrocardiographic (ECG) electrodes are not available (though the demand has been raised but yet not received). But now what to do, as it was midnight so it was also not available any nearby. Whether to proceed for surgery without basic standard monitoring or to refer case?

A 26 year old female taken for emergency caesarian section. Patient taken in operation theatre (OT) with informed written consent. Pulse oximeter and blood pressure attached. Pulse rate was 140/ min and Bp was 130/90 mmHg. Technician informed me that ECG electrodes are not available. As being the only anesthetist on duty, it was my decision to proceed for the case without standard monitoring or to refer. I was neither willing to go ahead without standard monitoring nor willing to refer on this ground. Then I tried to go ahead in different way bypassing the electrodes. I applied lignocaine jelly on back surface of ECG leads and leads applied, fixed with dynaplast strips. I was able to get normal ECG complexes (video1). We asked the surgeon to use bipolar cautery for patient safety. With adequate anaesthesia and monitoring, Surgery completed uneventfully.

Every patient posted /every medical setup with running OT should have basic standard monitoring. Many times anesthetist faces difficulty in having basic monitoring due to short supply of resources and has to manage accordingly. ECG monitoring is a basic standard monitoring for patients undergoing anaesthesia¹.

Electrocardiogram is a recording of the electrical activity of the heart using electrodes placed on the skin². ECG electrodes are typically wet sensors, requiring the use of a conductive gel to increase conductivity between skin and electrode. ECG electrodes routinely used are silver chloride electrodes. In this group of electrodes, an electrochemical process between the gel and the biological tissue yields a conductive path between the patient's skin and the electrode³. This gel normally takes the form of a conductive paste which makes intimate contact with the skin, by conforming to the contours of the skin, and fills the gaps between the skin and the electrode, thus providing a more reliable path for the electrical current than is afforded by dry surface contact between electrode and skin. These gels are normally made of a thickened aqueous mixture containing a conductive salt, such as sodium chloride. As we were not having ECG jelly, we applied lignocaine jelly which is also having viscous consistency and there was no harm in doing that. To avoid cautery burn, bipolar cautery was used in place of monopolar cautery.

In bipolar cautery, two tips of the forceps perform the active and return electrode functions. Only the tissue grasped in the forceps is included in the electrical circuit. In monopolar cautery active electrode is placed at the surgical site. The return electrode (area of at least 70 cm² of firm skin pad contact) is placed somewhere else on the patient's body as skin pad.

So ECG electrodes should be positioned away from the surgery site and the current pathway, when using monopolar cautery⁴. In our case without ECG leads in OT, we proceeded for surgery with keeping patient safety on priority. When we assessed, there was no harm in monitoring ECG without electrodes, except cautery. To avoid chances of burn, bipolar cautery was used.

References

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