

Use of Supplemental Oxygen in Trauma Patients

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Oxygen is considered as a drug for medical use. It is available in all healthcare facilities and used most of the times without proper indication, in an inappropriate fashion and without documentation. The cost of its use appears to be low and there is a general perception that its use shall bring in a dramatic change in a critically ill patient or one who is breathless for any reason. It must be kept in mind that injudicious use of oxygen can produce significant harm to the patient.¹

Hyperoxia produced by supplemental oxygen is debated to produce variety of effects in animals and human experiments that may be damaging rather than of good to an individual. One of its effects is a temporary increase in blood pressure by increasing total peripheral vascular resistance due to systemic peripheral vasoconstriction. It is also reported that it tends to decrease intracranial pressure. This improves brain oxidative metabolism in severe head injury patients. The use of hyperoxia in neonatal resuscitation is also controversial. Its potential good effect in systemic immune response is also debated because of ischemia –reperfusion mechanism. Thus liberal use of oxygen is to be discouraged.

Oxygen can be administered in different ways, in terms of its concentration, rate and mode of delivery based upon what is the ultimate goal. An in-depth knowledge is thus desirable. Normobaric oxygen is usually available in hospitals. It can be delivered in various concentrations from 24% of inspired oxygen to nearly 100% through different delivery systems. Low flow systems include nasal cannulae and ordinary face masks while high flow oxygen, above 10 liters per minute, can be administered through non-re-breathing masks, bag masks units and ventilators.

Use of supplemental oxygen is recommended in trauma patients as per Advanced Trauma Life Support Protocol. It is hypothesized that in trauma victims shock state as result of hypovolemia, is due to hemorrhage. This is the most common cause of circulatory compromise. In this

setting supplemental oxygen is beneficial. However studies have shown no beneficial effect or in fact detrimental outcome of supplemental oxygen in pre hospital trauma patients both in military setting and other scenarios.³ Till concrete evidence is brought forward supplemental oxygen must be provided to all trauma victims as high as 15 liters / minutes. The goal is to keep oxygen saturation as measured by pulse oximeter (often called as fifth vital sign) between 94% - 98%. The request must be put in treatment chart with type of device for administration, range of oxygen flow / percentage of inspired oxygen and for how long must be documented.⁴

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