Extracorporeal membrane oxygenation

In intensive care medicine, extracorporeal membrane oxygenation (ECMO) or extracorporeal life support (ECLS) is an extracorporeal technique of providing both cardiac and respiratory support to persons whose heart and lungs are unable to provide an adequate amount of gas exchange to sustain life. This intervention has mostly been used on children, but it is seeing more use in adults with cardiac and respiratory failure. ECMO works by removing blood from the person's body and artificially removing the carbon dioxide and oxygenating red blood cells. Generally it is only used in the later treatment of a person with heart or lung failure as it is solely a life-sustaining intervention. Cardiopulmonary bypass is generally used for shorter-term treatment.

Severe trauma may cause refractory life-threatening respiratory failure requiring extracorporeal membrane oxygenation (ECMO). Concurrent traumatic brain injury, however, complicates the use of ECMO because of the major risk of intracranial bleeding with systemic anticoagulation. Craniotomy and/or craniectomy for hematoma evacuation during ECMO are extremely high-risk procedures secondary to ongoing anticoagulation, and there are only a few such case reports in the literature.Anton-Martin et al., present the case of a child with multiple thoracic injuries and life-threatening respiratory failure supported on ECMO. She developed an intracranial hemorrhage while systemically heparinized that required emergent decannulation and bedside craniectomy for hematoma extraction. She survived with an excellent neurologic outcome. They also review the relevant literature regarding the use of ECMO in patients with polytrauma and the occurrence of craniectomy on extracorporeal support, with a focus on pediatric publications.Patients with polytrauma with brain injury can be supported on ECMO, but extreme precaution must be taken regarding anticoagulation. The intracranial complications of ECMO in this population are not infrequent, but this case report and review of the literature suggest that neurosurgical intervention should be considered in life-threatening conditions when no other alternatives are available [1].

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Anton-Martin P, Braga B, Megison S, Journeycake J, Moreland J. Craniectomy and Traumatic Brain Injury in Children on Extracorporeal Membrane Oxygenation Support: Case Report and Review of the Literature. Pediatr Emerg Care. 2016 Oct 4. PubMed PMID: 27749813.