



## Importance of Intensive Care During Neonatal Surgery

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### DESCRIPTION

Neonatal surgery is done on babies who have birth abnormalities that cannot be addressed while they are still in the womb. Surgery might take place right after birth or in the days or weeks thereafter. Fetal and neonatal surgery is both extremely complicated and often dangerous operations that require a multidisciplinary team of professionals. Neonatal surgery reduces unfavorable cumulative damage to secondary organs, which would occur if treatment was postponed. The neonatal medical and surgical teams must work together to choose the best time for operation. If the newborn has myocardial depression and end-organ ischemia, surgical correction or palliation should be delayed as long as possible until medical care can improve heart function and allow for end-organ recovery. If sepsis or infection is suspected, cultures should be obtained and appropriate antibiotic treatment should be delivered. Prior to surgery, clinical proof of infection clearance should be available. The lesser the intraoperative risk and postoperative morbidity, the more stable the neonate is before surgery.

In the perioperative period, there are elevated risks due to undiscovered congenital anomalies and the continuance of the transitional circulation in premature infants. Furthermore, neonates have a 10-fold higher rate of perioperative morbidity and mortality than other pediatric patients. Neonates with extensive cerebral arteriovenous malformations can develop congestive heart failure, which necessitates strong hemodynamic support. Intracranial right to left shunting is most usually caused by a patent ductus arteriosus or an open foramen ovale. Because of the small size of the airway, craniofacial deformities, laryngotracheal lesions, and acute (hyaline membrane disease, retained amniotic fluid) or chronic (bronchopulmonary dysplasia) disease, managing the neonatal respiratory system can be challenging. Because these disorders are changing, they should be addressed before surgery to reduce perioperative morbidity.

Premature newborns require anesthesia for painful treatments because their central nervous systems are capable of perceiving pain and developing a stress response after a surgical stimulation. However, aesthetic drugs are extremely toxic to undeveloped neonatal organ systems. Both inhaled and intravenous anesthetics are particularly sensitive to neonatal cardiac function, thus they must be used carefully to prevent the surgical stress response without causing myocardial depression. The most stable hemodynamic approach for newborns is an opioid-based anesthesia. However, because the hepatic and renal systems of neonates are not fully matured, neonates who are sedated using a narcotic method frequently experience delayed awakening from anesthesia and may require postoperative mechanical ventilation.

Treating a myelomeningocele or an encephalocele poses unique challenges. The membranes surrounding the spinal cord and brain may be ruptured while positioning the patient for tracheal intubation. The fragile membranes are protected by carefully cushioning the lesion by elevating the neonate on top of soft supports with a hollow center. Intubation of the neonate's trachea in the left lateral decubitus position may be required in some situations. To improve surgical outcomes and reduce pain, general anesthesia should be used. A highly specialized group that has integrated regional anesthesia in neonatal surgery has pushed for the use of spinal anesthesia for the closure of tiny myelomeningoceles, although this approach has not been universally recognized. The majority of uncomplicated myelomeningoceles surgical closures result in minimum blood loss. Large lesions, on the other hand, may necessitate extensive cutaneous tissue dissection to cover the defect, increasing the risk of blood loss and hemodynamic instability. Advances in the treatment of myelomeningoceles have allowed for early intervention during pregnancy.

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