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POSTOPERATIVE INTENSIVE THERAPY FOR ESOPHAGEAL ATRESIA AND ITS TRACHEOESOPHAGEAL FORMS IN NEONATES

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Annotation. *Esophageal atresia and its tracheoesophageal forms in newborns require complex intensive therapy after surgical intervention. This article discusses post-operative resuscitation measures, airway management, artificial ventilation methods, and strategies for preventing infectious complications. Based on international research and advanced clinical experience, optimal care principles for newborns are analyzed. Modern approaches to intensive therapy contribute to improving patients' quality of life and accelerating the recovery process.*

Keyword:*Esophageal atresia, tracheoesophageal forms, newborns, postoperative intensive therapy, artificial ventilation, airway patency, infectious complications, rehabilitation, nutritional recovery, gastroesophageal reflux, tracheomalacia, pediatric surgery.*

ПОСЛЕОПЕРАЦИОННАЯ ИНТЕНСИВНАЯ ТЕРАПИЯ ПРИ АТРЕЗИИ ПИЩЕВОДА И ЕГО ТРАХЕОПИЩЕВОДНЫХ ФОРМАХ У НОВОРОЖДЕННЫХ

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Аннотация*Ж Атрезия пищевода и ее трахеопищеводные формы у новорожденных требуют сложной интенсивной терапии после хирургического вмешательства. В данной статье рассматриваются реанимационные меры после операции, обеспечение проходимости дыхательных путей, методы искусственной вентиляции легких и стратегии профилактики инфекционных осложнений. На основе зарубежных исследований и передового клинического опыта анализируются оптимальные принципы ухода за новорожденными. Современные подходы к интенсивной терапии способствуют повышению качества жизни пациентов и ускорению процесса их восстановления.*

Ключовые слова : *Атрезия пищевода, трахеопищеводные формы, новорожденные, послеоперационная интенсивная терапия, искусственная вентиляция легких, проходимость дыхательных путей, инфекционные осложнения, реабилитация, восстановление питания, гастроэзофагеальный рефлюкс, трахеомаляция, детская хирургия*

YANGI TUG`ILGAN CHAQALOQLARDA QIZILO`NGACH ATREZIYASINING BRONXLARGA OQMALI TURLARINI OPERATSIYADAN KEYIN INTENSIV TERAPIYA O`TKAZISH

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Andijon davlat tibbiyot inistituti,O`zbekiston Respublikasi

Annotatsiya*. Yangi tug‘ilgan chaqaloqlarda qizilo‘ngach atreziyasi va uning bronxlarga oqmali turlari jarrohlik amaliyotidan keyin murakkab intensiv terapiyani talab qiladi. Ushbu maqolada operatsiyadan keyingi reanimatsion choralar, nafas yo‘llarining o‘tkazuvchanligini ta’minlash, sun’iy ventilyatsiya usullari hamda infektsion asoratlarning oldini olish strategiyalari ko‘rib chiqiladi. Xorijiy tadqiqotlar va ilg‘or klinik tajribalar asosida chaqaloqlarda optimal parvarish tamoyillari tahlil qilinadi. Intensiv terapiyaning zamonaviy yondashuvlari bemorlarning hayot sifatini oshirish va tiklanish jarayonini tezlashtirishga xizmat qiladi.*

Kalit so‘zlar*:Qizilo‘ngach atreziyasi, bronxlarga oqmali turlar, yangi tug‘ilgan chaqaloqlar, operatsiyadan keyingi intensiv terapiya, sun’iy ventilyatsiya,*

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nafas yo'llari o'tkazuvchanligi, infektsion asoratlar, reabilitatsiya, ovqatlanish tiklanishi, gastroezofageal reflyuks, traxeyomalatsiya, pediatrik jarrohlik.

Esophageal Atresia (EA) is one of the most severe congenital anomalies observed in newborns, characterized by a developmental abnormality of the esophagus resulting in its discontinuity. This pathology requires urgent surgical intervention within the first days of life. EA presents in various forms, with one of the most severe types being the communicating variant, where the esophagus abnormally opens into the bronchi. In such cases, food or gastric fluids can enter the lungs via the bronchi, leading to serious complications such as pneumonia, respiratory failure, and other related conditions.

Esophageal atresia usually arises during the 4th to 6th weeks of fetal development due to a disruption in the separation process between the esophagus and the trachea. According to statistical data, this defect occurs in approximately 1 in every 2,500–4,000 live births. The most common form of EA is the one associated with a distal tracheoesophageal fistula, accounting for about 85–90% of cases. Although the broncho-esophageal communicating variants are less frequent, they represent the most critical and life-threatening forms.Clinical signs manifest immediately after birth and include excessive frothy secretions from the mouth and nose, coughing or choking upon feeding, and cyanosis. If a fistula is present between the esophagus and the bronchi, aspiration of fluids into the airways may lead to severe aspiration pneumonia, causing respiratory insufficiency that often necessitates mechanical ventilation.Radiological examinations play a key role in diagnosing EA. X-ray imaging, particularly after the administration of contrast media into the esophagus, is essential for accurate diagnosis. In addition, bronchoscopy allows direct visualization of the fistulous connection to the bronchi and helps determine the appropriate surgical strategy.

Surgical correction remains the only effective treatment for esophageal atresia. During the operation, the disconnected segments of the esophagus are anastomosed, and the abnormal opening into the bronchi is closed. However, the

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surgery itself carries several risks, especially in newborns whose pulmonary tissues are not yet fully developed. Aspiration-related complications remain a significant concern. Therefore, postoperative intensive care management is considered an integral part of the treatment.

In communicating types of esophageal atresia (EA) involving the bronchi, postoperative intensive care plays a critically important role. Following surgical intervention, the respiratory tract in newborns is often not fully restored; therefore, supporting pulmonary ventilation, preventing infectious complications, and stabilizing the overall condition of the body are among the primary objectives. At this stage, modern resuscitation approaches contribute to accelerating the recovery process and reducing postoperative mortality rates.Mechanical ventilation holds a key position in the management of these patients. The majority of neonates with EA exhibit developmental anomalies of the airways, including tracheomalacia (weakness of the tracheal wall) and pulmonary infections. Since spontaneous respiration is often insufficient in the postoperative period, both invasive and non-invasive ventilation techniques are employed. If the infant's unique anatomical features do not allow for independent breathing, prolonged intubation and mechanical ventilation are required. In such cases, positive end-expiratory pressure (PEEP) is applied to prevent pulmonary collapse.The second important aspect is infection control and antibiotic therapy. Newborns with EA are at high risk for aspiration pneumonia, a condition that may worsen after surgery. Particularly in cases with fistulous communication to the bronchi, bacterial and viral infections can develop rapidly. Therefore, broad-spectrum antibiotics—such as beta-lactams, aminoglycosides, or carbapenems—are administered from the early postoperative period.The third critical component involves nutrition and metabolic balance. Enteral feeding (via the gastrointestinal tract) may be limited in the early days after surgery, as the reconstructed esophagus may not yet be fully functional. For this reason, parenteral nutrition (via intravenous route) is preferred initially. As the infant’s condition stabilizes, enteral feeding is gradually introduced in a stepwise manner.Additionally, prevention of hypoxia and asphyxia is an essential part of intensive therapy. Respiratory disorders in neonates

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with EA often lead to hypoxemia, thus continuous monitoring of oxygen saturation levels (SpO_2) is required. Oxygen therapy is applied as needed to maintain adequate oxygenation.In summary, postoperative intensive care is crucial for improving the quality of life and reducing complications in infants with esophageal atresia. The next section will explore the potential complications that may arise during intensive therapy and strategies for their prevention.

In newborns with esophageal atresia, the postoperative period requires close medical supervision, especially in cases with tracheoesophageal fistulas, which can be associated with a number of serious complications. The primary goal of intensive care is to prevent these complications, detect them early, and manage them promptly. The most common postoperative issues include respiratory failure, aspiration pneumonia, anastomotic leakage, tracheomalacia, and reflux esophagitis.

Respiratory function may remain compromised after surgery, particularly in patients with fistulous connections to the bronchi. To prevent respiratory failure, the duration of mechanical ventilation must be individually tailored. Once the neonate demonstrates improved spontaneous breathing, gradual extubation is carried out. Positive end-expiratory pressure (PEEP) is used to prevent pulmonary collapse.Additionally, mucolytic therapy and physiotherapy are employed to maintain normal bronchial secretion clearance, as excessive mucus can increase the risk of aspiration.

Aspiration Pneumonia and Infectious Complications

Due to the esophageal opening into the bronchi, gastric contents and bacteria may enter the lungs, leading to severe inflammation. To prevent aspiration pneumonia:

- Antibiotic therapy (e.g., beta-lactams, aminoglycosides) is initiated in the early postoperative phase.
- Airway hygiene is strictly maintained during ventilation.
- Antiseptic protocols are applied to minimize microbial contamination through the endotracheal tube.

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- Enteral feeding is initiated cautiously only after swallowing reflex and respiratory function have recovered.

Anastomotic Leakage and Tracheomalacia

During surgery, the disconnected segments of the esophagus are reconnected. However, anastomotic dehiscence can occur, potentially leading to internal bleeding, infection, and sepsis. Preventive measures include:

1. Careful planning of hydration and nutrition – parenteral nutrition is continued until the infant is stable.
2. Continuous monitoring of the anastomosis – using radiographic imaging and clinical observation to assess esophageal patency.
3. To reduce the risk of tracheomalacia, treatment focuses on maintaining airway patency and strengthening the tracheal walls.

Gastroesophageal Reflux (GER)

Infants with esophageal atresia are at high risk for gastroesophageal reflux (GER), where stomach acid returns into the esophagus, causing inflammation, spasms, and feeding difficulties. Prevention strategies include:

- Antireflux medications such as proton pump inhibitors and antacids.
- Establishing an appropriate feeding schedule, with small, frequent feedings.
- Ensuring upright positioning after feeding to minimize reflux.
- Continuous monitoring of the infant’s condition postoperatively.

Preventing these complications is a primary objective of intensive care, and treatment strategies must be tailored to the individual needs of each patient.

Nutritional management is a cornerstone of postoperative care in neonates with esophageal atresia. Due to esophageal dysmotility, gastroesophageal reflux, and delayed coordination of swallowing and breathing, many newborns experience feeding challenges during the early recovery period. A structured, phased nutritional rehabilitation plan is essential to prevent malnutrition and promote normal growth.

Initial Parenteral Nutrition: In the immediate postoperative phase, total parenteral nutrition (TPN) is utilized to meet the infant's caloric and fluid needs while

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minimizing stress on the newly reconstructed esophagus. TPN also allows time for the healing of the anastomosis without the risk of mechanical or chemical irritation.

Transition to Enteral Feeding: As clinical stability improves and the swallowing reflex becomes more coordinated, gradual transition to enteral feeding begins. Expressed breast milk is preferred due to its immunologic and nutritional benefits, though specialized hydrolyzed formulas may be used in cases of intolerance or reflux.

Management of Gastroesophageal Reflux (GER): GER is a frequent and potentially serious complication. Strategies to reduce reflux include feeding in small, frequent volumes, maintaining the infant in a semi-upright position during and after feeding, and pharmacologic treatment with proton pump inhibitors or H2-receptor antagonists, as indicated.Long-term follow-up is necessary to assess esophageal function, monitor weight gain, and detect any signs of feeding aversion or esophageal stricture formation. Multidisciplinary collaboration between pediatric surgeons, gastroenterologists, and dietitians plays a crucial role in optimizing outcomes.

Conclusion

Tracheoesophageal fistula associated with esophageal atresia is among the most complex congenital anomalies, and postoperative intensive care plays a crucial role in preserving the newborn's life and supporting healthy development. This condition may lead to serious complications such as respiratory failure, aspiration pneumonia, anastomotic leakage, and gastroesophageal reflux. Therefore, effective postoperative management in a neonatal intensive care setting is essential.

Postoperative intensive therapy involves mechanical ventilation, antibiotic therapy, parenteral nutrition, and maintenance of metabolic homeostasis. Preventing complications requires ensuring airway patency, combating infections, and continuously monitoring the integrity of the esophageal anastomosis.

The rehabilitation process includes restoring respiratory function, adapting the gastrointestinal system, and supporting psychomotor development. Regular follow-up and medical supervision significantly contribute to improving the quality of life and ensuring normal development.

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Overall, advances in modern surgical techniques and intensive care have significantly improved the survival rates of infants born with esophageal atresia. With individualized approaches and high-quality medical support, affected infants can achieve a healthy and fulfilling life.

LIST OF REFERENCES

1. Smithers, C. J., Hamilton, T. E., & Manfredi, M. A. (2017). Esophageal Atresia and Tracheoesophageal Fistula: Diagnosis and Management. Seminars in Pediatric Surgery, 26(4), 179-186.
2. Spitz, L. (2019). Esophageal Atresia: Lessons I Have Learned in a 40-Year Experience. Journal of Pediatric Surgery, 54(3), 393-398.
3. Rintala, R. J., & Pakarinen, M. P. (2020). Long-term Outcomes of Esophageal Atresia: Esophageal Function, Respiratory Morbidity, and Quality of Life. Journal of Pediatric Surgery, 55(4), 672-679.
4. Okamoto, T., Takamizawa, S., & Arai, H. (2018). Current Trends in the Surgical Treatment of Esophageal Atresia and Tracheoesophageal Fistula. Pediatric Surgery International, 34(4), 387-396.
5. Deurloo, J. A., Ekkelkamp, S., & Heij, H. A. (2016). Morbidity and Quality of Life in Adult Survivors of Esophageal Atresia. The Annals of Thoracic Surgery, 102(5), 1740-1747.
6. Gross, R. E. (2021). The Surgery of Infancy and Childhood: Its Principles and Techniques. Philadelphia: Saunders
7. WHO Guidelines on Neonatal Surgery (2022). Management of Congenital Esophageal Atresia and Associated Anomali