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Our experience in thoracoscopic treatment of congenital diaphragmatic hernia in newborns

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Background and aims.

The treatment of newborns with congenital diaphragmatic hernia (CDH) is still actual problem. Changing management tactics had led to an improvement in results last decade. The mini-invasive surgical procedure was developed and introduced in clinic adding new abilities.

The goal is to determine the effectiveness of thoracoscopy in treatment of CDH in newborns.

Methods and Materials.

The retrospective analysis of treatment of 127 infants with CDH during the period from 1993 to 2013 in Pediatric Surgery Center of Minsk, Belarus was conducted. From 1993 to 2006, the newborns were operated on 1-2 admission day. Traditional methods - laparotomy and thoracotomy applied in 59 of 65 children in this group, 16 patients died. Two patients were operated after 1 month age and excluded from investigation. Postoperative lethality was 27.1%, the overall mortality rate - 30.7%. Postoperative complications have demanded 18 (30.5%) reoperations in 13 patients, including 4 hernias relapse.

From January 2007 operation are produced only in children with stable condition on the 6-8 day of life. The use of HFOV by VIASYS is method of stabilization of the newborn, in addition to other therapeutic activities.



Fig. 1-4 Assessment and stabilization the clinical condition of newborn with CDH

The main hernia repair operative method from December 2009 is thoracoscopic plastic of diaphragm.



Fig. 5-11 Stages of thoracoscopic intervention and patient 6 months after the operation.

The 62 children have been treated. Operations were performed in 54 children: 16 children by traditional methods and 38 completed mini-invasive intervention. Four patients were operated after 1 month age and excluded from investigation.

Results.

Four patients (7.4%) died postoperatively and overall mortality amounted to 12.9%. Reoperations took place in 10 patients (18.6%), 5 children have recurrent hernia after thoracoscopic plastic. Four of them returned to clinic in a few months after discharge. One child relapse marked twice in 6 months. All children repeatedly operated with thoracoscopy, in four cases patches were applied.

No complications were revealed in early postoperative period in patients with hernia relapse repair.

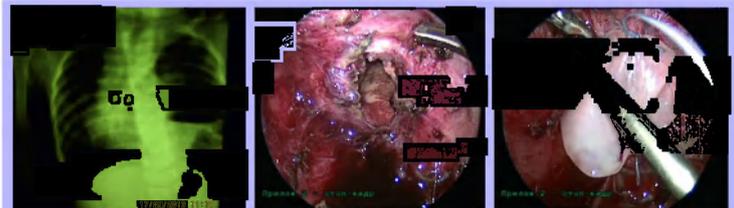


Fig 12-14 The hernia relapse and thoracoscopic plastic of diaphragm with patch

Conclusion:

Thoracoscopic repair for CDH is feasible and safe. Minimal trauma, good cosmetic results, and rapid recovery are all important advantages of this method. However, the further long term results investigation are necessary for an objective assessment of the application of thoracoscopy in treatment of congenital diaphragmatic hernia in newborns.

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Tab.1 The results of treatment in different groups

Sign	Comparison group (n=65)	The core group (n=62)
	n (%)	n (%)
Excluded patients	2 (3.07%)	4 (6.4%)
Operation treatment	59	54(16*/38**)
Preoperative lethality	4 (6.1%)	4 (6.4%)
Postoperative lethality	12 (27.1%)	4 (7.4%)
Overall mortality rate	16 (30.7%)	8 (12.9%)
Postoperative complications (including hernia relapse)	18 (30.5%)	10 (18.6%)
	4 (6.7%)	5 (9.2%)

* traditional operations
** thoracoscopic plastic of diaphragm