

## Laparoscopic Surgery and Open Surgery in the Treatment of Children with Congenital Diaphragmatic Hernia: A Clinical Observation

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**Abstract: Objective** Clinical efficacy of laparoscopic surgery and open surgery of congenital diaphragmatic hernia were compared. **Methods** Children with congenital diaphragmatic hernia in children 34 cases were treated in our hospital from March 2010 to February 2013, in accordance with the different surgical approach. It was divided into experimental group and control group. Experimental group were 17 cases. The experimental group children had laparoscopic surgery in diaphragmatic hernia, the control group children by laparotomy in diaphragmatic hernia. Among those two groups, operative time, length of the surgical incision, blood loss, postoperative feeding time, and postoperative complications were analyzed. **Results** The operative time, incision length, blood loss, postoperative feeding time shorter than the control group; small incidence of postoperative complications, significant difference between the two groups were statistically significant ( $P < 0.05$ ). **Conclusion** Laparoscopic children with diaphragmatic hernia repair surgery, shorter operative time, less bleeding, can quickly resume eating fewer complications, better overall clinical efficacy in children with congenital diaphragmatic hernia treatment is better surgical methods, it is worth further application in clinical practice.

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Congenital diaphragmatic hernia birth defects of the diaphragm (CDH) is one of the major diseases that threaten the lives of infants and young children, the cause of pulmonary hypoplasia and pulmonary hypertension is the main cause of death in patients. Carrying congenital diaphragmatic hernia newborn babies tend to exhibit respiratory distress, if they can not receive timely treatment would be fatal. Most typical are congenital diaphragmatic hernia, abdominal hernia, congenital retrosternal diaphragmatic hernia, bulging diaphragm and diaphragm central tendon defects. With the development of science and technology, the treatment nature of the medical institutions are also more and more mature, the application of minimally invasive techniques to effectively reduce the suffering of patients. With the continuous development of minimally invasive techniques, laparoscopic surgery, trauma, quicker recovery, shorter hospital stay, and so on, in clinical applications began to receive attention. In this paper, the clinical efficacy of laparoscopic surgery and open surgery of congenital diaphragmatic hernia observation and discussion and the results are reported as below.

### 1 Materials and Methods

1.1 The study of children admitted to our hospital from March 2010 to February 2013 in children with congenital diaphragmatic hernia, 34 patients underwent a chest X-ray confirmed. Clinical

manifestations of purple lips in 21 cases cough and fever in 13 cases. 22 males and 11 females, age 8h ~ 21 months, an average of 12.3 months. Defect diameter 4.3 to 7.0 cm, and an average of 5.6 cm; diaphragmatic hernia parts: the left posterior lateral in 18 cases, 16 cases of right posterolateral. According to the different surgical approach is divided into experimental group and control group 17 cases, differences between the two groups in terms of gender, age, diaphragmatic hernia site and defect diameter, are not statistically significant ( $P > 0.05$ ), comparable.

1.2 Surgical control group received laparotomy diaphragmatic hernia repair treatment, anesthesia: general anesthesia, do 5 to 8 cm transverse incision in the left upper quadrant subcostal abdominal viscera into the chest after reset fully reveal the the diaphragmatic defect site underwent the edge of the defect interrupted mattress suture, after conventional given anti-inflammatory, oxygen, rehydration symptomatic treatment, to be children with stable vital signs, pull out the drainage tube [1]. Experimental group were treated with laparoscopic diaphragmatic hernia repair surgery, anesthesia: general anesthesia, children take the first high-pin low, in the umbilical fossa doing 1 cm longitudinal incision, placed 5 mm Trocar, to establish the CO<sub>2</sub> pneumoperitoneum pneumoperitoneum pressure to 8 ~ 10 mmHg is appropriate, and then were placed in the belly of the left and right upper quadrant at the Trocar. Placed in the

operating equipment in the umbilical and right upper quadrant laparoscopic placement in the left abdomen, abdominal exploration, will enter the intrathoracic organs reduction in the abdominal cavity and suture the diaphragm to repair defects clear intra-abdominal, laparoscopic diaphragmatic repair was observed to determine the correct unplug the laparoscopic probe the incision was sutured, abdominal drainage tube placed. To take appropriate measures in accordance with conventional surgery to reduce the infection caused by surgery, the patient nutritional supplements and oxygen supply. Children one to two days after the chest X-ray

review, second review three months after discharge.

1.3 Statistical analysis using SPSS 13.0 software for statistical analysis, mean compared using t test,  $P < 0.05$  significant difference.

## 2 Results

2.1 Two groups of children with surgery compared the experimental group, operative time, incision length, blood loss, postoperative feeding time with the control group, the difference was statistically significant ( $P < 0.05$ ) (Illustrated in Table 1).

Table 1. Comparison of the surgery in children ( $x \pm s$ )

| Groups             | Cases | Duration Of Surgery<br>(min) | Incision Length<br>(cm) | Blood Loss<br>(ml) | Feeding Times<br>(d) |
|--------------------|-------|------------------------------|-------------------------|--------------------|----------------------|
| Experimental group | 17    | 89.4±5.3*                    | 3.2±0.2*                | 1.7±0.3*           | 1.6±0.2*             |
| Control group      | 17    | 129.1±12.7                   | 6.8±0.7                 | 5.7±1.6            | 3.7±0.3*             |

the comparison between the two groups, \*  $P < 0.05$ .

2.2 Two groups of children postoperative complication rate comparison after surgery during hospitalization, the experimental group had 0 cases of wound infection, wound cracking cases, pulmonary infection in 1 case, scleredema 0 cases, postoperative complications incidence of 5.9%; the control group 1 cases of wound infection, incision cracking cases, lung infection in 2 cases, scleredema 1 case, the total incidence of postoperative complications was 23.5%; surgical complications in the two groups compared to the experimental group lower incidence of, and the differences were statistically significant ( $P < 0.05$ ).

## 3 Discussion

Congenital diaphragmatic hernia mortality of 40% to 62%, from 16 to 18 weeks of pregnancy can be selected according to the seriousness of the condition can be ultrasound diagnosis, fetal intervention [2]. Newborn babies associated with respiratory failure due to pulmonary hypoplasia and pulmonary hypertension in rats.

Children with congenital diaphragmatic hernia is diagnosed, immediate surgery. Diaphragmatic repair the use of open surgery, but the diaphragmatic defect, different sizes, full exposure of the operative field, and often requires a larger incision, thereby increasing the amount of blood loss and operative time [3]. Newborn children with development and the formation of immune resistance function is not yet fully

factors after surgery can easily cause complications related to to bring some troubled children and family. With the continuous development and improvement of minimally invasive techniques, minimally invasive techniques have been widely used in clinical, laparoscopic techniques to achieve better results in the adult abdominal surgery, but whether this minimally invasive techniques to adapt to the treatment of children with congenital diaphragmatic hernia repair, clinical studies less [4].

In the past decade, laparoscopic surgery has been thought as a safe and effective surgical method is widely accepted and the video laparoscopy has become the standard. The advantages of laparoscopic surgery [5-6]: (i) reduce bleeding. (Ii) a smaller incision, thus reducing the pain, shorter recovery time, but also reduce the resulting scarring after surgery. (Iii) pain. (Iv) shorter hospital stay. (V) reducing the possibility of internal organs exposed to external contaminants and thereby reduce the risk of infections acquired.

The results of this study show experimental group operation time, incision length, blood loss, postoperative feeding time shorter than the control group, post-operative hospital stay, surgical complications of the experimental group ( $P < 0.05$ ) lower incidence. Therefore pediatric laparoscopic diaphragmatic hernia repair surgery, shorter operation time, less bleeding, shorter incision length, can be quickly restored eating and fewer complications, better

overall clinical efficacy, the current treatment of children with CDH better surgical techniques, it is worth further application in clinical practice.

#### References

- [1] Yang Xunjun, Dengyu Jiang, Gan Chun, .Laparoscopic surgery and open surgery in the treatment of children with congenital diaphragmatic hernia efficacy [J]. Hainan Medicine, 2012,23 (10) :39-40.
- [2] Keijzer R, Puri P. Congenital diaphragmatic hernia [C] // Seminars in pediatric surgery. WB Saunders, 2010, 19 (3): 180-185.
- [3] Shi huangjin, Chen Kuai, DAI Kangling deng, Pro thoracoscopic surgery for congenital diaphragmatic hernia experience [J] Journal of Pediatric Surgery, 2012,33 (5) :340-343.
- [4] Jackson CR, MacKinlay GA, McHoney M. Light at the end of the tunnel: a technical note on thoracoscopic repair of congenital diaphragmatic hernia [J]. Surgical Techniques Development, 2011, 1 (1): e6.
- [5] Zhao Yingmin, and Lee, Ye Hui laparoscopic children with congenital diaphragmatic hernia repair [J] Chinese Journal of Minimally Invasive Surgery, 2006,6 (8) :597-598.
- [6] Wen-Ying Liu, Ji Yi Research and Progress in the diagnosis and treatment of congenital diaphragmatic hernia [J] Journal of Pediatric Surgery, 2011,32 (4):302-305 DOI: 10.3760/cma.j.issn.0253-3006.2011.04.017 .

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