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Surgical Correction of the Chest Wall in the Treatment of Chronic Nonspecific Pleural Empyema with Bronchopleural Fistulas

ABSTRACT

Empyema with bronchopleural fistula is one of the most severe complications of pulmonary pathology. In the case of chronic course the disease becomes long-term for reducing the quality of life of the patient. The authors have shown a clinical case of empyema with bronchopleural fistula. The successful implementation of collapse surgical intervention on the thorax to eliminate empyema cavity and further improvement of the patient at the ineffectiveness of classic minimally invasive surgical treatments is demonstrated.

Keywords: bronchopleural fistula, empyema, thoracoplasty.

INTRODUCTION

The most severe complications in thoracic surgery reflected in the outcomes of treatment and quality of life of the patient, are bronchopleural fistula and, as a consequence, the development of pleural empyema. The presence of bronchopleural fistula complicates the treatment of pleural empyema, preventing the creation of a negative pressure in pleural cavity, necessary unfolding of the lung, contributes to the formation of residual cavities. In the acute phase of the disease the method of endoscopic treatment of bronchopleural fistulas - the valve bronchoblocation - should be used [2,3]. In the case of chronic process, damaged lung is becoming covered with visceral mooring which does not allow the lung to spread. Gradually, the thickness of the moor increases, while lung tissue is being replaced by connective tissue, it develops pneumatic cirrhosis. At this point conservative therapy is ineffective. Empyempleurectomy with a decortication of the lung is used as a method of surgical treatment. This type of operation is accompanied by the visceral pleura traumatization, and as a result it stimulates the formation of fistulas, which also prevents the smoothing of the lung. The thoracomyoplasty is used with an aim to eliminate the residual cavity with no tendency for a lung smoothing and bronchopleural fistulas closing [1].

Clinical surveillance. Patient K., 32 years old, entered the hospital with the clinic of parapneumonic empyema with a bronchopleural fistula on the right side 3.11.09. From

anamnesis: the patient had recurrent right-sided pleural effusion for 10 years before and which in 2002 was defined as a specific process. The patient received treatment with anti-TB drugs for 8 months with a positive effect. In the summer of 2009 another relapse of pleurisy happened, reactivation of a specific process was rejected. Fever, weakness, shortness of breath on exertion made the patient enter the RCH, drainage of the right pleural cavity was done and purulent exudate was allocated up to 1000 ml by drainage, then the patient was sent to a specialized department of RCH №1. The pattern works as a docker in the seaport, work involves heavy physical labor. The department conducted antibiotic therapy, rehabilitation empyema cavity, physiotherapy. After 16 days the drainage was removed. With a positive result of treatment in the form of a resolution of empyema, with an outcome into pleural pneumatic cirrhosis with a dry residual cavity, on the 17th day the patient was discharged from the department.

The patient was rehospitalized on the 26th of January, 2010 and entered the OHT department in RCH №1. He was diagnosed with a chronic empyema on the right in the acute stage. The right pleural cavity was drainaged. Within 50 days of receiving the treatment, there were signs of bronchopleural fistula, though in spite of this a positive result was achieved, in a stage of remission of a chronic empyema. The patient was discharged to dispensary and scheduled for surgery a month later. One month after the discharge the patient entered the OHT on the 23rd of March, 2010 in the stage of remission of a chronic empyema with a bronchopleural fistula on the right. The surgery was performed on the 5th of June, 2015 which included the thoracotomy on the right side, subperiosteal resection of the ribs 6,7,8, pleurectomy and decortication of the lung. During the thoracotomy, due to bone deformation of the rib hull, the need for resection of the side portions of the ribs appeared. Decortication of the lung was performed with technical difficulties, the thickness of the moore was up to 0.7 cm, pleurectomy was perfomed over the back-side surface, large defects of the lung were sutured. The postoperational period was marked by slow smoothing of the lung due to bronchopleural fistulas. Despite of the repeated draining fistula occlusions of the bronchi on various levels (segmental, lengthwise, medium), the lung was not cracked down, and a cavity in basal sides of the right hemithorax remained. Further treatment was conservative, in a state of a chronic empyema on the right with bronchial fistulas and a dry residual cavity. After 119 days of treatment, the patient was discharged (20.08.10.) to the dispensary stage for further correction of the chest wall by surgery in 2 months.

On the 21st of October, 2010, the patient was hospitalized. On the 9th of November, 2010, the imposition of torakostomy was performed along with a resection of the lateral sections of the 5, 6, 7 ribs for the purpose of conducting an open cavity empyema. On the 7th of December, 2010 the patient had a massive bleeding from the empyema cavity, which was stopped conservatively. After 55 days (15.12.10) of the hospitalization and after cupping the next exacerbation, the patient was discharged from the department.

Against the backdrop of a chronic empyema of the right pleural cavity the patient was admitted to the RCH №1 for the second stage of surgery on the 31 of January, 2011. As a result of the microflora of empyema cavity, Ps. Aeruginosa was detected. On the 24 of February, 2011 thoracorhinoplasty was performed with a resection of the chest wall on the right side, pleurostoma was closed. Side access was provided to 6 intercostal space with an excision of the pleurostoma, thoracotomy was continued to 6 intercostal space to the shoulder line. The lung was in atelectasis, covered with a moor up to 0.5 cm. The residual cavity extended up to the rear section of the rib 4, down to rib 9. Subtotal resection was performed from the 3rd to the 10th rib from the shoulder to the midclavicular line, including the previously resected 6-9 ribs. Together with ribs intercostal muscles were removed from the pleural moorings, with thickness up to 3 cm. Partial resection of 2 ribs was perfomed also. Mobilization of the body of the blade was followed by a resection of 1/3 of her body. Then excision of pulmonary moorings was done. Muscle flaps were fixed on the edge of the moor. Intermuscular spaces in the area of mobilization anterior of pectoral muscles (the major and minor pectoral muscles) were drained through counterpunctures. A pressing bandage was placed on the right side of the chest. Early postoperational period was complicated by a pneumothorax on the contralateral side, there was performed a puncture, a drainage of pleural cavity, and the complication was cropped conservatively. As a result of healing of the postoperational wound, seroma cavity formed in the deeper layers of muscles, the cavity was closed with the passage of time, the fistula of the postoperational scar healed. After 59 days of hospitalization the patient was discharged (31.03.11).

Last admission was on the 31 of January 2012, the patient entered the department because of the discovery of a new postoperational fistula ligature. On the 2nd of august, 2015 the excision of fistula ligature was performed, and a dacronic ligature was removed. Wound healing was carried out by primary pulling. On the 24th day of hospitalization (13.03.12) the patient was discharged with a complete healing of the fistula and recovery.

The last survey was conducted in April 2015. The chest was deformed due to thoracoplasty, there also was postoperational scarring with no signs of inflammation, the right lung was reduced, there wasn not neither free fluid in the right pleural cavity nor infiltrative changes in the lungs. The patient was brought through with a help of a healing process.

CONCLUSION

Chronic empyema with bronchopleural fistulas accompanied by long-term treatment, in this case more than 3 years, and as a consequence, disability and massive antibiotic therapy with an expanding range of resistant pathogens in foci of chronic infection, and the addition of hospital flora. A clinical example is given to demonstrate the successful implementation of collapse surgical intervention on the chest wall to eliminate empyema cavity and further improvement of the patient with the ineffectiveness of classic minimally invasive surgical treatments.

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