



ORIGINAL ARTICLE

Videothoracoscopic surgery before and after chest tube drainage for children with complicated parapneumonic effusion ☆,☆☆



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KEYWORDS

Pleural empyema;
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Thoracic surgery;
Videothoracoscopic surgery;
Chest tube drainage;
Child

Abstract

Objectives: To evaluate the effectiveness of videothoracoscopic surgery in the treatment of complicated parapneumonic pleural effusion and to determine whether there is a difference in the videothoracoscopic surgery outcome before or after the chest tube drainage.

Methods: The medical records of 79 children (mean age 35 months) undergoing videothoracoscopic surgery from January 2000 to December 2011 were retrospectively reviewed. The same treatment algorithm was used in the management of all patients. Patients were divided into two groups: in group 1, videothoracoscopic surgery was performed as the initial procedure; in group 2, videothoracoscopic surgery was performed after previous chest tube drainage.

Results: Videothoracoscopic surgery was effective in 73 children (92.4%); the other six (7.6%) needed another procedure. Sixty patients (75.9%) were submitted directly to videothoracoscopic surgery (group 1) and 19 (24%) primarily underwent chest tube drainage (group 2). Primary videothoracoscopic surgery was associated with a decrease of hospital stay ($p=0.05$), time to resolution ($p=0.024$), and time with a chest tube ($p<0.001$). However, there was no difference between the groups regarding the time until fever resolution, time with a chest tube, and the hospital stay after videothoracoscopic surgery. No differences were observed between groups regarding the need for further surgery and the presence of complications.

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PALAVRAS-CHAVE

Empiema pleural;
Derrame pleural
parapneumônico
complicado;
Cirurgia torácica;
Cirurgia torácica
vídeoassistida;
Drenagem torácica;
Criança

Conclusions: Videothoroscopic surgery is a highly effective procedure for treating children with complicated parapneumonic pleural effusion. When videothoroscopic surgery is indicated in the presence of loculations (stage II or fibrinopurulent), no difference were observed in time of clinical improvement and hospital stay among the patients with or without chest tube drainage before videothoroscopic surgery.

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Cirurgia torácica vídeoassistida antes e depois de drenagem torácica em crianças com derrame parapneumônico complicado

Resumo

Objetivos: Avaliar a eficácia da cirurgia torácica vídeoassistida no tratamento de derrame pleural parapneumônico complicado e determinar se há diferença no resultado da cirurgia torácica vídeoassistida realizada antes ou depois da drenagem torácica.

Métodos: Analisamos retrospectivamente prontuários médicos de 79 crianças (idade média de 35 meses) submetidas a cirurgia torácica vídeoassistida de janeiro de 2000 a dezembro de 2011. O mesmo algoritmo de tratamento foi utilizado no manejo de todos os pacientes. Os pacientes foram divididos em dois grupos: o Grupo 1 foi submetido a cirurgia torácica vídeoassistida como procedimento inicial; o Grupo 2 foi submetido a cirurgia torácica vídeoassistida após drenagem torácica prévia.

Resultados: A cirurgia torácica vídeoassistida foi eficaz em 73 crianças (92,4%); as outras seis (7,6%) necessitaram outro procedimento. Sessenta pacientes (75,9%) foram diretamente submetidos a cirurgia torácica vídeoassistida (Grupo 1) e 19 (24%) foram primeiramente submetidos a drenagem torácica (Grupo 2). A cirurgia torácica vídeoassistida primária foi associada à redução do tempo de internação ($p=0,05$), do tempo para resolução ($p=0,024$) e do tempo com o tubo torácico ($p<0,001$). Contudo, não houve diferença entre os grupos a respeito do tempo até que não tivessem mais febre, do tempo com o tubo torácico e do tempo de internação após a cirurgia torácica vídeoassistida. Não foram observadas diferenças entre os grupos com relação à necessidade de cirurgia adicional e à presença de complicações.

Conclusões: A cirurgia torácica vídeoassistida é um procedimento altamente eficaz para tratar crianças com derrame pleural parapneumônico complicado. Quando a cirurgia torácica vídeoassistida é indicada na presença de loculações (fase II ou fibrinopurulenta) não há diferença no tempo de melhora clínica e no tempo de internação entre os pacientes com ou sem drenagem torácica antes da cirurgia torácica vídeoassistida.

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Introduction

An estimate recently published by the World Health Organization (WHO)¹ shows Brazil among the 15 countries with the highest absolute number of new cases of pneumonia per year (1.8 million), with an estimated incidence of 0.11 episodes per child-year. Bacterial pneumonia in children is often accompanied by pleural effusion,² present in 40% of cases,³ of which 5%–10% may progress to complicated pleural effusion and/or empyema.⁴ Based on these data, it is estimated that approximately 14,000–20,000 new cases of complicated pleural effusion occur in children each year in Brazil.

Parapneumonic pleural effusion (PPE) is regarded as complicated (CPPE) when antibiotics alone are insufficient, and a surgical procedure³ is required for an adequate drainage the infected pleural space. In this case, the pleural fluid is characterized by positive bacterial studies, a glucose

level below 40mg/dL, a pH below 7.0, and progressive loculation.⁵

Controversy remains on the subject of the optimal treatment of pediatric CPPE.^{6,7} Treatment options range from simple chest tube drainage (CTD), with or without fibrinolytic instillation, and the less invasive videothoroscopic surgery (VATS), to more invasive thoracotomy and lung decortication of the lung; the intermediate option is represented by minithoracotomy.⁸ The choice of surgical intervention often depends on the clinical condition of the patient, stage of CPPE at diagnosis, and expertise and experience of local staff⁹; the treatment option has substantial economic implications.¹⁰ It remains unclear whether the choice and timing of the different therapeutic options influence the duration of illness and the length of hospital stay.¹¹

VATS is an effective option for pleural debridement in cases of loculated or septated effusion, allowing cleaning of the infected pleural space under direct vision and full

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