AB016. Pleurectomy/decortication for malignant pleural mesothelioma

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Abstract: Extrapleural pneumonectomy (EPP) or pleurectomy/decortication (P/D) is performed for operable malignant pleural mesothelioma (MPM). EPP is comprised of the resection of the parietal pleura, the lung, the diaphragm, and the pericardium. The diaphragm and the pericardium are reconstructed. P/D is comprised of entire resection of the parietal and visceral pleura, and if necessary partial resection of the diaphragm and the pericardium. The lung parenchyma is preserved in P/D. International Mesothelioma Interest Group (IMIG) guidelines concluded that EPP or P/D should be selected on the basis of disease distribution, institutional experience, and surgeon preference and experience (Rusch V, *et al.*, *J Thorac Cardiovasc Surg* 145:909-910, 2013). According to the International Association for the Study of Lung Cancer (IASLC) Mesothelioma Database (Rusch VW, *et al.*, *J Thorac Oncol* 7:1631-9, 2012), stage I MPM resected by EPP were associated with a median survival of 40 months whereas those managed by P/D had a median survival of 23 months. Our first choice is EPP followed by hemithoracic radiation and chemotherapy. If EPP is inappropriate, P/D followed by chemotherapy is performed. At the beginning of this presentation, I will show my video of P/D for MPM. The surgical procedures of the video were started in my hospital in 2013. Next, I will report the results of my P/D. Although P/D is usually performed for MPM, we have successfully treated some cases of pleural dissemination of abdominal malignancy by P/D, for example colon cancer, pseudomyxoma peritonei, and malignant peritoneal mesothelioma. Finally, another video will show the dissection of the visceral pleura from the lung parenchyma by use of a periosteum elevator for pleural dissemination of pseudomyxoma peritonei. The first video shows my P/D for MPM. In his left decubitus position, a 23 cm postero-lateral incision was made. The extrapleural plane was entered in the sixth inter costal space. The seventh rib was shingled posteriorly. The parietal pleura were dissected by hand. The extrapleural space was dissected. Towels with diluted epinephrine were placed to prevent bleeding. The parietal pleura were dissected from the superior vena cava and the azygos vein. The parietal pleura were dissected from the pericardium. The parietal pleura were dissected from the diaphragm. The edge of the parietal pleura and the diaphragmatic muscle were seen. Because tumor invasion was suspected, full layer of the diaphragm was partly resected, and reconstructed by direct sutures. The parietal pleura were incised by a knife. And also, the visceral pleura were incised by a knife. The visceral pleura were dissected using a periosteum elevator with the lung inflated. The visceral pleura were dissected from the fissure. The entire visceral pleura were removed. The phrenic nerve was preserved. The thoracic duct was ligated to prevent chylothorax. Operation time was 8 hours 53 minutes. Bleeding amount was 1,600 g. Case series of my P/D is reported. Sixteen consecutive cases of P/D for MPM which were performed from May 2013 to August 2017 in our hospital were reviewed. P/D was selected, if EPP was inappropriate. Overall survival was calculated from the start of treatment using Kaplan-Meier method. This was one institutional retrospective study. In results, median age at P/D was 66 [47–75] years old. Female was 2, and male was 14. Right side was 15, and left side was 1. The main reasons why P/D was selected were poor pulmonary function, old age, arrhythmia, diabetes mellitus, brain disease, and heavy smoking history. Fifteen patients were clearly exposed to asbestos. Biphasic type was 10, and epithelioid type was 6. IMIG c-stage IB was 11, and II was 5. Median P/D time was 8 hours 54 minutes (6 h 47 m–13 h 7 m). Median bleeding amount was 2,193 mL (350–3,420 mL). The endotracheal tube was extubated just after P/D in OR in all cases. 90 day mortality was zero. Frequent peri-operative complications were air leak more than two weeks 6 (38%), and atrial fibrillation 4 (25%). Median date of the chest tube removal was 13th post-operative day (POD 3rd–22nd). Pleurodesis was performed in 8 patients. IMIG pathological stage was stage III in 7, stage II in 4, and stage Ib in 4. One case was diagnosed solitary pleural mesothelioma with 6 cm diameter. All patients underwent adjuvant chemotherapy with CDDP plus PEM. Postoperative median follow-up period was 2 years 8 months at prognosis analysis. Eleven of sixteen have died due to mesothelioma. Median post-operative period of died patients was 2 years 1 month (1 year 2 months–3 years). No patient passed away within one year after P/D. Recently operated 5 cases are alive. In conclusions of this case series,

my P/D is feasible for epithelioid and biphasic MPM. The second video shows dissection of the visceral pleura from the lung parenchyma by use of a periosteum elevator for pleural dissemination of pseudomyxoma peritonei. The patient was mid-40s male. In 2015, he underwent complete reduction surgery (18 hours 13 minutes) with intra-peritoneal heated chemotherapy for pseudomyxoma peritonei. Eight months after the operation, he was referred to us to treat left pleural dissemination of pseudomyxoma peritonei by P/D. The operation was comprised of the following procedures, total resection of the left parietal and visceral pleura, and partial full layer resection of the left diaphragm with reconstruction. Operation time was 9 hours 11 minutes. Bleeding was 1,240 g. Pathologically, the tumor was consistent with pseudomyxoma peritonei. No invasion into lung parenchyma was detected. This operation was classified as R0 resection. Elevated blood carcinoembryonic antigen (CEA) value of 32.6 (normal range: 0–5) ng/mL went down to normal two weeks after the operation. Post-operative course until 2 years 8 months has been uneventful with excellent performance status. No definite tumor in the whole body has been pointed out, and the CEA is normal. In conclusions, P/D is feasible for selected patients with MPM and pleural dissemination of abdominal malignancy.

Keywords: Pleurectomy/decortication (P/D); malignant pleural mesothelioma (MPM); surgery; pleural dissemination

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