Video Article

Cardiophrenic and costophrenic lymph node resection via subxiphoid approach only

Khatib et al. Cardiophrenic and costophrenic lymphadenectomy

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DOI: 10.4274/jtgga.galenos.2022.2021.9-2

Received: 07 December, 2021 **Accepted:** 25 January, 2022

Abstract

Even the resection's impact of enlarged cardiophrenic lymph nodes (CPLN) on survival still uncertain, it contributes to accurate staging and complete gross resection in advanced ovarian cancer. CPLN resection can be performed via video-assisted thoracic surgery or transabdominally through the subxiphoid or transdiaphragmatic routes. The subxiphoid approach is utilized to reach the prepericardiac nodes located in the anterior mediastinum. The transdiaphragmatic route is used to remove the costophrenic and supradiaphragmatic paracaval lymph nodes located in the middle and posterior mediastinum, respectively. Transdiaphragmatic approach necessitates diaphragm opening and, in most cases, liver mobilization. However, costophrenic nodes can be resected through the subxiphoid route in appropriate patients without opening the diaphragm. Thus, the subxiphoid approach can be firstly preferred to remove the costophrenic lymph nodes, in cases whose diaphragm resection is not anticipated, and especially when the resection procedure is planned to include the prepericardiac nodes. In this video article, we present the method of resecting both prepericardiac and costophrenic lymph nodes through the subxiphoid approach in an advanced ovarian cancer case.

The subxiphoid virtual space between the pericardium and diaphragm was developed. The observed and palpated CPLNs were dissected and excised from the prepericardiac and right latero-cardiac spaces. Thereafter, diaphragm peritoneum beneath the right costophrenic nodes was dissected. After determining the enlarged costophrenic node by palpation, the sternal and costal diaphragmatic attachments were incised and the right latero-cardiac space was extended. When the node was reached, it was grasped and pulled with curved-ring forceps and ultimately resected.

Keywords: Cardiophrenic lymph node, Costophrenic lymph node, Subxiphoid approach, Advanced ovarian cancer

Introduction

The main goal of surgery in advanced ovarian cancer is finalizing the operation with no gross residual disease. Even the resection's impact of enlarged cardiophrenic lymph nodes (CPLN) on survival still uncertain, it contributes to accurate staging and complete gross resection in advanced ovarian cancer (1). CPLN resection can be performed via video-assisted thoracic surgery (VATS) or transabdominally through the subxiphoid or transdiaphragmatic routes. While, VATS mostly requires thoracic surgeon, subxiphoid and transdiaphragmatic approaches can be successfully performed by gynecologic oncologists in many qualified centers (2). The subxiphoid approach is utilized to reach the prepericardiac nodes located in the anterior mediastinum. The transdiaphragmatic route is used to remove the costophrenic and supradiaphragmatic paracaval lymph nodes located in the middle and posterior mediastinum, respectively (3). Transdiaphragmatic approach necessitates diaphragm opening and, in most cases, liver mobilization. However, costophrenic nodes can be resected through the subxiphoid route in appropriate patients without opening the diaphragm (4). Thus, the subxiphoid approach can be firstly preferred to remove the costophrenic lymph nodes, in cases whose diaphragm resection is not anticipated, and especially when the resection procedure is planned to include the prepericardiac nodes. In this video article, we present the method of resecting both prepericardiac and costophrenic lymph nodes through the subxiphoid approach during interval cytoreduction surgery of an advanced ovarian cancer case. The patient was 79-years old. After receiving 3 cycles of platinum-based chemotherapy, she became fit for surgery. However, tomography demonstrated persisting enlarged CPLNs (Figure 1). Therefore, CPLN resection was planned during the interval cytoreduction.

The subxiphoid virtual space between the pericardium and diaphragm was developed. The observed and palpated CPLNs were dissected and excised with their fatty pads from the prepericardiac and right latero-cardiac spaces (Figure 2). Thereafter, the automatic retractor blade was moved laterally, and diaphragm peritoneum beneath the right costophrenic nodes was dissected to obtain better exposure. After determining the enlarged costophrenic node by palpation, the sternal and costal diaphragmatic attachments were incised and the right latero-cardiac space was extended. When the node was reached, it was grasped and pulled with curved-ring forceps and resected using an ultrasonic device (Figure 3). Finally, the incision was closed with non-absorbable interrupted sutures (Video 1). Pathological evaluation revealed 7 lymph nodes in which 2 of them were metastatic.

Video 1. Cardiophrenic and Costophrenic Lymph Node Resection Via Subxiphoid Approach Only

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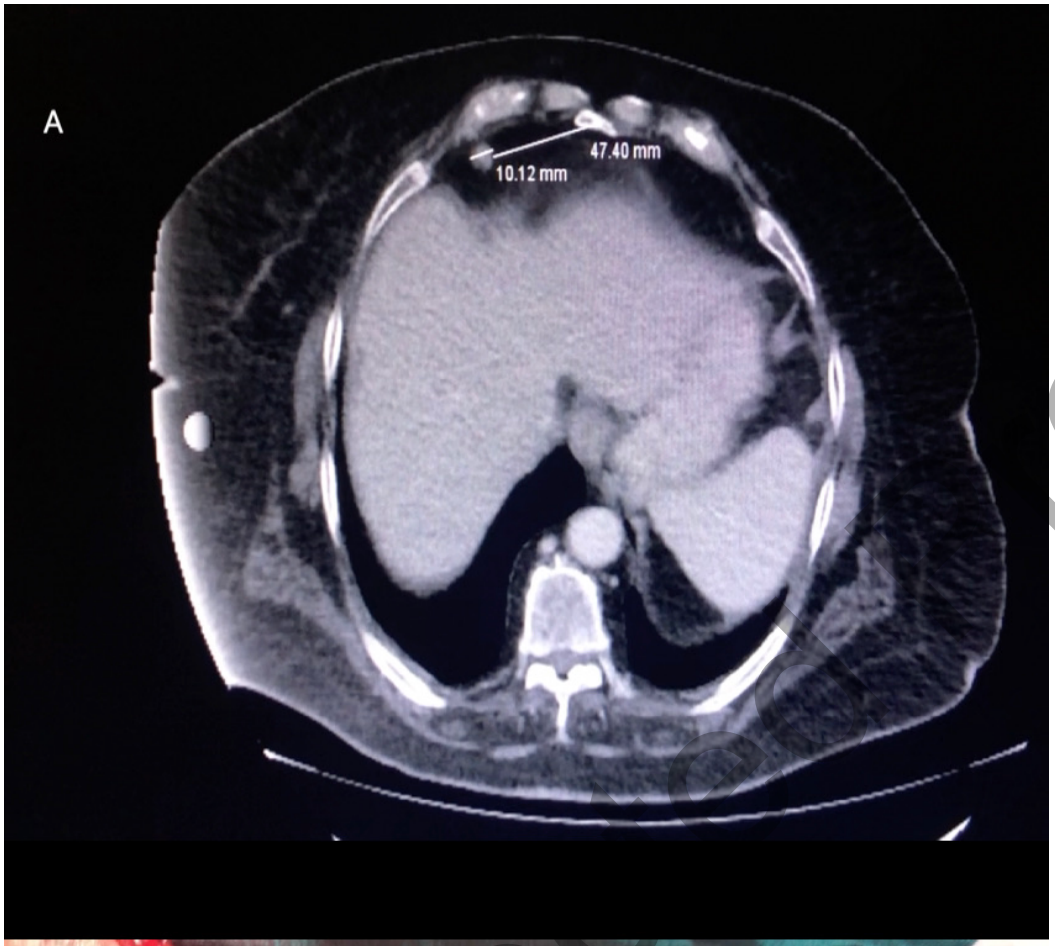
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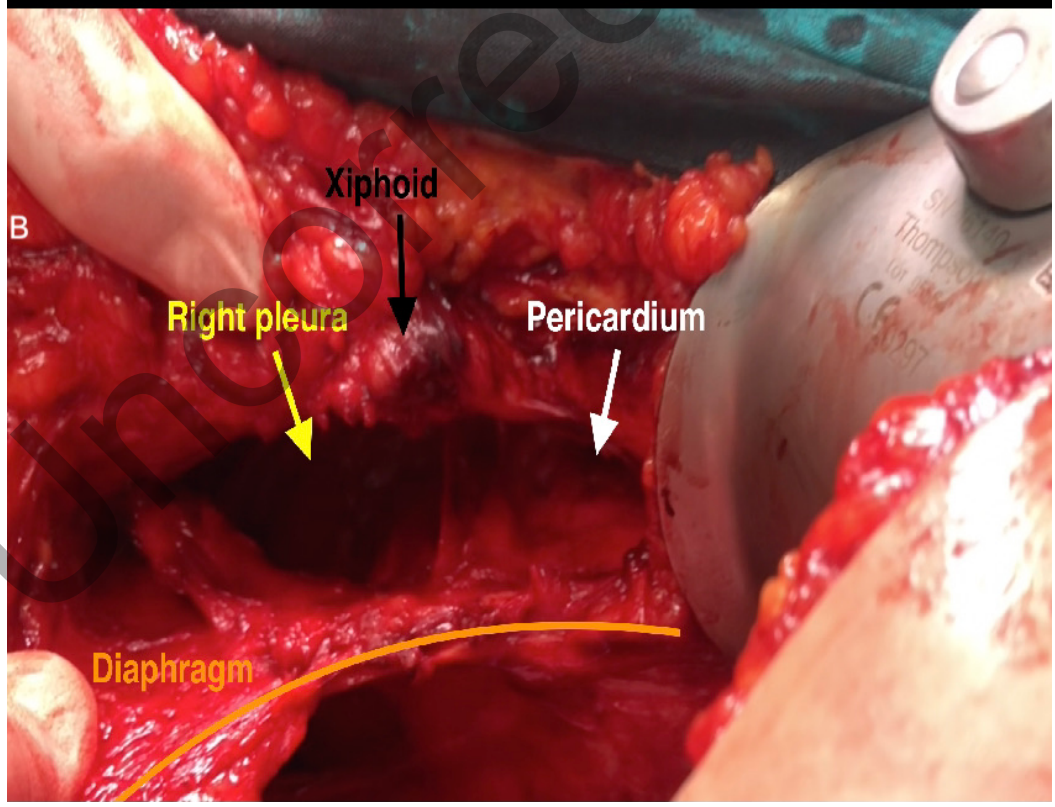
B
Xiphoid
Right pleura
Pericardium
Diaphragm

Figure 1. Enlarged right costophrenic lymph node approximately 5 cm from the xiphoid and sternum on computed tomography