Video-axillaroscopy: a new mini-invasive technique for surgical exploration of the axillary region†

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Abstract

Subclavicular lymph nodes are one of the deeper lymph node groups of the lymphatic network located in the axillary region. As its location is surrounded by vessels and nerves, biopsy of subclavicular lymph nodes is not possible without eye control. We describe a new, mini-invasive technique for accessing the thoracic outlet region. Video-axillaroscopy is a reliable mini-invasive technique for targeting biopsies of lymph nodes in the axillary region. It is safer and more accurate than radio-guided techniques. Exploration of this region might benefit treatment of lymphoma and breast cancer and applications might emerge for thoracic outlet syndromes.

Keywords: Minimally invasive surgery • Video-assisted thoracic surgery • Thoracic outlet syndrome • Lymph nodes • Positron emission tomography • Mediastinoscopy

INTRODUCTION

The Lymphatic networks of the axillary region are constituted of 12–30 lymph nodes and arranged in five groups: the lateral or brachial group, the anterior or pectoral group, the posterior or subcapsular group, the central group and the medial or subclavicular group. Access to the subclavicular group by standard approach is deleterious through open surgical approach. We present a new, non-invasive technique for exploring lymph nodes, using a video mediastinoscope through auxiliary approach.

METHODS

The patient is installed in position with a small pillow being placed under his shoulder and his arm in 90° abduction. A 5-cm incision is performed in the axilla parallel to the pectoralis major muscle. Penetration into the axilla is begun by finger blunt dissection, preventing injury of the intercostobrachial cutaneous nerve. Then, the video mediastinoscope is pushed down and dissection is performed by aspiration canula and dissectors. Progression is performed with clavipectoro-axillary fascia, serratus anterior and axillary vein as landmarks to reach the subclavicular lymph node group beneath the axillary major vessels and nerves at the top of the axillary region (Fig. 1). Magnification of the device allows good discrimination of all the compartments of the axillary lobe. The inferior valve of the video mediastinoscope may be opened widely, allowing stabilization of the video mediastinoscope, exposure of the axillary region and obtaining an operative field for bimanual surgery. Lymph node biopsies, as well as lymphadenectomies, are possible. Lymphatic vessel sutures may be performed by fusion tissue devices or clips.

RESULT

Two patients were operated on by VAXY

A 68-year old woman, with a past history of breast carcinoma treated 9 years previously, suffered from left upper arm phlebitis due to a 2-cm soft tissue mass at the top of the axillary region. (18F)-fluorodeoxyglucose-positron emission tomography/computed tomography scan (FDG-PET/CT scan) showed hyperactivity of the mass without any other fixation (Fig. 2). Node recurrence of the breast carcinoma was suspected, but biopsy was absolutely necessary. Biopsy was performed by video-axillaroscopy (VAXY) and confirmed a single node metastasis of breast carcinoma. Targeted therapy adapted to tumour phenotype was prescribed.

A 57-year old woman was treated for a Hodgkin disease revealed as a parasternal inflammatory mass. Six months after the end of treatment (chemotherapy) a FDG-PET/CT scan showed hyperactivity on a subclavicular lymph node group beneath the axillary vessels. Biopsy was necessary to differentiate the persistence of Hodgkin’s disease or fibrotic tissue. It was performed through VAXY. It was an inflammatory lymph node on biopsy and the patient was free of relapse after 15 months.

DISCUSSION

PET-CT is increasingly integrated in decision-making for treatment of cancer disease and also for inflammatory disease.

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In the management of Hodgkin’s disease, discrimination between viable tumour and residual fibrotic tissue is one of the challenges. PET-CT has emerged as a major imaging modality for staging and follow-up in lymphoma. Even though its negative predictive value is good (93–95%), its positive predictive value is 14–74% for the presence of residual mass on conventional imaging after first line chemotherapy [1–2]. In those situations, histological confirmation is mandatory. The subclavicular lymph node group is the higher lymph node of the axillary region. Those nodes are connected on the internal thoracic chain and may be connected to the axillary lymph node network.

As its location is surrounded by vessels and nerve, biopsy of subclavicular lymph node is not possible without eye control. In standard surgical approach, it may necessitate transclavicular or transternal damaged approach [3].

VAXY is a reliable non-invasive technique for targeting biopsy of lymph node in the axillary region. It is safer and more accurate than radio-guided techniques. Exploration of this region might benefit treatment of lymphoma and breast cancer, and applications might emerge for thoracic outlet syndromes [4] complementary to the transaxillary approach developed by Urschel [5].

VAXY is thought to be part of the same evolution of minimvasive intrathoracic exploration developed in the last 50 years [6–7], from axial mediastinoscopy to VAMLA and TEMLA [8–9]. This is a simple technique and is easily reproducible by all thoracic surgeons, which is really beneficial for patients.

Conflict of interest: none declared.

REFERENCES