

Complicated axillary lymphadenectomy due to a pectoralis quartus muscle

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Rezumat

Limfadenectomie axilară complicată datorată mușchiului pectoralis quartus

În timpul limfadenectomiei în axila stângă a unei paciente de 38 ani cu un carcinom ductal invaziv de 1,4 cm a fost decelat un mușchi accesoriu. Datorită anatomiei sale mușchiul supra-numerar a fost recunoscut drept *pectoralis quartus*. După cunoștința noastră acesta este primul caz de *pectoralis quartus* descoperit chirurgical. Chirurgul trebuie să fie informat despre posibila prezență a acestei anomalii și despre caracteristicile sale anatomice în scopul de a evita orice complicație.

Cuvinte cheie: chirurgie oncologică, cancer de sân, axilă, anatomie, variante, complicații

Abstract

During lymphadenectomy in the left axilla of a 38-year-old woman with a 1.4cm invasive ductal breast carcinoma an accessory muscle was found. Due to the presence of the anomalous muscle the lymphadenectomy was carried out troublesomely through a limited field. Based on its anatomical characteristics, the supernumerary muscle was recognized as the pectoralis quartus. To our knowledge this is the first report of a pectoralis quartus muscle as a surgical finding. The surgeon should be aware of the possible presence of this anomaly as well as its anatomical characteristics in order to avoid any complications.

Key words: surgical oncology, breast cancer, axilla, anatomy, variations, complications

Introduction

The muscular variations that may affect the axillary lymphadenectomy (AL) have been recently summarized in the literature. They are three supernumerary muscles, namely the Langer's axillary arch, the pectoralis quartus and the chondroepitrochlearis muscles, as well as the aplasia of the lower part of the pectoralis major muscle (1). The most frequent is the Langer's axillary arch, which is the only one abnormal muscle that has been found intraoperatively during AL (2). In the present study we present a case where another supernumerary muscle, the pectoralis quartus, complicated dissection of the nodes during an AL.

Case report

During lymphadenectomy in the left axilla of a 38-year-old woman with a 1.4cm invasive ductal breast carcinoma and after preparation of the lateral margin of the pectoralis major muscle, an aberrant muscular slip was observed slightly lateral and deep to the pectoralis major muscle. The two muscles were separated by a narrow band of connective tissue which had been completely dissected during the preparation of the pectoralis major lateral margin. Following this, the supernumerary muscle was located in the center of the surgical field and was pulled towards the latissimus dorsi muscle in order to access the axilla content. Thus, the muscle formed an arcuate course from its costal attachment towards the deep surface of the pectoralis major tendon. The accessory muscle was inserted superficial to the neurovascular bundle of the axilla, in contrast to the latissimus dorsi muscle which is inserted deep to the bundle. As a result the

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lymphadenectomy was carried out troublesomely through a limited field (Fig. 1). At the end of the operation the nature of the accessory muscle was investigated and based on its anatomical characteristics, it was recognized as the pectoralis quartus muscle.

Discussion

The pectoralis quartus muscle is a long and flat supernumerary muscular slip, which arises from the costochondral junction of the fifth and sixth ribs or from the anatomical structures around them, namely the lateral margin of the pectoralis major muscle or the rectus sheath. It runs along the lateral margin of the pectoralis major, located slightly deep to this margin and it may be distinctly separate or loosely connected to it. The pectoralis quartus passes over the neurovascular bundle to be inserted in or near the deep layer of the pectoralis major tendon (Fig. 2) (3,4).

In the literature, pectoralis quartus muscle has been reported only as an anatomical finding with a 2.8% frequency. Since there are no studies reporting its intraoperative recognition, the significance of the pectoralis quartus for the AL is not known. However, according to its anatomical features the presence of the pectoralis quartus muscle may transpose the medial border of the AL surgical field, i.e. the pectoralis major lateral margin, laterally and downwards. If the surgeon mistakes the pectoralis quartus for the pectoralis major lateral margin, then the operation may be led to a lower level and as a result, the axillary vein is located deep under the pectoralis quartus and the pectoralis major muscles. In such a case the pectoralis quartus should be retracted along with the lateral margin of the pectoralis major muscle (1).

However, in our case we recognized the real pectoralis major lateral margin and divided the pectoralis quartus from this margin. As a result the supernumerary muscle was placed in the center of the surgical field. The surgeon pulled the muscle towards the latissimus dorsi and it formed an arched course. Although the lymphadenectomy was carried out troublesomely through a limited field, the amount of the lymph nodes dissected was satisfactory (N: 0/25). Following the operation and a literature review we recognized that the supernumerary muscle in our case was a pectoralis quartus muscle and concluded that its surgical division and ligation would be very helpful for a smooth lymph nodes dissection since this muscle is insignificant functionally.

The case presented here shows that once the pectoralis quartus is present, the surgeon who copes with AL should recognize it. In the literature, there are no reports of preoperative recognition of the pectoralis quartus muscle. Therefore, presently recognition of this anomaly is feasible only intra-operatively. In order to intraoperatively recognize the pectoralis quartus the surgeon should be aware of the possible presence of such a muscle in this region and bear in mind its main anatomical features. Presentation of our intraoperative experience with this anomaly and how it affected the lymph nodes dissection may be helpful for breast surgeons to recognize and manage it properly during AL avoiding any complications.

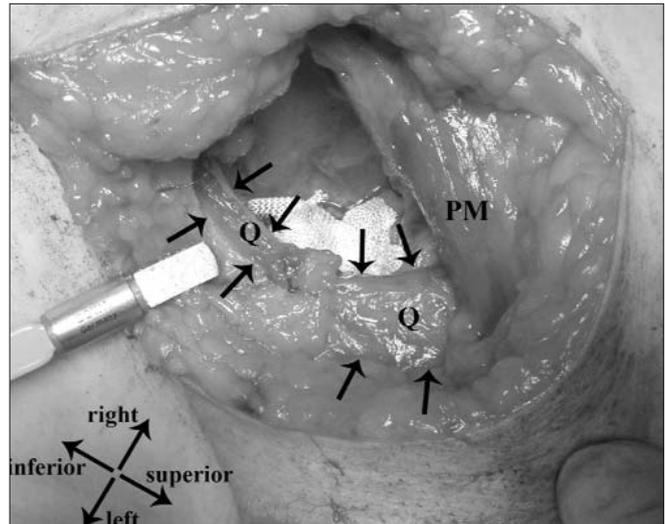


Figure 1. Intraoperative view of the patient's left axilla, which shows the limited surgical field between the pectoralis quartus (highlighted with arrows-Q) and the pectoralis major muscles (PM), after excision of the axilla content. The pectoralis quartus muscle has not its typical appearance, since it has been divided from the pectoralis major and pulled towards the latissimus dorsi muscle in order to access the axilla

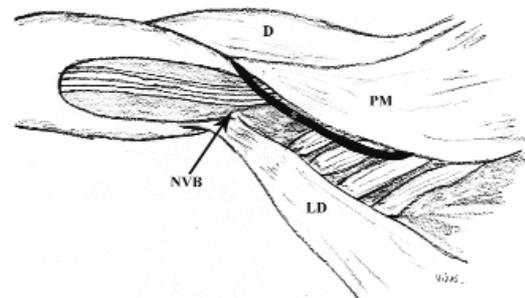


Figure 2. Illustration of the typical pectoralis quartus muscle (highlighted area-asterisk). (D: Deltoid muscle, PM: Pectoralis major muscle, LD: Latissimus dorsi muscle, NVB: Neurovascular bundle) Printed with permission from: Natsis et al. *Breast Cancer Res Treat.* 2010; 120:77-82.

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