Popliteal lymphadenectomy on sentinel lymph node melanoma metastasis

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Popliteal lymph node dissection is a procedure that surgeons rarely perform and, therefore, scarcely represented in bibliography. In this paper we present the case of a patient with melanoma metastasis to popliteal sentinel lymph nodes showing the surgical procedure and discussing some epidemiological and technical issues.

Key words: melanoma, popliteal lymphadenectomy.

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INTRODUCTION

Seldom do the surgeons have to face the necessity of carrying out a popliteal lymphadenectomy. This is why there is little literature describing such a technique.
However, the discovery of popliteal melanoma metastasis obliges to dissect the lymph nodes of this area. We hereby present the case of a patient in such situation, showing the popliteal lymph node dissection and discussing technical aspects of this such a little documented technique.

CLINICAL CASE

68-year-old male referred to our center for treatment of superficial spreading melanoma on right heel, ulcerated, 2.1 mm Breslow thickness and Clark level IV. He had been diagnosed after biopsy of a verrucous lesion which had undergo topical treatments for 1 year after ulceration. No previous personal or familiar history of interest was identified.

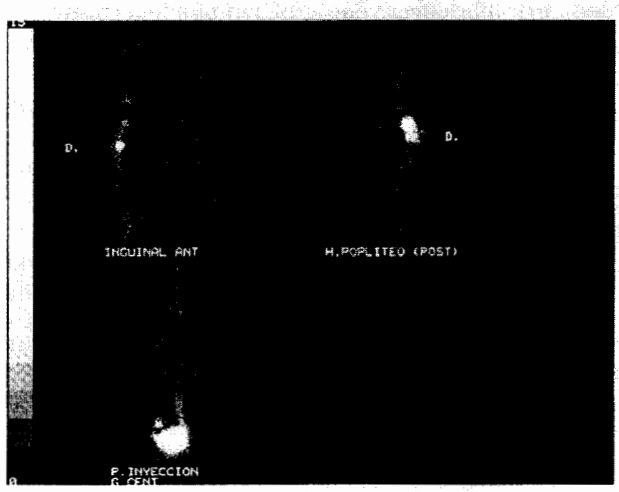

Fig. 1. Lymphadenectomy showing point of injection on heel, 2 efferent lymphatic vessels, 2 sentinel lymph nodes and 1 inguinal ganglion.

The physical examination did not revealed any alteration, except for the scar on the heel, with no results in the search for adenopathies. The patient has a type III skin with lentigos and less than 10 nevi.
Since no metastasis were found on bone scintigraphy and whole body CAT scan, wide scar excision and centinel lymph node biopsy were advised.
Lymphoscintigraphy showed 2 channels that from injection point were direct towards 2 hot popliteal nodes and 1 in the inguinal region (fig. 1). However, during surgery, besides the 2 popliteal lymph nodes (one adjacent to the lower saphenous vein and a prevascular one), 2 more high counting nodes were identified in the inguinal region.
The study of the sentinel lymph nodes showed the existence of melanoma metastasis in the two popliteal nodes and in one of the inguinals. Therefore the patient was advised to undergo popliteal and ilioinguinal lymph node dissection.
The popliteal lymphadenectomy was made on the patient in decubitus prone position with an incision in vertical spindle, in order to excise the scar of the previous biopsy, which extended towards the lateral in the cranial end and towards midline in the caudal (fig. 2).

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Fig. 2. Design of the incision for popliteal lymphadenectomy.

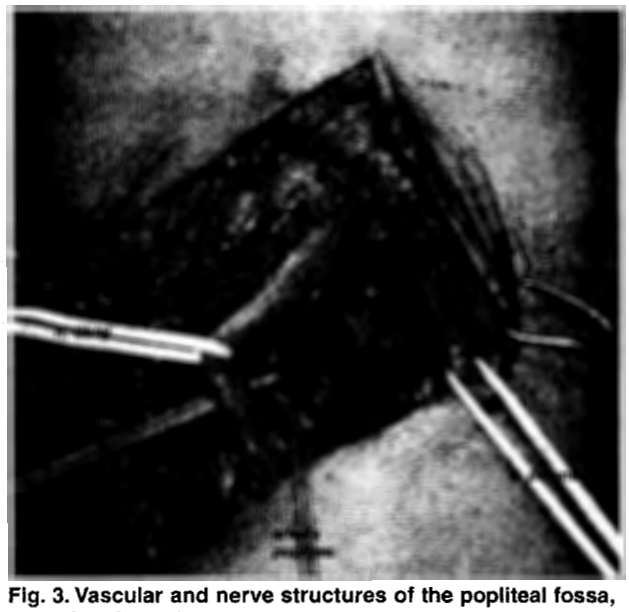

Fig. 3. Vascular and nerve structures of the popliteal fossa, once the dissection was completed.

Skin flaps were developed until they formed a rhombus limited by the ischiotibial and gastrocnemius muscles, which leave at the bottom the inferior sphenous vein and the powerful popliteal fascia. The fibrosis caused by the callusing of the sentinel lymph node biopsy wound, made the efforts to identify the medial sural nerve unsuccessful, and for that reason it was not possible to isolate the said nerve before cutting off the inferior saphenous vein.

Longitudinal sectioning of the popliteal aponeurosis gives access to the deep basin and within immediately appears the tibial nerve, which was then dissected. Afterwards, the peroneal nerved was identified from its appearance at the rhombus vertex to the head of the fibula to avoid an injury that would cause club foot due to denervation of the ankle flexor muscles. Gentle retraction of both nerves with vessel-loops allowed identification of the popliteal artery and vein, located alengthways in the depth of the popliteal area.

Once these structures were identified, the lymph node dissection was completed removing all existing fat between the ischiotibial and gastrocnemius muscles and coagulating the small vessels located over the knee's joint sheath. Figure 3 shows the surgical field once the dissection is complete.

Subsequently, ilioinguinal lymphadenectomy was performed. The post-surgical stay was extended up to 3 weeks due to problems on the inguinal wound but the popliteal lymph node dissection did not determined more alterations than a flexor paresis on ankle which was spontaneously solve within 5 days.

In the specimen study other 3 popliteal nodes were found with reactive lymphadenopathy. In the inguinopelvic dissection 13 nodes were identified, one of them, in the obturator region, showed melanoma metastasis.

DISCUSSION

Up to recently, the lymph node dissection of the popliteal area was a technique used in very few occasions, to the point that the first description published on the proceeding was made by Karakousis in 1980[1]. Probably, the main cause would be that, when the popliteal lymph affectation became evident, the illness is already disseminated and therefore the lymphadenectomy is not recommended. This low rate of clinical detections is justified according to Sholar et al by the fact that the popliteal nodes are located under the powerful popliteal fascia[2].

The introduction of the selective lymph node dissection (SLND) has allowed to identify the lymph nodes located in less usual areas such as the back dorsal triangle, epitroclear region or the popliteal fossa[3]. This situation, which belongs to just 3.1% of the patients, requires an exhaustive search for and a biopsy of the «ectopic» nodes because it entails the same risk of having metastasis as the sentinel lymph nodes located in the usual areas[4]. This situation represents, within the popliteal fossa, one of the 2 suppositions that Thompson and collaborators establish as indication of popliteal node disection[5].

As far as lymphadenectomy si concerned Karakousis in his publication proposes a S-shape incision with the horizontal branch perpendicular to the axis of the leg and Sholar modifies it to a Z-plasty with a lesser risk of a deforming joint contracture[1,2]. In this case, obliged by the previous incision of the sentinel lymph node biopsy, a spindle, longitudinal to the axis of the leg was made, which was extended in the ends to-

wards the sides of the extremity, allowing a good access to the popliteal fossa and with no healing problems.

The identification and isolation with vessel-loops of the peroneal and posterior tibial nerves at the beginning of the lymphadenectomy allowed its mobilization in order to access the deepest structures without taking the risk of damaging them.

References

1. Karakousis CP. The technique of popliteal node dissection. Surg Gynecol Obstet. 1980; 151:420-3.
2. Sholar A, Martin II RCG, McMasters KM. Popliteal Lymph Node Dissection. Ann Surg Oncol. 2005;12:189-93.
3. Roozendaal GK, de Vries JD, van Poll D, et al. Sentinel nodes outside lymph node basins in patients with melanoma. Br J Surg. 2001;88:305-8.
4. McMasters KM, Chao C, Wong SL e Sunbelt Melanoma Trial Group. Interval sentinel lymph nodes in melanoma. Arch Surg. 2002;137:543-7 discussion 547-9.
5. Thompson JF, Hunt JA, Culjak G, Uren RF, Howman-Giles R, Harman Cr. Popliteal lymph node metastasis from primary cutaneous melanoma. Eur J Surg Oncol. 2000;26:172-6.