

# Preoperative Evaluation of a Subungual Glomus Tumor Case Using Multidetector Computed Tomography Angiography

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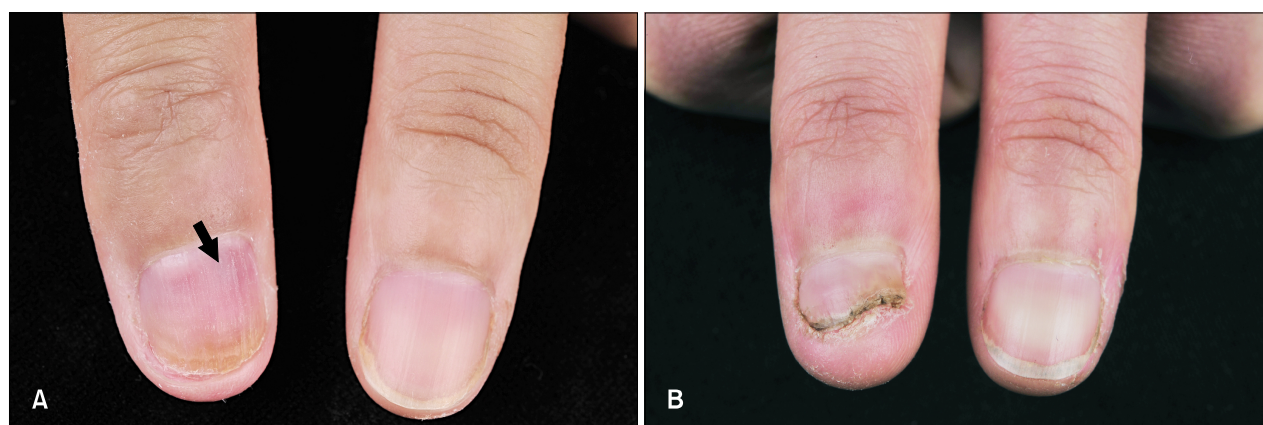
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Dear Editor:

Glomus tumors (GTs) are characterized by the triad of severe pain, pinpoint tenderness, and cold sensitivity. Most GTs are located in the fingertips, especially in the subungual region<sup>1,2</sup>. Ultrasonography and magnetic resonance imaging (MRI) are useful for preoperative diagnosis, and complete excision is usually recommended<sup>1-5</sup>. Although it is feasible to use multidetector computed tomography (MDCT) in the diagnosis of suspected vascular diseases, it has been not applied in subungual GT. Here, we describe a patient with a subungual GT that was identified using MDCT angiography. This study is approved by Affiliated

Hospital of Guangdong Medical College (IRB No. PJ2012131).

A 23-year-old woman presented with a 2-year history of severe pain in the thumb of the right hand on touch or exposure to cold. Physical examination revealed a 6×4-mm, purplish, flush with distal yellowish discoloration on the proximal nail plate of the right thumb (Fig. 1A). Palpation of the nail yielded excruciating pain. The patient was otherwise healthy and routine laboratory results were unremarkable. Ultrasonography revealed a 5.1×2.2-mm, hypervascular, hypoechogenic mass in the proximal nail bed of the right thumb.



**Fig. 1.** Subungual glomus tumor on the distal part of the right thumb. (A) A 6×4-mm purplish flush (arrow) with distal yellowish discoloration on the right thumb. (B) No nail abnormality present at 4 months postoperation.

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**Fig. 2.** Volume-rendered image of the vascular reconstruction displaying a hypervascularized nodule (arrow) overlying the distal phalanx of the right thumb.

The patient underwent 64-MDCT (Siemens Healthcare, Erlangen, Germany), and three-dimensional volume-rendered images were acquired on a workstation using 0.6-mm slice thickness and 0.4-mm interval. The scanned area ranged from the fingertips to the distal parts of the metacarpal bones of the right thumb. The contrast-enhanced scan was performed after pre-contrast scanning; image acquisition was begun after a delay of 30 s. The enhanced scanning showed a subungual nodule on the radial side of the right thumb and a depression of the distal phalanx. Volume-rendered reconstruction of bone images revealed a local depression in the distal phalanx of the right thumb, while vascular reconstruction enabled the visualization of a  $4.5 \times 3.5$ -mm subungual mass (Fig. 2)

The patient underwent a transungual tumor resection with nail plate avulsion. A poorly demarcated reddish nodule was excised *en bloc*, followed by radiofrequency destruction. The nail bed wound healed through secondary wound closure. Pathological examination showed numerous small blood vessels surrounded by clusters of uniform cells. The cells were round with faintly eosinophilic cytoplasm and round nuclei. CD34 immunoreactivity was detected in both tumor and vascular endothelial cells, while  $\alpha$ -smooth muscle actin was detected in the tumor cells. A diagnosis of subungual GT was made based on clin-

icopathologic and immunohistochemical results. The patient had no nail abnormality at the 6-month follow-up (Fig. 1B).

Since GT tumors are often only a few millimeters in size and the resection area is small, the surgical management of subungual GTs is challenging<sup>3</sup>. Ultrasound and MRI can display GTs as small as 2 mm in diameter<sup>1,4</sup>, but they are unable to achieve satisfactory bone imaging. Furthermore, it is difficult to display small and flattened subungual lesions with ultrasonography because the imaging results are often operator-dependent and the nail plate curvature may contribute to artifacts in the lateral nail folds<sup>4</sup>. In the presented case, repetitive ultrasonography showed a poorly demarcated hypoechogenic nodule, while MDCT angiography delineated a well-defined mass overlying a depression of the distal phalanx. Three-dimensional reconstruction can illustrate the tumor, vascular branches, and bony components in a single image. Therefore, although composite images of photography and ultrasonography can often identify the location and extent of subungual GTs<sup>5</sup>, MDCT angiography may be a more promising technique for an ill-defined tumor. In all, 5% ~ 50% of postoperative recurrences are due to incomplete surgical removal of the tumor<sup>4</sup>. Because the tumor in the current case had ill-defined margins and a deep location, subsequent radiofrequency destruction was employed to prevent a possible recurrence.

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