

Neurite Distribution in Small Facial Nerve Tumors

ABSTRACT

Objectives: To demonstrate the presence of nerve fibers within the parenchyma of small facial nerve schwannomas.

Study Design: Demonstration of nerve fibers, using immunohistochemical labeling, within the substance of small facial nerve schwannomas in archival temporal bone specimens.

Methods: Immunohistochemical labeling of neurofilaments within nerve fibers buried in the substance of small seventh nerve schwannomas.

Results: All of the small tumors exhibited nerve fibers within the tumors, either diffusely or in bundles.

Conclusions: The smallest facial nerve schwannomas contain nerve fibers buried within the body of the tumor. Surgical removal of even small tumors might result in facial dysfunction.

Key Words: Facial nerve, schwannoma, neurofilaments.

INTRODUCTION

Small sub clinical schwannomas have been reported during temporal bone surgery or at postmortem examination (1,2,3,4). Biopsy of small tumors may result in facial nerve paralysis.(5) Nerve fibers are usually disseminated throughout the substance of facial nerve schwannomas (6), similar to the findings in NF2 tumors, in contrast to isolated vestibular nerve tumors where they are found on the surface and can be dissected free.(7) Here, we present evidence that in the smallest facial nerve tumors, the nerve fibers are scattered throughout the tumor.

METHODS AND MATERIALS

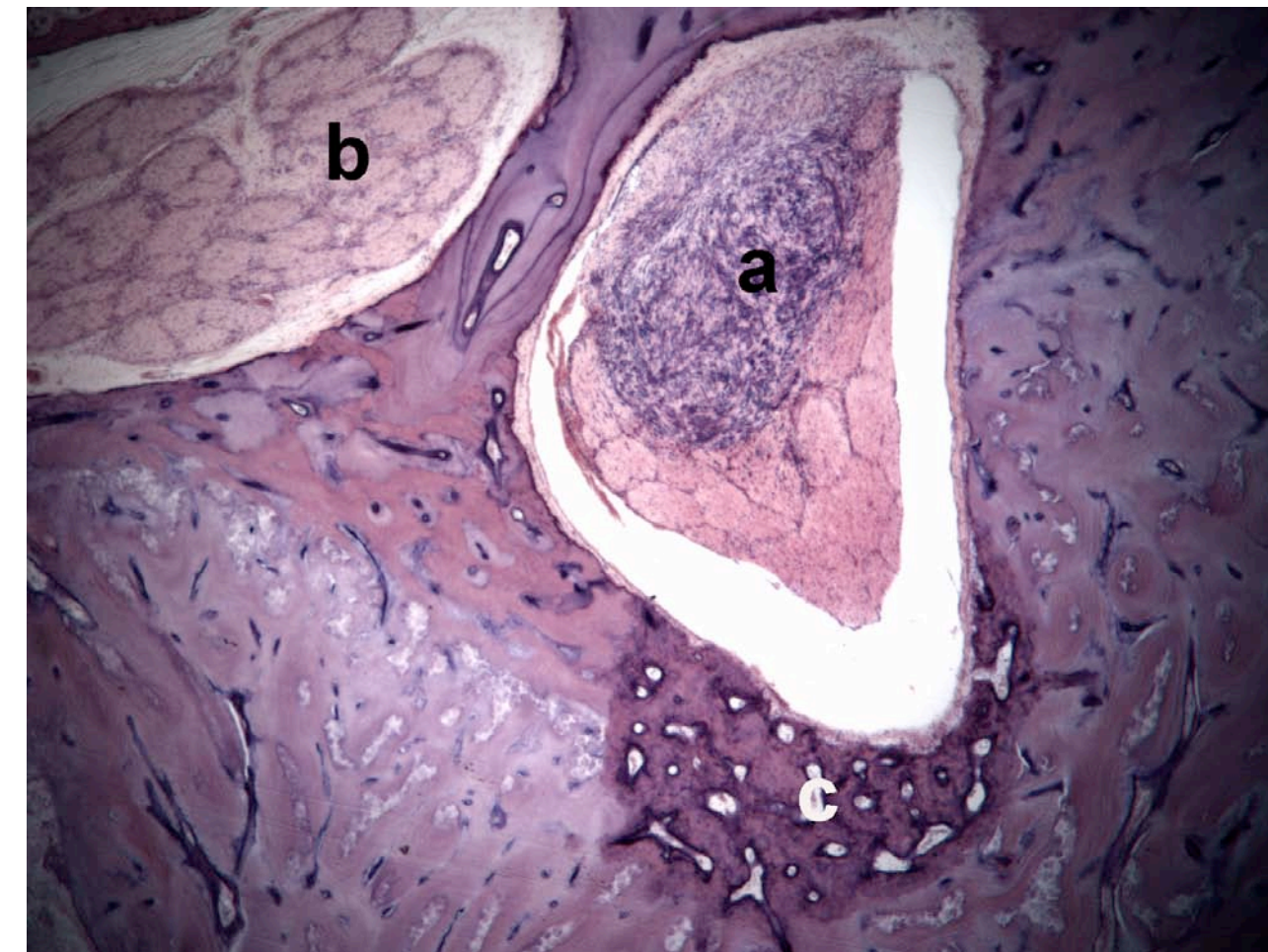
Three asymptomatic schwannomas were found in the collection of 1500 temporal bones that have been processed for histologic examination. The bones have been acquired through the temporal bone pledge program, of the House Ear Institute, established in 1950 by Howard House.

The bones were decalcified in ethylenediaminetetraacetic acid until shown by x-ray to be free of calcium. They were then embedded in celloidin and cut into 20 micron sections. Every tenth section was mounted on a glass slide and stained with hematoxylin and eosin (H&E); the other nine are stored on numbered tissues for special analysis. From these extra sections, examples adjacent to the H&E slide showing the tumor, were labeled with neurofilament antibody and fast red chromagin.

FINDINGS

Each tumor exhibited nerve fibers within the substance of the tumor, either disseminated or in bundles. Attempts to remove the tumors, even though small, might result in facial nerve impairment.

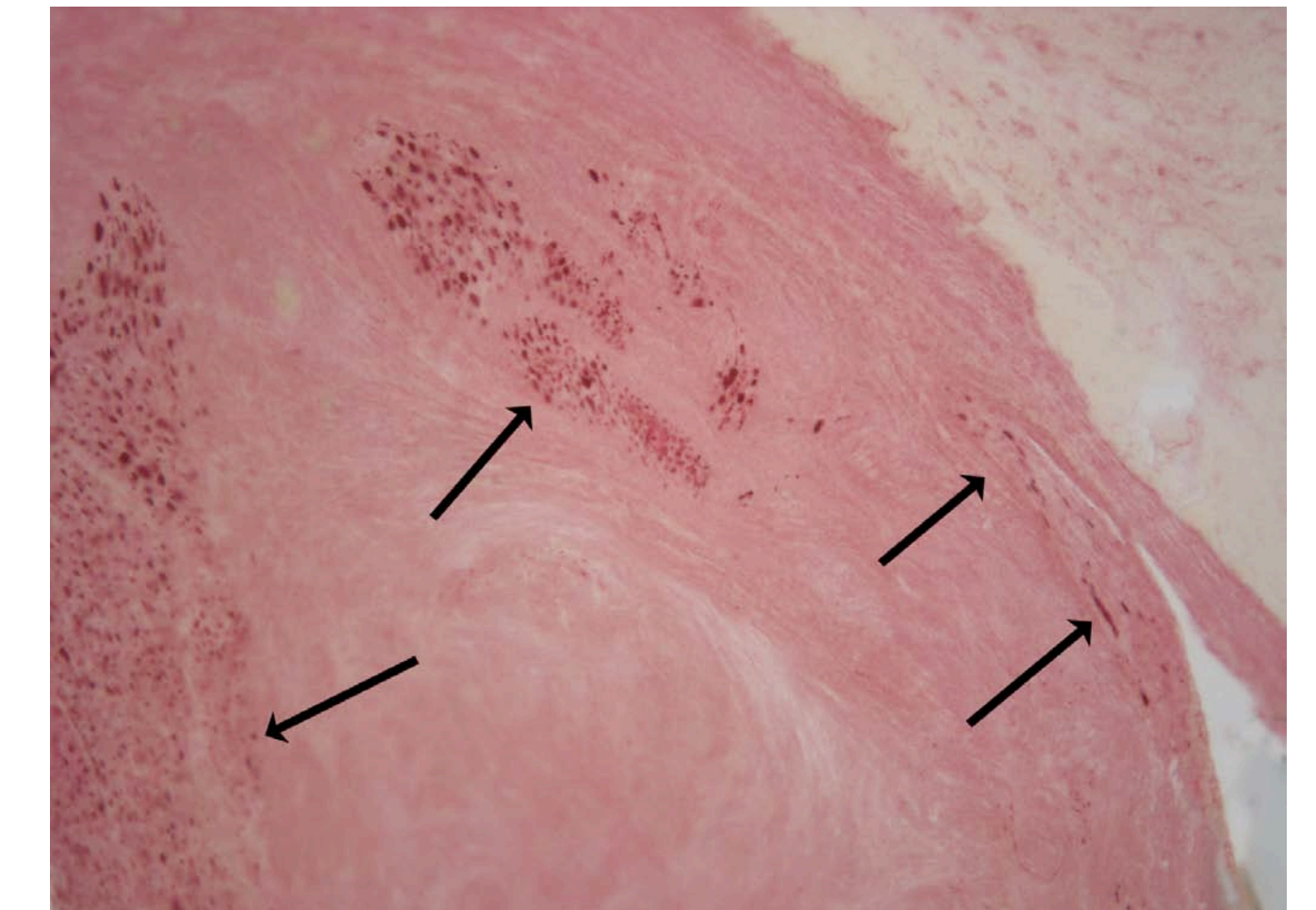
FINDINGS



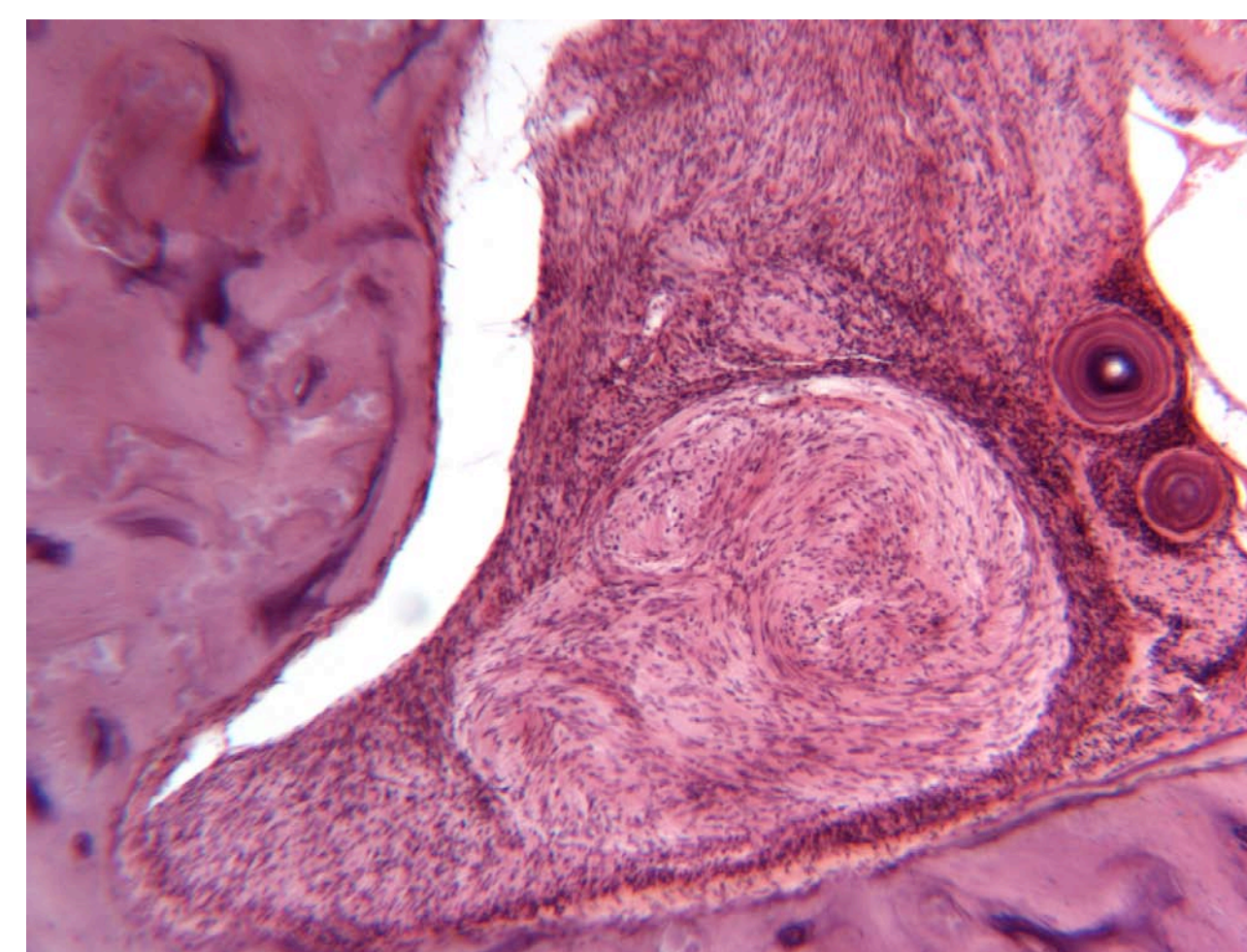
a. Small schwannoma in geniculate area of the facial nerve.

b. Horizontal segment of the nerve

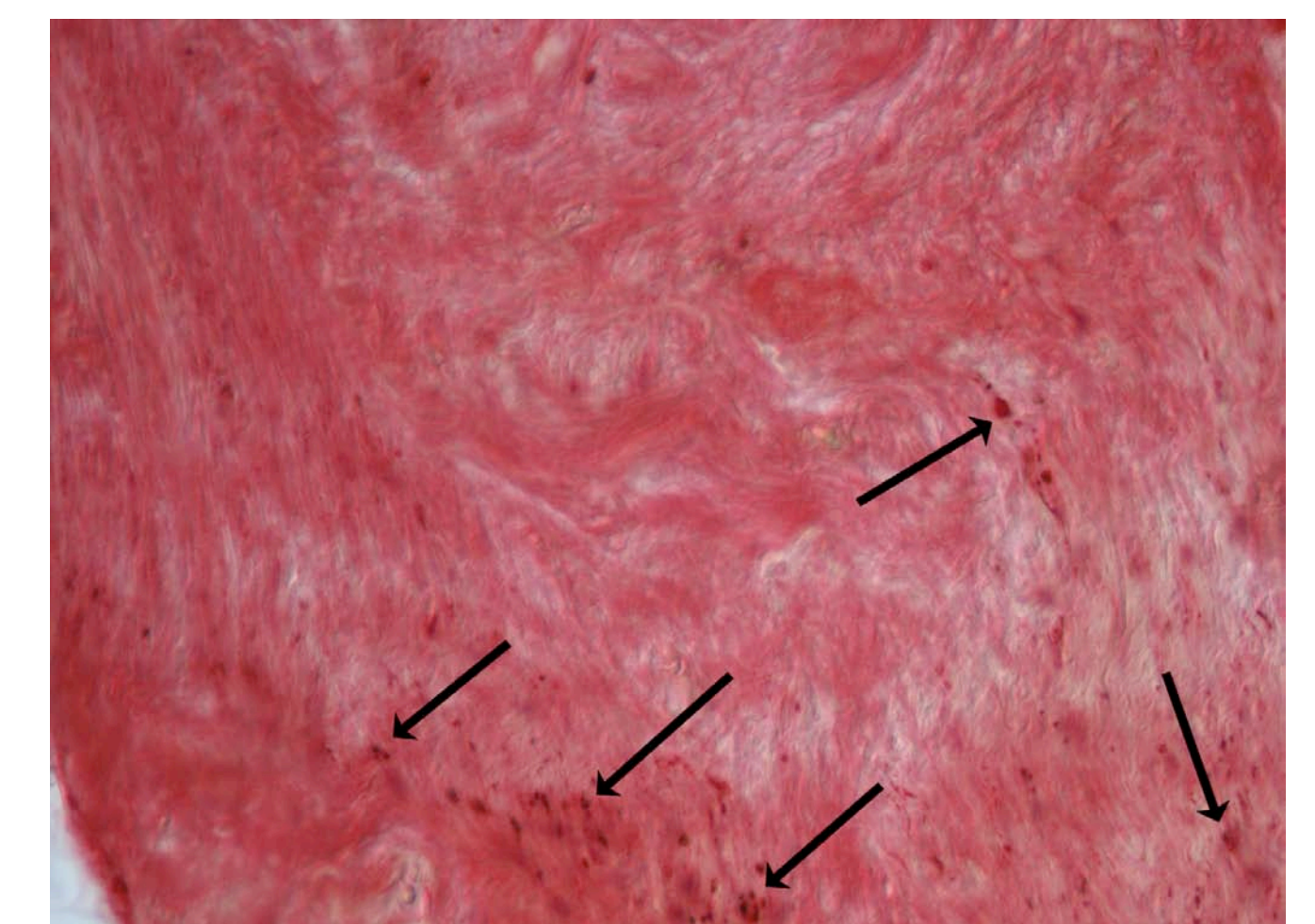
c. Small otosclerotic focus



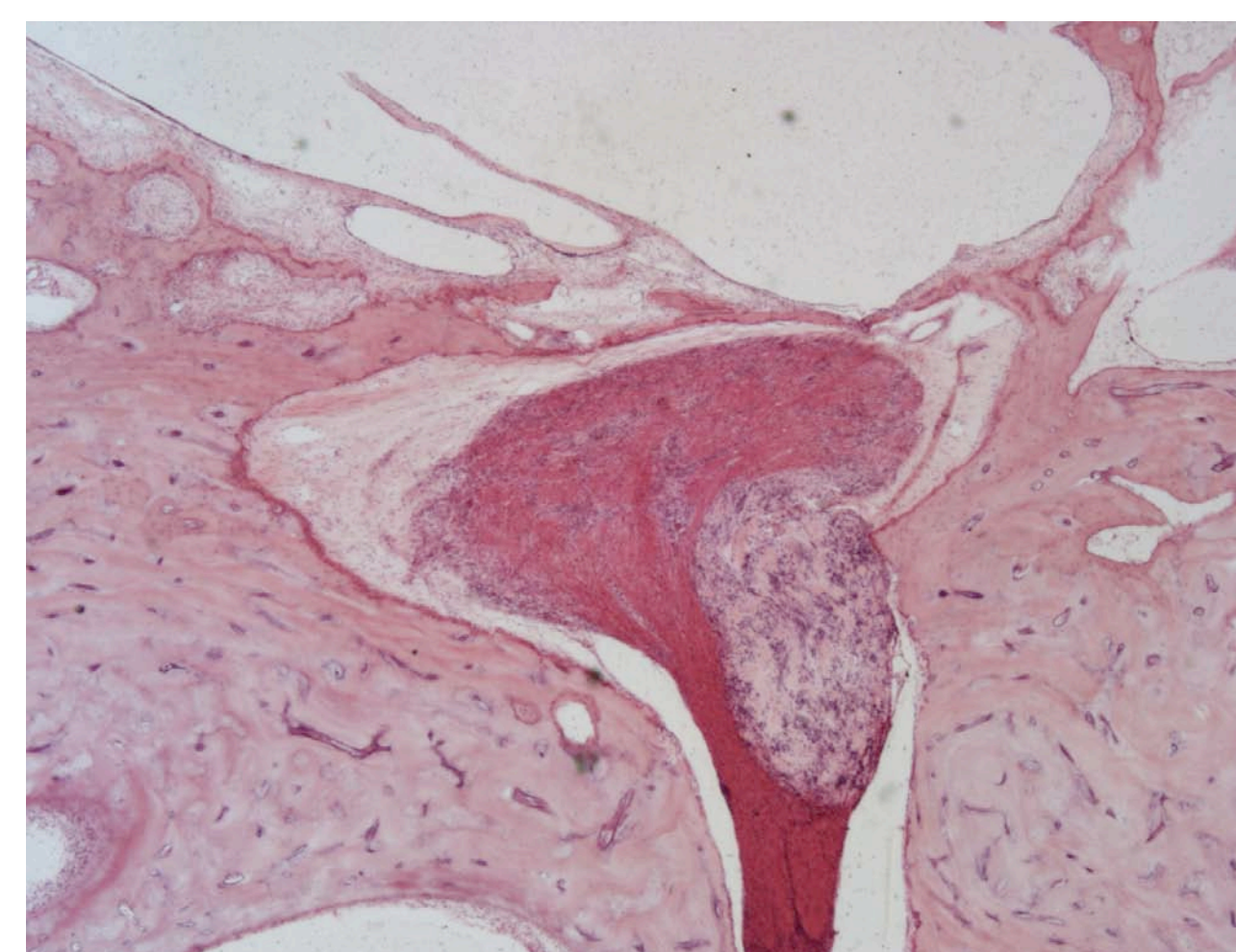
Nerve fiber bundles within tumor demonstrated by neurofilament Immunohistochemistry



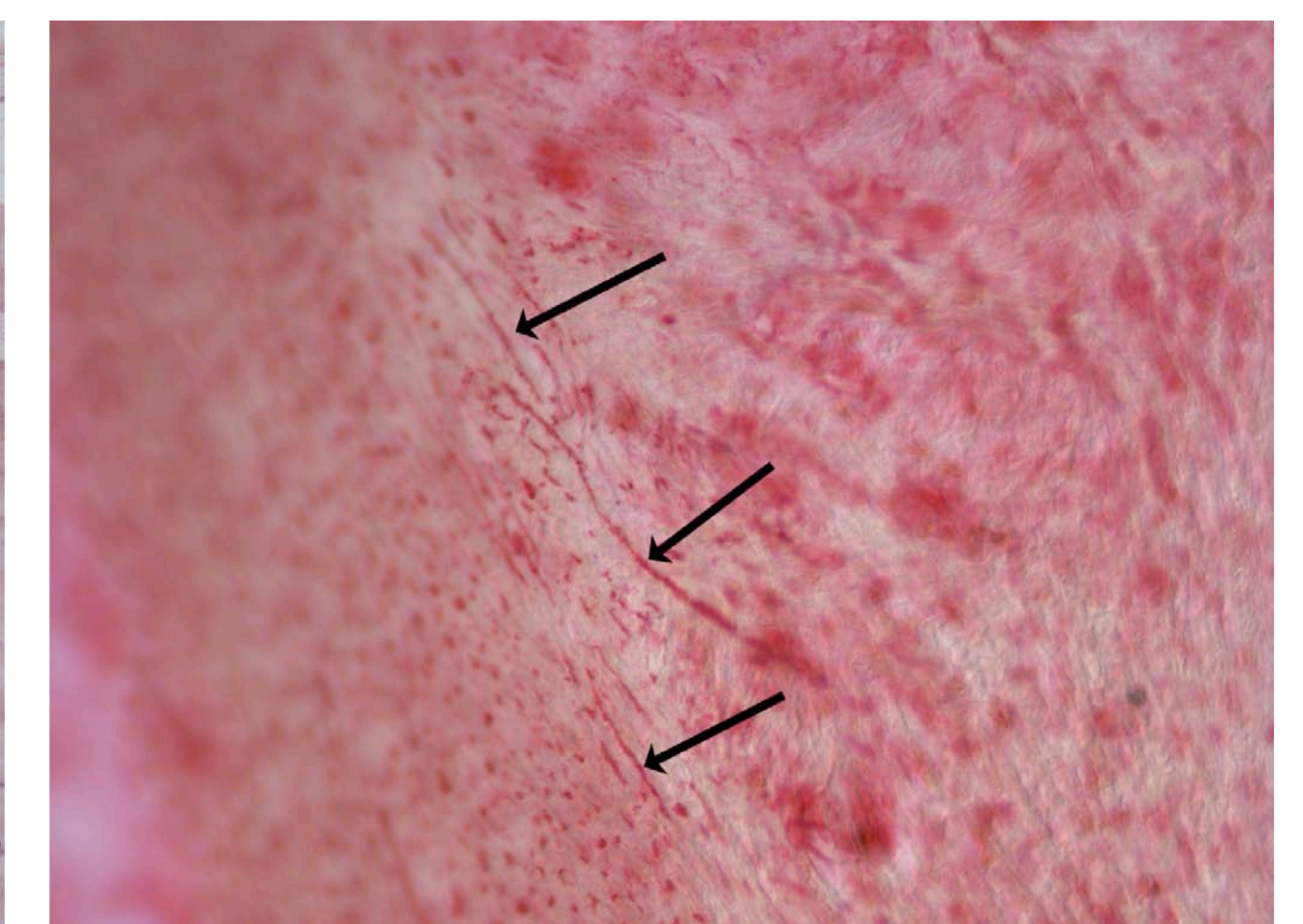
Small schwannoma and two psammomas in genu of facial nerve in a patient with neurofibromatosis 2.



Nerve fibers within tumor, a characteristic of NF2, demonstrated by neurofilament Immunohistochemistry



Small schwannoma in genu of facial nerve



Nerve fibers within tumor demonstrated by neurofilament Immunohistochemistry

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