Nasal tip angiolipoma: The “Pinocchio” nasal deformity

David A. De Poortere, MD; Boris M. De Poortere, MD; Noam A. Cohen, MD, PhD

Abstract
Angiolipoma is a rare, benign variant of lipoma; its distinctive feature is its prominent vascularity. It presents as a subcutaneous nodule of white adipose tissue; pain, which may be exacerbated by pressure, is the chief symptom. The anatomic distribution predominantly involves the trunk and extremities. Because of the rarity of this condition in otorhinolaryngology, our understanding of its diagnosis, treatment, and follow up is limited. Microscopically, two different histopathologic forms of angiolipomas exist: circumscribed and infiltrating. The diagnosis of angiolipoma can be aided by ultrasound, computed tomography, or magnetic resonance imaging. Surgical excision remains the treatment of choice. Sites of previously reported otolaryngologic cases include the cheek, palate, mandible, nasal septum, and cervical area. We describe what we believe to be the second case of a nasal tip angiolipoma in a 78-year-old woman complaining of progressive aesthetic deformity.

Introduction
Angiolipoma is a common benign tumor composed of mature fat cells, usually with a slow growth pattern. It is a rare, benign variant of lipoma; its distinctive feature is prominent vascularity. Although this disease has been reported in orthopedics and dermatology, few reports of otolaryngologic angiolipoma are found in the literature. A case in which an angiolipoma occurred on the nasal tip of a 78-year-old woman is presented. This “Pinocchio,” or “Cyrano,” nasal tip deformity results in severe psychosocial problems for patients.

Case report
A 78-year-old woman was evaluated for a mass over her nasal tip that had been present for 4 years. She described gradual enlargement and progressive pain but denied epistaxis or nasal obstruction. She had no significant family history and denied trauma. Physical examination revealed a 1.5 × 2.5-cm, soft, well-defined, mobile, painless mass over the nasal tip. The overlying skin was slightly darker than the surrounding skin (figure 1, A). Facial analysis revealed increased nasal length, an overprojected tip, and a decreased nasolabial angle, completely altering the nasal lobule anatomy (figure 1, B). No evidence of septal deviation or intranasal masses was observed. Computed tomography (CT) was not performed.

The patient was taken to the operating room; the main goals of surgery were aesthetic and diagnostic. An external rhinoplasty approach was not selected because of the skin excess over the nasal tip. Instead, a 4-cm vertical median incision of the tip was performed, which allowed trimming of the redundant skin. A 1.5 × 1.8-cm, ovoid, highly vascular, encapsulated lesion was found to lie between the lower lateral cartilages. After careful excision, an increased interdomal distance was noted (figure 2); an interdomal suture with 6-0 Prolene was used to improve nasal tip width. Wound closure was made with simple sutures.

Pathologic examination revealed a benign, fibro-fatty lesion composed of mature adipose tissue mixed with a network of vascular channels; it was interpreted as an angiolipoma of the circumscribed type (figure 3).

The patient's postoperative course was uneventful, and she was discharged. Follow-up at 6, 12, and 24 months revealed no evidence of recurrence, with marked cosmetic improvement of her nose (figure 4).

Discussion
Howard and Helwig established angiolipoma as an entity in 1960; in 1974 it was reported to account for 17% of all lipomas. The anatomic distribution predominantly involves the trunk and extremities. The forearm has
been the most commonly reported site, representing two-thirds of cases, with the trunk and upper arm representing the majority of the remaining one-third.\(^9\) Angiolipomas of the head and neck are especially rare.\(^3\)

An extensive review by Alvi et al\(^2\) revealed only 17 adequately documented cases of head and neck angiolipoma in the English literature; previous cases have been reported to include the parotid gland, palate,\(^10\) cheek,\(^1,11\) intraosseous mandible,\(^12\) nasal dorsum,\(^13\) nasal septum, and cervical area. The most common site was the cheek (5 of 17; 29\%).\(^2\) To the best of our knowledge, our case is only the second presentation on the nasal tip.

On physical examination, the typical angiolipoma is a subcutaneous nodule of white adipose tissue, usually less than 4 cm in diameter, that tents the mobile overlying skin and is rarely associated with discoloration. Pain, which may be exacerbated by pressure, is the chief symptom.\(^5\) The pain is thought to be related to intravascular thrombi or associated neuropathies secondary to vascular engorgement and edema, which can lead to compression of the adjacent neural tissue.\(^3\)

Fine-needle aspiration of the mass is rarely helpful and not needed. The definitive diagnosis of angiolipoma is made only after microscopic examination of the resected specimen.\(^2\) Microscopically, angiolipomas consist of mature fat cells separated by a branching network of uniformly small, thick-walled vessels\(^14\) in the connective tissue septa.\(^5\) The ratio of adipose to vascular tissue is variable.\(^13\) The vascular channels contain fibrin and calcified thrombi, a feature that is absent in ordinary lipomas.\(^2\)

Two different histopathologic forms of angiolipomas exist: circumscribed and infiltrating.\(^15\) Circumscribed lesions have a fibrous tissue encapsulation, can be clearly differentiated from the surrounding normal subcutaneous tissue, rarely exceed 4 cm in diameter, and occur much more frequently than the infiltrating form. Atypia, pleomorphism, and mitotic figures of both adipose and angiomatous components are never encountered in the circumscribed form.\(^7\) Infiltrating angiolipoma is a poorly encapsulated lesion that arises in the deep soft tissue, including muscle—often the quadriceps femoris or the gastrocnemius—and may infiltrate adjacent structures, leading to muscular pain and neural deficits.\(^2\)

Figure 1. A: Frontal view shows that the nasal tip mass has caused marked aesthetic deformity, characterized by skin discoloration and increased nasal length. B: Lateral view shows the overprojected tip, increased nasal length, and decreased nasolabial angle.

Figure 2. After the median incision of the nasal tip and excision of the mass, an increased interdomal distance is noted in this intraoperative image. An interdomal suture has been used to improve the tip width.
Three pathogenic mechanisms for angiolipoma have been reported: originating from fatty degeneration of an angioma; vascular proliferation of a lipoma (embryonic sequestrations of multipotential cells activated at puberty); and from a benign mesenchymoma. The latter mechanism is based on the fact that in patients with multiple angiolipomas, smaller angiolipomas resemble angiomas, while the larger ones resemble lipomas. Therefore, an angioma arises first and infiltrates into surrounding adipose tissue. This induces proliferation of adipocytes, and the tumor is eventually replaced by adipose tissue. We expect that further investigations will reveal how these processes are involved in the pathogenesis of angiolipoma.

The differential diagnosis for angiolipoma includes hemangioma, lipoma, mesenchymoma, and liposarcoma. In pure hemangioma, there is no lipomatous component. Angiolipoma can be differentiated from lipoma by its predominant vascular component. The absence of other mesenchymal elements, such as smooth muscle, precludes a diagnosis of mesenchymoma. Liposarcoma can be confused with angiolipoma but can usually be differentiated by the presence of embryonal adipose tissue, pleomorphism, increased mitosis, and metastasis.

**Role of imaging.** The diagnosis of angiolipoma can be aided by ultrasound, CT, or magnetic resonance imaging. The sonographic appearance of angiolipomas is characterized by a hyperechoic infiltrating pattern, with small, patchy hypoechoic areas in the larger lesions. A CT study of an angiolipoma shows the homogeneous low attenuation of a typical lipoma (low attenuation values between -65 and -125 Hounsfield units), with marked enhancement on the contrasted CT as a result of its intense vascularity. Liposarcoma must be excluded when evidence of soft tissue or bony invasion is found on CT.

**Treatment.** For circumscribed angiolipomas, simple excision is curative. Lesions almost never recur. For the infiltrating type, wide local excision is the preferred surgical procedure, but this type may recur after surgical excision. In cases of inadequate excision, radiation therapy is necessary.

Certain cosmetic and functional considerations are necessary when excising angiolipomas from the head and neck. Careful dissection with facial nerve identification should be performed in cases of angiolipoma of the cheek. The use of a facial nerve monitor and preoperative patient counseling are necessary. Angiolipomas of the hard palate can be excised, and the defect can be left to heal by secondary intention. Defects of the soft palate must be reconstructed to avoid velopharyngeal insufficiency and oronasal reflux.

In conclusion, angiolipoma is a rare subgroup of lipoma that can occur anywhere in the body but only rarely occurs in the head and neck. A CT scan can help with diagnosis, location, and extent. Surgical excision remains the treatment of choice.

**References**


