Recurrent epidermal inclusion cyst of the parapharyngeal space: case report and review of literature

Caleb J. Fan, BS1; Susan D. Emmett, MD, MPH2; Elise Gel, MD3; C. Matthew Stewart, MD, PhD3; David W. Eisele, MD2
From the School of Medicine1, the Department of Otalaryngology - Head and Neck Surgery2, and the Department of Pathology3
The Johns Hopkins University, Baltimore, Maryland, USA

ABSTRACT

Objective: To share a case report and literature review of a recurrent parapharyngeal epidermal inclusion cyst.

Study Design: Case report and literature review.

Methods: The literature review was conducted in PubMed using "(epidermal inclusion cyst" OR "epidermoid cyst" OR "epidermal cyst" OR "sebaceous cyst") AND "parapharyngeal space"

Results: A 45 year-old woman presented with symptoms of ear fullness and a pressure sensation in the left upper neck area. She reported a history of resection of a left skull base epidermal inclusion cyst that wrapped around the mastoid tip and extended toward the midline skull base four years prior at an outside hospital. Pathology was consistent with an epidermal cyst. The patient denied a recent history of ototrauma, otalgia, dysphagia, facial weakness, pain or sensory loss, or prior radiation. Head and neck examination was unremarkable including cranial nerve examination. Pure tone audiogram revealed normal hearing sensitivity bilaterally and tympanometry demonstrated normal middle ear pressure and compliance bilaterally. MRI demonstrated a 3.0 x 1.2 x 1.9 cm heterogeneous, predominantly T2 hyperintense lesion located slightly below the level of the left stylomastoid foramen. Facial nerve function was intact preoperatively, and audiogram was unremarkable. A joint transcervical and transmastoid approach to the lateral skull base was required for complete excision due to dense adherence of the tumor to the facial nerve in the stylomastoid foramen. The facial nerve was intact 1 week postoperatively. Histopathologic diagnosis confirmed an EIC.

Of the 499 articles on EICs obtained by literature review, 2 described parapharyngeal EICs. One case was iatrogenic and developed 5 years after a modified radical mastoidectomy for cholesteatoma. The second case described an idiopathic EIC of the styloid process that presented with decreased hearing and tinnitus.

Conclusions: EICs are rarely found in the parapharyngeal space but should be considered in the differential. Imaging and fine needle aspiration can help with diagnosis. In addition to a head and neck surgery evaluation, consultation with neurotology and oral and maxillofacial surgery is recommended given the potential need for multiple points of access to the parapharyngeal space.

INTRODUCTION

An epidermal inclusion cyst (EIC) is a benign lesion that develops from the implantation of epidermal elements into the dermis.1 Trauma and surgery are common iatrogenic causes. EICs commonly arise on the face, scalp, neck and trunk; however, there are only two reported cases of EICs of the parapharyngeal space in the literature.2,4 We describe a third case of an EIC of the parapharyngeal space that recurred 4 years after excision.

CASE REPORT

A 45 year-old woman presented with symptoms of ear fullness and a pressure sensation in the left upper neck area. She reported a history of resection of a left skull base epidermal inclusion cyst that wrapped around the mastoid tip and extended toward the midline skull base four years prior at an outside hospital. Pathology was consistent with an epidermal cyst. The patient denied a recent history of ototrauma, otalgia, dysphagia, facial weakness, pain or sensory loss, or prior radiation. Head and neck examination was unremarkable including cranial nerve examination. Pure tone audiogram revealed normal hearing sensitivity bilaterally and tympanometry demonstrated normal middle ear pressure and compliance bilaterally. MRI demonstrated a 3.0 x 1.2 x 1.9 cm heterogeneous, predominantly T2 hyperintense lesion located slightly below the level of the left stylomastoid foramen (Figure 1). Core biopsy of the lesion showed histology that was consistent with an EIC. The patient elected to undergo surgery after a discussion of the risks and benefits, and a multidisciplinary surgical team was assembled.

During the case, extensive scar was encountered at the site of the previous resection. A scar band on the superomedial surface of the mass was encountered, which was in close proximity with the main trunk of the facial nerve. The plane of dissection was not easily obtained between the scar and nerve. A transmastoid approach was then used to identify vertical facial nerve and stylomastoid foramen. Dense scar tissue was adherent to the peristeum of the internal aspect of the stylomastoid foramen, the tumor capsule, and the facial nerve. The foramen was opened to about 240 degrees circumferentially, allowing dissection of the tumor capsule from the skull base, including the facial nerve and surrounding soft tissue. The facial nerve was stimulated in the vertical segment at 0.1 milliamps and was confirmed to be intact. No cyst elements were remaining.

Histopathologic examination of the specimen demonstrated a cystic cavity containing lamellated keratin debris, involving parotid tissue and skeletal muscle. The cyst wall was lined by keratinized stratified squamous epithelium with a developed granular layer. No skin appendages (e.g., hair follicles or sebaceous gland) were identified (Figure 2). These findings were consistent with a diagnosis of EIC. Facial nerve was intact postoperatively.

The patient’s hospitalization was uneventful, and she was discharged home on postoperative day 1. Her facial nerve function was normal in all divisions at discharge and at follow-up 1 week later.

DISCUSSION

EICs are common benign lesions in the general population; however, their exact incidence is unknown because they are usually asymptomatic and not brought to the attention of a physician. EICs originate from the infundibulum of a hair follicle and from the implantation of epidermal elements into the dermis. The epidermal lining of the cyst produces keratin within a circumscribed space of dermis, which accumulates and eventually forms a cystic mass.1

A review of the literature reveals that EICs of the parapharyngeal space are extremely rare. Ulku describes an iatrogenic EIC of the parapharyngeal space that presented with a sinus tract and developed after a modified radical mastoidectomy for cholesteatoma five years prior.2 Nair describes an idiopathic EIC of the styloid process that presented with decreased hearing and tinnitus.4 The patient had no history of trauma or intervention in that area.

The differential diagnosis of an EIC in the head and neck regions includes but is not limited to: branchial cyst, calcinosis cutis, lipoma, or pilar cyst. Branchial cysts are congenital epithelial cysts of the lateral neck due to branchial cleft obliteration failure during embryonic development. Calcinosis cutis describes a group of disorders where calcium deposits form in the skin. Lipomas are generally deeper than EICs and have a rubbery texture. Pilar cysts commonly appear on the scalp and may be indistinguishable from EICs clinically. Histologically, however, pilar cysts differ from EICs in that they show abrupt keratinization without the presence of a granular cell layer. The diagnosis of EICs can be made clinically, but for EICs of unusual locations, fine needle aspiration6 or imaging with ultrasonography, radiography, CT scan, or MRI may be appropriate.7

The surgical treatment of EICs of the parapharyngeal space must be approached carefully. One of the most important nearby structures is the facial nerve, which could be damaged by leaving the cyst to grow or by removing the cyst. Depending on the amount of scar tissue from previous operations and on the size and precise location of the cyst, head and neck surgery should collaborate with neurotology and oral and maxillofacial surgery for the possibility of a transmastoid approach or mandibular osteotomies. After excision, the ultimate diagnosis of an EIC is made by histopathology.

CONCLUSIONS

EICs are rarely found in the parapharyngeal space, but should be considered in the differential diagnosis of a mass in this region. Imaging and fine needle aspiration can help with diagnosis. In addition to a head and neck surgery evaluation, consultation with neurotology and oral and maxillofacial surgery is recommended given the potential need for multiple points of access to the parapharyngeal space.

REFERENCES