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Interventional Radiology

Successful sclerotherapy of a recurrent, benign parotid cyst

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ABSTRACT

Benign parotid lesions can grow to be a cosmetic deformation with psychological sequelae for a patient. Although surgical resection is the treatment of choice, cyst aspiration has also been attempted. This, however, has been shown to recur, requiring repeat intervention. An alternative therapeutic method not as widely recognized, but which has been reported to be both effective and less invasive than surgery for treating parotid cyst lesions, is sclerotherapy. Here we describe a report of a patient with a benign, localized, cystic neck mass refractory to 2 trials of fine needle aspiration. After the patient refused surgical resection, a trial of sterile ethanol sclerotherapy was performed. Our patient tolerated the procedure well with a significant reduction in the size of the lesion.

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Case report

A 78-year-old man with a medical history of adenocarcinoma of the lung (status post left upper lobectomy), prostate cancer (on hormone therapy), hypertension, and renal insufficiency presented with a localized left neck mass in the parotid region. Upon palpation, the mass was nontender, firm, and multilobulated. As per family, the mass had been present for 5 years, and the patient had refused surgical resection of the mass due to the risk of nerve damage. Three years ago, a fine needle aspiration was performed at an outside institution, reducing the size of the mass. At the time, pathology and infectious disease did not identify malignant features and

infectious processes, respectively. The patient then presented to our ear, nose, and throat clinic with the complaint that the size of the mass has been increasing over the past few weeks. The patient denied pain, constitutional symptoms, or any recent illness. Patient again refused surgical intervention and requested a reaspiration of the mass. An unenhanced computed tomography scan demonstrated an $8.0 \times 5.2 \times 6.5$ cm multilobulated, cystic mass involving the superficial lobe of the left parotid gland (Fig. 1A and B). Four days after the initial visit, 60 mL yellowish, serosanguinous fluid was aspirated by the ear, nose, and throat surgeon. Within a week, the patient stated he noticed the mass slowly enlarging. The parotid mass was measured to be approximately 12×10 cm (Fig. 2). The patient continued to refuse complete excision of the mass,

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Fig. 1 – Noncontrast coronal (A) and axial (B) computed tomography demonstrated a cystic mass (red circle) in the left parotid region with no surrounding fat stranding, lymphadenopathy, or bony erosion. No malignant features were demonstrated. The mass measured $8.0 \times 5.2 \times 6.5$ cm.

and at this time, the interventional radiology service was consulted to discuss any additional options for treating the recurrent neck mass. Several case reports demonstrated success utilizing sclerotherapy with a dehydrated alcohol (98% ethanol) solution. The patient agreed to this procedure. After placing the patient under general anesthesia in the operation room, a 21-gauge micropuncture needle was placed into the parotid mass under ultrasound guidance (Fig. 3A and B). Approximately 65 mL of serosanguineous fluid was aspirated and sent for culture and histopathologic testing. Ten milliliters of the sclerosing agent, 98% ethanol, was injected into the cystic mass. The cyst was gently massaged, and, after 10 minutes, its contents were aspirated (Figs. 4 and 5). On postoperative day 7, the patient presented with a recurrently enlarged mass approximately 60% of its preoperative size (Fig. 6). On postoperative day 35, the patient presented with a parotid mass of approximately 8×7 cm (Fig. 7), noticeably smaller than that in the first follow-up. One month after that, as per family, the patient's

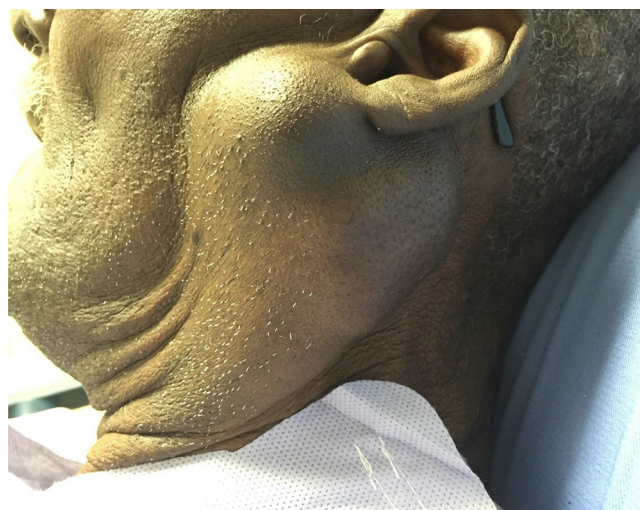


Fig. 2 – A 78-year-old man with a 10×12 cm parotid left neck mass during the day of sclerotherapy. Two simple fine needle aspirations were attempted before this procedure.

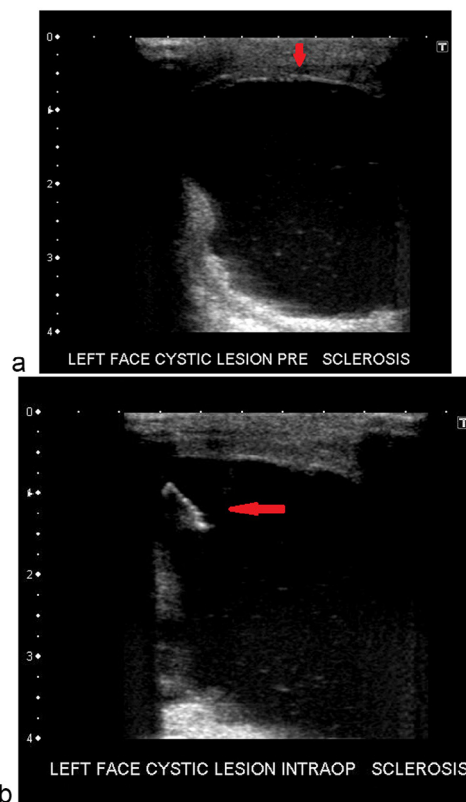


Fig. 3 – Sagittal ultrasound image of the cystic mass with internal echoes (red arrow), likely representing debris in the left parotid region (A). The 21-gauge micro puncture needle (red arrow) was shown to be within the cystic mass, in which the fluid was aspirated and sent for appropriate testing (B).

mass had continued to appear smaller. On postoperative month 4, the mass was noted to be reduced to 5×4 cm. As per family, the mass was the “smallest it has ever been.” Cytopathology and microbiology analysis of the samples taken at the time

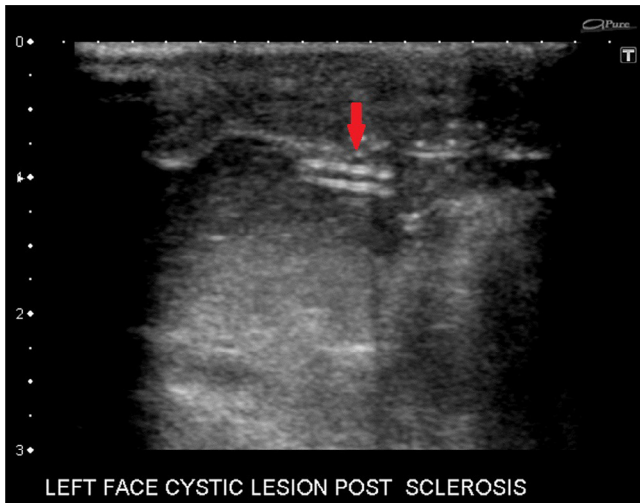


Fig. 4 – Postsclerotherapy ultrasound was performed in the sagittal plane demonstrating the resolution of the cystic mass (red arrow) with internal hyperechogenic material, representing the sclerosing agent.



Fig. 5 – Postsclerotherapy day 0. Approximately 65 mL of serosanguineous fluid was aspirated but a residual solid mass remained.

of our procedure were negative for any malignant and infectious processes, respectively.

Discussion

Benign salivary gland cysts are rare. Parotid glands are the most common site for salivary gland tumors with about 75% of parotid lesions being benign [1]. The differential diagnosis for parotid cysts include benign lymphoepithelial cysts, polycystic parotid disease, lymphangiomas, first branchial cleft cysts, traumatic sialoceles, salivary duct cysts, hydatid cyst, tuberculous abscess, Sjogren syndrome, necrotic lymph nodes, and infected lymph nodes. Tumors to consider include pleomorphic adenomas, Warthin tumor, adenocarcinoma, and

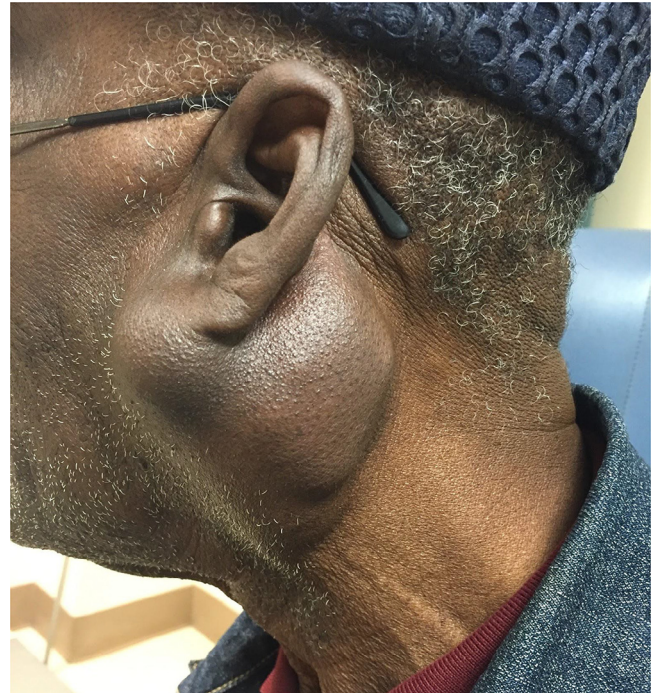


Fig. 6 – Postsclerotherapy day 7. The parotid cyst recurred since the procedure but was grossly reduced compared with presclerotherapy.

mucoepidermoid carcinoma. Other etiologies include the sequelae of prior trauma, infection, and chronic inflammation [2]. The postoperative diagnosis in our case was a large unilateral cystic parotid mass secondary to lymphangioma. The pathophysiology of lymphangiomas is not fully understood. It has been theorized that during fetal development, dysplastic lymphatic tissues could sequester in target tissues. Connections that are normally established between lymphatic and venous systems fail to form. The disconnected lymphatic tissues consequently dilate and become cystic [3]. For our patient, the chronic mass was noninfiltrative and was solely a cosmetic concern.

The treatment of choice for benign parotid cysts is lobectomy or superficial parotidectomy [4]. Radiation therapy as an adjunct or alternative treatment has shown some success [2]. In our case, the patient refused definitive surgical excision of the mass and failed multiple fine needle aspiration attempts. Our patient underwent a fine needle aspiration, which led to temporary success for 3 years. Another fine needle aspiration was attempted, but the cyst recurred shortly after. Upon literature review, alcohol injection sclerotherapy was proposed to be an efficacious alternative treatment to cysts of the parotid gland [5–7]. The mechanism behind sclerotherapy is using chemical agents to denature proteins and to dehydrate the epithelial cyst walls. Cell aggregation and occlusion of vessels prevent further fluid inflow and buildup in the region [2]. Injection sclerotherapy with alcohol has been reported for HIV-positive patients with benign lymphoepithelial cysts. Ten out of 11 patients were satisfied with the cosmetic results after a 6-month follow-up. Three of the patients required a second sclerotherapy injection [2]. Alcohol sclerotherapy was also

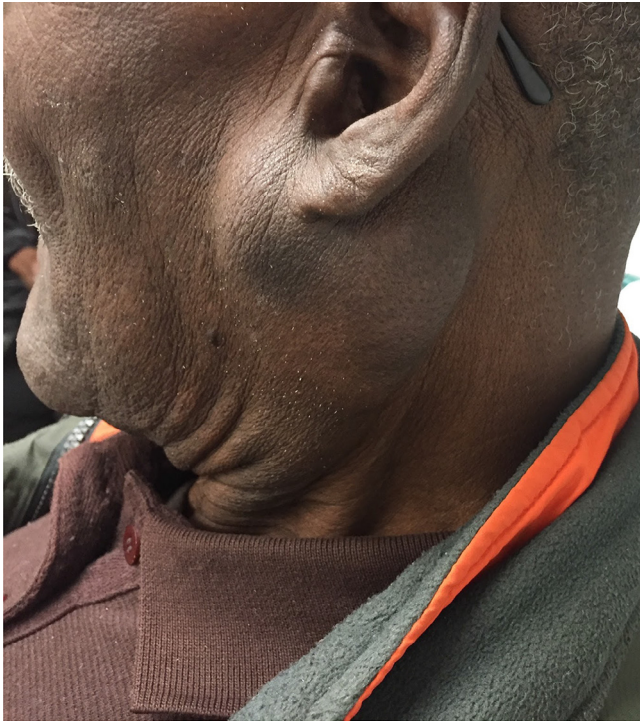


Fig. 7 – Postsclerotherapy day 35. The patient presented with a reduced parotid mass (8 × 7 cm) compared with postsclerotherapy day 7. Three months later, the mass was reduced even more to 4 × 5 cm. The family and the patient were still pleased with the results, stating, “It is the smallest it has ever been.”

performed on cervical cystic lymphatic malformations on 8 children with a 100% satisfactory result and an 87.5% complete disappearance [7]. Previous complications documented were immediate mucosal swelling, discomfort, swallowing difficulties, nerve damage, hypotension, skin necrosis, and hemoglobinuria [8,9]. If the cystic lesions are suspected to be acutely infected, the infection should be controlled first before sclerosant application [10]. However, with radiological guidance, the procedure can be accurate, minimally invasive, safe, cheap, and reliable with few complications. Based on the documented success of sterile ethanol sclerotherapy, our patient agreed to a trial. Other sclerosing agents that have been previously used were OK-432, bleomycin, doxycycline, and sodium morrhuate [11–13]. For this present case, alcohol was used based on availability and its efficacy in previous studies [5–7]. After routine follow-up for 4 months, our patient was satisfied with the result and declined a second trial. Although general anesthesia was done for our case, local anesthesia is a valid option to consider in patients who cannot undergo interventions secondary to general anesthesia risks.

Despite the literature on the reported efficacy of sclerotherapy on parotid cysts, mainly lymphoepithelial cysts in

adults, sclerotherapy may still not be a widely known or accepted alternative for more invasive surgical procedures. If parotid cysts are benign and solely a cosmetic problem, a lobectomy or a parotidectomy should not be considered as an early treatment given the risks. Simple aspiration of the cysts may be performed, but if unsuccessful, an irritant, such as alcohol, injected into the region may be a cheap, less invasive, and more effective option. Our single case report demonstrated cosmetic success and patient satisfaction with sclerotherapy when our patient did not desire surgical intervention. The cystic parotid mass decreased in size without any complications under a minimally invasive technique.

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