

Successful Ultrasound Guided Sclerotherapy Technique for the Management of a Microcystic Warthin's Tumor

Tatiana Ferraro^{1,2}, Sophia Song¹, Punam Thakkar¹, Arjun Joshi^{1*}

¹Division of Otolaryngology-Head and Neck Surgery, The George Washington University School of Medicine and Health Sciences, Washington, DC, USA,

²Drexel University College of Medicine, Philadelphia, PA, USA

Abstract

Ultrasonographic descriptions of Warthin's tumor (WT) vary from a predominately macrocystic appearance (anechoic with internal septations) to microcystic (multiple, diffuse, 1–2 mm anechoic areas). While the current first-line treatment for WTs is surgical excision, ultrasound-guided ethanol sclerotherapy (UGES) demonstrates success in macrocystic WTs, with aspiration of the cystic contents followed by injection of the sclerosing agent. Typically, microcystic tumors are thought to be unresponsive to sclerotherapy. In this case, we report the first application of ethanol sclerotherapy without ultrasound-guided aspiration for the treatment of a microcystic WT. The patient presented with a 2.0 cm × 1.97 cm × 3.05 cm right parotid mass of 9 years' duration. UGES was performed in clinic under local anesthesia through injection of 97% ethanol in the three separate components of the target lesion. Six months postprocedure, ultrasound evaluation demonstrated a volume reduction rate of 78.53%. The patient reported significant cosmetic improvement and no observed complications.

Keywords: Ethanol sclerotherapy, microcystic tumor, Warthin tumor

INTRODUCTION

Warthin's tumor (WT) is the second most common benign salivary neoplasm and comprise up to 15% of all parotid tumors.^[1] While the mainstay of treatment is surgical excision, the current literature details the possibility of integrating thermal ablative technologies and ultrasound-guided ethanol sclerotherapy (UGES) into practice.^[2] UGES is regarded as a safe and effective treatment for benign, cystic head, and neck lesions, especially thyroid disease with a purely cystic and anechoic appearance on ultrasound.^[3] Its application to parotid lesions, such as WT, has been guided on this basis.

While the use of UGES for WT has been reported, its application has been limited to macrocystic lesions with an anechoic to hypoechoic appearance on ultrasound amenable for aspiration.^[4,5] Microcystic WTs are described as well-defined hypoechoic masses with multiple spongiform anechoic regions.^[6] In the absence of a larger cyst, aspiration before the administration of the sclerosing agent is not possible. We report the first case of ethanol sclerotherapy without aspiration in a patient with a microcystic, isoechoic

WT resulting in significant tumor volume reduction and patient satisfaction.

CASE REPORT

A 69-year-old male with a history of tobacco use presented to the head-and-neck surgery clinic for the evaluation of a right parotid mass. The lesion was present for 9 years but became increasingly enlarged within the past 2 years. He underwent fine-needle aspiration of the mass at onset, which consisted of oncocytic cells in a background of lymphocytes, macrophages, and necrotic debris, without evidence of malignancy; findings were deemed suspicious for a WT. Subsequent computed tomography of the neck demonstrated a circumscribed ovoid 2 cm × 1.5 cm × 2.3 cm enhancing mass in the inferior aspect of the superficial lobe of the right parotid gland [Figure 1].

On physical examination, there was a large 3-cm mobile mass in the right parotid [Figure 2a]. Ultrasound performed in clinic

Address for correspondence: Dr. Arjun Joshi,
The George Washington University School of Medicine and Health Sciences,
2300 M St NW, 4th Floor, Washington, DC 20037, USA.
E-mail: ajoshi@mfa.gwu.edu

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demonstrated a heterogeneous, hypoechoic predominately microcystic mass involving the tail of parotid measuring 2.0 cm × 1.97 cm × 3.05 cm [Figure 3a]. Given cosmetic concerns, management with sclerotherapy or parotidectomy was reviewed. The patient opted to attempt UGES despite microcystic appearance on ultrasound.

He returned to the clinic 1 month after initial presentation for UGES. After verbal consent was obtained, local anesthesia with 1% lidocaine and epinephrine was injected at the lesion site. Under ultrasound guidance, 5 cc's of 97% ethanol solution were injected in thirds into the lumen of the lesion, beginning with the posterior aspect followed by the middle

and anterior aspects. The area was then massaged, and a compressive dressing was placed over the injection site. The patient tolerated the procedure well and was discharged after a 20-min observation period. Compression bandaging was worn for 1-week postprocedure.

The patient returned 6 weeks following sclerotherapy endorsing satisfaction with cosmetic outcomes. He denied recurrent growth or postprocedure complications. Physical examination demonstrated a significant reduction in size [Figure 2b and c]. Ultrasonographic examination demonstrated a heterogeneous, hypoechoic mass in the tail of parotid measuring 1.7 cm × 1.3 cm × 2.08 cm [Figure 3b]. The patient continued to endorse volume reduction of the mass and denied recurrence when he returned to clinic 5 months after sclerotherapy [Figure 2d]. Ultrasonographic examination after 6 months redemonstrated a hypoechoic mass in the tail of parotid measuring 1.57 cm × 0.99 cm × 1.67 cm [Figure 3c].



Figure 1: Computed tomography of the neck demonstrating circumscribed ovoid 2 cm × 1.5 cm × 2.3 cm enhancing mass in the inferior aspect of the superficial lobe of the right parotid gland. (a) Coronal view (b) axial view

DISCUSSION

While the typical radiologic appearance of a WT is a well-defined lesion with multiple anechoic areas, our patient presented with a hypoechoic, predominately microcystic tumor lacking a clearly defined portion amenable for aspiration and injection of a sclerosing agent.^[6] Differentiation between macrocystic (51%–90% fluid component), microcystic (predominately solid with 11%–50% of fluid), or spongiform (multiple small cysts <5 mm interspersed within

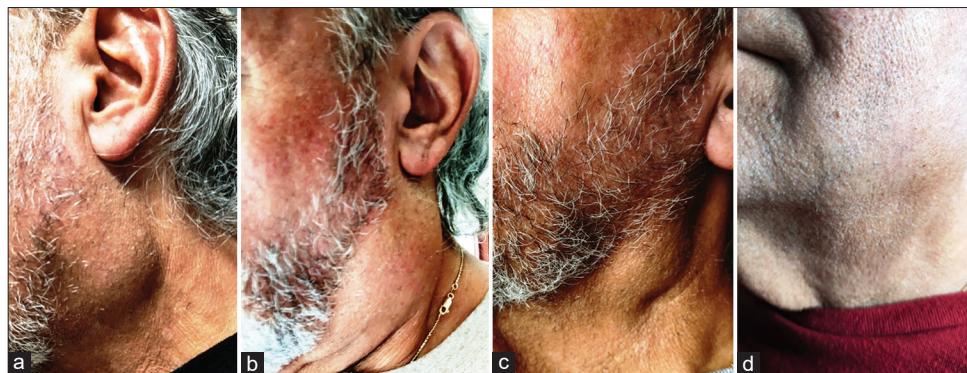


Figure 2: Images of the progression of Warthin's tumor and recession following ethanol sclerotherapy. (a) Image taken before ultrasound-guided ethanol sclerotherapy (UGES) (b) image taken immediately following UGES (c) image taken 6 weeks following UGES (d) image taken 3 months following UGES

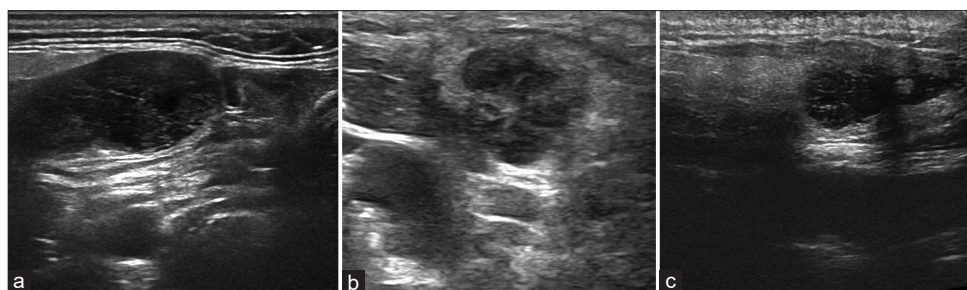


Figure 3: Right Warthin tumor ultrasound (a) Pretreatment ultrasound of the right parotid demonstrating a heterogeneous, hypoechoic predominately microcystic mass measuring 2.0 cm × 1.97 cm × 3.05 cm. (b) Six weeks posttreatment demonstrating a heterogeneous hypoechoic mass measuring 1.7 cm × 1.3 cm × 2.08 cm. (c) Six months posttreatment demonstrating a hypoechoic mass measuring 1.57 cm × 0.99 cm × 1.67 cm

solid tissue) has been defined for the sonographic appearance of thyroid nodules and extended to the discussion of WT.^[7] To our knowledge, only three reported cases reference UGES for macrocystic WT treatment and state a volume reduction rate (VRR) varying between 55.73% and 98.32%.^[4,8] We achieved comparable results with a VRR of 61.98% at 6 weeks and 78.53% at 6 months, visible reduction of parotid mass protrusion, and patient satisfaction. This is the first recorded application of ethanol sclerotherapy in a microcystic WT without a clear macrocystic target on ultrasound, omitting a procedural component of aspiration. Nevertheless, we achieved adequate sclerosis and optimal cosmetic response with a single round of ethanol sclerotherapy.

In the absence of fluid aspiration, we challenge the traditional notion of requiring evacuation of the cystic contents for sclerosing of the target lesion's capsule. In our case, sclerotherapy's success without aspiration relies entirely on the mechanism of action for ethanol as a sclerosing agent. Albanese and Kondo describes the denaturing of surface proteins and hypertonic dehydration, inducing cellular damage.^[9] This likely induces an inflammatory response as evidenced by the patient's experience of edema and erythema of the lesion in the immediate postprocedure period, followed by gradual volume reduction. We propose that significant volume reduction was achieved through ethanol's cytotoxic effects on WTs central contents and the pressure dressing that reduced dead space.

In-office sclerotherapy offers a variety of benefits, including the reduced need for general anesthesia, minimal scarring/incisions, and decreased financial burden. Overall, ethanol sclerotherapy is well tolerated, but reported complications include nontarget embolization, neuritis, and adjacent tissue necrosis.^[9] Ethanol sclerotherapy for WT carries the theoretical possibility of damaging the facial nerve, a reported complication of parotidectomy as well.^[10] Nevertheless, facial nerve injury with sclerotherapy has not been described in the literature thus far and may be avoided with optimal sclerotherapy technique and thorough ultrasound examination.^[4,5,8] Further studies in larger cohorts of patients with microcystic WTs investigating predictors on the ultrasound of sclerotherapy success and

complication rates will guide the clinical decisions and treatment algorithms.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. Barnes L, Eveson J, Reichart P, Sidransky D. World Health Organization Classification of Tumours: Pathology and Genetics of Head and Neck Tumours. Lyon, France: IARC Press; 2005.
2. Quer M, Hernandez-Prera JC, Silver CE, Casasayas M, Simo R, Vander Poorten V, *et al.* Current trends and controversies in the management of warthin tumor of the parotid gland. *Diagnostics (Basel)* 2021;11:1467.
3. Talmor G, Nguyen B, Mir G, Badash I, Kaye R, Caloway C. Sclerotherapy for benign cystic lesions of the head and neck: Systematic review of 474 cases. *Otolaryngol Head Neck Surg* 2021;165:775-83.
4. Mamidi IS, Lee E, Benito DA, Li L, Goodman JF, Thakkar PG, *et al.* Ultrasound-guided ethanol sclerotherapy for non-surgical treatment of warthin's tumor. *Am J Otolaryngol* 2021;42:102813.
5. Lee E, Badger C, Mamidi IS, Benito DA, Li L, Goodman JF, *et al.* Ultrasound-guided ethanol sclerotherapy for multifocal unilateral warthin's tumor after partial parotidectomy. *Ultrasound* 2022;30:158-61.
6. Kim J, Kim EK, Park CS, Choi YS, Kim YH, Choi EC. Characteristic sonographic findings of warthin's tumor in the parotid gland. *J Clin Ultrasound* 2004;32:78-81.
7. Bisceglia A, Rossetto R, Garberoglio S, Franzin A, Cerato A, Maletta F, *et al.* Predictor analysis in radiofrequency ablation of benign thyroid nodules: A single center experience. *Front Endocrinol (Lausanne)* 2021;12:638880.
8. Lee E, Park I, Elzomor A, Li L, Lloyd A, Benito DA, *et al.* Efficacy of ethanol ablation as a treatment of benign head and neck cystic lesions. *Am J Otolaryngol* 2021;42:103082.
9. Albanese G, Kondo KL. Pharmacology of sclerotherapy. *Semin Intervent Radiol* 2010;27:391-9.
10. Siddiqui SH, Singh R, Siddiqui E, Zhao EH, Eloy JA, Baredes S, *et al.* Outpatient versus inpatient parotidectomy: Comparison of postoperative complication rates. *Laryngoscope* 2019;129:655-61.