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Type II first branchial cyst and sinus excision with preservation of facial nerve and parotid gland

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ABSTRACT

We describe a rare case of type II first branchial cleft sinus and cyst, which was misdiagnosed and mismanaged for many years before being correctly diagnosed and managed. A 3-year-old girl had been seen 16 times over a 3-year period for a recurrent discharging sinus before a correct diagnosis of a first branchial cleft cyst and sinus was made. The patient had an uneventful recovery following total excision of the sinus and cyst with preservation of the facial nerve and parotid gland. We report a novel technique of anatomical and electrophysiological identification of facial nerve and preservation of the facial nerve and parotid gland in type 2 first branchial sinus and cyst deep to the facial nerve trunk involving superficial and deep lobes of the left parotid gland.

Anomalies of the first brachial cleft are rare [1,2,3], with an incidence less than 10% of all branchial arch cleft defects [4] and less than 8% of all branchial anomalies [5] with approximately 200 cases reported in literature [6]. They are typically misdiagnosed and inappropriately managed [7] for several years before being correctly diagnosed and appropriately treated. Data analysis by Triglia et al. shows that the average delay between initial presentation and adequate treatment was 3.5 years The delay in diagnosis can result in unnecessary investigations and iatrogenic injuries and unnecessary anguish for the patient [8,9]. Traditionally type 2 first branchial cyst and sinus excision will involve either superficial or total parotidectomy with some injury to the facial nerve, we describe the novel technique of total excision of the cyst and sinus with total preservation of both the facial nerve and the parotid gland.

1. Case report

A 6-month-old girl presented in January 2009 with a left submandibular abscess which was drained uneventfully. However, the lesion itself persisted and continued to discharge small amounts of watery pus on a regular basis (Fig. 1A). The patient had been seen by her general practitioner 4 times prior for a non-resolving abscess and cellulitis with courses of flucloxacillin and doxycyclin. The patient then had a further 12 recurrent hospital consultations for a possible atypical tuberculous lymph node infection in the left submandibular region, where the presenting complaint was of an intermittent watery pus discharge accompanied with a painful lump in the region of the left parotid gland.

Each hospital visit was compounded by the abscess having healed, with no obvious discharge, thus no active investigation were pursued. It was after the patients' twelfth hospital appointment that imaging was considered for a possible diagnosis of a first branchial cleft cyst.

Initial imaging with an ultrasound scan revealed that from the visible puckered scar there was a 4 mm diameter tract running deep passing lateral to the left submandibular gland. It can be traced for about 1.5 cm and ending in the deep part of left parotid gland in a 2 cm long and about 8 mm heterogenous well defined cyst with vascularity on Color Doppler scan (Fig. 2A and B).

A magnetic resonance imaging (MRI) scan under general anesthesia revealed a left neck sinus tract, adjacent to the left submandibular gland and running deep to the superficial level of the left parotid gland ending into a small 9.9 mm × 9.5 mm focal

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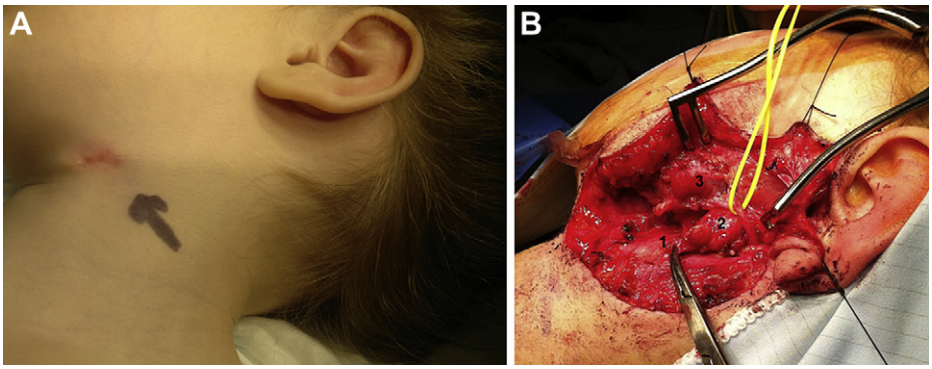

Fig. 1. A and B, Clinical and operative photographs. Cyst [1], Sinus Tract [2] and isolation and preservation of the facial nerve (sling) and the parotid gland [3].

area of high T2 signal region which was suggestive of a first branchial cleft cyst and sinus (Fig. 2C and D).

Following discussion with the Ear Nose and Throat (ENT) surgeons an operation was scheduled. At operation total excision of first branchial sinus and cyst was carried out with preservation of the facial nerve using, both visual anatomical and electrophysiological identification, and both parts of the left parotid gland (Fig. 1B).

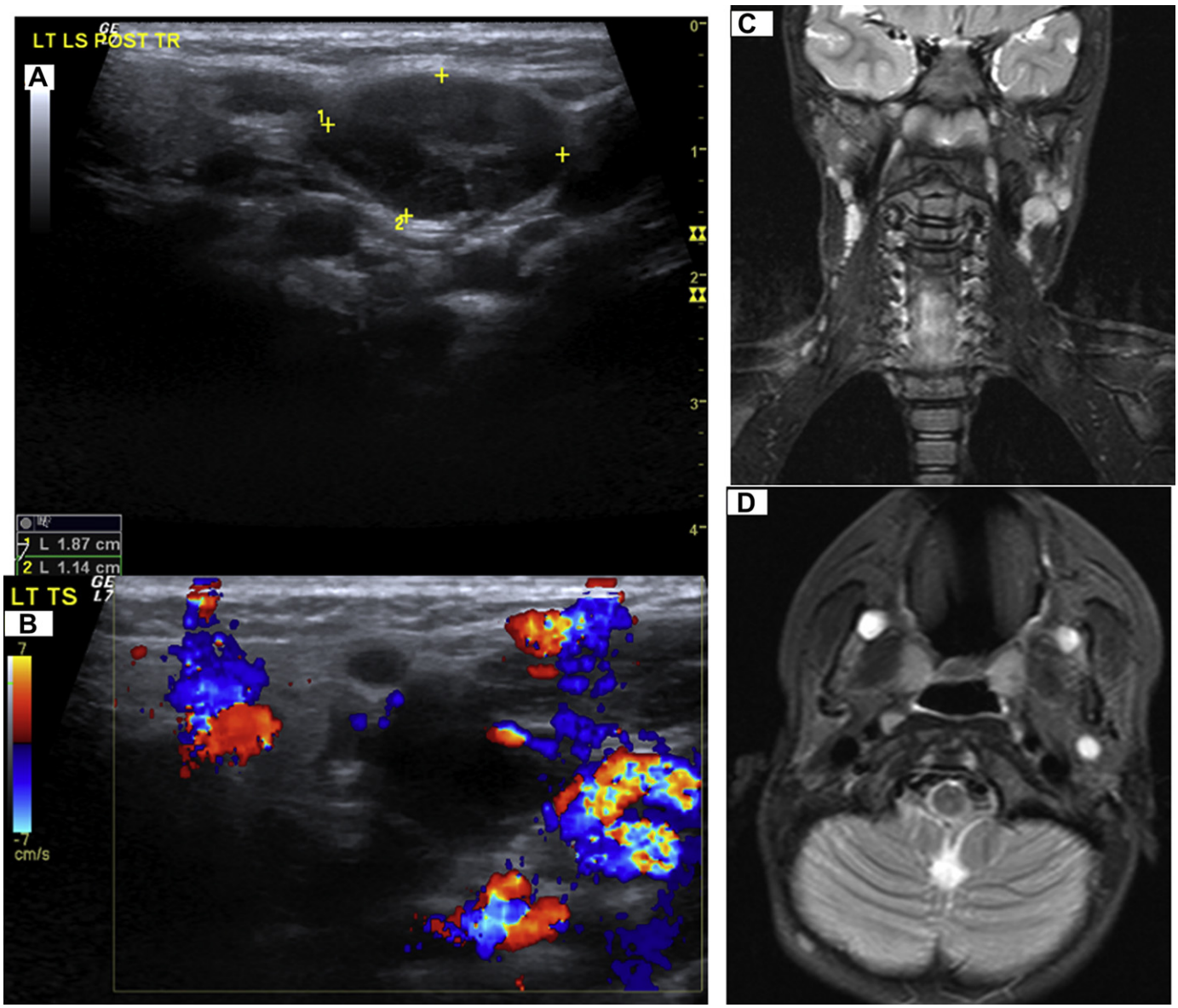

Fig. 2. A, Ultrasound 2B Color Doppler and; C&D, MRI scans showing the location and extent of the sinus and the cyst.