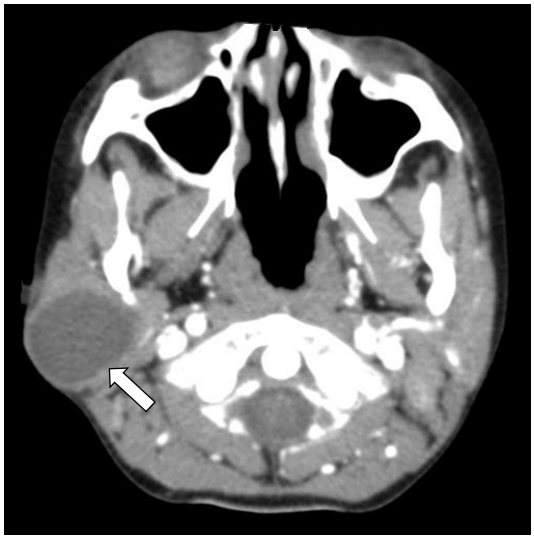
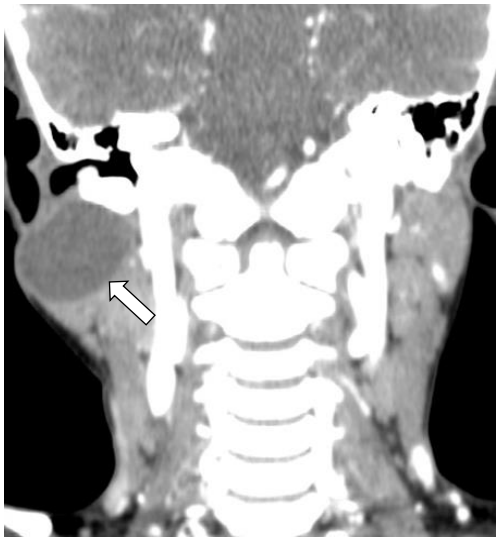
1st BRANCHIAL CYST



A



B

Case #4. A 3-year-old girl was brought in for consult due to an enlarging lump in the pre-auricular region. Contrast CT scan was done. What is your impression?

Axial (Figure A) and coronal (Figure B) contrast-enhanced CT images demonstrate a well-defined, cystic lesion in the right parotid gland. No abnormal enhancement, adjacent enlarged lymph nodes and overlying soft tissue swelling are noted. These are consistent with a **1st branchial cyst**.

Work classification is as follows:

> Type I - considered an EAC duplication, located in the preauricular region with a distal portion anterior or posterior to the pinna; frequently lateral to the facial nerve, and may be within the parotid gland.
>
> Type II - considered a duplication anomaly of the membranous EAC and pinna, situated usually just posterior or inferior to the angle of the mandible that may be lateral to, medial to, or between the branches of the facial nerve within the parotid gland.

If there is an associated fistulous tract, the tract opens into the EAC in both types. There are rare instances where they originate in the middle ear cavity or nasopharynx. Both Work type I and type II first branchial anomalies relate to the parotid gland and the facial nerve. Location of the cyst depends timing of the embryologic development.

Second branchial anomalies, on the other hand, are the most common of all branchial anomalies. However, by location, it is unlikely in this case. Bailey classification is as follows:

Type I - deep to platysma and cervical fascia, and anterior to sternocleidomastoid muscle
Type II - adjacent to the carotid and jugular vessels, most common
Type III - between the internal and external carotid arteries
Type IV - lateral pharyngeal wall

If there is an associated tract extending toward the EAC, then the diagnosis is unequivocal. If none however, differential diagnoses include lymphatic malformation, dermoid, abscess, necrotic adenopathy from nontuberculous mycobacterial infection (young children), sialocele, and cystic pilomatrixoma. Lymphatic malformations are typically multi-cystic / multi-septated fluid collections. Dermoid cysts often show fatty content on imaging. Abscesses have thick-enhancing rind with associated inflammatory changes. Enlarged necrotic lymph nodes usually involve multiple nodes not just one. Sialocele and cystic pilomatrixoma are generally not seen in young children, the former being a common complication of prior surgery.

Reference: Pediatric Radiology: Practical Imaging Evaluation of Infants and children. Edward Y. Lee, editor. Wolters Kluwer 2018.

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