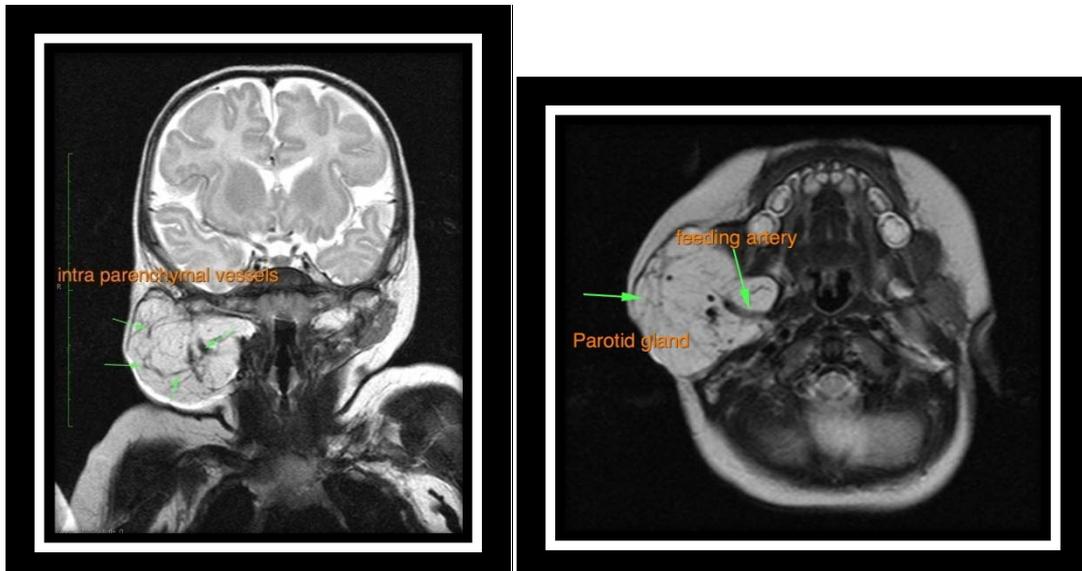


**Clinical History:**

A 3 months old child presented with history of swelling in the right parotid region. The swelling was noticed few weeks after the birth of the child. There was progressive increase in the size of the lesion. No ulceration or discoloration of the skin was seen.

**Imaging Findings:**

**Patient referred for Plain MR imaging.**



T2WI CORONAL

T2WI AXIAL

**Plain MRI Findings revealed:**

- The superficial as well as deep lobe of the right parotid gland appeared enlarged in size and showed altered signal intensity, appearing hyperintense on T2WI and isointense on T1WI.
- No calcification was detected on GRE sequences.
- Numerous intra-parotid flow voids were noted suggestive of vessels within the gland.
- A large feeding artery was seen arising from the right external carotid artery.
- And few of the intra-parotid vessels were seen to empty into the right jugular vein.
- No phleboliths were seen in the parenchyma of the gland.
- The visualised bones and the overlying skin appeared normal.

**Final Diagnosis:**

**Intraparotid A-V Malformation.**



### **Discussion:**

**Vascular malformations** can be divided into two categories, **Fast flowing** and **Slow flowing** lesions. Arteriovenous malformations (AVMs) are predominantly high-flow lesions that allow shunting of blood from the arterial system directly into the venous system. And Venous, Capillary and Lymphatic lesions are slow flowing lesions. AVM's are most commonly found in the head and neck region, especially intracranially; and intraparotid AV malformations are rare. These lesions consist of arteriovenous structures that allow shunting to occur. These lesions are defined by the presence of feeding arteries and draining veins.

### **Presentation:**

AVMs are often noted at birth. In infancy, they are almost universally asymptomatic. They eventually manifest as subcutaneous or submucosal swellings that are warm to the touch, have a palpable thrill, and an audible bruit. This usually occurs in late childhood, adolescence or early adulthood, possibly secondary to hormonal changes. When the lesion expands, blood is shunted away from the skin and bones, possibly leading to skin ulceration and bone necrosis.

### **Complications :**

AVMs can cause pain, expansion, and disfigurement, ulceration, life-threatening bleeding, cardiac hypertrophy, and cardiac failure secondary to sustained high cardiac output. Excessive bleeding and its associated morbidities and potential mortality may occur during resection of these lesions.

The diagnosis of these lesions is based on the history of physical examination, supported by imaging studies. Imaging is important to assess the extent of the disease and diagnosis.

**MRI** and **MR Angiography** are the best imaging studies.

On MRI the involved area of the parotid gland reveals an hyperintense signal on T2WI with many flow voids scattered throughout the parenchyma. No dominant mass is seen within the parenchyma. Diffuse enhancement with contrast is seen.

Intraosseous extension is seen as decreased marrow signal on T1WI, hence MRI can rule out early invasion of the bone.

MRA will demonstrate a very vascular lesion and reveals the tangled, ectatic nature of the lesion's vasculature and the main feeding vessels from the normal circulation.

Hence MRI can distinguish a low flow lesion like Hemangioma, Venous and Lymphatic Malformation from the high flow lesion like A-V malformation and facilitate diagnosis.



### **Advantages of MR Angio over CT Angio:**

1. Radiation free scan.
2. The blood vessels can be visualised with TOF angiography without the use of I.V contrast.

### **Treatment:**

Small, asymptomatic lesions are best observed. Surgical excision has been used, most often following attempts to embolize the lesion. In fact, intraarterial embolization followed by surgical excision is the only "curative" treatment modality. However, these lesions are often intimately involved with vital structures and the facial skeleton, making their complete surgical removal impractical. Embolization usually precedes surgery by 1-2 days and is designed to decrease blood loss and facilitate surgery, not shrink the mass.

Embolization may be used as a single modality in the palliation of patients whose lesions are not resectable without unacceptable complications. Surgical ligation of feeding vessels has little role. This is thought to lead to rapid recruitment of other vessels and to obliterate a potential route for embolization.

### **Message:**

1. **MRI is the imaging modality of choice in HFN vascular lesions.**
2. **MRI / MRA can distinguish a high flow lesion like AVM's from low flow lesions like Hemangiomas, Venous and Lymphatic Malformations.**
3. **Feeding vessels and extent of the lesion are best delineated on MRI; as in case of Intraparotid AVM's**
4. **MRI gives a radiation free scan and also may not require the use of contrast for visualization of vessels.**

**Regards,**

**Dr. Deepa S. Nadkarni / Dr. Shaikh M. Mazhar**

N.B: This case is authentic and from the archives of Radiance Diagnostics. For any queries / suggestions/feedback write to us at [radiance@radiancediagnostics.in](mailto:radiance@radiancediagnostics.in)