

# Traumatic Internal Carotid Artery Pseudoaneurysm in a Toddler: Diagnostic Challenges and Endovascular Management

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**Abstract:** Background: Internal carotid pseudoaneurysm are rare in children but carries high mortality and morbidity if timely intervention fails [1,2], this pathology often presents as complication of pharyngeal infections, any trauma or congenital malformations. These lesions may present from asymptomatic mass to fatal hemorrhage. Case presentation: we report a 13 -month- old boy who sustained a blunt trauma neck following fall from bed. He presented with a swelling over left side of neck of size 3x3 cm with irritability and feeding difficulties, MR angiography revealed a pseudoaneurysm of the left cervical ICA. Endovascular coil embolization done with patent flow from circle of willis. The child recovered uneventfully with no neurological deficit on further follow up visits. Conclusion: this case highlights the importance of considering vascular injury in pediatric trauma, even with nonspecific symptoms. Early and prompt diagnosis with imaging and endovascular intervention can achieve in potentially life-threatening ICA pseudoaneurysm in pediatric age group [3-5]

**Keywords:** endovascular coil embolization, toddler vascular injury, internal carotid artery pseudoaneurysm, Circle of Willis circulation.

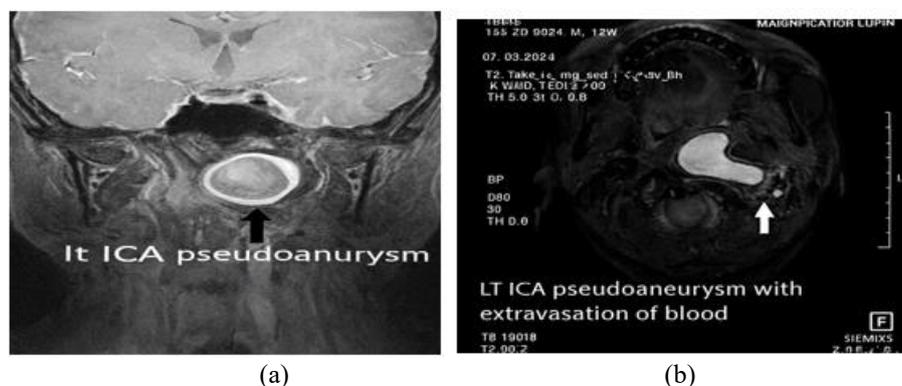
## 1. Introduction

Extra cranial carotid pseudoaneurysm uncommon in pediatric age group, particularly toddler pertaining to elastic vessels [1], but carries high mortality and morbidity if timely intervention fails, this pathology often presents as complication of pharyngeal infections, any trauma or congenital malformations. These lesions may present from asymptomatic mass to fatal hemorrhage [2, 3]. Diagnosis is often delayed due to non-specific symptoms. Endovascular techniques proved to be a safer and preferred management strategy compared with open surgery in terms of morbidity and mortality [4,5].

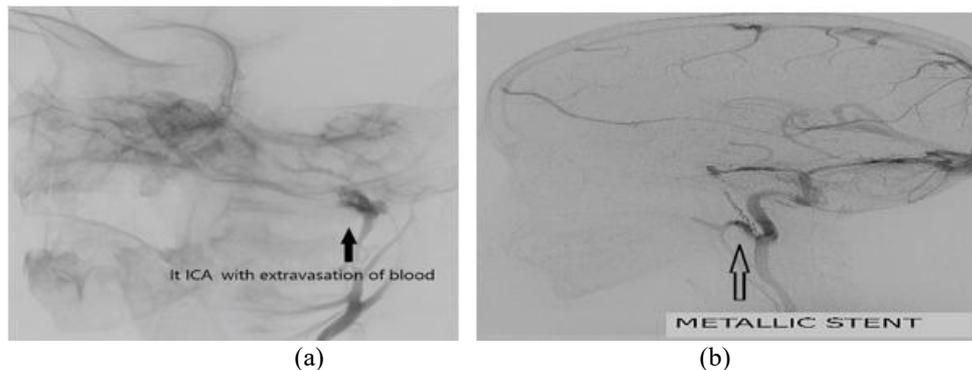
## 2. Case Report

A 13-month-old male child was presented with history of fall from bed two month ago and had swelling over left sided carotid triangle. Baby was irritable with decreased food and had wheeze on inspiration with room air saturation

of 95%. On performing magnetic resonance angiography of neck and brain (Fig.1) showed a mixed signal intensity round lesion compressing the adjacent airway in the nasopharyngeal region, lesion is about 3x3 cm in size with non- visualization of the left internal carotid artery suggesting a partial thrombosed pseudoaneurysm (Fig. 2). Child was admitted in intensive care unit for further monitoring, mass lesion was gradually expanded up to a size 6x6 cm over five days abutting almost the whole area of left temporo-mandibular joint with persistent bleeding from left ear, child developed severe respiratory distress barely maintaining oxygen saturation over 90% on non-invasive oxygen support. Computed tomography scan of head and neck showed left internal carotid artery breach with active extravasation of blood. The patient underwent endovascular coil embolization under general anesthesia with preservation of the parent artery flow and good cerebral perfusion. Patient discharged after five days on antiplatelet therapy. Patient was in good health with no neurological deficit on 6-month follow up.



**Figure 1:** (a) A mixed signal intensity lesion in the left side of the neck on magnetic resonance angiography. (b) CT scan of neck and brain shows left internal carotid artery breach with extravasation



**Figure 2:** (a) Pre procedure fluoroscopic view shows extravasation of blood from left internal Carotid Artery (b) Post procedure with endovascular stent in the affected region.

### 3. Discussion

Traumatic pseudoaneurysm in pediatric age group especially toddlers are exceedingly rare [1,2]. Vascular imaging in such age group is essential as clinical presentation may often misleading and mimic minor head injury [3].

Endovascular treatment gains wide attention in such situation as compared to open surgeries may result in less complication, preserving vessel integrity [2-5].

Albuquerque et al. described successful endovascular management of carotid pseudoaneurysm in adults [1]. Pham et al. reported endovascular techniques in managing carotid injuries in pediatric age group [2]. Ospel et al. stated firmly about early recognition and intervention in carotid injuries to prevent catastrophic outcomes [3].

This case adds to the literature regarding pediatric vascular injuries and confirming the importance of endovascular management of ICA pseudoaneurysm [4,5].

### 4. Conclusion

Early diagnosis of such condition is necessary especially in a child, endovascular technique can prove to be a prompt and effective technique for such lesion at a surgically difficult location with minimal risk related to open surgery and secondly importance of thorough history and effective use of imaging modalities is mandatory of such lesions.

#### Abbreviation

- CTA: Computed tomographic angiography
- MRA: Magnetic Resonance Angiography
- LT ICA: Left Internal Carotid Artery

#### Declarations

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**Data availability:** All data underlying the results are available as a part of the article and no additional source are required

**Ethics committee approval:** Not applicable

**Informed consent:** Taken

**Conflict of interest:** None

**Human and animal rights statement:** All procedures are performed in this study involving human participants were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and its later amendments or comparable ethical standards. This article does not contain any studies with animals performed by any of the authors.

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