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## Reminder of important clinical lesson

## Palatal avulsion injury by a foreign body in a child

Sulyman Biodun Alabi,<sup>1</sup> Shuaib Kayode Aremu,<sup>2</sup> A Y Abdulkadir,<sup>3</sup> J N Legbo,<sup>4</sup> Halima J Akande<sup>5</sup><sup>1</sup>ENT Department, UIITH, Ilorin, Nigeria;<sup>2</sup>ENT Department, FMC Azare, Bauchi State, Nigeria;<sup>3</sup>Radiology Department, FMC Gusau, Gusau, Zamfara, Nigeria;<sup>4</sup>Surgery Department, UDUTH, Sokoto, Nigeria;<sup>5</sup>Radiology Department, UIITH, Ilorin, Kwara, Nigeria**Correspondence to** Dr Shuaib Kayode Aremu, shuaib.arem@gmail.com**Summary**

A 6-year-old girl who claimed to have fallen while playing with metal rod that resulted in palatal avulsion injuries was presented. Neither of the parents was around when the incidence happened. She was brought to the hospital because of pain, bleeding from the mouth, drooling of saliva mixed with blood and inability to feed or phonate appropriately. Examinations of the oral cavity revealed a triangular area of avulsion in the posterior aspect of the hard palate extending to the soft palate. She had examination under anaesthesia and wound repaired with 3-0 vicryl interrupted sutures after thorough wound debridement. She did well and was discharged from the clinic.

**BACKGROUND**

Foreign bodies implantal injuries to the palate are quite rare with 32 cases reported in the English literature.<sup>1</sup> Most cases occur in infants and children, and are usually accompanied by a poor and confusing history. Due to its rarity, it is not usually considered among the differential diagnosis of palatal lesions. Although these injuries usually heal without treatment, thrombosis of the internal carotid artery is a rare complication.<sup>2</sup>

**CASE PRESENTATION**

A 6-year-old girl who claimed to have fallen while playing with a metal rod was brought to our ENT emergency unit 16 h after by the father. Neither of the parents was around when the incidence happened. She was brought to the hospital because of pain, bleeding from the mouth, drooling of saliva mixed with blood and inability to feed or phonate appropriately.

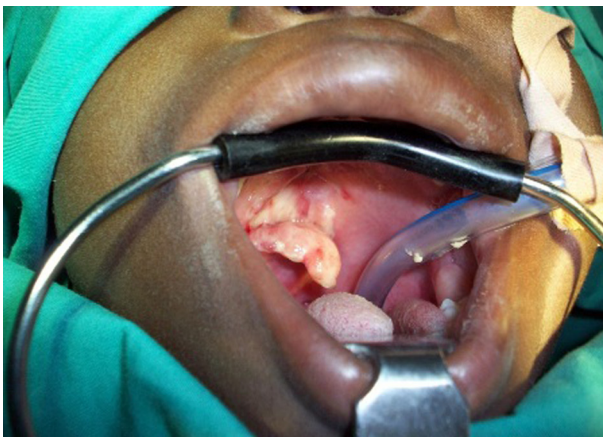
General examination reveal temperature (T°) of 37.0; pulse rate of 118 bpm; respiratory rate of 22 cpm. Examination of the oral cavity revealed a triangular area of avulsion in the posterior aspect of the hard palate extending to the soft palate with its flap of skin over hanging the uvula posteriorly (figure 1). Other systems were essentially normal.

**INVESTIGATIONS**

Urgent packed cell volume (36%), full blood count (within normal limit) and x-ray soft tissue neck (reveal no abnormality) were done.

**TREATMENT**

The patient was admitted, commenced on intravenous fluids and augmentin and metronidazole injections. She had examination under anaesthesia and had wound repaired with 3-0 vicryl interrupted sutures under general anaesthesia after thorough wound debridement (figures 2 and 3).



**Figure 1** Preoperative photograph showing lacerated palate. Note the flap of skin and the exposed palatine.



**Figure 2** Immediately postsuturing: the wound is well apposed.



**Figure 3** Third postoperative day.

She was placed on nil per oral for 8 h and thereafter commenced on straw feeding over 72 h.

### OUTCOME AND FOLLOW-UP

The patient did well and was discharged home on the 5th post operation day in a stable condition and outpatient clinic visits have been uneventful since over 3 months and she has been discharged from the clinic.

### DISCUSSION

Foreign body impalement injuries to the palate are quite rare with 32 cases reported in the English literature.<sup>1</sup>

The possibility of children inserting objects into their oral cavity is the main reason why palatal foreign bodies and injuries are most common in this age group.<sup>3</sup> Objects tend to adhere to the hard palate due to the anatomical differences in the paediatric palate. The natural position of the tongue, thumb sucking and feeding patterns further led to the adherence of a foreign body to the roof of the oral cavity by producing a constant force on the foreign body up against the palate. Foreign bodies of the hard palate can present in a variety of ways.<sup>3-7</sup> In the group of children under 6 years of age as in the case presented, injuries to the mouth and oropharynx are usually caused by objects, such as pens, pipes and cylindrical toys.<sup>4</sup> A metal rod was the agent in our case. The most common types of impalement injuries in the paediatric age group result from falls sustained while holding objects intraorally as in our patient.<sup>5,6</sup> The resultant injuries, can result in several complications requiring active management, some of which are potentially life threatening.<sup>7,8</sup> Due to the paucity of such events there is no evidence base or clear consensus on a particular management plan.

### Surgical anatomy

The skull base forms the floor of the cranial cavity and separates the brain from other facial structures. This anatomic region is complex and poses surgical challenges for otolaryngologists and neurosurgeons alike. Working knowledge of the normal and variant anatomy of the skull base is essential for effective surgical treatment of disease in this area.

The five bones that make up the skull base are the ethmoid, sphenoid, occipital, paired frontal and paired parietal bones. The skull base can be subdivided into three regions: the anterior, middle and posterior cranial fossae. The petro-occipital fissure subdivides the middle cranial fossa into one central component and two lateral components. This article discusses each region, with attention to the surrounding structures, nerves, vascular supply and clinically relevant surgical landmarks.<sup>9,10</sup>

The most important anatomic structures below the anterior cranial fossa are the orbits and the paranasal sinuses. A thorough description is beyond the scope of this article, but important anatomy and relationships are discussed.

The bony orbit is often a route for intracranial and extracranial spread of infection and tumours because of its direct proximity to the anterior fossa. The posterior wall is thin and adjacent to the superior sagittal sinus and frontal lobe dura. The posterior aspect includes the optic canal, the superior orbital fissure (SOF) and the inferior orbital fissure (IOF). The SOF conveys the oculomotor, trochlear, abducens and ophthalmic nerves (cranial nerves (CN) III, IV, VI and V1, respectively), as well as the ophthalmic veins.

The IOF transmits the maxillary nerve (CN V2) and infraorbital vessels, and it communicates with the infratemporal and pterygomaxillary fossae. The lateral portion of the IOF is an important surgical landmark for positioning lateral orbital osteotomies during anterior skull base resections. The optic canal transmits the optic nerve (CN II) and the ophthalmic artery.<sup>9,10</sup>

### Management

Management of trauma to the palate and lateral pharyngeal wall will initially include hospitalisation, mucosal repair and antibiotic prophylaxis and also diagnostic studies as well as treatment if thrombosis or neurologic changes develop. Shanon *et al* in 1972 and Hengerer in 1984 both recommended hospitalisation for 48 to 72 h, due to the devastating nature of carotid and cerebral vascular thrombosis hence angiography and surgical management if indicated.<sup>11,12</sup> The patient presented was hospitalised for 5 days due to unreliable home situations and distance from the hospital in order to ensure proper healing of the wounds.<sup>13</sup>

Our patient did not show any evidence of vascular thrombosis that would have necessitated angiography.

The reported indication for laceration repair of palatal injury varies from 7% to 72%.<sup>14-18</sup> Domarus *et al* and Hellman *et al*<sup>14,15</sup> suggested repair for gross contamination, large, avulsed, or hanging flaps as in the case presented. The need for antibiotics remains unclear, however some authors empirically recommend antibiotic prophylaxis in all patients.<sup>14</sup> especially in large avulsed wound to be sutured as in our case coupled with the tropical climate in our environment which encourages infection.

### CONCLUSION

Most lacerations heal if left alone, however repair should be undertaken for large, gaping injuries, with foreign bodies, and when perforating with empirical antibiotics cover as in our case, also hospitalisation is quite important in an environment with poor health facilities that are not readily assessed by the populace.

## Learning points

- ▶ The possibility of children inserting objects into their oral cavity is the main reason why palatal foreign bodies and injuries are most common in this age group.
- ▶ The most common types of impalement injuries in the paediatric age group result from falls sustained while holding objects intraorally.
- ▶ The need for antibiotics remains unclear, however some authors empirically recommend antibiotic prophylaxis in all patients.

**Competing interests** None.

**Patient consent** Obtained.

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