



## Penetrating Injury Wound on a 9-Year Old Patient: A Case Report

Foo Q C<sup>1</sup>, Lee C W<sup>2</sup>, Zainal Abidin M<sup>3</sup>, Gopalan S<sup>2</sup>

<sup>1</sup> Dental Officer, Oral Maxillofacial Department, Queen Elizabeth Hospital, Kota Kinabalu, Malaysia

<sup>2</sup> Oral Maxillofacial Surgeon, Oral Maxillofacial Department, Queen Elizabeth Hospital, Kota Kinabalu, Malaysia

<sup>3</sup> Consultant and Head of Department, Oral Maxillofacial Department, Queen Elizabeth Hospital, Kota Kinabalu, Malaysia

### ABSTRACT

Penetrating injury to the maxillofacial region can be life threatening and difficult to manage due to the myriad of vital structures present. A 9-year-old boy suffered a penetrating wound injury to his face after stepping onto a dislodged metal rod of a drain cover. The rod was removed under sedation followed by toilet and suturing under general anaesthesia. The patient recovered without significant complication. The scar tissue was kept to minimum with good debridement and layered linear wound closure. Antimicrobial topical ointment further decreases scar formation. Once the surgical aspect was done, the psychological implication of the injury to the patient need to be taken into consideration.

**Key Words:** Trauma, Penetrating injury, Paediatric, Buccal cheek

Please cite this article as: Foo Q C, et al. Penetrating injury wound on a 9-year old patient: a case report. Malaysian Dental Journal 2014; 36(2): 20-23.

### INTRODUCTION

Penetrating injury to maxillofacial areas always presented as a big challenge to an Oral Maxillofacial surgeon in managing the case.<sup>1</sup> It is because within the maxillofacial territory, comprises of few major vital structures, in which injury to any of these vital structures, definitely causing patients having certain degrees of disability and reduced quality of life. The scenario worsens when it happens to a paediatric patient.

This case report presented an unusual trauma suffered by a 9-year-old boy from Kota Kinabalu, Sabah. In this article, the chronology of the incident, collaboration between different hospital-based departments, surgical management of the patient and the post-operative follow up will be discussed.

### CASE REPORT

A 9-year-old boy was presented to Accident and Emergency Department (A&E), Queen Elizabeth Hospital (QEH) for a through and through puncture wound on his right cheek from a metal rod. The

incident happened when the patient was off from school. Patient was walking towards his school bus and fall into a drain. A loose metal rod with a length of 1-meter from the drain enters the oral cavity and pierced through his right buccal mucosa out through the right cheek.

The patient was immediately brought in by Fire and Rescue Department officers after the incident happened. The 1-meter smooth-surfaced metal rod was strapped to patient's leg to immobilize it, in order to reduce further injury to surrounding area before definitive treatment was provided. Medical officers from the Emergency Department were the first to attend the case. 2mg morphine and 0.5ml anti-tetanus toxoid were administered immediately. During the primary survey, patient was alert and conscious, no vomiting, no dizziness and no epistaxis. Glasgow Coma Scale was full (15/15). Medically he was fit and healthy and has no allergy. Once the preliminary assessment and management was done, the patient was referred to Oral and Maxillofacial Surgery (OMFS) Department. The patient responded with weak voice and limited limbs movement due to the metal was strapped on

the limbs. There was no active bleeding from the injured site and his eye visual were intact. Initial clinical examination showed no damage to the cranial region and surrounding vital structures, no bony penetration was encountered. The metal rod has penetrated the right buccal cheek area.

Decision was made to schedule patient in operating theatre to remove the metal rod and suturing the wound. Attention to Dental Paediatrician was immediately sought for arrangement of emergency operation in Sabah Women and Children's Hospital (HWKKS). Anesthetic team did comprehensive review on the patient condition and decided to sedate the patient for removal of the metal rod before proceed with general anesthesia for oral toilet and suturing. Extra precautions were needed due to the position of the metal rod blocking the path of intubation (Figure 1).



**Figure 1.** General anaesthesia team unable to intubate the patient as the metal rod was in the way.

In order for OMFS and Dental Paediatrician to remove the rod, patient was sedated with ketamine. A periosteal elevator was used to carefully detach the rod from the surrounding soft tissue and a removal path was created before it was slowly pulled out (Figure 2). There was minimal bleeding from the injured site during and after the rod removal.

Once the rod has been removed, patient was intubated orally. The punctured wound was carefully assessed. The rod left a 2cm through and through laceration wound on his right cheek. Vital structures such as the orbit, parotid gland with its duct, and infraorbital nerve were not injured. Copious irrigation with normal saline and iodine to make sure no foreign body or metal remnant was

left behind in the wound (Figure 3). Meticulous layer suturing technique with absorbable Vicryl® 4/0 was performed on the inner oral mucosa and deeper mucosa layer. Non-resorbable Dafilon®6/0 were used to approximate the skin layer aiming to achieve the best aesthetic results (Figure 4).



**Figure 2.** The metal bar was detached with periosteal elevator and removed under sedation.



**Figure 3.** Wound debrided and cleaned with copious irrigation of iodine and saline.



**Figure 4.** Suturing was done under general anaesthesia.

Post-operatively, chloramphenicol eye ointment was applied to laceration wound 3 times a day and he was prescribed with intravenous

ampicillin 250mg and intravenous metronidazole 200mg, 3 times a day for 5 days. He was on tablet paracetamol 500mg 3 times a day for post-operative pain.

Post-operative healing was uneventful. On 1st day post-operative review, patient has no complaint. Sutures were intact and there was no active bleeding. There was minimal right facial swelling. Patient reported multiple episodes of vomiting. Abdominal palpation revealed soft but tender epigastric region. A referral was made to Paediatric Surgical team and he was diagnosed as epigastric pain. He was under close monitoring and pain resolved after 1 day. Patient's post-operative orthopantomogram (OPG) and occipito-mental (OM) view shows no fracture or injury to the maxilla and mandible. Maxillary sinus was clear. Patient was discharged on second day. He was well, tolerating orally, afebrile and ambulating.

During the review in dental paediatric clinic on day-5, patient was well and tolerating orally. Sutures were removed and Hyaluronic acid (Gingigel®) was prescribed for intraoral application. Due to the nature and extent of the injury, the press coverage and tender age of the patient, we referred him to Counseling Department, QEH for physiological assessment.

On second week post-operative review, patient was well and cooperative. Scar noted on right cheek and right buccal sulcus. Neither deformity nor disability was noted. Patient's parents were satisfied with the surgical results. Patient was prescribed with Topical Silicone Gel (Dermatix® Ultra) to facilitate the wound healing on the skin.

On 3 months review, minimal scar was noted on right cheek (Figure 5 and Figure 6). There was no complaint from the patient or his parents. Counseling Unit reported no Post Traumatic Stress Disorder from this patient and thus discharged him.

## DISCUSSION

Maxillofacial injuries in pediatric patients were completely different from an adult patient, in term of etiologies, clinical presentations, and its surgical managements. The incidence is normally lower than happened in adults.<sup>2,3</sup>



Figure 5. Post-operative 3 months review.



Figure 6. Patient at post-operative 3 months review.

Accidental foreign body penetration to the maxillofacial region in the pediatric patient is even less common. In this case, the metal rod entered the oral cavity, pierced through the upper right buccal mucosa, near to the upper sulcus area, exit through the skin just immediately under the inferior orbital floor. The parotid duct opening, tooth structure, maxilla and mandibular bone were intact without any damaged. Major blood vessels and nerve tract were spared from the penetration. This 9-year old boy is considered very lucky as any displacement of the rod medially sure will result in life-threatening complications to the patient.

Extra care has to be taken to immobilize the rod during the transferring of the patient from the site of accident to the hospital, in order to prevent prevent bleeding and further injuries to the surrounding structures. No pre-operative radiograph was taken to avoid any unnecessary movement to the patient. The initial clinical examination in A&E department revealed no hard tissue injury. However, post-operative radiographs

– orthopantomograph (OPG) and occipito-mental (OM) view were taken to confirm our pre-operative diagnosis.

We have difficulties intubating the patient as the rod is in the way of an oxygen mask. Decision was made after discussion with the anesthesiologist to remove the rod under sedation followed by intubation for toilet and suturing. We did not anticipate major bleeding, as the rod was not in the area of major blood vessels.

Scarring was kept to a minimum with adequate debridement, proper suturing and application of Chloramphenicol eye ointment and Topical Silicone Gel (Dermatix). Nevertheless, we should take into consideration the psychological impact of this injury to a 9-year-old boy. This case was widely reported in the local newspaper and his picture at the time of injury was published. No attempt was made to cover up his identity during publication. Thus, we referred him to Counseling Department for assessment and consultation. On 3 months postoperative review, the boy recovered with minimal scarring and was given a positive evaluation by the Counseling Department.

With the training and collaboration between specialties, management of this patient was straightforward. Once the removal path was achieved and rod has been removed with minimal manipulation, preserved as much as possible surrounding soft tissue, the final step was to proceed with oral toilet and suturing of a 2cm through and through laceration wound. The challenge was to remove the penetrating object without causing further damage to the surrounding tissues, any major blood vessels and vital structures.<sup>4</sup> A positive outcome was attained by multidisciplinary approach of OMFS, Paediatric Dental Surgery and Anaesthesiologist Team.

## ACKNOWLEDGEMENT

The authors would like to thank Dr. Leong Kei Joe and Dr. Azalina Hj. Osman from Sabah Women and Children's Hospital for their contribution with this case.

## REFERENCES

1. Wang YL, Pan L, Xu H. The surgical treatment of reinforced steel bar injury penetrating the skull base and maxilla-mandibular area. *J Craniofac Surg* Vol.25 (6), 2014. e521-3.
2. Ferreira P, Barbosa J, Amarante J et al. Changes in the characteristics of facial fractures in children and adolescents in Portugal 1993-2012. *Br J Oral Maxillofac Surg* 53 (2015) 251-6.
3. Zhang QB, Zhang ZQ, Chen D et al. Epidemiology of maxillofacial injury in children under 15 years of age in southern China. *Oral Surg Oral Med Oral Pathol Oral Radiol* 2013; 115: 436-41.
4. Orbay AS, Uysal OA, Iyigun O et al. An Unusual penetrating faciocranial injury caused by a knife: A case report. *O.M.Ü. Tıp Dergisi* 1997;14(2):129-36.

## Corresponding Author:

Dr. Lee Chee Wei  
Department of Oral Maxillofacial  
Queen Elizabeth Hospital  
88200 Kota Kinabalu, Sabah, Malaysia.  
Tel: +6088-517555  
Email: [lee\\_chee\\_wei@hotmail.com](mailto:lee_chee_wei@hotmail.com)