

# KidSIM Scenario



## Penetrating Neck Trauma – Toddler (4 Year Old)

(SD0094)

## CASE: Penetrating Neck Trauma – Toddler (4 Year Old)

This is a case of a previously healthy 4 year old who presents with multiple facial and torso lacerations from a dog attack. He is mentating sufficiently but has remarkable injury to his face and most importantly to his neck and the learners have to pick up on vascular injury as he becomes more shocky, as well as a small pneumothorax he has developed from a bite to his lateral rib cage.

### TARGET AUDIENCE:

PEM Fellows, nurses, paramedics, respiratory technicians

### LEARNING OBJECTIVES:

#### *Knowledge:*

*By the end of the session the participants will:*

- Recognize certain dog bite/attacks as significant trauma and take similar precautions including c-spine precautions
- Recognize extent of a penetrating neck injury
- Know the zone classification of penetrating neck injuries
- Complete a full trauma assessment to capture other possible life threatening injuries such as pneumothorax/hemothorax

#### *Skills:*

*By the end of the session the participants will:*

- Manage possible impending airway collapse
- Demonstrate an efficient primary and secondary survey

#### *Attitudes / Behaviours:*

*By the end of this session the participants will:*

- Appropriately consult ancillary services early (Code 88, surgery, anesthesia)
- Direct team members appropriately to various tasks with clear communication of roles
- +/- deliver news of critical illness to hysterical parent/loved one

### SCENARIO ENVIRONMENT

**Location** Pediatric tertiary care ED, trauma/resuscitation bay

**Monitors:** Cardiorespiratory and defibrillator

#### **Physical props/equipment:**

Medication

- Standard PALS Medication
- Inotropes (Dopamine, epinephrine)
- Standard RSI medication
- pRBCs

C-spine collar

Intubation equipment

**SD0094**

**Key Words (for database):**

**Author: Naminder Sandhu**

**Date last revised: September 1, 2015**

## CASE: Penetrating Neck Trauma – Toddler (4 Year Old)

Quick-trach set

O2 delivery devices

IV supplies:

- NS with tubing
- Pump
- Pressure bag
- IO equipment

Documentation records

stethoscope

### **Make up /Moulage:**

Multiple facial lacs; neck one ++bloody; t-shirt bloody over left lateral rib cage with open wound to thorax

### **Multi media:**

- CXR – *subcutaneous emphysema above the apices; small pneumothorax*
- *Facial pictures – significant neck laceration*
- *Blood gases – normal*

### **Mannequins:**

- Pediatric high fidelity mannequin for 4 year old patient requiring resuscitation

### **Personnel:**

- *Consultant PICU via telephone*
- *Anesthesia +/- Gen surgery*

### **Potential Distracters (Optional):**

- Hysterical mother arriving on scene

## SCENARIO

### **Case Introduction:**

EMS brings in a 4 year old boy who was attacked by a dog while being baby sat by his aunt. The aunt is on her way. The boy is upset, crying and EMS has given him IV Fentanyl as well as put dressings on his wounds. He has multiple wounds to his face and body.

### **Available Collateral History from aunt:** *(Information given if requested)*

*She was babysitting her nephew at her and her boyfriend's house. Their dog is a boxer breed and has attacked her boyfriend before. The attack was unwitnessed. The patient was playing in the living room when the dog started getting aggressive with him. She found him lying in the hallway to the kitchen with significant bleeding from his face and shirt.*

*Past medical history unavailable – healthy, NKA, IUTD*

**SD0094**

**Key Words (for database):**

**Author: Naminder Sandhu**

**Date last revised: September 1, 2015**

**CASE: Penetrating Neck Trauma – Toddler (4 Year Old)**

**The Script:**

Scenario Transitions / patient parameters	Effective Management	Consequences of Ineffective Management	Notes
<p>1. Arrival of 4 year distressed patient:                      VS:  <b>P</b> 150  <b>BP</b> 90/50  <b>RR</b> 40  <b>Sao2:</b> 93%  <b>T</b> 37  <b>ENT:</b> Left eyelid swollen and lacerated (as per picture), right nare torn. Multiple facial lac with significant lac to left side of neck: oozing blood, can see a white cord-like structure and a separate pulsatile structure; no air leak heard, no emphysema palpable  <b>CVS:</b> CRT 3 sec cent and periph; hands cool  <b>CNS:</b> Alert, crying with anxiety and pain  <b>Resp:</b> ; Hyperventilating. No stridor or wheeze, no hoarse voice. Reduced air entry left chest but difficult because patient crying  <b>Skin:</b> Shirt torn with blood on it. Gauze dressings covering eyes and neck. Two significant lacerations to side (over left lateral ribs; air sucking in b/c open pneumothorax), left arm, face/eye, and neck  <b>GI:</b> abd soft, non-tender; no dysphagia</p>	<ul style="list-style-type: none"> <li>▪ Appropriately exposes patient to assess extent of injury</li> <li>▪ Manages as a full trauma with primary and secondary surveys and consider c-spine precautions</li> <li>▪ Quickly prioritize injuries (neck = airway, and thoracic lacerations = breathing)</li> <li>▪ Obtain quick IV access and send off labs for probable OR</li> <li>▪ Recognizes potential blood loss and manages via pressure control initially</li> <li>▪ Consider calling for help (eg. Code 88/anesthesia/ENT)</li> </ul>	<ul style="list-style-type: none"> <li>▪ If doesn't recognize potential serious neck trauma by removing dressings or assessing laceration, overall delay in airway control and hemorrhage control</li> <li>▪ If probes laceration, bleeding worsens</li> <li>▪ If doesn't recognize bleeding source/pneumothorax source from bite to left rib cage, will miss worsening dyspnea and intrathoracic hemorrhage</li> </ul>	<p>CXR shows small pneumothorax left side</p>
<p>2. Patient becomes more dyspneic and shocky  <b>VS :</b>  <b>HR</b> 160's  <b>Bp :</b> 88/50  <b>RR :</b> 48  <b>Sao2 :</b> 92% on RA                      Rest as above  <b>Neck :</b> dressings ++ soaked</p>	<ul style="list-style-type: none"> <li>▪ Careful pain control so as not to affect LOC too much because of airway concerns</li> <li>▪ Have equipment prepared for possible airway control but do not intubate unassisted</li> <li>▪ Apply oxygen and recognize need to address small open pneumothorax (they should not be so swayed as to consider chest tube but apply proper dressing)</li> </ul>	<ul style="list-style-type: none"> <li>▪ If decide to intubate unassisted, patient's trachea transected and patient goes hypoxic → arrests</li> </ul>	<p>Can stop scenario at this point if appropriate</p>
<p>3. Patient becomes more shocky and a bit more altered (sign of not perfusing brain due to vascular injury)  <b>VS :</b> <b>HR</b> 180's</p>	<ul style="list-style-type: none"> <li>▪ Appropriate recognition of major bleeding likely from neck lac so urgency for exploration of neck wound for vascular injury</li> </ul>		

**CASE: Penetrating Neck Trauma – Toddler (4 Year Old)**

<p><b>Bp</b> : 78/46  <b>RR</b> : 46  <b>Sao2</b> : 90% unless appropriate airway/oxygen management  <b>Neck</b> : pulsatile hematoma noted</p>	<ul style="list-style-type: none"> <li>Fluid resuscitation when recognize signs of shock; initiate blood stat</li> </ul>		
-------------------------------------------------------------------------------------------------------------------------------------------------------------	--------------------------------------------------------------------------------------------------------------------------	--	--

**Debriefing Points**

- How to assess severity of penetrating neck trauma and anticipate possible complications
- Who to call/mobilize if concerned about neck trauma penetrating the platysma with concerns of either: airway or vascular compromise
- Consider mechanism of dog attacks as this one as significant trauma and c-spine precautions are prudent but how to do it when there is a direct penetrating injury to the neck
- How to provide appropriate anesthesia when concerned about possible airway compromise
- What investigations/airway management is necessary in penetrating neck trauma
- Careful not to fixate only on “A” of ABCs so as not to miss other injuries such as pneumothorax

**Hard and soft signs of neck trauma:**

Hard	Soft
Respiratory distress	Subcutaneous emphysema
Air bubbling neck wound	Hoarseness
Major hemoptysis	Minor hemoptysis
Severe active bleeding	Minor bleeding
Large expanding hematoma	Small to moderate hematoma
Diminished/absent pulse	Proximity wounds
Unexplained hypotension	Hypotension responding to fluids
Bruit	Painful swallowing
	Hematemesis

