

**FALL FROM 8<sup>TH</sup> FLOOR OF A BUILDING: CASE REPORT OF A FOUR YEAR OLD GIRL**

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**ABSTRACT**

Falling is part of the normal development of a child, while most falls are of little consequence some go beyond the resilience of a child's body; making falls the 4<sup>th</sup> largest cause of unintentional injury and death in children. A 4 year old girl who fell from 8<sup>th</sup> floor of a building and presented to Accident and Emergency unit after 2 hours after a fall fully conscious and sustained a right pneumothorax and bilateral upper limb closed fractures. Fatal falls are classified as the ones from beyond 40 feet (causing severe head injury or thoracic injuries and abdominal injuries). Mortality rates in most studies were elevated in high level falls most of them secondary to head injury. Barlow et al also showed 100% survival in falls less than 3 stories while 50% survival from falls between 5 and 6 stories.

This is a unique case in that a small child fell from 8 stories and survived, whereas other studies have reported a mortality of almost 100% in falls over 5 stories.

**INTRODUCTION**

Falling is part of the normal development of a child, while most falls are of little consequence some go beyond the resilience of a child's body; making falls the 4<sup>th</sup> largest cause of unintentional injury and death in children(1). The height of the fall determines the kinetic energy transmitted to the victim. The kinetic energy, body position, impact surface all determine the pattern and severity of injury. Falls can be classified as high level or low level where high level is 20 feet and above. For high level falls that go beyond 50 feet (five stories) the morbidity and mortality reported is almost 100% (2, 3).

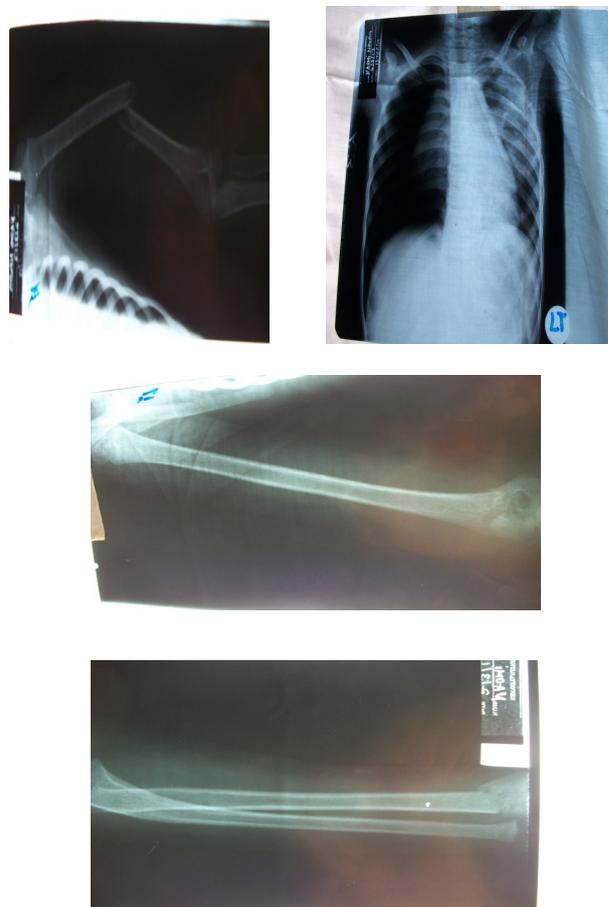
**CASE REPORT**

A 4 year old girl presented to the Emergency Department of Kenyatta National Hospital on 2<sup>nd</sup> March 2013 after having fallen from 8<sup>th</sup> floor of a housing block at around 1 pm and landed on a sandy ground. She presented almost two hours after the injury. The fall was from the balcony and the child was playing unsupervised when it happened. However, she was fully conscious but had difficulty in breathing and pain of both upper limbs. She was the second born in a family of two siblings and had just started pre-unit school.

Physical examination revealed a girl child who was fully conscious with Glasgow coma scale of 15/15 and neurologically intact. Remarkable findings were on chest where she had reduced movement on the right with tympanic percussion and reduced breath sounds, with no obvious tension noted. Both upper limbs were unable to move due to tenderness and reduced range of motion. Swelling was noted on the arm on the right and around the elbow and forearm on the left. Investigatory findings revealed a normal CT scan of the head, chest X-ray showed a right pneumothorax

with no rib fractures but lung contusions (Figure 1). Radiographs of the left upper limbs revealed a left humeral midshaft fracture with translation of 100% and varus angulation. Radiographs of the right upper limb revealed a supracondylar fracture Gartland 2 with a distal radius fracture.

**Figure 1**  
*Radiographs taken on admission*



## Post treatment radiographs



The patient was diagnosed as a polytrauma patient with mild head injury, right pneumothorax and bilateral upper limb closed fractures. The right pneumothorax was treated with a chest tube. The left humerus fracture was treated with a U-slab and the right limb injuries were treated by long-arm back slab. The patient stayed in the hospital for about 3 weeks and discharged home.

## DISCUSSION

This case illustrates the higher risk of upper limb fracture secondary to high level falls. Supracondylar fracture of the humerus was shown to be high secondary to high level falls in a study done at Kenyatta National Hospital (4). However this observation is different in other studies which show increased incidence of lower limb fractures with high level falls while upper limb fractures especially radius and ulna are more common with low level falls (2). High level falls also have increased rate of open fractures of about 20% of fractures as opposed to our case where no open fractures were sustained (2). Commonest injury occurring after a fall is usually head injury accounting for about 39% and ranging from mild to severe (3). Most common fatal injuries occurred in falls between height of about 15-40 feet including intracranial bleeds and cerebral contusion suggesting that deceleration energy needed to produce intracranial bleed occurs in less than 15 feet (2). Thoracic and abdominal injuries rated third in some studies after a fall of greater than 4 stories while other studies reported of lower rates of abdominal and thoracic injury (2,5-7). The pattern of thoracic injury included lung contusion, pneumothorax and rib fracture in that order of frequency.

Mortality rates in most studies were elevated in high level falls most of them secondary to head injury (1-5,7). Barlow *et al* (8) also showed 100% survival in falls less than 3 stories while 50% survival from falls between 5 and 6 stories (8). Falls mainly occur during summer, spring and autumn (March, April, May, September and October) as shown by studies in US (7, 10). Balconies and apartment windows falls being the most common high level falls. Timing of when falls occur has a bimodal distribution being from 11 am to 2 pm and from 4 pm to 8 pm, most falls

occur during lunch time when the family member is preoccupied with meal preparation (10). Fall from heights occurred mainly in unsupervised children under the age of 5 years during experimental activities like climbing roof tops, while adolescent falls usually involve suicide attempts. This illustrates the effect of rapid urbanization and multi-story dwellings on the changing pattern of injuries seen in children.

## CONCLUSION

This is a unique case in that a small child fell from 8 stories and survived, whereas other studies have reported a mortality of almost 100% in falls over 5 stories. Non fatal falls represents a health care burden around the world. The frequency of non fatal falls, health care cost and significant risk of death demand prevention of fall related injuries. For establishing legislations on installation of window guards, and proper balcony guidelines we recommend greater enforcement of safety guidelines when buildings are inspected.

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