

Generalized Surgical Emphysema in Open Pelvic Fracture: a case report

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ABSTRACT

Open fractures of the pelvis are rare and potentially lethal injuries with mortality rate ranging from 30 % to 50 %. Subcutaneous surgical emphysema over the pelvis in open pelvis fracture has been reported in literature but generalized surgical emphysema in open pelvis fracture has not been reported previously. We present and discuss here a case of 24 years old man who had sustained Road traffic accident resulting in multiple fractures and developed generalized surgical emphysema.

INTRODUCTION

Open fractures of the pelvis are rare and potentially lethal injuries (mortality rate 30 % to 50 %). These fractures are as a result of high energy trauma and possess challenge to successful management and sometimes early and correct diagnosis, especially when the fracture is associated with unusual clinical finding. Subcutaneous surgical emphysema over the pelvis in open pelvis fracture has been reported by J Lim and K M Porter in emergency medicine journal in 2002 as a case report but generalized surgical emphysema in open pelvis fracture has not been reported yet and we believe this to be the second report of subcutaneous surgical emphysema and the first report of generalized surgical emphysema associated with an open pelvic fracture.

CASE REPORT

A 20 years old male was referred to our center after 24 hours of injury in the state of hypovolemic shock. He had road traffic accident and was hit by a high speed truck while walking on the side of the highway.

At the time of presentation his general condition was poor. His blood pressure, pulse and respiration rate were 70/40mm Hg, 108/min and 22/min respectively. There was swelling and deformity at right thigh and right leg with Gustilo I wound medial aspect of right thigh and right leg at the level of deformity. The left hip was swollen and tender on palpation. The left thigh was swollen with out deformity. There was swelling and tenderness at the left knee. A small punctured wound was found at the five o'clock position of perineum with oozing venous blood in a very minimal quantity.

X-ray revealed ipsilateral right femur and tibia fracture, left both pubic rami fracture and left tibial eminencia fracture.

The right femur and tibia shaft fractures were taken care by closed reduction intramedullary interlocking nailing. Conservative management was planned for pelvic fracture and tibial eminencia fracture.

He was doing well till postoperative 2nd day (5th day of accident) but he started developing surgical emphysema generalized and progressive in nature. He never complained of difficulty in breathing despite surgical emphysema. Repeated chest x-rays were normal. There was no sign of haemopneumothorax. The patient was taking food orally without any complaint. Conservative management was continued after consultation with chest physician. He was given oxygen supplement by nasal cannula as advised by physician. But patient stated that his swelling increases with the oxygen supplementation and he feels more discomfort from that therapy so it was discontinued. The oxygen saturation remained above 95% all the time even after discontinuation. Flatulence in the form of bubbles was observed from the perineal wound during defecation and this was also felt by the patient himself.

It was when he started developing fever, his general condition deteriorated, his abdomen gets distended and his left thigh and hip skin started being necrosed with a formation of an outlet discharging fecal like material from medial aspect of the left distal thigh and from the wound nearby the anus at the five o'clock position in the perineum, the injury took another direction requiring more attention for further management. Consultation with

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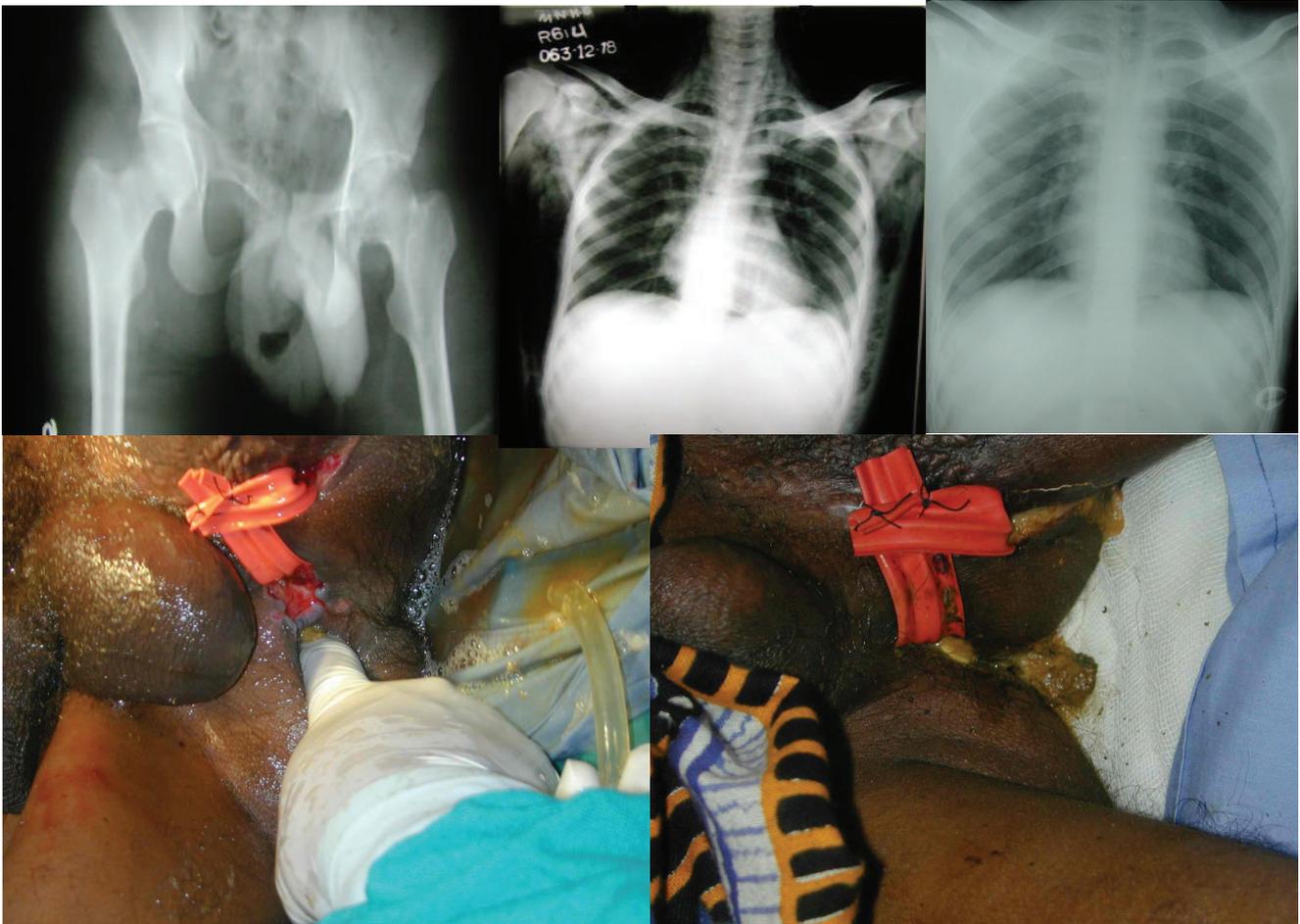


Figure A-E. A- Fracture of the Pelvis; B- Initial Normal X-Ray; C- X-Ray with Surgical Emphysema; D- Punctured wound in the perineum. E- Fecal material from perineal wound.

general surgeon ruled out intrabdominal pathology. The USG abdominopelvis was inconclusive due to surgical emphysema. The patient was taken to theater and necrotic skin over left thigh and hip with tensor fascia was excised. A foul smelling seropurulent collection was evacuated. The perineal wound was found connected to the left thigh through medial aspect. Rectal digital examination did not reveal any tear in anus or rectum up to the level where the examiner digit could reach. The second consultation with general surgeon regarding fecal material from perineal wound decided for conservative management and to undertake diverting colostomy if required in few days. The fistula was bypassed from medial thigh by putting corrugate drain through perineal wound.

The surgical emphysema disappeared gradually in few days and patient general condition improved in progressive manner.

He required repeated debridement and dressing before he was ready for skin grafting. The raw area over left thigh

and hip was managed with meshed skin grafting. His perineal fistula healed and feces started to come from the normal route only in about 6 weeks.

DISCUSSION & REVIEW OF LITERATURE

Open pelvic fractures have high mortality rate ranging from 30 % to 50%¹. Associated injuries include large vessel injury, gastrointestinal injuries and genitourinary injuries. Subcutaneous emphysema is a rare complication of open pelvic injury. Kumar et al³ reported intrapelvic and extrapelvic surgical emphysema associated with major pelvic disruption. Lim et al² reported first case of subcutaneous surgical emphysema associated with open pelvic fracture. Surgical emphysema in trauma patient is usually because of injury to airway and lung.

The generalized emphysema in this case is due to the spread of gas from perineum to the rest of the body because of continuation of fatty layer of the superficial fascia throughout. However, the source of gas may be from flatulence or gas forming bacteria in lower GI tract

or infected haematoma by gas producing bacteria.

Aerophagia with high flow oxygen through nasal prongs must have increased the air volume in GI tract and increased flatulence. The separation of subfascial plane due to trauma and fistulous connection in the subfascial plane of perineal region must have resulted generalized emphysema. But there is no objective finding to support this.

Open perineal wound may lead to life threatening situation as in our case when this wound make connection to nearby subcutaneous plane if timely major decision is not taken. Simple diversion procedure as we did in our case helped to heal the fistulous opening otherwise more invasive procedure like diverting colostomy would have required.

After going through extensive literature search we assume this to be the second report of subcutaneous surgical emphysema and the first report of generalized surgical emphysema associated with an open pelvic fracture.

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