

# Gunshot wound of the fetus

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**Abstract** We report here a fetus, who was delivered via cesarean section in 32th gestational week from a 37-year-old mother and sustained multiple gunshots. Post-natal evaluation revealed eight entry–exit holes and the baby was transferred to our clinic. Upon admission, peripheral pulses were nonpalpable, appropriate fluid administration and blood transfusion were conducted and further examinations revealed bladder perforation. Bladder was repaired over a suprapubic catheter and bullet holes were primarily sutured. Left foot drop was observed on follow up and the patient was discharged with no further complication. Although the maternal and the fetal morbidity and mortality rates are high in intrauterine gunshot wounds, appropriate management may provide survival as seen in our case.

## Introduction

Gunshot wound to gravid uterus is generally mortal for both the maternal and the fetal life. Mortality rate has been reported to be 19–38% for the mother and 59–80% for the fetus and perinatal mortality declines to 41–71% for the neonate [1].

## Case report

A 37-year-old woman sustained two pistol shots in the abdomen, and the fetus was delivered via cesarean section elsewhere. The baby weighed 1,700 g. On physical examination, bullet holes in the left arm, left thigh and the left leg had been evaluated as bullet graze and the patient was intubated and transferred to our clinic.

Upon arrival, the patient presented with tachycardia, respiratory sounds were spasmodic bilaterally and peripheral pulses were nonpalpable. Blood pressure was 30/20 mmHg and heart rate was 152 bpm. Blood gases pH 6.80,  $p\text{CO}_2$  50 mmHg,  $p\text{O}_2$  40 mmHg, and  $\text{HCO}_3$  5.7 mmol/L. Multiple entry–exit holes which consist of one gun shot wound in the anterior and the posterior aspect of left arm, one in the right gluteal area lateral to the sacral region, one in the left lower quadrant of the abdomen superior to the pubic region, one in the left medial thigh, one in the superior and the inferior margin of the left popliteal fossa, and one in the lateral aspect of the left leg have been detected (Figs. 1, 2, 3).

Bleeding was observed through these aforementioned bullet holes. The baby was transferred to neonatal surgical intensive care unit and was monitored, resuscitated accordingly. Since the baby had hypovolemia intravenous fluid replacement, 20 ml/kg blood transfusion and 15 ml/kg plasma were given. Bullet holes were primarily sutured to prevent further blood loss.  $\text{HCO}_3$  perfusion was started intravenously. Surfactan was administered 4 ml/kg for pulmonary maturation via endotracheal tube. Direct roentgenogram was performed and single fracture in the left distal humerus, and multiple fragmented fractures in the left proximal radius, and the left fibula were visualized. Hematuria was observed after catheterization. After the patient was hemodynamically stabilized, we performed abdominal surgical exploration.

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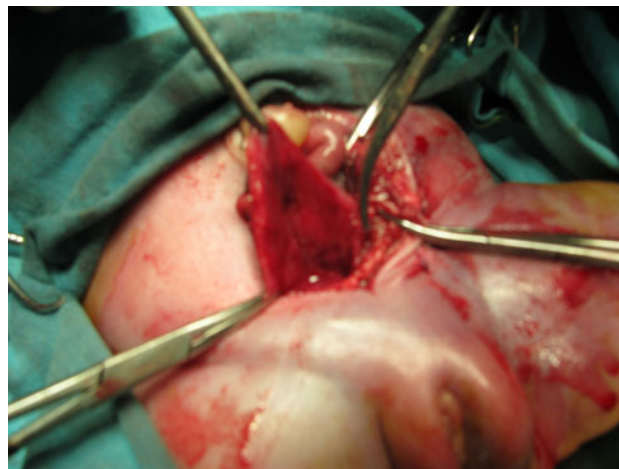
**Fig. 1** Multiple gunshot wounds are seen on the fetus



**Fig. 2** Multiple entry–exit holes are seen on the left leg



**Fig. 3** The wounds are seen on the left arm



**Fig. 4** Bladder rupture is seen at operation

Under general endotracheal anesthesia, abdomen was entered via an infra-umbilical midline incision. Upon exploration, the whole anterior wall of the bladder was seen perforated (Fig. 4). Urethral orifices were catheterized and no leakage was detected. Further abdominal exploration revealed no additional abdominal pathologies. A suprapubic catheter was inserted in the bladder and the bladder wall was primarily sutured in two layers. Orthopedic surgeons joined the operation. No additional surgical intervention was recommended for these fractures. Left arm and left leg were stabilized in casts after the operation. Urinary and suprapubic catheters were withdrawn at the 7 and 10 days respectively. The patient was discharged after 1 month, her left arm recovered, but the patient is on orthopedic follow up for the left drop foot problem. Achilloplasty was performed for this problem 1 year after hospital discharge. She is 18 months old now and she can walk without any difficulties.

## Discussion

Recently, reports of gunshot wounds to gravid uterus are appearing often. Mortality rates of gunshot wounds during pregnancy are higher for the fetus than the mother.

English literature concerning intrauterine gunshot wounds can be traced back to 1845 as reported by Kobak and Hurwitz [1] in 1954, which includes 33 cases of intrauterine gunshot wounds.

Trauma in pregnancy is the major cause of nonobstetric maternal death, and maternal death is the leading cause of fetal death [2]. The trauma incidence has been reported to be around 7% in pregnancy, due to the trauma caused by motor vehicle accidents, accidental falls and violence [3]. Violence to the pregnant woman is an increasing event as reported by Krulewitch et al. [4]. Prevalence rates of

violence during pregnancy has reached 0.9–21%. Gunshot wounds to the gravid uterus cause fetal injuries in 60–70% of the cases and leads to fetal death in 40–65% of the cases [5, 6].

Self-inflicted gunshot injury to the pregnant abdomen is occurring with increasing frequency. Buchsbaum et al. reported two and Sandy et al. reported one patient with self-inflicted gunshot wounds to the gravid uterus in an attempt to induce abortion [6, 7].

Penetrating trauma may affect the multiple organs and the fetus is subjected to its consequences. Awward et al. [8] reported a retrospective series of 14 patients, who are victims of civil war. Muzumdar et al. [9] reported a fetus with penetrating head trauma following gunshot injury who recovered well but with some developmental delay in general intellectual and cognitive abilities. Gallo et al. [10] reported a patient with intrauterine stab wound to the head with normal neurological findings.

No case report with a blunt or penetrating trauma affecting urinary and musculoskeletal system of the fetus was found in the English literature. Our patient presenting these types of pathologies was transported to our clinic after an emergent cesarean section and was discharged 1 month after surgery. Her left arm is doing well, but she is still on follow up for the left drop foot.

The fetus may be a victim of violence following an intrauterine gunshot wound. This incident has high mortality and morbidity rates. The pediatric surgeon can provide satisfactory results with a thorough collaboration with the other clinical disciplines.

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