

# Learning from Mistakes: Femoral Vein Cannulation-An Unusual Complication or a Blessing in Disguise!!!

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**Abstract** Femoral vein cannulation is often used in resuscitation and in critical care units. We report an uncommon complication of femoral vein counterpuncture-peritoneal puncture and the consequences which led us to diagnose a missed traumatic diaphragmatic rupture.

**Keywords** Femoral cannulation · Femoral vein counterpuncture · Peritoneal puncture · Traumatic diaphragmatic rupture · Hemoperitoneum · Hemothorax

## Introduction

Femoral vein cannulation is often used in resuscitation and in critical care units [1, 2]. Although long term complications, such as deep vein thrombosis or catheter-related sepsis, may be major concerns, serious acute complications are uncommon after this procedure. We report an uncommon complication of femoral vein counterpuncture-peritoneal puncture and the consequences following this

complication. The complication was a mistake but it led us to diagnose another entity: a blessing in disguise!

A 30 year old male farmer presented with blunt trauma abdomen & chest injury following road traffic accident. He had pain in the chest and abdomen with respiratory distress. Femoral vein cannulation was done and transfusion started which included 2 units of blood. Vital parameters were stable. Next day the patient developed decreased air entry on left side. X-ray chest showed left sided hemothorax. Intercostal tube was inserted & 1,500 ml hemorrhagic fluid was drained stat. Between 3rd and 8th day, two units of blood were transfused per day and 1.5 to 2 l of hemorrhagic fluid was collected in the intercostal tube drainage bag every day. Patient was subjected to C.T. Scan of thorax & abdomen on the 7th day which revealed fracture 7th & 8th right ribs with surgical emphysema & pneumo-mediastinum; contusion left lung parenchyma (Fig. 1) with moderate hemoperitoneum and urinary bladder diverticula & retroperitoneal hematoma.

The patient was taken for emergency thoracotomy on 9th day following a sudden gush of 2.5 l of hemorrhagic fluid through the ICD. Over a period of 10 days, 17 units of blood & 25 l of i.v. fluids were infused through femoral cannula.

Left thoracotomy revealed apparently healthy lung with no active intrathoracic bleed and a 5 cm rent was seen in left dome of diaphragm. Incision was converted into thoracoabdominal & upon exploration of abdomen, femoral cannula was found to lie freely in the peritoneal cavity.

Postoperatively patient recovered well. Review of C.T. scan by radiologist revealed femoral cannula in peritoneal cavity (Fig. 2) and rent in left dome of diaphragm (Fig. 3) which was missed preoperatively.

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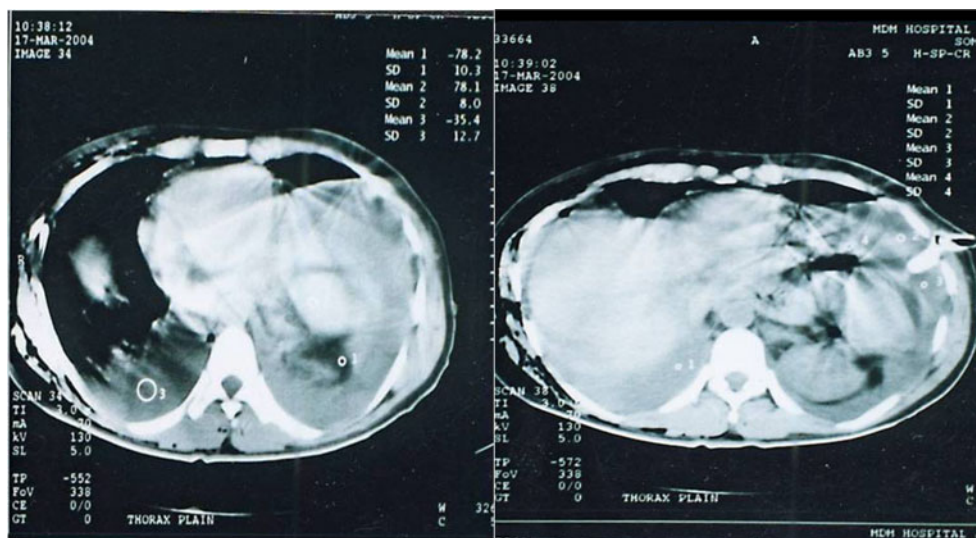
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**Fig. 1** Contusion lt. lung seen in C.T. Thorax film



## Discussion

Complications of femoral vein cannulation include: puncture-site infection, local hemorrhage from femoral artery or vein femoral vein thrombosis, phlebitis, arteriovenous fistula [3], femoral artery pseudo aneurysm and injury to the femoral nerve. Retroperitoneal hemorrhage (RPH) is the most serious complication of femoral vein catheterization and incidence of RPH was estimated to be around 0.5%. Kjellstrand et al. [4], reported one death in 700 femoral catheterizations, while Erben et al. [5], reported one fatality due to retroperitoneal bleeding in a series of 2,368 cases of hemodialysis through a femoral vein catheter. Femoral vein counterpuncture-peritoneal puncture is a rare complication and though we encountered this complication in our patient but it led us to diagnose traumatic diaphragmatic rupture.

Surgeons missed on the diagnosis of diaphragmatic rupture inspite of the persistently increased intercostal

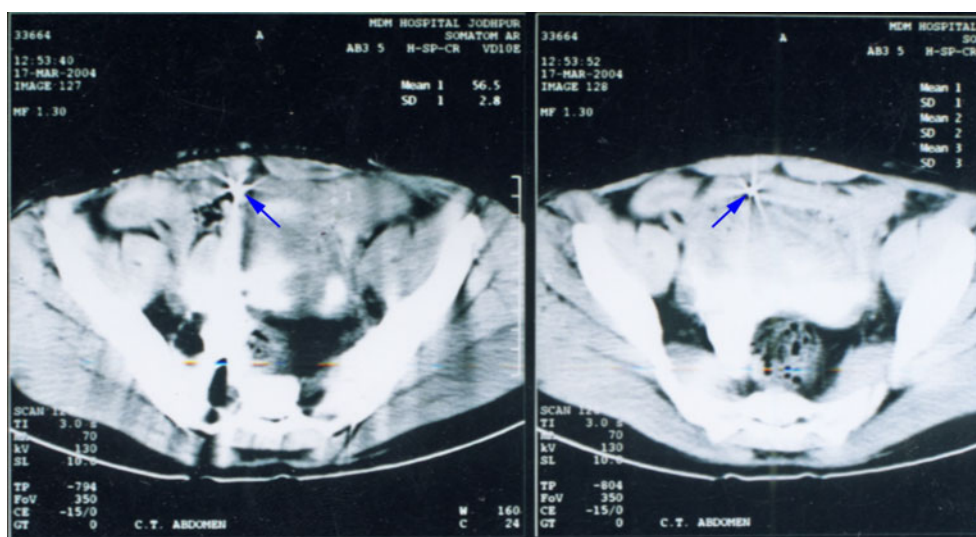
chest tube drain outputs. Radiologist missed the finding of diaphragmatic rupture in C.T. Scan thorax and abdomen. Not only did the reporting team miss the diagnosis of diaphragmatic rupture but also they missed the femoral cannula lying as a foreign body in the peritoneal cavity.

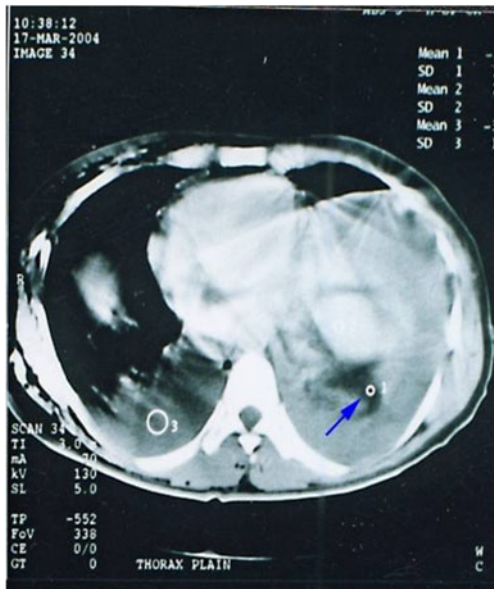
Due to wrong placement of femoral line in the peritoneum all the blood kept collecting in the peritoneum and via the small rent in left dome of diaphragm the blood kept draining into the intercostal chest tube drain. A complication while inserting femoral long line could track us to diagnosis of traumatic rupture of diaphragm.

## Conclusion

We dealt with a new complication of femoral vein catheterization and had a lesson from this mistake.

**Fig. 2** Femoral cannula lying in the peritoneal cavity





**Fig. 3** Rent visible in diaphragm in C.T. thorax

Complication of peritoneal rupture and misplacement of femoral cannula should be kept in mind while inserting a femoral vein cannula.

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