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Metallic line in Chest Radiograph: Artifact

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BACKGROUND

A 72-year-old man with advanced right thigh synovial sarcoma and pulmonary metastasis presented with bilateral pleural effusion in March 2024. Upon admission he underwent left-sided pleural drainage. A few days later, an 8F pigtail catheter was inserted on the right side, which successfully drained approximately 1500 ml of slightly blood-stained pleural fluid (Figure 1). However, on the same night, the catheter was inadvertently dislodged by the patient. A tight-fitting plaster was promptly applied, and he remained symptom-free. A follow up chest radiograph showed a clear linear radiopaque shadow measuring around 9.4 cm with the tip visible well inside the right chest (Figure 2). This shadow was puzzling as the pleural drain had been completely removed. There was no palpable swelling, wires, or tubes under the skin. Upon closer examination, it was discovered that the gauze used (Bromed Gauze Lap sponges, Brosco International Inc, Mesquite, USA) had a linear radiopaque marker (Figure 3). A repeat radiograph did not show this opacity. This radiopaque marker on the gauze resembled a metallic foreign object in the thorax, causing anxiety and confusion among the medical staff and the patient. Patient remained well without worsening of the effusion for two months but succumbed to his illness subsequently.

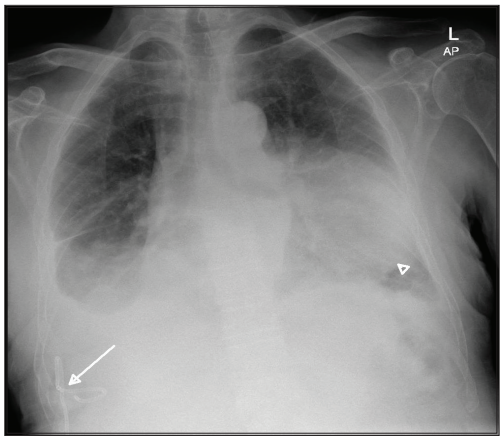

Figure 1: Chest radiograph showing a pigtail catheter on the right side (arrow), bilateral pleural effusions and a metastatic mass left lower zone (arrowhead).

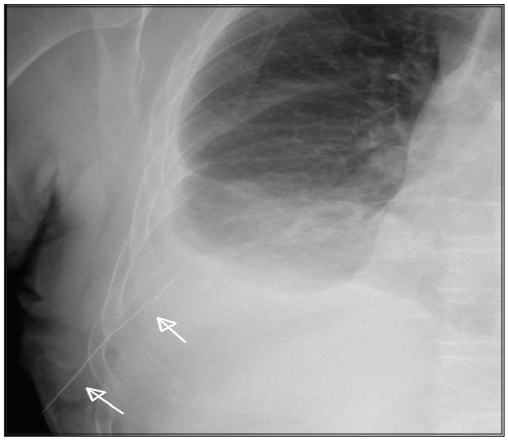

Figure 2: Right hemithorax view of the chest radiograph showing a white, radiopaque, straight line 9.4 cm suggestive of a thin wire on the right lower chest (arrows).

Figure 3: Sterile, super absorbent surgical sponge with a blue radiopaque strip.

DISCUSSION

An artifact on an image is a feature that does not correlate with the physical properties of the subject being imaged and may hinder an accurate diagnosis. Radiographic artifacts can result from hardware failure, operator errors or post-processing inaccuracies [1]. Common artefacts include motion distortion, radiopaque objects on/external to the patient, twin/double exposure, grid cut-off, debris in the housing and parallax effect. Notably, several artifacts on chest radiography have been reported to resemble pulmonary diseases. Skin folds, hair, clothing, and bed sheets can sometimes imitate pneumothorax; similarly, electrocardiographic leads and beads on clothing can mimic lung nodules [2-4]. In our patient the slant at which the artifact appeared coincided with the entry angle typically seen during pleural space access. Moreover, this specific gauze is not usually kept in our medical unit's dressing sets and so the image was convincing for a procedural error. Often these artifacts can be deceptive, potentially leading to erroneous diagnoses and compromised patient care. In cases of uncertainty, physicians should exercise caution when planning interventions.

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