

Subcutaneous Emphysema Manifesting with Ginkgo Leaf Sign

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INTRODUCTION

A 61-year-old man with a documented history of chronic obstructive pulmonary disease (COPD) presented with complaints of left-sided chest pain and shortness of breath for 3 days to an emergency department of a district hospital. There, he was diagnosed with a large left-sided pneumothorax on a chest radiograph (Figure 1). A 16 Fr pigtail chest tube was inserted through the intercostal space in the left pleural cavity. The patient was later referred to us due to the development of swelling around the chest drain site which was extending to the left chest and neck region. On palpation, there was a crackling sensation on touch on the left-sided chest and neck area suggestive of subcutaneous emphysema.

The chest tube water column was moving with inspiration and expiration and there was a bronchopleural fistula present, which was grade 1, FE (only present on forced expiration). Chest examination revealed trachea central and bilateral air entry present on auscultation, there were no added sounds.

A chest radiograph was done which showed a “Ginkgo Leaf” sign. A distinct ginkgo leaf sign is typically observed when there is significant subcutaneous emphysema affecting the chest wall. On the X-ray, air outlines the fibers of the pectoralis major muscle, producing a branching pattern that closely mirrors the venation seen in a ginkgo leaf.¹ Chest radiograph also shows air in the soft tissues of the left side of the chest and axilla and an intercostal drainage tube can be seen *in-situ* (Figure 2A & B).

Subcutaneous emphysema (SE), also known as surgical emphysema, occurs when air becomes trapped within the soft tissues beneath the skin. While it can develop in various parts of the body, it most commonly affects the skin overlying the chest wall or neck. SE typically manifests as painless

tissue swelling and produces a crepitating, crackling feel on palpation. The condition can result from three primary mechanisms: internal gas leakage, external air introduction, or gas production from infection. Internal gas can originate from conditions such as pneumothorax, pneumomediastinum, or perforation of a hollow organ. External air can enter the body through penetrating injuries, surgical procedures, or percutaneous interventions. In some cases, gas is produced *de novo* by infections, such as necrotizing fasciitis caused by gas-forming bacteria.^{2,3} In this case, the reason was internal



Figure 1: Chest radiograph showing hyperlucent left lung field and mediastinal shifting towards right side i.e. left sided pneumothorax

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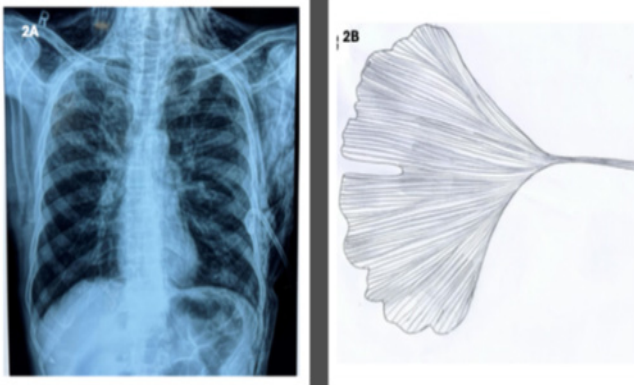


Figure 2A: Chest X -ray PA view done after 24 hours of pigtail intercostal drain insertion showing subcutaneous emphysema in left chest wall, air outlining pectoralis major muscle fibers: Ginkgo leaf sign and intercostal drainage tube in situ. **Figure 2B:** drawing of Ginkgo leaf

gas from a large pneumothorax was drained with the small size of the chest drain resulting in the release of a gush of air through a small opening which further led to the escape of air in the subcutaneous plane. This case was managed conservatively with manual milking and rolling of the chest wall and by giving a high flow nasal flow of oxygen while keeping ICD *in-situ*.

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