Chest tube

A chest tube, or thoracostomy tube, is a medical device inserted into the chest cavity to remove air, fluid, or pus that has accumulated in the pleural space. It is commonly used to treat conditions like pneumothorax (collapsed lung), pleural effusion (fluid buildup around the lung), hemothorax (blood in the pleural space), and post-operative management following chest surgery.

The tube is typically inserted through a small incision in the chest wall, either between the ribs or slightly below the ribs, and is connected to a drainage system to allow for continuous substance removal. The procedure may be done under local anesthesia and sometimes with sedation, but in emergencies, it might be done without much preparation. Chest tubes are often left in place until the problem is resolved, such as when the lung re-expands or the fluid drainage stops.

The sunken flap or sinking skin flap syndrome is a complication that can be observed following a decompressive craniectomy. More rare, sinking skin flap syndrome can occur as an iatrogenic complication of pleural effusion evacuation via chest tube placement in the presence of ventriculopleural shunt.

The case of a Hispanic male patient in his 20s who presented to the emergency department after sustaining a penetrating gunshot wound to the head. In addition to undergoing an emergent decompressive craniectomy, a ventriculopleural shunt was subsequently placed as a treatment for hydrocephalus. Two days after shunt placement, the patient developed significant hydropneumothorax that did not respond to observational management. Owing to the severity of his hydropneumothorax, a chest tube was placed for evacuation, but he developed a sinking skin flap at the craniectomy site. The suction function of the chest tube was discontinued, and the ventriculopleural shunt pressure was increased. Within 24 hours, the skin flap reexpanded. They hypothesize that the inherently negative pressure of the pleural space combined with the significant suction effect from chest tube evacuation placed him at risk of sinking skin flap syndrome despite having an antisiphon device.

The case highlights the importance of understanding cerebrospinal fluid dynamics with shunt presence and suggests a potential treatment framework for iatrogenic sinking skin flap syndrome in the presence of ventriculopleural shunt [1)].

This case report provides an important contribution to the understanding of sinking skin flap syndrome in patients with complex injuries involving both ventriculopleural shunts and chest tubes. The authors rightly emphasize the importance of CSF dynamics and the delicate balance required in managing patients with multiple ongoing interventions. Although the case is rare and the management approach is somewhat individualized, the insights provided could lead to more nuanced care strategies in similar future cases.

However, the limitations of generalizability, the lack of mechanistic detail, and the absence of long-term follow-up suggest the need for further research to confirm these findings in a broader patient population and to better understand the fluid dynamics at play. Overall, this case serves as a useful clinical reminder of the potential for iatrogenic complications in patients with complex medical histories and multiple interventions.

1)
Liang SQ, Tarzi FP, Sung GY, Poblete RA. Sunken flap following chest tube placement in the presence of ventriculopleural shunt: a case report. J Med Case Rep. 2024 Dec 25;18(1):609. doi: 10.1186/s13256-024-04963-9. PMID: 39719649.