



UNIVERSITY of CALIFORNIA, SAN DIEGO

MEDICAL CENTER HYPERBARIC DEPARTMENT



Immersion Pulmonary Edema (IPE) Precipitating a Fatal Air Gas Embolism (AGE) in a SCUBA Diver

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Introduction and Background:

Pulmonary edema during SCUBA diving is a well described syndrome. While the pathophysiologic characteristics of the process have not been fully elucidated, physiologic changes with immersion include effects on central vascular volume, redistribution of pulmonary blood flow and lung volumes. Although fatal cases have been described, we believe this is the first case of what appears to be IPE causing an AGE.

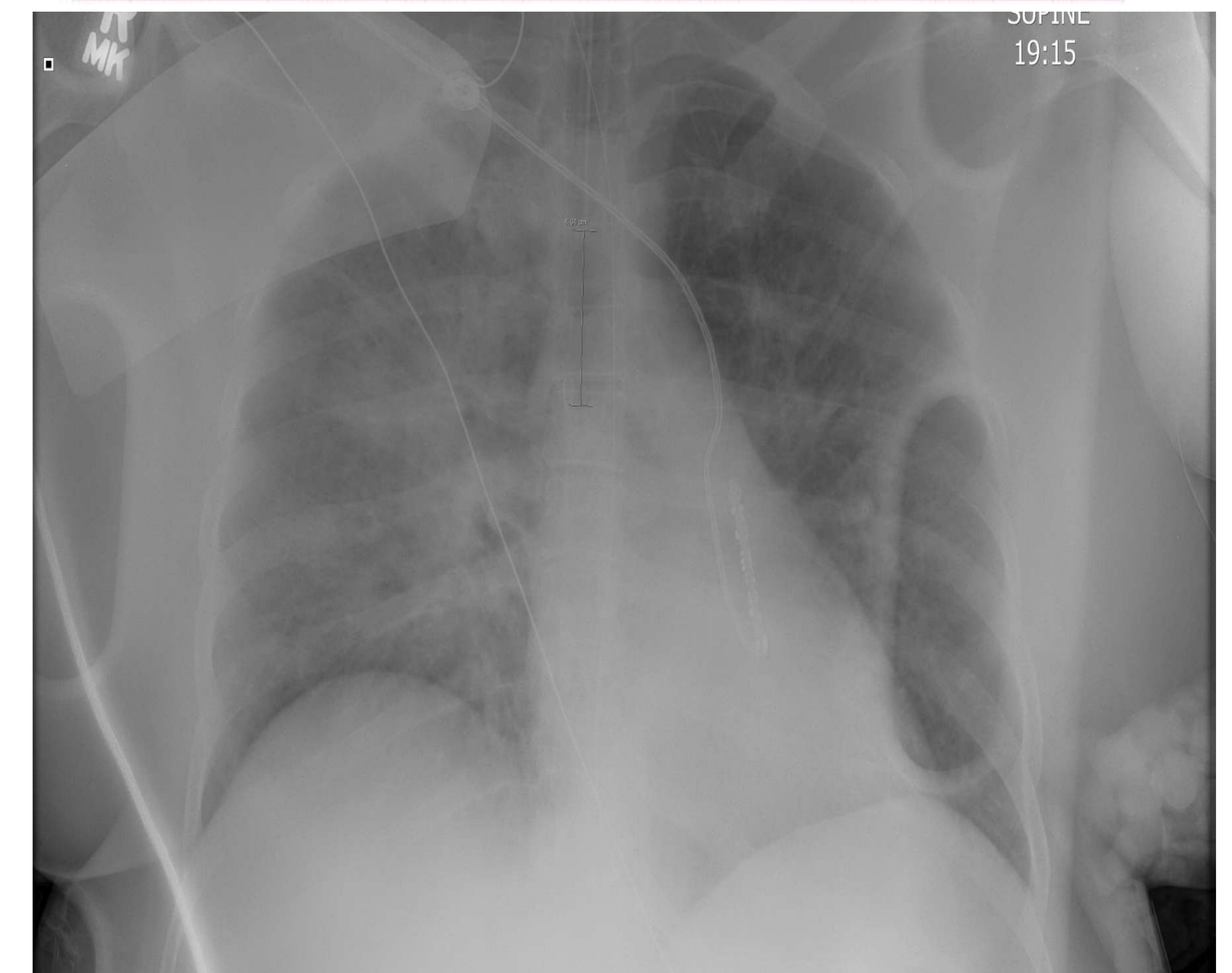
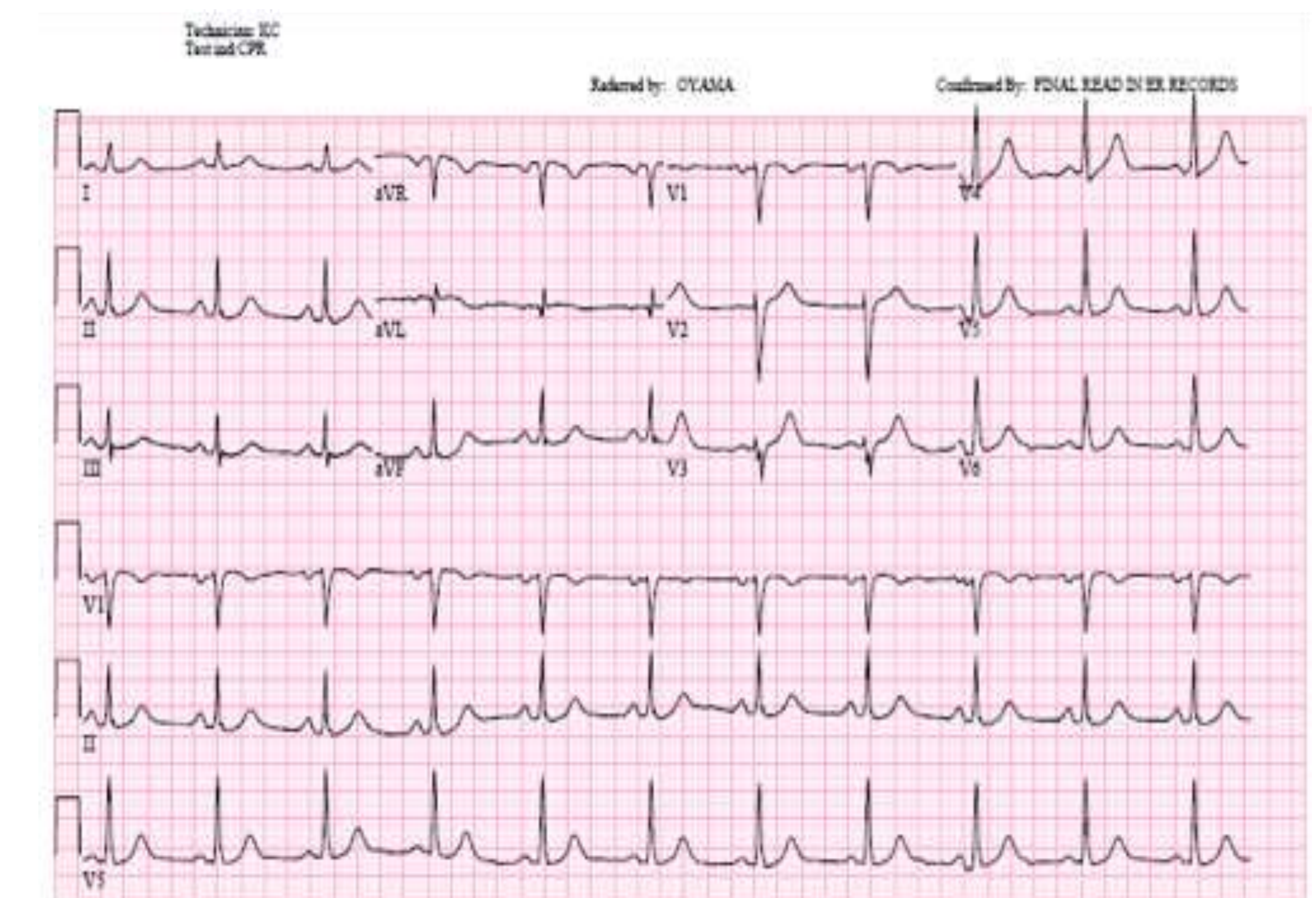


Case Report:

A 56 year old female with no significant past medical history presented to the Emergency Department (ED) in cardiac arrest after SCUBA diving. She had made a dive to 100 feet of sea water (fsw) and within 12 minutes of arriving at depth, signaled to the dive master that something was wrong and she needed to surface. Ascending rapidly, she spat out her regulator at 15 fsw and then shot to the surface.

On the surface, the patient was able to briefly complain that she was short of breath with expectoration of large amounts of frothy sputum from her mouth and then lost consciousness. CPR was initiated. She received a total of 75 minutes of CPR prior to regaining a pulse. Her initial ABG was 6.51/134/90 on 100% oxygen and a chest x-ray revealed bilateral, right greater than left infiltrates. She was intubated and maintained on up to 5 vasopressors for hemodynamic stability and treated with a US Navy Treatment Table 6 for presumed air embolism. She continued to be resuscitated, ventilated and was externally cooled as well.

She was ultimately declared brain dead on hospital day 3. Autopsy revealed normal coronary arteries and findings consistent with anoxia and resuscitative care.



Conclusion:

The patient likely suffered from immersion pulmonary edema while at depth causing her emergent ascent. In holding her breath during the ascent from 15 fsw, she also suffered an air gas embolism due to pulmonary barotrauma.