



HYPERBARIC OXYGEN THERAPY FOR AN AIR EMBOLISM FROM AN ATRIAL-ESOPHAGEAL FISTULA

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MAINTENANCE OF CERTIFICATION CREDITS QUESTIONS

1. What are potential complications of cardiac radio-frequency catheter ablations?
2. What are presenting signs and symptoms of an atrial-esophageal fistula?
3. What are treatment options for an atrial-esophageal fistula?

INTRODUCTION

Atrial-esophageal fistula (AEF) is a known rare high mortality complication from cardiac radiofrequency catheter ablation. We present an unusual case of cerebral air embolism resulting from cardiac ablation for atrial fibrillation treated with both surgical repair and hyperbaric oxygen.

CASE DESCRIPTION

46 y/o WM

PMHx: Refractory atrial fibrillation & flutter with RVR, OSA

PSHx: 2x cardiac radiofrequency catheter ablations (3 weeks apart)

Presentation:

- 7 days post his second ablation
- Altered mental status, right-sided weakness, ataxia, fever, generalized malaise
- Diagnosed with an atrial-esophageal fistula after CT revealed gas in the left atrium

Operative course:

- Uneventful GETA 18 hours after initial presentation to OSH
- Surgical repair via right posterolateral thoracotomy, off-bypass
- Takedown of atrio-esophageal fistula with primary atrial repair, primary esophageal repair with intercostal muscle flap, pericardial window

Post-operative course:

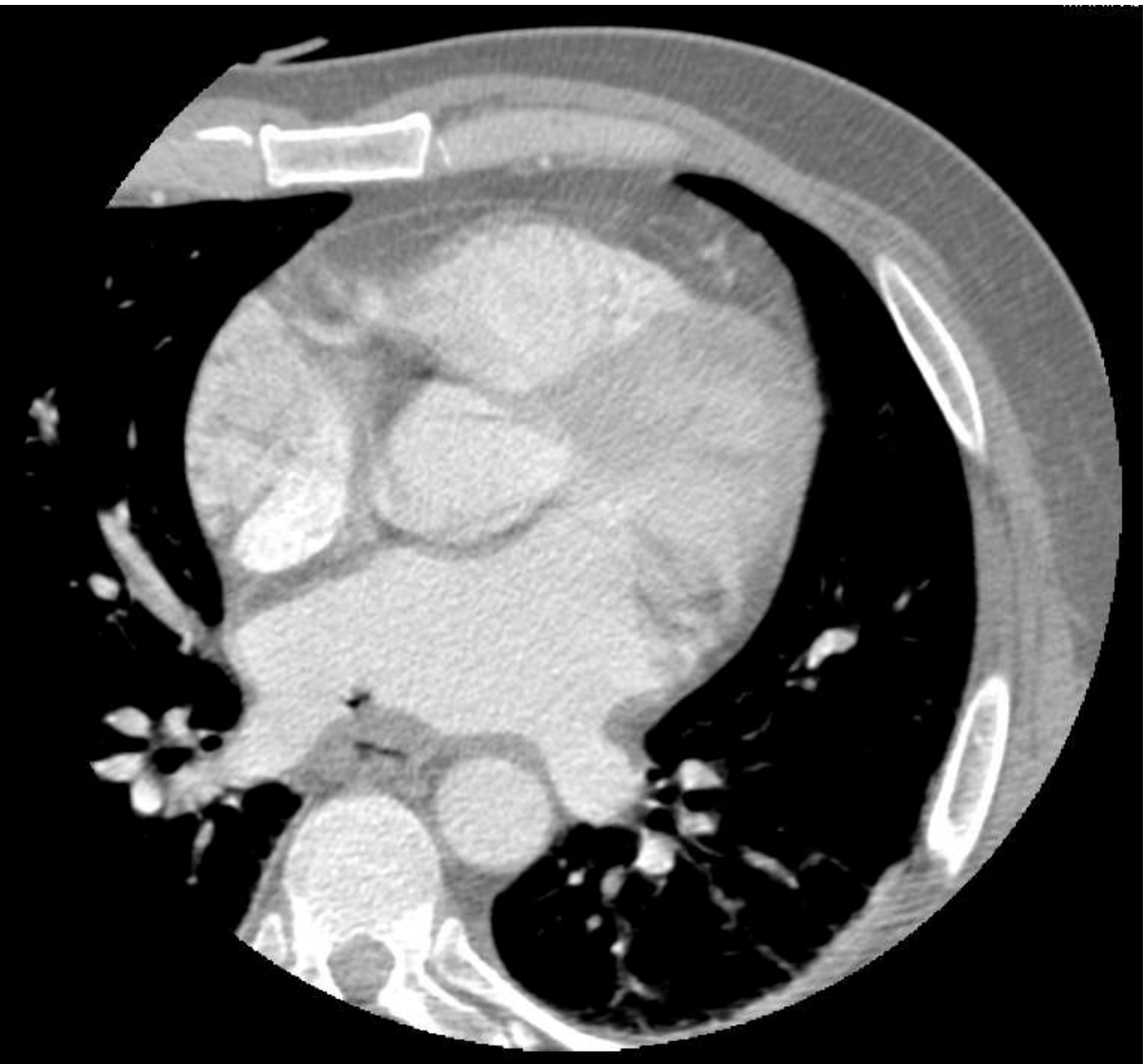
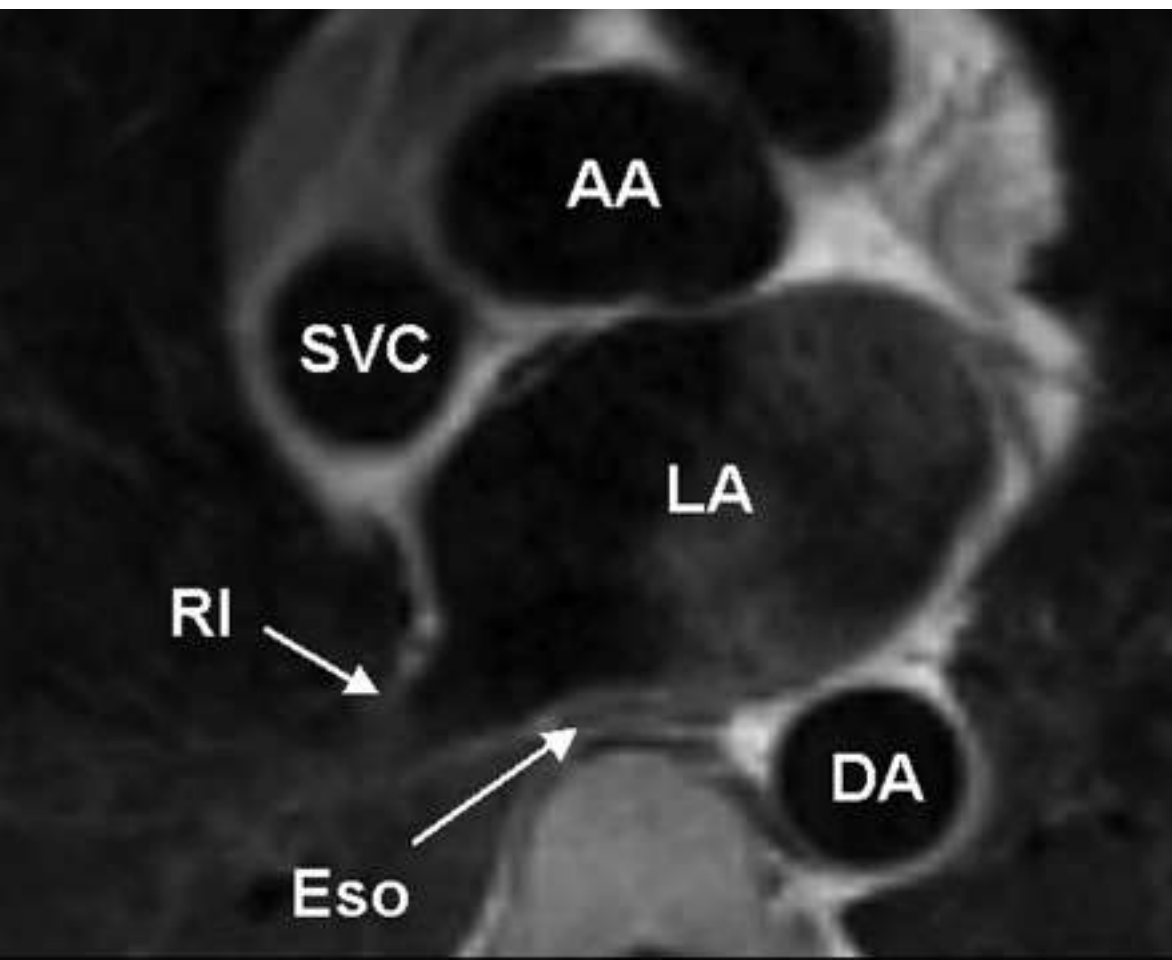
- Remained intubated, sedated
- Began HBOT three hours post surgical repair

Hyperbaric therapy:

- 28 hours after initial presentation
- Five hyperbaric treatments:
 - 60 fsw x 290 min
 - 60 fsw x 287 min
 - 60 fsw x 125 min
 - 48 fsw x 90 min
 - 33 fsw x 120 min
- Significant neurologic improvement after 5th dive
- Complete recovery at 2 month follow up

ATRIAL-ESOPHAGEAL FISTULA ^{1,5,6,13,14}

- Atrial-esophageal fistulas are very rare and often fatal complications seen in <1 % of radiofrequency cardiac ablations
- Patients typically present ~ 17 days post ablation (range 3-38 days)
- Persistent neurologic defects are common
- Mortality 68%



Anatomy: Ascending/Descending aorta (AA/DA), Superior Vena Cava (SVC), Left Atrium (LA), Esophagus (Eso), Right inferior pulmonary vein (RI)

DIAGNOSIS & MANAGEMENT ^{2,3,4}

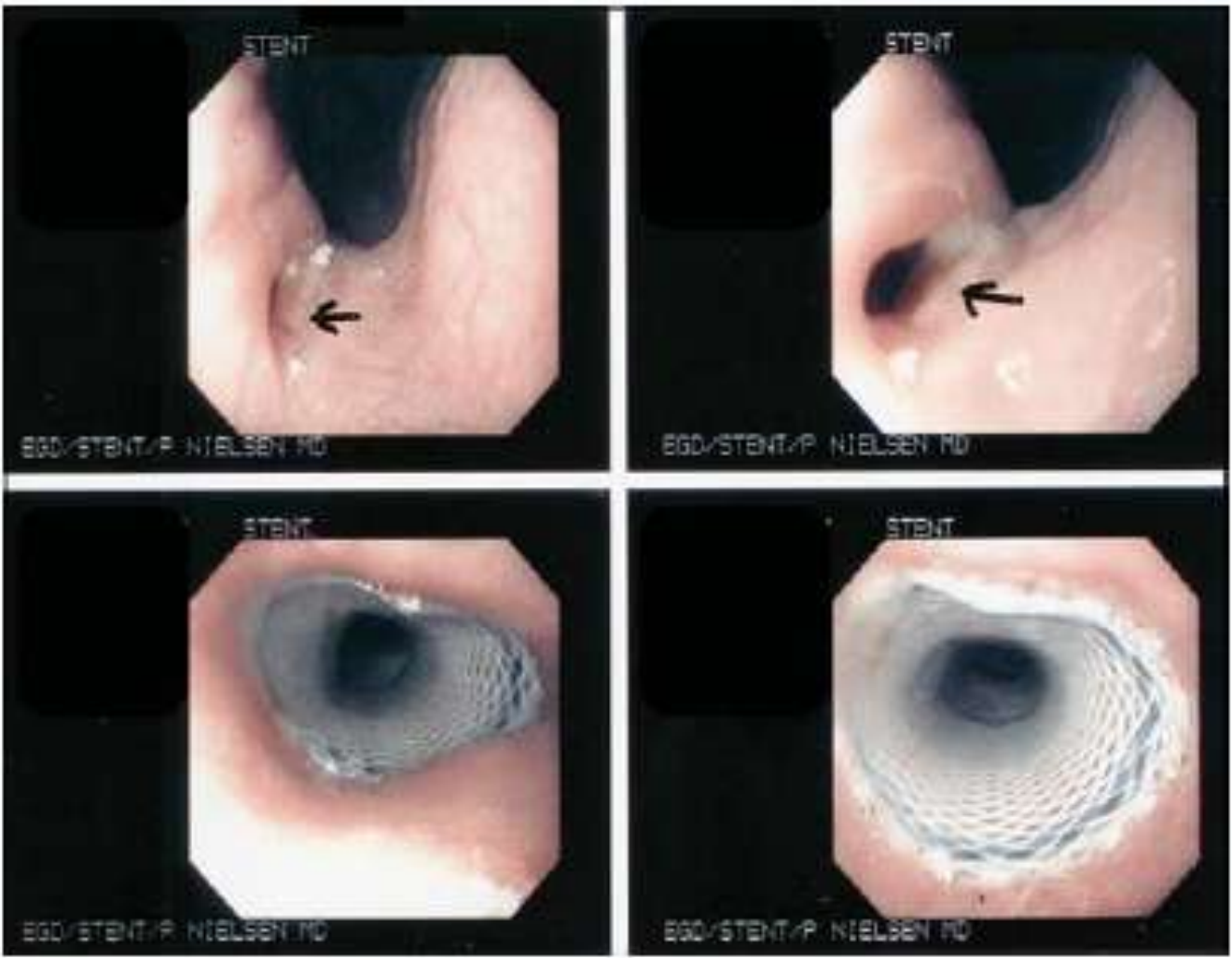
DDx: meningitis, stroke

Signs and symptoms:

- Sudden neurologic symptoms
- Chest pain
- Fever
- Sepsis

Treatment:

- Surgical repair
- Esophageal stenting
- Hyperbaric oxygen for cerebral air embolism

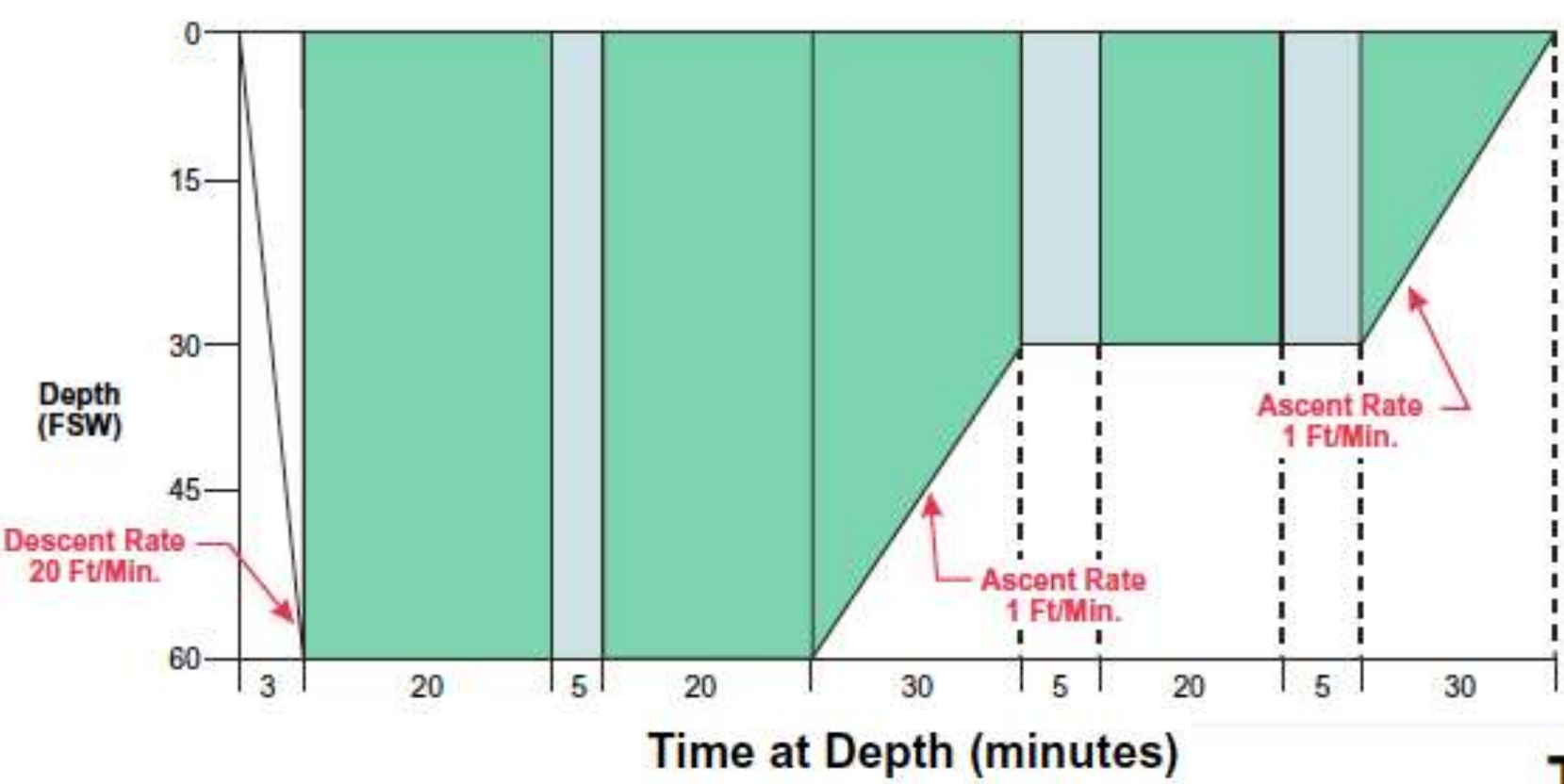


HYPERBARIC OXYGEN ⁷⁻¹²

- First-line treatment for acute arterial embolism
- Often overlooked therapy for cerebral air due to atrial-esophageal fistula because of lack of awareness or facility availability
- Improved neurologic outcomes with prompt treatment (< 6 hours)
 - Utilize 100% oxygen until recompression
- USN TT 5 or 6 (compression with 100% oxygen at 2-2.8 ATA) are starting tables
- Treat until improvement plateaus

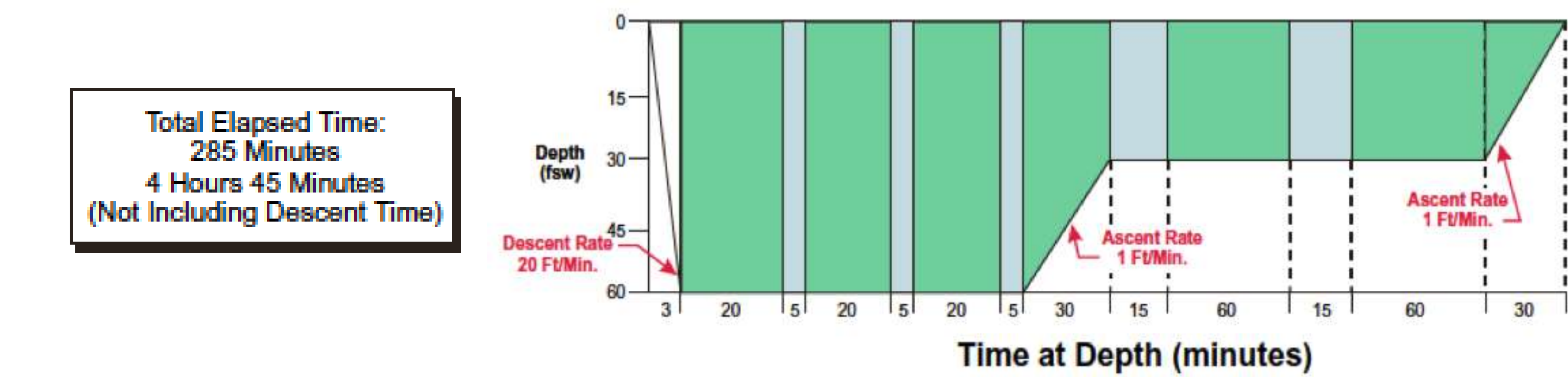
USN TREATMENT TABLES ¹¹

Treatment Table 5 Depth/Time Profile



Total Elapsed Time:
135 Minutes
2 Hours 15 Minutes
(Not Including Descent Time)

Treatment Table 6 Depth/Time Profile



CONCLUSION

- Hyperbaric oxygen should be considered in patients with an atrial-esophageal fistula who present with neurologic symptoms from cerebral gas embolism

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