

Hyperbaric oxygen therapy in the prevention and management of tracheal and oesophageal anastomotic complications

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Abstract

OBJECTIVES

Failure of anastomotic healing is a morbid complication after airway or oesophageal surgery. Hyperbaric oxygen therapy (HBOT) has been used extensively in the management of complex wound-healing problems. We demonstrate the use of HBOT to rescue at-risk anastomoses or manage anastomotic failures in thoracic surgery.

METHODS

Retrospective review of 25 patients who received HBOT as part of the management of tracheal or oesophageal anastomotic problems during 2007–2018. HBOT was delivered at 2 atm with 100% oxygen in 90-min sessions.

RESULTS

Twenty-three patients underwent airway resection and reconstruction while 2 patients underwent oesophagectomy. There were 16 (70%) laryngotracheal and 7 (30%) tracheal resections. Necrosis at the airway anastomosis was found in 13 (57%) patients, partial dehiscence in 2 (9%) patients and both in 6 (26%) patients. HBOT was prophylactic in 2 (9%) patients. Patients received a median of 9.5 HBOT sessions (interquartile range 5–19 sessions)

over a median course of 8 days. The airway anastomosis healed in 20 of 23 (87%) patients. Overall, a satisfactory long-term airway outcome was achieved in 19 (83%) patients; 4 patients failed and required reoperation (2 tracheostomies and 1 T-tube). HBOT was used in 2 patients after oesophagectomy to manage focal necrosis or ischaemia at the anastomosis, with success in 1 patient. Complications from HBOT were infrequent and mild (e.g. ear discomfort).

CONCLUSIONS

HBOT should be considered as an adjunct in the management of anastomotic problems after airway surgery. It may also play a role after oesophagectomy. Possible mechanisms of action are rapid granulation, early re-epithelialization and angiogenesis.