

# Incidence of middle-ear barotrauma with hyperbaric oxygen therapy

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## BACKGROUND

Middle-ear barotrauma is a known risk from hyperbaric oxygen therapy (HBO2), but the range of reported incidence is large (2% to 45%). We performed a retrospective review of patients receiving HBO2 to determine the incidence of middle-ear barotrauma at our facilities.

## METHODS

We reviewed charts of patients initiating HBO2 1/1/2011-12/31/2013 at two hospital-based hyperbaric centers (Intermountain Medical Center and LDS Hospital). Our staff inspected tympanic membranes (TM) by otoscope before and after each HBO2 session and graded middle-ear barotrauma per the modified TEED scale.

## RESULTS

330 were patients treated during the review interval, and 302 had TEED data recorded (181 (40%) male, mean age 49±20 years (range 1-92), mean sessions 15±17 (range 1-76), 24 intubated). 138 patients (46%) experienced middle-ear barotrauma after at least one HBO2 session. Four patients had tympanostomy tubes placed to facilitate continued HBO2, and 5 received decongestants. 22/24 intubated patients (92%) experienced middle-ear barotrauma, including the 10 patients with TEED-4. Of non-intubated patients, 71/157 patients (45%) treated exclusively in monoplace chambers, and 14/47 (30%) treated exclusively in the multiplace chamber, experienced middle-ear barotrauma.

	After HBO2 #1	After HBO2 #2	After HBO2 #3	During HBO2 Course
Patients	285	266	249	302
TEED-0	205 (72%)	192 (72%)	183 (73%)	164 (54%)
TEED-1	41 (14%)	26 (10%)	23 (9%)	107 (35%)
TEED-2	21 (7%)	22 (8%)	22 (9%)	60 (20%)
TEED-3	9 (3%)	13 (5%)	10 (4%)	21 (7%)
TEED-4	2 (1%)	7 (3%)	5 (2%)	10 (3%)
TEED-5	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Wax	7 (2%)	6 (2%)	6 (2%)	14 (5%)

## CONCLUSIONS

Though 46% of our patients experienced middle-ear barotrauma, only 4 patients (1% of total) required tympanostomy tubes to continue their HBO2 course; therefore, the clinical significance of this barotrauma is unknown. Decongestants were rarely offered due to concerns about vasoconstriction.