CUHMA ACMHS
Canadian Undersea and Hyperbaric Medical Association
Association Canadienne de Médecine Hyperbare et Subaquatique

E-NEWS

EDITOR'S NOTE – January 2025

The E-News is the monthly newsletter of CUHMA, the primary outlet to share news/announcements, upcoming events, abstracts of recent publications, job postings, professional perspectives, and images of relevant professional scenes. Submission of applicable content is welcome. New issues are released on the last business day of each month. Past issues are available at https://cuhma.ca. Direct correspondence to info@cuhma.ca.

Neal W. Pollock, PhD
Université Laval

NEWS/ANNOUNCEMENTS

New CUHMA Board of Directors

Thanks to all who have provided their time and effort through service on the CUHMA board of directors. The election cycle for the new board concluded on December 29. The confirmed roster follows:

President - Kaighley Brett
Past-President - Geoff Zbitnew
President-Elect - vacant
Vice-President - Caroline Bain
Secretary - Neal Pollock
Treasurer - vacant
Director-at-Large - Edward Cheung
Director-at-Large - Sherri Ferguson
Director-at-Large - Karen Keats
Director-at-Large - Cesar Orellana

CUHMA Bylaws Review

A draft revision of the CUHMA bylaws has been sent electronically to all members for review. A virtual special business meeting will be held January 25 at 1100 EST to consider the draft bylaws revision. The meeting link will be sent to all active members three days prior to the meeting.

We appreciate the engagement of all members; both in providing comments in advance of the meeting and in the meeting discussion. Comments can be sent to the following:

Kaighley Brett - kaighley.brett@gmail.com
Neal Pollock - neal.pollock@kin.ulaval.ca
Geoff Zbitnew - gzbitnew@gmail.com

UPCOMING EVENTS

Boston Sea Rovers 2025

The 71st international ocean symposium and film festival with be held March 14-16 at the DoubleTree by Hilton-Boston North Shore in Danvers, MA. For more information: https://bostonsearovers.com.

AAUS Diving for Science Symposium 2025

The American Academy of Underwater Science Diving for Science symposium will be held March 24-29 in Seattle, WA. The event will be hosted by the University of Washington, the National Oceanic and Atmospheric Administration, and the Seattle Aquarium. Visit: https://aaus.org/annualsymposium.

Canadian Underwater Conference 2025

The Diver Certification Board of Canada (DCBC) will hold the 13th Canadian Underwater Conference & Exhibition March 30-April 01 at the Executive Hotel Vancouver Airport in Richmond, BC. For more information, visit: https://www.underwaterconference.ca.

UMC Introductory Diving Medicine Course

Undersea Medicine Canada is offering a Level 1 'Introductory Course in Diving Medicine - Fitness to Dive' May 12-16 at the Atlantic Commercial Diving Centre in Summerside, PEI. An optional half-day pre-course will be held on May 11 for those wanting additional preparation for the program. Visit: https://underseamedicine.ca or contact Dr. Debbie Pestell at drdeb1@ns.sympatico.ca or 902-225-8214 for more information.

AsMA/UHMS Joint Scientific Meeting 2025

The joint scientific meeting of the Aerospace Medical Association and the Undersea and Hyperbaric Medical Association will be held June 01-06 at the Hyatt Regency Hotel in Atlanta, GA. For more information, visit: https://www.asma.org/scientific-meetings/asma-annual-scientific-meeting/2025-asma-uhms-annual-scientific-meeting.

EUBS Annual Scientific Meeting 2025

The annual scientific meeting of the European Underwater and Baromedical Society will be held September 02-06 in Helsinki, Finland. Information will be posted on the dedicated conference website: www.eubs2025.com.

RECENT PUBLICATIONS

Allinger J, Melikov O, Lemaître F. Trends in competitive freediving accidents. Diving Hyperb Med. 2024 Dec 20;54(4):301-307. doi: 10.28920/dhm54.4.301-307.

Introduction: Understanding safety issues in competitive freediving is necessary for taking preventive actions and to minimise the risk for the athletes. Methods: We analysed occurrence of loss of consciousness (LOC) and pulmonary barotrauma (PBt) in various freediving disciplines in 988 competitions over five years (from 2019 to 2023 inclusive), with 38,789 officially registered performances (starts): 26,403 in pool disciplines and 12,386 in depth disciplines. Results: Average incident rate in competitive freediving (all cases: LOCs plus PBt, 2019-2023) was 3.43% (1,329 incidents / 38,789 starts). The average incident rate of LOC and PBt within five years were 3.31% and 0.38% respectively for all disciplines. Two disciplines present higher risk for LOC: dynamic without fins (DNF) (mean risk ratio (RR)=1.48, 95% CI, 1.13 to 1.96, P<0.01) and constant weight without fins (CNF) (mean RR=2.02, 95% CI, 1.39 to 2.94, P<0.001). The RR for PBt was not higher in any discipline. The overall risk of all types of incidents (LOC plus PBt) was also higher for DNF (mean RR=1.55, 95% CI, 1.18 to 2.04, P<0.01) and CNF (mean RR=2.80, 95% CI, 1.70 to 5.04, P<0.001). Conclusions: The disciplines without fins in the pool (DNF) and at depth (CNF) appear to be the most dangerous in terms of LOC. We may recommend that organisers and safety teams should pay a special attention to no-fin disciplines as most risky for possible LOC.

Ben Ayad I, Damman C, Vander Essen L, Majerus B. Anaesthetic and surgical management of gastric perforation secondary to a diving incident: a case report. Diving Hyperb Med. 2024 Dec 20;54(4):350-353. doi: 10.28920/dhm54.4.350-353.

Gastric perforation secondary to barotrauma is a rare surgical condition which may manifest as an acute abdomen and potentially lead to complications such as pneumoperitoneum. A 50-year-old, healthy, experienced diving instructor was transported to our emergency department for an acute abdomen and severe dyspnoea after a diving incident. Clinical suspicion combined with computed tomography scanning lead to the diagnosis of linear rupture of the stomach. Exsufflation of the abdominal cavity was performed in the emergency department and then the patient was sent to the operating room for emergency laparoscopic gastric repair. Post-operative management was focused on decompressing the stomach with a nasogastric tube and abdominal radiography with barium ingestion was performed to confirm the absence of leakage. The patient was discharged at postoperative day four. We found 16 similar cases in the published literature. Gastric perforation secondary to a diving accident is rare but requires rapid diagnosis and surgical treatment.

Banham N, Smart D, Wilmshurst P, Mitchell SJ, Turner MS, Bryson P. Joint position statement on immersion pulmonary oedema and diving from the South Pacific Underwater Medicine Society (SPUMS) and the United Kingdom Diving Medical Committee (UKDMC) 2024. Diving Hyperb Med. 2024 Dec 20;54(4):344-349. doi: 10.28920/dhm54.4.344-349.

This joint position statement (JPS) on immersion pulmonary oedema (IPO) and diving is the product of a workshop held at the 52nd Annual Scientific Meeting of the South Pacific Underwater Medicine Society (SPUMS) from 12-17 May 2024, and consultation with the United Kingdom Diving Medical Committee (UKDMC), three members of which attended the meeting. The JPS is a consensus of experts with relevant evidence cited where available. The statement reviews the nomenclature, pathophysiology, risk factors, clinical features, prehospital treatment, investigation of and the fitness for future compressed gas diving following an episode of IPO. Immersion pulmonary oedema is a life-threatening illness that requires emergency management as described in this statement. A diver with previous suspected or confirmed IPO should consult a medical practitioner experienced in diving medicine. The SPUMS and the UKDMC strongly advise against further compressed gas diving if an individual has experienced an episode of IPO.

Blake DF, Crowe M, Lindsay D, Turk R, Mitchell SJ, Pollock NW. Divers treated in Townsville, Australia: worse symptoms lead to poorer outcomes. Diving Hyperb Med. 2024 Dec 20;54(4):308-319. doi: 10.28920/dhm54.4.308-319.

Introduction: Hyperbaric oxygen treatment (HBOT) is considered definitive treatment for decompression illness. Delay to HBOT may be due to dive site remoteness and limited facility availability. Review of cases may help identify factors contributing to clinical outcomes. Methods: Injured divers treated in Townsville from November 2003 through December 2018 were identified. Information on demographics, initial disease severity, time to symptom onset post-dive, time to pre-HBOT oxygen therapy (in-water recompression or normobaric), time to HBOT, and clinical outcome was reviewed. Data were reported as median (interquartile range [IQR]) with Kruskal-Wallis and chi-square tests used to evaluate group differences. Significance was accepted at P<0.05. Results: A total of 306 divers (184 males, 122 females) were included with a median age of 29 (IQR 24, 35) years. Most divers had mild initial disease severity (n=216, 70%). Time to symptom onset was 60 (10, 360) min, time to pre-HBOT oxygen therapy was 4:00 (00:30, 24:27) h:min, and time to start of HBOT was 38:51 (22:11, 69:15) h:min. Most divers (93%) had a good (no residual or minor residual symptoms)

outcome and no treated diver died. Higher initial disease severity was significantly associated with shorter times to symptom onset, oxygen therapy, and HBOT, and with worse outcomes. The paucity of cases receiving HBOT with minimal delay precluded meaningful evaluation of the effect of delay to HBOT. Conclusions: Most divers had mild initial disease severity and a good outcome. Higher initial disease severity accelerated the speed of care obtained and was the only factor associated with poorer outcome.

Clavell C, Dossett J, Yadav S, Patel A, Laxson LC, Ghorayeb G. Multimodal imaging analysis of retinal and choroidal microvascular abnormalities in a case of ocular decompression sickness. Am J Ophthalmol Case Rep. 2024 Nov 6:36:102208. doi: 10.1016/j.ajoc.2024.102208. eCollection 2024 Dec.

Purpose: Decompression sickness can result in a variety of ocular manifestations due to barotrauma. The retinal complications of this illness are less defined. In this case report, we describe a case of pigment epithelial detachment (PED) with retinal and choroidal microvasculature changes secondary to ocular decompression sickness in a scuba diver. Observations: The parafoveal serous pigment epithelial detachment resulted in a scotoma associated with a kaleidoscope-like visual disturbance and mildly decreased vision which started immediately after the accident. Multimodal imaging was obtained revealing a serous PED without exudation, pooling of dye on fluorescein angiography, and decreased flow signal on optical coherence tomography angiography (OCT-A) in the deep capillary plexus and choriocapillaris in the area of the PED. Over the course of three months, the serous PED spontaneously resolved leaving behind subtle retinal pigment epithelium (RPE) alterations. Visual acuity also improved over the same time period however the visual disturbance had not completely resolved at the date of last follow-up. Conclusions and importance: The imaging findings, temporal association with the diving accident, and short timeframe to resolution of this PED favor an etiology related to ocular decompression sickness. PED formation in this context may be secondary to 1) RPE dysfunction due to endothelial cell damage from free radicals and 2) choroidal ischemia resulting from gas emboli. To our knowledge, this is the first reported case where OCT-A has been used to demonstrate choroidal ischemia in ocular decompression sickness. The patient received hyperbaric oxygen treatments for several weeks following the accident which may have contributed to the rapid resolution of the PED supporting the role of choroidal ischemia in its pathogenesis.

Daniel A, Haney V, Tveit M, Lipkin I, Lee SM, Couch K, Wallace SJ, Teal CB, Ranganath B. Evaluating the effect of hyperbaric oxygen therapy to treat mastectomy skin flap ischemia in breast reconstruction: a single-institution retrospective analysis. Am J Surg. 2024 Nov 21:116110. doi: 10.1016/j.amjsurg.2024.116110. Online ahead of print.

Background: Mastectomy skin flap ischemia is a well-known postoperative complication following mastectomy and breast reconstruction. Hyperbaric oxygen therapy (HBOT) has shown promising results for reducing the adverse effects associated with mastectomy skin flap ischemia and associated necrosis; however, there is paucity of literature regarding the indications for HBOT following breast cancer surgery. This study aimed to assess HBOT efficacy in treating and mitigating complications from postoperative tissue ischemia. Secondarily, it explored how patient-related factors may impact the success of HBOT. Methods: A retrospective analysis was conducted from January 2018 to October 2023. The study analyzed 23 patients at a single institution who were treated with HBOT for diagnosed skin flap ischemia following mastectomy and immediate breast reconstruction. Patient demographics, preoperative, and operative details were collected, as well as postoperative outcomes. The authors deemed HBOT a "success" if there were no major complications and a "failure" if there was ≥1 major complication reported within 6 months following the last HBOT treatment. Logistic regression modeled the odds of HBOT success as a function of patient characteristics. Results: HBO was deemed a success in 15/23 patients (65 %) and a failure in 8/23 (35%). Of the successes, 11 received immediate post-operative HBOT. Average age at surgery was 49 years, average BMI was 24, and average number of HBOT treatments was 11. Logistic regression analysis revealed that preceding minor complications and age both trended towards significance regarding their impact on HBO outcome. Odds of success decreased by 92 % in the presence of minor complications (OR=0.08; p< 0.09) and increased by 15% with every 1-year increase in age (OR=1.16; p<0.07). CONCLUSIONS: In this retrospective analysis, HBOT was successful in treating postoperative mastectomy skin flap ischemia and preventing major complications in the majority of patients. Notably, age at time of surgery and presence of minor complications were the only variables found to potentially impact the success of HBOT. Future studies on a larger scale are needed to better evaluate HBOT's therapeutic utility in mastectomy flap necrosis.

Elliott E, Smart D, Lippmann J, Banham N, Nochetto M, Roehr S. South Pacific Underwater Medicine Society (SPUMS) position statement regarding paediatric and adolescent diving. Diving Hyperb Med. 2024 Dec 20;54(4):338-343. doi: 10.28920/dhm54.4.338-343.

This paediatric diving position statement was developed from a targeted workshop at the 51st Annual Scientific Meeting of the South Pacific Underwater Medicine Society (SPUMS) on 8 June 2023. It highlights the factors that SPUMS regards as important when undertaking health risk assessments for diving by children and adolescents (defined as aged 10 to 15 years). Health risk assessments for diving should be performed by doctors who are trained in diving medicine and who are familiar with the specific risks which result from breathing compressed gas in the aquatic environment. Undertaking a diver health risk assessment of children and adolescents requires a detailed history (including medical, mental health, psychological maturity), a comprehensive diver medical physical examination and evaluation of all relevant investigations to exclude unacceptable risks. In addition, assessment of the individual's motivation to dive and reported in-water capability should occur, whilst engaging with their parent /guardian and instructor, where appropriate, to ensure that safety for the child is optimised. The guideline applies to all compressed air diving including scuba and surface supply diving provided in open and contained bodies of water.

Gamarra E, Trimboli P, Careddu G, Fazi A, Turra V, Morelli A, Cimino E, Bartolo PD, Valentini U, Bonomo M. Performance of a safety protocol for scuba diving in people with type 1 diabetes: 20 years of "Diabete Sommerso®" experience. Diabetes Res Clin Pract. 2024 Dec 5:111945. doi: 10.1016/j.diabres.2024.111945.

Background and aims: Scuba diving for people with diabetes was discouraged due to hypoglycemia risks. However, evolving guidelines now enable safe diving for people with diabetes. Among them, the Diabete Sommerso® safety protocol. This study aims to describe data from 20 years of DS activities and evaluate the performance of the protocol in avoiding metabolic complications. Research design and methods: During DS camps, participants are trained to monitor glycemia before and immediately after diving, aiming for stable levels between 150-250 mg/dl. Since 2004, glycemic data from dives conducted with DS/independently by its members have been collected. Results: DS issued diving licenses to 74 type 1 diabetic people. Data are available for 68: median age was 32 years (IQR 22 yrs), diabetes duration 18 years (IQR 16 yrs), HbA1c 7% (IQR 1%). 34 used insulin pumps, 43 continuous glucose monitoring. A total of 1179 dives were analyzed, showing a median reduction in glycemia of -38 mg/dl during dives (IQR 92 mg/dl, $p<0.0001$). Post-dive hypoglycemia occurred in 20 cases, 45% of which involved protocol non-adherence. Hypoglycemia prevalence was 1.7% when the protocol was followed. No severe hypoglycemic episodes occurred during/after diving. Conclusions: Data from 1179 dives indicate that, with adherence to the safety protocol, scuba diving is safe and poses no risk of severe hypoglycemia for people with type 1 diabetes.

Harvey SE, Reynolds RP, Fisher JF. Delayed-onset arterial gas embolism after underwater egress training. Aerosp Med Hum Perform. 2024; 95(11): 867-70. doi: 10.3357/AMHP.6492.2024.

Background: Arterial gas embolism (AGE) may occur while breathing compressed air and failing to exhale during ascent to compensate for gas expansion as pressure decreases. Trauma to the lungs from over-pressurization may result in air bubbles entering the pulmonary veins and subsequently the systemic circulation, causing obstructed blood flow and inflammatory cascades. AGEs are known to always manifest within 10 min of surfacing from depth. In underwater egress training (UET), which is mandatory for U.S. Marines, service members learn to escape from a tilt-wing or rotor aircraft after it submerges and inverts in water. Case report: We report a case of cerebral AGE in which the victim experienced neurological symptoms more than 1 h after completing UET at a depth between only 3.28-6.56 ft (1-2 m). The patient was treated with a U.S. Navy Treatment Table 6 and experienced complete resolution of symptoms. Discussion: This case is one of only two AGEs reported with symptom onset occurring after 10 min of surfacing from depth to be published. AGE at depths between 1-2 m has only been reported on three other occasions, and dysbarism injuries during UET are also exceedingly rare. This case demonstrates a situation in which all three events occurred, highlighting the need for increased awareness and clinical consideration of delayed AGE in similar scenarios despite the commonly held belief that AGEs do not occur outside of 10 min of surfacing.

Kassotis A, Shabto J, Stevens S, Coombs A, Kazim M. Utilization of hyperbaric oxygen therapy in oculoplastic surgery: A case series. J Fr Ophtalmol. 2024 Dec 13;48(2):104382. doi: 10.1016/j.jfo.2024.104382.

Objective: Hyperbaric oxygen therapy (HBOT) has emerged as a versatile tool in the management of an array of medical conditions, including tissue ischemia and delayed wound healing. Despite the incorporation of HBOT in other medical fields, HBOT is not routinely utilized in the field of ophthalmic plastic and reconstructive periorbital surgery. Design: Case series. Participants: A series of oculofacial cases treated with adjuvant HBOT is reviewed. The authors describe a 47-year-old man presenting with vision loss secondary to a retinal vascular event one day after orbital surgery, a 38-year-old woman presenting with acute hyaluronic acid filler-associated blindness, and a 44-year-old man presenting with orbital necrotizing fasciitis after minor

trauma. Results: In each case, HBOT was utilized as adjuvant management, with favorable outcomes despite a guarded initial prognosis. Conclusions: HBOT shows promise as part of a treatment regimen for a variety of conditions in oculoplastic and reconstructive surgery.

Laupland BR, Laupland KB, Thistlethwaite K. Hyperbaric oxygen therapy for idiopathic sudden sensorineural hearing loss: a cohort study of 10 versus more than 10 treatments. Diving Hyperb Med. 2024 Dec 20;54(4):275-280. doi: 10.28920/dhm54.4.275-280.

Introduction: Current treatment of idiopathic sudden sensorineural hearing loss (ISSNHL) includes a combination of corticosteroids and hyperbaric oxygen therapy (HBOT) without established dose. The objective of this study was to investigate whether >10 HBOT treatments offers improved outcome over 10 treatments. Methods: A retrospective chart review was performed of patients treated with HBOT for ISSNHL between 2013 and 2022 at the Royal Brisbane and Women's Hospital. Pure tone average results from 500, 1,000, 2,000, 4,000 hertz (PTA4) were obtained pre-treatment, after treatment 10, and six weeks post-treatment. Results: There were 479 patients treated for ISSNHL: 144 having audiograms six weeks post-treatment, 140 of whom also had an audiogram after treatment 10. At six weeks post treatment 22% (32/144) had normal hearing (PTA4 <25 dB), and 69% (99/144) had a PTA4 gain ≥10 dB. At the treatment 10 audiogram, 83/140 (59%) were improved. From these, 5/21 (24%) with 10 treatments and 14/57 (25%) with > 10 treatments had a further PTA4 gain of ≥10 dB occurring after treatment 10. For those 57/140 (41%) not improved at treatment 10, 7/26 (27%) with 10 treatments and 12/31 (39%) with >10 treatments were improved at six weeks post-treatment with 5/7 (71%) and 8/12 (67%) of the 10 and >10 groups respectively having ≥10 dB gain in PTA4 occurring after treatment 10. Overall, there was no significant difference in mean (SD) hearing gain from treatment 10 to six weeks post treatment between the 10 treatments and >10 treatments groups: 4.73 (8.90) versus 5.93 (11.25) dB, P=0.53. Conclusions: In conjunction with steroids, 10 treatments of hyperbaric oxygen therapy appear to offer equivalent benefit to >10 treatments. Similar improvements in PTA4 and hearing recovery occur after 10 HBOT treatments independent of ongoing HBOT. A prospective trial comparing 10 versus >10 treatments for ISSNHL with outcome measured beyond treatment completion is warranted.

Smart D. Five consecutive cases of sensorineural hearing loss associated with inner ear barotrauma due to diving, successfully treated with hyperbaric oxygen. Diving Hyperb Med. 2024 Dec 20;54(4):360-367. doi: 10.28920/dhm54.4.360-367.

Introduction: This report describes the outcomes of sensorineural hearing loss (SNHL) due to cochlear inner ear barotrauma (IEBt) in five divers treated with hyperbaric oxygen (HBOT). Methods: The case histories of five consecutive divers presenting with SNHL from IEBt due to diving, were reviewed. All divers provided written consent for their data to be included in the study. All had reference pre-injury audiograms. All noted ear problems during or post-dive. Independent audiologists confirmed SNHL in all divers prior to HBOT, then assessed outcomes after HBOT. Results: Three divers breathed compressed air on low risk dives, and two were breath-hold. None had symptoms or signs other than hearing loss, and none had vestibular symptoms. All could equalise their middle ears. Inner ear decompression sickness was considered unlikely for all cases. All were treated with HBOT 24 hours to 12 days after diving. Two divers received no steroid treatment, one was treated with HBOT after an unsuccessful 10-day course of steroids, and two divers received steroids two days after commencing HBOT. All divers responded positively to HBOT with substantial improvements in hearing across multiple frequencies and PTA4 measurements. Median improvement across all frequencies (for all divers) was 28 dB, and for PTA4 it was 38 dB. Conclusions: This is the first case series describing use of HBOT for IEBt-induced SNHL. The variable treatment latency and use/timing of steroids affects data quality, but also reflects pragmatic reality, where steroids have minimal evidence of benefit for IEBt. HBOT may benefit diving related SNHL from IEBt with no evidence of perilymph fistula, and provided the divers can clear their ears effectively. A plausible mechanism is via correction of ischaemia within the cochlear apparatus. More study is required including data collection via national or international datasets, due to the rarity of IEBt.

Sokolowski SA, Räisänen-Sokolowski AK, Lundell RV. Development of myopia in scuba diving and hyperbaric oxygen treatment: a case report and systematic review. Diving Hyperb Med. 2024 Dec 20;54(4):328-337. doi: 10.28920/dhm54.4.328-337.

Introduction: A 54-year-old, previously healthy Caucasian male diver was on a 22-day liveaboard diving holiday. During this time, he performed 75 open-circuit dives, of which 72 were with enriched air nitrox. All dives were within recreational length and depth. After the trip he noticed a worsening of vision and his refraction had changed from the previous -3.75/-5.75 to -5.5/-7.75 dioptres. Hyperoxic myopia is a well-known phenomenon after hyperbaric oxygen treatment (HBOT), but related literature in recreational divers is scarce. Methods: A systematic literature review on the effect of a hyperoxic environment on the development of myopia was done according to the PRISMA guidelines. Three databases were searched: Ovid MEDLINE, Scopus, and the Cochrane Library. A risk of bias analysis was done on all articles, and the GRADE approach was used to evaluate

the quality of evidence. Articles that had sufficient data were used to synthesise a visualisation of oxygen exposure and changes in refraction. Results: Twenty-two articles were included in this review. These included five case reports, two case series, nine cohort studies, one randomised controlled trial and five reviews, of which one was systematic. Most articles described HBOT patients' ocular complications, although four articles were diver centric. The synthesis of results suggests that divers tend to get a greater myopic shift with a smaller exposure. However, the data were too heterogeneous to perform meaningful statistical analyses. This review is the first to focus on divers instead of HBOT patients. Conclusions: The case presented led to a systematic literature review on the effects of hyperbaric oxygen on refractive changes in both HBOT patients and divers. The data were too heterogeneous to make meaningful suggestions on a safety limit to prevent myopisation in diving.

Wilmshurst PL, Edge CJ. Recurrent cutaneous decompression sickness in a hyperbaric chamber attendant with a large persistent foramen ovale. Diving Hyperb Med. 2024 Dec 20;54(4): 354-359. doi: 10.28920/dhm54.4.354-359.

A 41-year-old female nurse had cutaneous decompression sickness on two occasions after acting as an inside chamber attendant for patients receiving hyperbaric oxygen. She breathed air during the treatments at pressures equivalent to 14 and 18 metres of seawater, but each time she decompressed whilst breathing oxygen. Latency was 2.5 hours and one hour. She was found to have an 11 mm diameter persistent foramen ovale. It was closed and she returned to work without recurrence of decompression sickness. Review of the literature suggests that shunt mediated decompression sickness is an important occupational risk for individuals with a large right-to-left shunt when working in hyperbaric air, but the manifestations of decompression sickness differ in those who decompress whilst breathing oxygen compared with those who decompress whilst breathing air.

Yu E, Dong GZ, Patron T, Coombs M, Lindholm P, Tillmans F. Occurrence and resolution of freediving-induced pulmonary syndrome in breath-hold divers: an online survey of lung squeeze incidents. Diving Hyperb Med. 2024 Dec 20;54(4):281-286. doi: 10.28920/ dhm54.4.281-286.

Introduction: Breath-hold divers occasionally surface with signs of fluid accumulation and/or bleeding in air-filled spaces. This constellation of symptoms, recently termed 'freediving induced pulmonary syndrome', is thought to come from immersion pulmonary oedema and/or barotrauma of descent and is colloquially termed a 'squeeze'. There is limited understanding of the causes, diagnosis, management, and return to diving recommendations after a squeeze. Methods: We developed an online survey that queried breath-hold divers on the circumstances and management of individual squeeze events. Results: A total of 132 (94 M, 38 F) breath-hold divers filled out the survey. Most were recreational or competitive freedivers with mean age of 37 years old and nine years of experience. Of those, 129 (98%) held a certification in freediving from an accredited training agency. A total of 103 individuals reported 140 squeeze events from 2008-2023. The average depth at which a squeeze occurred was 43 m. The top contributors to lung squeezes were described as movement at depth, contractions, and inadequate warm-up. The most common symptoms of a squeeze were cough, sputum production, and fatigue. Divers were instructed to wait an average of two months before returning to diving after a squeeze. On average, divers were able to achieve the same depth of their squeeze event three months after the incident. Conclusions: Inadequate warm-up, contractions, and abnormal movement at depth are the most reported causes for a squeeze. Most divers do not seek medical treatment after a lung squeeze event and can return to the same depth within three months.

CUHMA-ACMHS is the Canadian voice for the advancement of hyperbaric and diving medicine throughout our country and beyond. Our activities include continuous medical education for physicians, nurses, respiratory therapists and anyone involved in the fields of hyperbaric and diving medicine. We are also promoting dissemination of clinical research, publishing position statements, liaising with related professional associations and government agencies. Our main goal is advocating on behalf of our patients. Our vision is to be the reference for the development and delivery of hyperbaric and diving medicine in Canada and beyond. Our mission is to promote excellence in hyperbaric and diving medicine through leadership in education, promotion of best practices and advocacy for our patients. Our values are excellence, leadership, collaboration, communication, and integrity.

Canadian Undersea and Hyperbaric Medical Association

10 Plumtree Place, Portugal Cove-St. Philips,
Newfoundland and Labrador, A1M 3T1
info@cuhma.ca https://cuhma.ca

Editor: Neal W. Pollock, PhD - neal.pollock@kin.ulaval.ca