Decompression Sickness: Four brief cases

Dr Douglas Walker

There is a general, persistent, and probably irradicable belief among most experienced divers that their years of diving without having recompression therapy indicate that not only are their diving techniques safe but that there is a margin of safety present that allows discretionary variation without penalty. This belief illustrates their possibly natural lack of understanding of the basis upon which the conventional diving tables are constructed. Both Naval and Commercial tables are, in general terms, designed to accommodate diving by healthy young men making vertical ascents and descents at specified rates, dive depth and duration being accurately known, and work being of a moderate intensity. Any “decompression stops” will be taken at accurately measured depths, confirmed by trained surface support divers. In case of doubt about depth, time, environmental or work factors the appropriate increase in table “obligation” will be followed. Under such circumstances a few cases of decompression sickness will still occur but will be notified and treated without delay. Any suggestion that such a description is appropriate to many dives conducted by recreational or professional divers (other than those in Governmental employ or of exceptional carefulness) would stretch credulity, although many divers certainly approximate adequately and suffer no apparent symptoms. Modern beliefs concerning decompression incline to the acceptance of pressure-reduction induced bubbles forming even when following the present day diving schedules, the “bubble score” relating in general to the likelihood of developing symptoms. It is known that there is a wide and unpredictable variability in symptom occurrence after identical dives, that frequent diving increases tolerance of a given dive schedule, this tolerance being rapidly lost after the diver ceases such dives, while the threshold for “noticing” symptoms of decompression sickness is effected by a multitude of factors. The following cases are presented to indicate that the Mantle of Immunity can wear thin, many years of diving notwithstanding. As the ill effects of many year’s of “rough diving” have still to be evaluated, the wise diver will continue to try to avoid troubles, known and unknown, by heeding even the most gentle of symptoms.

Case A

Aged 35 and with a 14 years diving history without clinically diagnosed bends, this hookah diver spent 7 hours at 21 metres harvesting abalone. Shortly after he surfaced he started to experience severe symptoms, which he apparently hoped would go away. Despite his disablement he remained physically active, driving his boat and then his car as he made his way home, apparently in the company of others who one would expect to be able to assist him if allowed. The severity of his alarm ultimately forced him to call an ambulance and attend a Hospital for recompression therapy. His residual hearing deficit would seem to be a slight price to pay for his type of diving. (This case is reported more fully in the separate article).

Case B

This 43 year old diver with 15 years of hookah diving experience undertook three dives to 30 metres in a 2 hour period. Their individual duration is not known. During this time he was spearfishing, this being his usual habit. Symptom onset was 1 hour after his last dive.

Case C

This diver, aged 30, had 13 years experience of compressed air diving without receiving recompression therapy, the purpose of his diving being searching for shells. He was diving alone in an area well known to him and for which the depth had been triple checked on previous occasions.

The dive plan was for 50 minutes at 70-80 feet with stops of 5 minutes at 20 feet and 10 feet. In the event, because he began to feel cold, the actual dive was 45 minutes at 65-82 feet, with the planned "stops" unchanged. About half an hour after surfacing he experienced a slight pain in his right knee, 4 hours later an aching right shoulder. His right ear also felt painful. He apparently first contacted medical aid 12 hours after surfacing and started treatment over 48 hours post dive, as explained below.

Some modification became necessary in this apparently clear story after additional facts were revealed. In fact there had been three previous occasions where mild "bends" symptoms had been recognised as occurring by the victim, these producing numbness in his forearms. One was treated at a Hospital with 1 ATA Oxygen overnight. He also revealed that the lesser dive time "possibly made me get a little slack". It is probable in fact, that dive maximum was 85 feet "for a very short time", and he actually ascended direct to his boat to place his heavy "goody bag" in it, then descended to make his scheduled decompression stops. There had been dives on each of the previous two days, surface intervals being 24 hours, the first being 35 minutes, at 80 feet, with a 5 minute stop at 10 feet, the most recent for 50 minutes at 80 feet with 5 minute stops at 20 and 10 feet. His daytime job, performed as usual before this incident dive, involved heavy physical work with his arms. Depth were stated with certainty, the diver having seen others get into trouble through relying on DCM or inaccurate depth measuring. His actual actions after symptoms developed were to contact the nearest hyperbaric facility after 12 hours, to be told to contact the Hospital. However before he reached the Hospital his symptoms had abated so he made his way back home (150 miles), as detention for observation would have caused his workmates to lose time because of his absence. However on the second morning back he could no longer ignore his symptoms and therefore attended for his treatment. This was an Oxygen table (2 and a half hours), followed by oxygen/ air alternate hours for 12 hours. Mild joint pains persisted for 4-5 days after, and occasional discomfort still occurs. He has not yet resumed diving, though he is at his regular work. He is a careful diver and never makes dives requiring decompression (now) when using hookah air supply unless he wears a scuba supply as back-up in case there is a hookah problem during his "stops".

Case D

This 28 year old scuba diver of undetailed experience was crayfishing. He made a 70 foot dive for 1 and a half hours, had a 1 and a half hour surface interval, then made a further dive at 70 feet, for 1 and a quarter hours this time. There were no decompression stops with either dive. Pain in the left shoulder and formication of the upper anterior chest occurred 5 minutes after surfacing.

Comment

It is apparent that none of these were simple, single depth dives of the type for which the tables were designed and against which they had been tested. It is very likely that these divers habitually followed similar dive patterns, and believable that they had not accepted the possibility that they had suffered mild "bends" symptoms on previous occasions. The cases are presented as a warning that decompression sickness lurks in the background and extra exertion; cold; mistakes with depth/time/rate of ascent; tiredness; or some other factor, may result in a penalty that the victim cannot shrug off. Spinal bends have terminated the careers of "tough" divers and will do so to others in the future, as well as some careful divers. A free and relaxed relationship with the Dive Tables can go remarkably sour without the diver feeling he deserves his fate.

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AVOIDING THE BENDS continued from page 5.

Diver education seminars on *Avoiding the Bends* might be helpful. Such a seminar should cover deep diving procedures, standard US Navy dive tables, repetitive diving, avoiding the bends, and decompression sickness and treatment. Ask your club President, Divemaster, or NAUI Branch Manager to consider a seminar like this in your locale.

Finally if ever you feel pain or itchiness anywhere, however slight, following a dive, call your divemaster or instructor immediately. Waiting could possibly aggravate your condition. Your instructor or divemaster will know what to do.

Each diver should carry a list of *important telephone numbers* in case of emergency. A good place to store these numbers is inside your log book or wallet. Make sure your dive buddy knows where these numbers are located. This list of important numbers should consist of local police, state police, local hospital, Coast Guard, and nearest location of a recompression chamber. Your local Branch manager can help you locate these important telephone numbers.

Remember: the US Navy Dive Tables are just a guide. Know the no-decompression limits for sport diving. Modify the tables so that you end your dive well within the limits of the dive table. Play it safe!

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There is no guarantee that therapy will be completely successful, so don’t bet your health against a mess of bubbles.

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DOING WHAT COMES NATURALLY Continued from page 38

This Seminar revealed the existence of some of the complex factors effecting the production of Medically Pure Air for divers. It is probable that divers will only get pure air if they insist on it by only going to those who provide such an article.