

has been found since this incident that diving contractors no longer give pure oxygen in the water as they have had problems even with experienced divers who had quite satisfactorily passed oxygen tolerance tests (60ft on pure oxygen for 30 minutes). This important information was only revealed after the event. Another problem was that no Authority (or private contractor) with a suitable chamber would permit O₂ tolerance tests to be conducted, both before and after the incident. For obvious reasons the one man chamber was unsuitable for this test. The divers who underwent O₂ decompression did so voluntarily after the risks were explained. No further dives of this type have been carried out since the accident. Events demonstrate that all reasonable precautions were taken and that skilled backup was immediately available and deployed correctly.

Critical factors worth noting include the following:-

Equipment

The use of a KMB mask guaranteed protection from the risk of drowning when consciousness was lost. There was also certainty of breathing gas supply and a good communications link allowing a degree of monitoring of what was occurring. The communications facility was a vital safety factor.

Dive Planning

Thorough consideration of the proposed dive ensured recognition of all possible complications and the preparation of the appropriate responses. There were adequate reserve gas supplies, a recompression chamber and therapeutic Tables. The use of a one-man chamber was a consequence of the 'force majeure' of circumstances and its limitations were recognised.

Personnel

The trainers were all adequately experienced divers and aware of the potential problems. The "top side" supervision showed by their actions that they were both highly alert and well informed. Management of the chamber treatment indicated a deep understanding of the principles which governed management, the continued vocal encouragement of the subject showing appreciation of the fact that there was a person rather than a case in the chamber.

Heliox diving

Attention is drawn to the fact that the physical basics for such diving is readily available but the essential physiological knowledge (ie. the Tablets which enable safe usage) is highly restricted. Such secrecy can be rationalised but not excused in its present degree. The non-dissemination of information concerning the adverse experiences of diving contractors using the US Navy in-water oxygen decompression tables is another example of the imperfect awareness of the diving community of the necessity for centralisation of incident reports.

Oxygen toxicity

The practical difficulties which prevented the performance of this screening test are noted, as also the caution that to "pass" such a test is not a guarantee of immunity.

By the Editor:

This report is taken, virtually unedited, from the Incident Report. Permission to print it is acknowledged with gratitude. The "top side" staff, whose performance was excellent, understood the concept of responsibility so well described by Admiral Rickover at the Thresher disaster investigation:

"Responsibility is a unique concept. It can only reside and inhere in a single individual. You may share it with others, but your portion is not diminished. You may delegate it, but it is still with you. You may disclaim it, but you cannot divest yourself in it. Even if you do not recognise it or admit its presence, you cannot escape it. If responsibility is rightfully yours, no evasion or ignorance, or passing the blame can shift the burden onto someone else. Unless you can point your finger at the man who is responsible when something goes wrong, then you never had anyone really responsible."

Doctors, Diving Instructors and Supervisors, are particularly subject to the moral and legal implications of Responsibility. This diving organisation passed the test.

DOES A ROLE EXIST FOR DENTISTRY IN DIVING?

Adrian Gardiner

As a dentist with a long interest in diving and an association with SPUMS which goes back to 19/6 Manna Island meeting, (which spurred me to seek scuba qualifications and SPUMS membership) I have been frequently posed this question by me professional colleagues. With some experience and thought it became increasingly obvious to me that the answer was definitely "yes".

The most obvious and frequently encountered dental problem in diving is the occurrence of severe dental pain. The incidence of severe toothache associated with dysbaric conditions was noted and studied during World War II by the late George Christiansen during his term in the RAAF, and later as consultant oral surgeon to that service. This condition severely afflicted aircrews and impeded their performance. Briefly his findings were that small entrapped air pockets under fillings and restorations rapidly changed

their pressure and volume under variations in the ambient atmospheric pressure, causing acute pulp inflammation in the involved teeth. This condition was readily and rapidly relieved by removal of the offending restoration and careful replacement using a sedative base under the filling.

It will be obvious that these findings are as readily applicable to the hyperbaric situation of diving as to the hypobaric situation of aviation. However, when faced with a case of dental pain in a diver, careful examination (using Radiographs and pulp vitality tests) is essential to eliminate obvious dental pathology as it would be unwise to encourage a patient to undertake diving with grossly carious teeth, periodontal disease or other obvious dental infections. The diver suffering these problems should be dissuaded from diving until the condition has been resolved. While the diver suffering from the above type of toothache has little doubt as to which tooth is affected, I have found that a significant number of divers seeking treatment complain of general pain affecting the posterior maxillary teeth either unilaterally or bilaterally, subsequent oral examination revealing no dental problems. Further examinations and questioning usually reveals an inflammatory condition of the facial sinuses particularly the maxillary sinus. Anatomically the apices of the roots of the posterior maxillary teeth are close to or within the maxillary sinus while their blood supply and innervation are intimate with the antral lining. Thus it is obvious that dental pain will be a sequel to maxillary sinus squeeze.

All the foregoing have relevance to an incident during the recent SPUMS conference at Pulau Tioman. A member had sought dental treatment for toothache shortly before leaving Australia. However, the pain persisted and increased in intensity during the week. There was an overlying sinus problem and apart from using analgesics and antibiotic therapy, I delayed radical treatment. However, on the Thursday of the week the pain became so intense while returning from a magnificent day of diving at Pulau Labas and Pulau Tulai that treatment could no longer be delayed.

I removed the offending tooth and sutured the socket in my hotel room under local anaesthetic (4 cc Citanest 15) with premedication (45 mgs Oxazepam) given 45 minutes previously. As I had given the patient 250 mg Moxacin tablets for 24 hours I got him to continue this therapy for the next 3 days as antibiotic cover for the initial healing period. Healing was uneventful and after sleeping off the effects of the premedication he was able to indulge in some snorkelling and free diving the next afternoon, but was dissuaded from scuba diving to prevent the very real possibility of air embolism in the wound. The tooth was found to have deep caries on the mesial surface with pulpal involvement.

Another facet of dentistry with an important relevance to diving, is the field of prosthetic replacement of teeth. It is very evident that there are many divers wearing full dentures who are able to control their regulator mouthpieces with no functional problems whatsoever. The edentulous diver wearing small removable partial dentures

presents a different set of circumstances.

Should one of these appliances become dislodged, as they can do, it is quite conceivable that it could become dislodged in the oropharynx with serious consequences to the airway. It is my personal feeling that divers wearing these prosthetic appliances should forego human vanity and store their partial denture in their dive bag while below the surface. This then leads to the situation of the diver whose dentition is so impaired as to make it impossible to effectively control a regulator mouthpiece in his mouth. It should be possible and in fact relatively simple to construct an individual mouthpiece from silicone or neoprene rubber that is comfortable and effective for these divers.

In the foregoing I have attempted to set down briefly personal thoughts on the role my profession has to play in diving medicine, but more importantly hope to urge all those members of SPUMS who are not in the Medical profession but in related occupations to contribute their knowledge and skills to their sport.

SPUMS AGM 1980

25th June 1980

PRESIDENT'S REPORT

1979/80 has been a year of progress for the Society. We have changed the Secretary and we have a new hand at the helm running the Society's business. Besides that, we have launched out into the first international joint meeting that SPUMS has been associated with. It is a great honour for SPUMS to be associated with a meeting, in Singapore, with the Singapore Armed Forces who could easily have put this meeting on by themselves with the backing of the medical profession in Singapore who are contributing to the conference. In my opinion, it is extremely important that as many members and their wives as possible should attend at least the opening ceremony and the first day. If you have read the programme you will agree that it should be an excellent meeting. There is a lot for us to learn about the problems that people have in this part of world, and we are hoping to enlighten the people who live around warm water of some of the problems we have with our colder water.

You might be surprised to know that we now run a Journal. It was a newsletter when it started, and then it was a newsletter-journal. Then when we applied for Category B publication status to reduce postal cost, the Post Office said that it had to be either a newsletter or a journal. It has not been a newsletter for years because the news that got into it was history by the time it got to us, so I said it was a Journal. So now our publication is a Journal. You will have noticed that the Journal has changed its shape and production. We had great difficulty getting the Journal out on time when it was being printed in Sydney. And with the constant rise in postal costs