QUEENSLAND DIVING ACCIDENTS

John Knight

July 1988 to June 1989

The Queensland Dive Tourism Association of Australia (QDTAA) has published a Dive Tourism Accident Bulletin which appeared in Neville Coleman's "Underwater Geographic" (ISSN 1032-5212) No 28, pages 72 and 73.

The QDTAA is to be congratulated on providing such a report. Unlike other diving accident reports there is a mention of the number of dives involved (250,000) but unfortunately this is just an estimate of dives carried out in Queensland in the time covered by the report, not a record of the number of dives performed under the auspices of the reporting companies. Minor injuries were probably under reported as 74.1% of the injuries were classified as serious.

In twelve months there were 27 accidents reported by members of the QDTAA, three of which were fatal. Two of these were attributed to drowning (one not on scuba and so classified as a minor accident) and one to cerebral arterial gas embolism (CAGE). The minor accidents reported were divided into non-scuba and minor injuries. Non-scuba included a death (mentioned above) while swimming, facial laceration from a trigger fish, an exploding scuba tank in a dive shop and a person reported lost and later found alive. At least three of these were very major problems for those involved and difficult to classify as minor incidents. Minor injuries were salt water aspiration, a bleeding ear and reverse ear squeeze.

Of the 20 serious accidents while using scuba 80% were decompression sickness (DCS). However the pie chart of major scuba-related accidents shows 10% were drownings and 10% CAGE so presumably one drowning was resuscitated and one CAGE victim survived leaving 16 cases of DCS.

Nearly 50% of the serious diving related accidents occurred off Cairns and over 35% off Townsville. These two centres provide the bases for most dives in Queensland.

Of interest is the fact that females outnumbered males in the ages groups 15-24 (M 2, F 5) and 25-34 (M 2, F 3) but in the age group 35-54 it was the other way round (M 3, F1). But as the numbers are small it is quite possibly due to chance.

July 1989 to June 1990

The QDTAA report for July 1989 to June 1990 is now available. In this year there were 34 accidents, three fatal. One was attributed to drowning while the other two were cardiac, which were classified as minor accidents as they were not related to scuba diving.. 21 of the accidents (62%) were classified as serious.(13 DCS, 3 CAGE and 5 scuba related drowning or near-drowning). Besides the two cardiac deaths there were 11 other minor accidents, mostly salt water aspiration.

The estimate of recreational scuba dives, from regional membership and certification surveys, was about 884,000 dives in the twelve months. There were no statistical differences between the incidence of accidents between the two years.

Young (aged 15-24) and older (35-54) females outnumbered males in the accident statistics, but in the 25-34 age groups males predominated. However with 9 females (43%) to 12 males (57%) females, who are estimated to be about 25% of the Queensland diving population, are overrepresented. The report draws attention to the fact that if the two years are combined it seems that females are three times as likely to have a major diving accident (usually DCS) than males. The QDTA is to be congratulated for drawing attention to this and recommending that there is a need for improved diving training for females.

This year the accident winner, if one can use the term, is Townsville with 10 accidents per 100,000 dives, up from just over six last year. This may be due to the fact that the boats that visit the Yongala wreck, which is in deep water, are mostly based in Townsville. Unfortunately no absolute figures for accidents by area are provided this year.

These reports, and an interesting table of the 1989 accidents are available from the Mr David Windsor, Secretary of the Queensland Dive Tourism Association of Australia (Inc.), PO Box 122, Chermside, Queensland 4032, Australia.

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THE DILEMMA OF THE PATENT FORAMEN OVALE

Michael Gatehouse and Tom Wodak

The SPUMS Journal, (Vol 19, No 4) contained two papers dealing with the latent condition, patent foramen ovale, (PFO), one by D.F.Gorman and S.C.Helps[1], and the other by D.Davies.[2] In addition a thought provoking editorial[3] on the subject has prompted the writers to address the legal issues which PFO raises.

First, by way of introduction, we are both practising lawyers and diving instructors, who derive knowledge, inspiration and enjoyment from each edition of the SPUMS Journal.

Several years ago, a group of Victorian lawyers with an interest in diving, formed a group for diving lawyers under the umbrella of the doubtful acronym of CODS. The inspiration for the name of our organization was derived from a passage in one of the early judgments in English law in which the concept of the reasonable man was formulated. In that judgment, the reasonable man was thought to be the man on the Clapham Omnibus. One of the founders of our organization, himself a reasonable man with great perspicacity and an understanding that all diving lawyers were reasonable men, made the inspired suggestion that our organization should be named "Clapham Omnibus Diving Society". The dual advantage of the title of our organization can be seen from the acronym which if it does not immediately conjure up an image of diving lawyers, at least provokes some association with the water. Without apology, CODS was modeled on, and sought to draw upon the success of, SPUMS although to date its accomplishments have been rather modest.

Both writers were active in the formation of CODS, and have been and remain on its executive. One of the aims in establishing CODS was to provide a forum through which members of the legal profession with an interest in diving could exchange knowledge and discuss issues raising medico-legal aspects of diving and hyperbaric medicine with the SPUMS membership.

PFO presents as a topic of great relevance to diving instructors, the diving industry and those interested in hyperbaric medicine.

An issue which needs to be addressed is the duty owed by the examining doctor to candidates wishing to undertake entry level diving courses. It appears that up to 30% of the population have a PFO and most have no symptoms. Recent studies suggest that individuals with demonstrable interatrial shunts compromise a high proportion of divers exhibiting early neurological decompression sickness (DCS). They also said to constitute a majority of the divers who have DCS of unexpected onset, that is the time/pressure profile of the dive was well within the limits of the table being used.

Our understanding is that the vast majority of persons with PFO are asymptomatic, and exhibit no clinical signs of the condition, which accordingly is likely to go undiagnosed. We understand that diagnosis of an asymptomatic PFO requires performance of a specialised form of echocardiogram which can show blood passing through the patent foramen ovale into the left side of the heart. This is an expensive procedure which, in any event, may identify no greater than 50% of divers with a PFO.

Should a doctor performing a diving medical within the requirements of a particular instructor agency remain silent about the risks associated with PFO? Or should the doctor advise the candidate sufficiently concerning the latent condition to enable him or her to decide whether to undergo echocardiography? Indeed should the diving doctor recommend that the candidate undergo echocardiography?

In the event of a diving fatality following severe DCS complicated by a previously undiagnosed PFO, the diving doctor, who certified the deceased as medically fit to dive, is exposed to the risk of criminal prosecution, disciplinary proceedings before a Medical Board and civil action for damages brought by the deceased's dependents. The same risks apply if the diver survives.

It is a measure of contemporary social values that the professions are increasingly subject to legal scrutiny including claims for damages whenever and wherever there is a prospect of success. This form of litigation is gaining in popularity in Australia, the trend having drifted, with some encouragement from the legal profession, across the Pacific. Although our legal system has declined to adopt the American standard of "informed consent", which requires doctors to advise their patients fully and comprehensively of all risks, the Australian medical profession owes a duty of care to its patients. This includes providing advice commensurate with that which a reasonably prudent medical practitioner would give in the particular circumstances.

We do not believe that a diving doctor is under an obligation to recommend that prospective divers undergo echocardiography. However it is our view, having regard to what is now known about PFO, and its potential complications in cases of severe cases of DCS, that the reasonably prudent medical practitioner should, at the very least, alert the prospective diver to the existence of the latent condition, its possible consequences, the diagnostic option and its attendant risks.

It is acknowledged that there are likely to be commercial pressures upon diving doctors, not to provide such advice, or to understate the problem in order not to deter potential divers from embarking upon diving courses. Clearly the issue must be kept in prospective and scare-mongering is inappropriate.

At present it is impracticable, and clearly undesirable, to require all qualified and potential divers to undergo investigation for PFO. However, to do or say nothing will not, in our view, equate with the proper discharge of the diving doctor's professional duty to exercise the due care, skill and diligence when assessing the medical fitness of the diver or potential diver.

We advocate inclusion in the preamble to the standard diving medical form, or the handing by doctors to

candidates for diving medicals, of a notice containing a warning setting out the potential risks of diving with a PFO, and of the difficulties and risks associated with its diagnosis.

The medical knowledge against which the actions of the diving doctor will be measured by the deliberations of a court asked to determine whether a diving doctor acted with due care, skill and diligence, contains sufficient reputable and responsible research and discussion on PFO for the issues we have raised to be given urgent consideration by the medical profession and for appropriate measures to be instituted. We have prepared a further paper about the responsibilitties of doctors who do diving medicals and their duties towards their patients in warning them of the risks involved which we hope will be presented in a later issue of the SPUMS Journal.

References

1 Gorman DF and Helps SC. Foramen ovale, decompression sickness and posture for arterial gas embolism. *SPUMS J* 1989; 19 (4): 150-151
2 Davies D. Patent foramen ovale. *SPUMS J* 1989; 19 (4): 151-153
3 Editorial. *SPUMS J* 1989; 19 (4): 149 and 154

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SPUMS NOTICES

MINUTES OF SPUMS EXECUTIVE MEETING (TELECONFERENCE) MONDAY JULY 30, 1990 AT 1800 HOURS EST.

1 **Apologies**

Drs John Knight and Tony Slark.

2 **Minutes of the previous meeting**

The Minutes of the AGM and of the Executive Meetings in Palau were taken to be a true record of those meetings. Proposer Dr C Acott, seconder Dr D Davies.

3 **Business arising from the minutes**

3.1 Future AGM venues.

It was agreed that the Society is committed to The Maldives in 1991, and should return to Palau in 1993.

Discussion regarding the venue for 1992 centred on Port Douglas and in particular the Mirage Resort which would make an excellent venue. The advantage of holding a conference on the Australian mainland was noted. Provided Allways Travel can provide a costing competitive with other venues, it was decided Port Douglas should be the venue for the 1992 AGM.

3.2 Future AGM speakers

Dr Gorman informed the Executive that Dr Glen Egstrom had accepted the Society's invitation to be the Keynote Speaker at the 1991 AGM. Regrettably, the other invited speaker, Dr Peter Bennett, had to decline due to other commitments. It was felt, however, that Glen Egstrom was a speaker of sufficient calibre to ensure an excellent meeting and that his presentations will be well complemented by papers from other recognized authorities attending the conference. The subject is to be "Diving Equipment and the Diver-Equipment Interface".

Discussion turned to the Port Douglas meeting and it was agreed the subject should be"Barrier Reef Marine Ecology". Dr John Williamson was suggested as a Keynote Speaker. Dr Williamson spoke and indicated there is a large number of experts relevant to this topic in North Queensland. Dr Peter Fenner, Dr King, Dr Joe Baker of AIMS and Bob Hartwick were all mentioned. Further, it was suggested that the people of the Great Barrier Reef Marine Park Authority (GBRMPA) would be most interested in having input to the meeting.

Dr Williamson agreed to research the theme and further inform the Executive of developments.

Discussion turned to the 1993 meeting in Palau. It was quickly agreed that an excellent subject would be "Comparative Physiology", and that we should invite Dr Runciman and Dr Russell Baudinette as Keynote Speakers because of their pre-eminence in this field and the great success of previous presentations by Dr Runciman at the 1988 AGM.

With regard to venues for 1994 and 1995, it was decided to await the result of Geoff Skinner's investigations of more exotic venues.

Opinion was sought by the President of each executive member about speakers we should consider for further meetings.

Dr Davies proposed Richard Moon and re-inviting Dr Peter Bennett.

Dr Williamson added Dusty Rhodes of Thailand.

Dr Gorman proposed the Diving Inspector in