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AMALGAM FILLINGS; "SHOULD WE HAVE THEM REMOVED?"

Some patients believe that their general health will improve if they have all their old silver-mercury [amalgam] fillings removed. This advice is available from various sources, but hopefully not from the Dental Profession, because we have been advised by a scientific committee [Committee on toxicity of chemicals in food, consumer products and the environment] that they do not present a health hazard. [1997]. No research since the date of this report has implicated existing fillings in situ.

It is known that at the time of placement and removal of dental amalgam, there is a potential hazard of mercury gas being given off in the mixing process for placement, or the drilling phase of removal. This is real enough for the Committee to recommend a ban on placement during pregnancy in case inhaled mercury is absorbed into the blood and crosses the placenta to the foetus. Those most at risk would be dental staff because of the potential for repeated exposure but there is no statistical evidence to support
actual occupational risk occurrence. [See the Committee's formal Report below]

Some sources wrongly quote the condemnation of amalgam fillings by the banning of the use of mercury in several Scandinavian countries. This directive is to eliminate the incidence of mercury in the water supply and food chain and is not specifically directed at dentistry.

Our Practice philosophy in relation to silver mercury fillings.

If a silver filling has been carefully made with correct condensation, with close-fitting margins, good contacts and marginal ridges to avoid food impaction, and is well polished, we advise to leave it in place.

If an otherwise successful silver filling is visible in speech and smiling we would remove it on request and replace it with an aesthetic restoration. Amalgam has been used successfully for over a hundred years, but it definitely not tooth-coloured and we would not now place a new one in a visible position.

If a patient presented with multiple silver amalgam fillings and a general health problem, and asked to have all their amalgams removed, we would advise them not to expect health improvements as a result.
There are some exceptions to this general rule.

Some patients have had extensive allergy tests by blood and patch tests by specialist physicians and if the advice is that they are susceptible to silver mercury then removal is warranted.

One condition, Lichen Planus, shows improvement after the removal of amalgam, especially from fillings in contact with the mucosa of the cheeks, viz. fillings on the buccal or outer surfaces of the teeth.

We would not place amalgam fillings, in any position, in the mouth of an expectant woman.

We do not place amalgam fillings in new cavities. White composite fillings of quartz crystals held together with a plastic are now strong enough, and require less removal of tooth tissue.

We believe that with adequate water cooling and high speed aspiration right next to the drill we can control the release of gas during placement and removal of amalgam making both processes safe.

COMMITTEE ON TOXICITY OF CHEMICALS IN FOOD, CONSUMER PRODUCTS AND THE ENVIRONMENT.

STATEMENT ON THE TOXICITY OF DENTAL AMALGAM

Introduction

1. The Committee has been asked to advise the Medical Devices Agency on the toxicity of mercury in dental amalgam. This request was made in order to help formulate the United Kingdom's response to the report of an ad hoc group of experts established by the European Commission to consider dental amalgam within the context of the Medical Devices Directive. [1] Particular topics on which the Committee's views were sought included: the risk assessment, the risks of neurotoxicity or nephrotoxicity, the risks of amalgam use during pregnancy or in patients with renal disease, and the adequacy of the toxicological database.

Background

2. The Committee last considered the safety of dental amalgam in 1986. At that time we recognised that some mercury may be released from completed restorations but were of the opinion that the use of dental amalgam is free from risk of systemic toxicity and that only a very few cases of hypersensitivity occur.[2l

3. Recently there has been a resurgence of interest in the toxicity of mercury in dental amalgam. We have been informed that dental restorative materials, including dental amalgam, are considered to be medical devices under the terms of the Medical Devices Directive *93/42/EEC* and have seen the report of the ad hoc group established to review dental amalgam in relation to this directive.[1]

Exposure to dental amalgam and intake of mercury

4. We have been informed that the use of dental amalgam in the UK has declined. Whereas the annual placement rate in 1986 was 30 million amalgam restorations per year, the estimate for 1996 in National Health Service patients in England and Wales of 12 to 13 million restorations is considerably lower. The decline is possibly due to a decrease in the incidence of dental decay as well as a reduced usage of amalgam by dentists.

5. The Committee noted that there were problems in accurately measuring the intake of elemental mercury from amalgam fillings and that other sources of exposure, such as the diet, might result in the absorption of mercury in other chemical forms (e.g. as cations or as organo-mercury compounds). It was understood that the contribution of dietary intake to mercury exposure was of a similar order as that from amalgam fillings. It was agreed that the placement or removal of such fillings were occasions during which the greatest exposure of individuals to mercury could occur.

6. We also noted that when studies of metabolism and excretion of mercury have been carried out these were undertaken most frequently in individuals who were exposed occupationally to mercury. Such exposures might not be relevant to the individual exposed to the trace quantities (estimated as 1 to 5 micrograms (mg) per day, or in a more recent paper as 1 to 2 micro gms per day [3]) released from dental restorations *in situ.*

Toxicity of mercury to humans

7. The Committee considered the toxicity of mercury to the kidney and noted that epidemiological studies of the effects of dental amalgam on renal function have been conducted only in healthy subjects. In these individuals mercury exposure from dental amalgam was not associated with the urinary excretion of N-acetyl-p-D-glucosaminidase, which is an enzyme that is a sensitive indicator of kidney damage. The Committee concluded that, in healthy subjects, exposure to mercury from dental *amalgam* was not associated with nephrotoxicity. On the basis of the available data it was not possible to draw any conclusions about the effects of mercury from amalgam on persons with pre-existing renal disease.

8. The Committee agreed that immunologically-mediated mercury-induced glomerulonephritis (a form of kidney damage) was poorly understood and that studies in occupationally-exposed individuals indicated the existence of a possible dose-response relationship for this effect. This could be an appropriate subject for further research. In our last consideration of dental amalgam we noted the occurrence of a few cases of hypersensitivity but considered that this area did not warrant further study.

9. The Committee recognised that neurotoxicity was of potential concern. Both elemental mercury and organo-mercury compounds can contribute to this. The major source of organo-mercury compounds is the diet but the Committee noted that methylation and demethylation of mercury compounds by micro-organisms in the large bowel might occur. Evidence on the balance of these reactions is limited. The Committee accepted that exposure to mercury vapour is of greater concern for dentists and their staff than for patients.

10. The Committee noted that there was some evidence that mercury could be taken up by the foetus and placenta during pregnancy, however there was a lack of data that would determine whether the mercury was present in an unreactive, metallothionein-bound form. Apart from one study [4] which had been severely criticised,[5l and which was discounted, there was no evidence that occupational exposure to mercury during pregnancy in modern dental
practice was harmful. There is no evidence that the placement or removal of amalgam fillings during pregnancy is harmful.

Conclusions and Recommendations

11. The Committee welcomes the report [1] and appreciates the opportunity to comment on it. Although the report includes information published since the Committee last reviewed dental amalgam we *consider* that our former conclusions regarding hypersensitivity and the lack of risk of systemic toxicity remain unchanged.

12. The Committee *concluded* that nephrotoxicity was not associated with exposure of healthy subjects to mercury amalgam from dental restorations. Also, we *consider* that neurotoxicity caused by exposure to mercury vapour is a matter of more concern in the occupational setting than in dental patients.

13. We *conclude* that there is no available evidence to indicate that the placement or removal of dental amalgam fillings during pregnancy is harmful. We *are of the opinion,* however, that the toxicological and epidemiological data are inadequate to assess fully the likelihood of harm occurring in such circumstances. Until appropriate data are available we *concur* with the view that it may be prudent to avoid, where clinically reasonable, the placement or removal of amalgam fillings during pregnancy.

14. Accordingly, we *consider* that pregnant women and patients with kidney disease are groups who should be included in future studies. We *recommend* that such studies should incorporate measurements of dietary intake of the various chemical forms of mercury. Additionally *I* we *consider* that studies to elucidate the mechanism of immunologically-mediated mercury-induced glomerulonephritis should also be included in further research. Studies should be done to ascertain the kinetics of mercury in the body at low doses and verify whether the kinetics determined from occupational studies are applicable to patients with dental amalgam restorations.

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