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SURVEY ON TYPES OF DENTAL AMALGAM IN MEDICINE

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ABSTRACT

Most people recognize dental amalgams as silver fillings. Dental amalgam is a mixture of mercury, silver, tin and copper. Mercury, which makes up about 50 percent of the compound, is used to bind the metals together and to provide a strong, hard, durable filling. After years of research, mercury has been found to be the only element that will bind these metals together in such a way that can be easily manipulated into a tooth cavity.

KEYWORDS: Silver, Mercury, Amalgam

INTRODUCTION

Dental amalgam is considered a safe, affordable and durable material that has been used to restore the teeth of more than 100 million Americans. It contains a mixture of metals such as silver, copper and tin, in addition to mercury, which binds these components into a hard, stable and safe substance. Dental amalgam has been studied and reviewed extensively, and has established a record of safety and effectiveness.

Mercury in dental amalgam is not poisonous. When mercury is combined with other materials in dental amalgam, its chemical nature changes, so it is essentially harmless. The amount of mercury released in the mouth under the pressure of chewing and grinding is extremely small and no cause for alarm. In fact, it is less than what patients are exposed to in food, air and water.

Ongoing scientific studies conducted over the past 100 years continue to prove that amalgam is not harmful. Claims of diseases caused by mercury in amalgam are anecdotal, as are claims of miraculous cures achieved by removing amalgam. These claims have not been proven scientifically.

Figure 1

ALTERNATIVES TO AMALGAM

Alternatives to amalgam, such as cast gold restorations, porcelain and composite resins are more costly. Gold and porcelain restorations take longer to make and can require two dental appointments. Composite resins, or white fillings, are aesthetically appealing but require a longer time to place the restoration. It should also be known that these materials, with the exception of gold, are not as durable as amalgam.

Figure 2

Dental amalgam is a dental filling material used to fill cavities caused by tooth decay. It has been used for more than 150 years in hundreds of millions of patients around the world.

Dental amalgam is a mixture of metals, consisting of liquid (elemental) mercury and a powdered alloy composed of silver, tin, and copper. Approximately 50% of dental amalgam is elemental mercury by weight. The chemical properties of elemental mercury allow it to react with and bind together the silver/copper/tin alloy particles to form an amalgam.

Dental amalgam fillings are also known as “silver fillings” because of their silver-like appearance. Despite the name, "silver fillings" do contain elemental mercury.

When placing dental amalgam, the dentist first drills the tooth to remove the decay and then shapes the tooth cavity for placement of the amalgam filling. Next, under appropriate safety conditions, the dentist mixes the powdered alloy with the liquid mercury to form an amalgam putty. (These components are provided to the dentist in a capsule as shown in the graphic.)

Figure 3

FILLINGS (SILVER-COLORED)

Dental amalgam is made from a combination of metals that include mercury, silver, tin, and copper. Sometimes described as “silver-colored” fillings, dental amalgam has been used by dentists for more than 100 years because it lasts a long time and is less expensive than other cavity-filling materials such as tooth-colored composites or gold fillings.

Because of their durability, these silver-colored fillings are often the best choice for large cavities or those that occur in the back teeth where a lot of force is needed to chew. Amalgam hardens quickly so it is useful in areas that are difficult to keep dry during placement, such as below the gum line. Because it takes less time to place than tooth-colored fillings, amalgam is also an effective material for children and special needs people who may have a difficult time staying still during treatment.

One disadvantage of amalgam is that these types of fillings are not natural looking, especially when the filling is near the front of the mouth, where it may show when you laugh or speak. Also, to prepare the tooth, the dentist may need to remove more tooth structure to place an amalgam filling than for other types of fillings.

Dental Amalgam Safe

Although dental amalgam is a safe, commonly used dental material, you may wonder about its mercury content. It’s important to know that when combined with the other metals, it forms a safe, stable material. Be assured that credible scientific studies affirm the safety of dental amalgam. Study after study shows amalgam is safe and effective for filling cavities. The American Dental Association, U.S. Centers for Disease Control and Prevention, U. S. Food and Drug Administration and World Health Organization all agree that based on extensive scientific evidence, dental amalgam is a safe and effective cavity-filling material. The Alzheimer’s Association, American Academy of Pediatrics, Autism Society of America and National Multiple Sclerosis Society—all science-based organizations like the ADA—also say that amalgam poses no health risk.

Figure 4

There are Five Other Types of Restorative Materials for Tooth Decay

- Resin Composite
- Glass Ionomer

- Resin Ionomer
- Porcelain
- Gold Alloy

THE USE OF MERCURY IN DENTISTRY

In sixteenth and seventeenth century America, dentistry was a subspecialty of medicine. Painful or decayed teeth were either pulled or cavities were filled with molten gold – a painful and expensive procedure.

In 1833, the Crawcour brothers, who were French dentists, immigrated to the United States and introduced the use of amalgam as a dental restoration material. 3 The medical community was well aware of the toxicity of mercury. Nineteenth century hat makers were known to go insane from felting hats with a mercury solution. Lewis Carroll made that knowledge part of the popular lexicon with his nonsensical Mad Hatter in his best selling novel, Alice in Wonderland. Additionally, the poor quality of the amalgam also led to its condemnation by many medical dentists. In the 1840's these medical dentists formed the American Society of Dental Surgeons (ASDS) and required its members to sign a pledge promising to not use amalgam.

However, once amalgam was introduced in America, tradesmen, primarily barbers and blacksmiths, could easily make amalgam from filings of silver coins and other metals, using liquid mercury to amalgamate the mixture of metals, creating a soft pliable plug that could be quickly and easily tamped into a hole in a tooth. The amalgam quickly hardened into a strong resistant substance which could withstand the rigors of chewing. Amalgams were sold to the common man as an inexpensive method to save teeth and its installation was relatively painless.

Some medical dentists saw the advantages of amalgam. It was inexpensive, easy to use and broadened the potential patient base. Ultimately, dissident medical dentists and tradesmen-dentists formed a competing dental trade organization in 1859 which is now known as the American Dental Association (ADA). The ASDS faded away and with it, the vocal concerns about mercury-based dental fillings.

The use of amalgam was founded in controversy and continues to the present. Up until 1986, the ADA and its member dentists asserted that the mercury in amalgam, when combined with its constituent metals, was inert, did not expose patients to any mercury and was not a source of health harm.4 However, as early as the 1860's, medical doctors were making a link between amalgam fillings and specific health harm. A lecture by William P. Wesselhoeft, MD, Boston, MA, on his clinical experiences was written up in an 1896 edition of the International Hahnemannian Association Transactions. It included a post-lecture discussion with other doctors about their similar experiences.

The connections these doctors made between health harm and amalgams was unequivocal and included: tongue ulcers ("I firmly believe the ulcer was caused by the contact with the filling.") chronic gastritis ("The result of the removal of the fillings was a perfect, and permanent cure of his chronic gastritis."); tinnitus ("The tinnitus she says is now 'so far off' that she scarcely hears it); disfiguring eczema ("…his mother sent me this message: 'The Lord be praised that our son is again presentable through your ministrations.'"); chronic rheumatism ("I have relieved chronic rheumatism many times after having the mercurial amalgams removed, and I think this is the experience of a great many in our profession."); and, follicular pharyngitis ("…follicular pharyngitis, and many other affections of the throat, post-nasal catarrh, etc., are practically incurable until these amalgam fillings are removed.").

One theme that is common for patients with mercury amalgam poisoning is the difficulty of finding a diagnosis for their wide-ranging maladies. Medical doctors are not trained to look to dental materials as a source of health problems and dental consumers have little knowledge about the composition of fillings being placed in their mouths. Patients don't ask about them and dentists don't volunteer the information even though the doctrine of "informed consent" requires such a discussion.

A February 2006 Zog by poll on mercury amalgam dental fillings revealed that 76% of Americans are unaware that mercury is the primary component of amalgam fillings. 92% are of the opinion that dental consumers should be informed of the available alternatives.

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