DENTAL FILLING MATERIAL CHOICES

Patients have not needed to know anything about dental materials because dentists have decided for them which materials were to be used, usually based on structural criteria or cost. Because of changing paradigms, controversial issues, and my knowledge of alternative healthcare philosophies, I no longer feel it is proper or possible for me to make that choice. Being a patient in *this* practice now means you will be made aware of all known options so that you can choose the material. Please understand that only you really know what is appropriate based on expectations, healthcare philosophy, time, cost, practicality, and lifestyle, and that it is you, not I, who will live with that decision 24 hours a day, 7 days a week.

Dental Material Concepts:

1. **CONVENTIONAL:** Except in rare situations, currently used dental materials are safe in the mouth. The important criteria are how durable, natural-looking, and practical it is for the dentist and dental laboratory to use.
2. **ALLERGENIC:** Because some people have allergic reactions to certain substances, the choice of dental materials may have to be limited. Blood tests may be utilized to determine allergenic potential.
3. **TOXICITY:** Some dental materials contain toxic substances which, depending on exposure and other factors, may cause a variety of health problems from resultant dysfunction of the immune system. Non-toxic alternatives should be used to significantly decrease exposure to and accumulation of environmental toxins.
4. **INTERFERENCE FIELDS:** Some dental treatment and materials can be disruptive to the normal flow of energy through the acupuncture meridians. Eastern philosophy believes chronic disruption of energy flow causes dysfunction and resultant health problems.
5. **ELECTROGALVANISM:** Dissimilar metals in the mouth, including different formulations of the "same" metal, create microamps and millivolts of electric current which could cause oral pain, corrosion of the metal, dry mouth, unpleasant taste, erythema, and possible dysfunction of other organ systems.

METALS:

1. Amalgam filling - The most commonly used material for back teeth. It contains approximately 50% mercury, and varying amounts of silver, tin, zinc, and copper. It is the least costly and least time consuming to perform. It expands over time which sometimes causes cracks in the tooth. The controversy is that it contains mercury, a neurotoxin.
2. Galloy filling - A material containing silver, tin, copper, indium, and gallium. It is meant to be a mercury-free alternative to amalgam. Studies of gallium alloys have reported problems with corrosion, durability, tooth fracture, and tooth sensitivity and recommend it for baby teeth only.
3. Gold inlay/onlay - Used when maximum strength is desired and appearance is not a factor. There are many formulations of gold, varying from 1% to 99%. It costs approximately 3-4 times more than an amalgam and takes 2 visits.
4. Titanium inlay/onlay - Used when a gold alloy is not biocompatible, otherwise the benefits, cost, and time to perform are the same as for a gold alloy, even though it is not a precious metal. There are different purities of titanium, with grade 1 being the purest. This is the metal used in joint replacement, dental implants, and bone pins. It takes 2 visits.
5. Non-precious inlay/onlay - Used when cost is the most important factor. There are 2 basic formulations, one that contains nickel and one that is nickel-free. The controversial issue is that nickel, beryllium, and palladium are toxic and may cause health problems in some people.

SYNTHETICS:

6. Direct Composite filling - A special plastic material that bonds to tooth structure, is tooth-colored, is more easily repairable, and requires less tooth structure to be trimmed away than any other material.
7. Lab Composite inlay/onlay - Used when ideal anatomy, fit, and durability is desired, which is seldom achieved with a direct composite filling. Cost is approximately 2-3 times that of an amalgam filling and takes 2 visits.
8. Ceramic Optimized Polymer inlay/onlay - Used when the risk of porcelain fractures and wearing down of opposing teeth is to be avoided. Not quite as wear resistant or esthetic as porcelain, but very acceptable.
9. Porcelain inlay/onlay - Used when cosmetics and wear resistance is most important.

(over)

General Comments:

Composite:

- When used in back chewing teeth, it is significantly more difficult and time-consuming to place than amalgam, and therefore more expensive, from 50-100% more than amalgam.
- They *may* be less durable than amalgam *if* the filling is large, but it may not be clinically significant.
- They are more natural-looking, require less tooth reduction, and are bonded in place for a better seal.
- Some brands of composite are less biocompatible than others because of the amount of iron oxide, aluminum oxide, barium, and other unique materials in them. The only exception is Holistore, which has no metal oxides, but as a result is quite white in color and significantly less durable.
- Direct composites (dentist made) occasionally cause tiny hairline cracks in the tooth during the hardening process, however these cracks rarely present a problem.
- Indirect composites (lab made) are stronger than direct composites, do not crack during the hardening process, but are more expensive.
- For a few weeks or months, they may be more sensitive to cold and chewing than other filling materials.

Porcelain:

- It is more natural-looking than composite. Many formulations are harder than tooth enamel and as a result, can wear away the teeth it comes in contact with. However, there are newer “soft” porcelains which have the same hardness as tooth enamel.
- All porcelains contain large amounts of metal oxides, especially aluminum oxide. The exception is unshaded belleglass, but be aware it is weaker and not very natural-looking.
- The controversy is that it contains more metal oxides than composite.

Metal:

- Most “gold” alloys used today contain from 1 - 40% gold. Higher gold content alloys increase the cost. Typically, I use 71% or 87% gold alloys in my practice.
- One perspective is that all metals, even non-allergenic or non-toxic metals, are electrically disruptive and therefore should never be used in the body. Still other experts think the use of high quality metals like high content gold or titanium is acceptable *but only if* one brand and formulation is used for the entire mouth.
- Because of contractual language, statistics, and lack of knowledge, use of titanium, high content gold, and composite for crowns, bridges, or fillings will probably result in lessened or no insurance benefits, even though the time, cost, and effort in making them is the same or more as for standard gold alloy and porcelain materials.

General:

- Lab inlays and onlays (gold, titanium, porcelain, or composite), require more tooth structure to be trimmed away than amalgam and direct composites, and take 2 appointments rather than 1 appointment.

- Read the handouts on DENTAL MATERIALS BIOCOMPATIBILITY and AMALGAM CONTROVERSY for additional related information on dental materials.

Ronald L. King, DDS 6100 Excelsior Blvd., Suite East St. Louis Park, MN 55416
Phone: 952-929-4545 FAX: 952-929-4592 e-mail: kingtooth@juno.com Web site: www.kingtooth.com