Class 1 Cavities:

Class 1: cavities which begin in structural defects (pits and fissures that occasionally occur on the occlusal surfaces of molar and premolars and other teeth).

Cavities and restorations of class 1 cavity preparation are of 3 types:

1. Occlusal surfaces of molars and premolars.

2. Occlusal two thirds of the buccal and lingual surfaces of molars and premolars.

3. Lingual surfaces of maxillary incisors.

So basically, any pit or fissure caries is a class 1.

A typical class 1 has 5 surfaces:

1. Facial surface.

2. Lingual surface.

3. Mesial surface.

4. Distal surface.

5. Pulpal walls.

- Pits and fissures caries have the highest prevalence of all dental caries. Why?

Because the debris and bacteria are protected in that area, since the bristles of the toothbrush don’t fit.

So, what is the best approach to protect the teeth against the dental caries?

SEALING pits and fissures just after the eruption of the tooth.

What materials can we use for a class 1? Amalgam, composite, indirect restorative materials (gold and ceramic onlays)

We can use gold as a direct restorative material since it is ductile and when provided in sheets, it can be condensed in the cavity and in the end will be solid.

Classical indications:

1. Moderate / large cavities.

2. Restorations that are not in highly esthetic areas of the mouth.

3. Restorations that have heavy occlusal contacts.

4. Restorations that cannot be well isolated.

5. Restorations that extend on to the root surface.

6. Abutment teeth for a removable partial denture in the disease control stage in the treatment plan.

\* Composites of today can be used in heavy occlusion because the work resistance of it is much larger (better) than the composites of before.

\* The modern dentine bonding agents overcome the problem of the extension of the cavity (to the root surface) that prevented us from using composites instead of amalgams because of the bonding.

\* Any treatment plan is two sections:

1- Disease control and rehabilitation phase.

 Disease control is the elimination of the oral diseases: dental caries and periodontal diseases.

2- Restorative phase: restore aesthetic and function.

So, in the disease control we can use amalgam restorations as part of this treatment.

Contraindications:

1. When aesthetics are of a prime importance.

2. Small cavities that could be very well isolated. Why?

Because it's not conservative, if we have a small cavity, we serve the patient better by using a material like composite where the cavity preparation is minimal.

3. If the patient has a problem (allergy) with any component of amalgam material. (Which is very rare by the way –to have an allergy to a metal-)

\* The most allergic metal is NICKEL which was used in dental alloys then it was limited.

4. Debatable issues according to the politics of the country due to the mercury toxicity:

- Children under 12.

- Lactating women.

-pregnant women.

\* THE BEST INSULATOR TO THE PULP IS THE DENTINE.

\* The IDEAL outline consists of the two resistance form principles that are bases for all occlusal cavities:

1. Placement of the margins in areas that are sound and subjected to minimal stress. Which means: don't let the margins be in the fissure area.

2. Preservation of the tooth structure, don't extend your cavity too far. (Don’t overdo it) which means: extend it to the areas that are smooth and resistant (minimal occlusal forces).

\*Try to preserve the marginal ridge to maintain the strength of the tooth.

Even if the fissure is extending closer to the marginal ridge, we sacrifice one principal of tooth preparation which is the retention; we tilt the bur in a direction that will give us a wall diverging occlusaly, or straight sometimes to preserve the dentinal support to the marginal ridge. We lost the retention in that area, it's okay because actually I don't need EVERY bit of the cavity to be retentive. There are other sites of the cavity that provide retention and resistance form we need.

-minimal depth for dental amalgam: 1.5-2mm.

When preparing a cavity, we usually start distally or with the most carious part.

The instrument should be operated before touching the tooth

\*the high-speed hand piece has a speed of 300,000 RPM (revolution per minute) or more.

Our aim is to reach an ideal enamel (cavity) margin; a margin that is formed of full-length enamel prisms with partial length enamel prisms supported by dentine. We don't want unsupported enamel margins; we don't mind how much are the partial-length enamel rods or how much the full-length are, provided that both are supported by dentine.

Resistance form is provided by sufficient areas of relatively flat pulpal floor in sound tooth structure.

-Minimal extension of the external walls not to weaken the tooth.

-Strong ideal enamel margins.

-Sufficient depth to resorb in a liquid thickness of the restoration.

-Retention form is provided by the occlusal convergence of all or part of the cavity walls.