

Let's Make Another Restorative Available

-The Direct Restorative Gold-

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When called upon to correct a home plumbing or electrical problem it is necessary to have the right equipment. Of greater significance is to have the knowledge and experience which will relate to the problem and help resolve it.

There are times when the problem presented by a patient would best be remedied by using direct gold; however, because of inadequate knowledge, skill and equipment that option is not considered. This gives rise to a factor of practice which states that it is available for delivery only if it happens to be on the shelf.

This presentation will discuss the advantages, disadvantages and indications for using direct filling golds. Suggestions will also be advanced to help the practitioner add direct restorative golds to the practice.

ADVANTAGES AND DISADVANTAGES OF DIRECT GOLDS

The trend in recent years is to treat a greater number of patients who have fewer and smaller carious lesions as compared to a few years ago. These patients are usually in a younger age group with better dental information, oral habits and have benefitted from the advantages of fluoride.

Most of these patients are being treated with dental amalgams or resins because the dentist feels comfortable with these materials. From a clinical perspective, let us consider the success and lasting qualities of these materials. Fifteen years from an amalgam restoration and five years from a well-placed resin or silicate material is considered successful (Fig. 1). As the restorations are replaced, they become larger and move away from the conservative outline.

The dentist should consider direct gold as an option, because it has an excellent longevity record when well placed. Other advantages of the direct gold:¹

1. Does not easily tarnish or corrode in the mouth.
2. Is insoluble and has a thermal expansion similar to that of dentin.



Figure 1. A, Class V alloy restoration with gross marginal decay.

3. The cavity preparation is atraumatic to the dental pulp and supporting structures. Figure 2 shows the conservative outline forms of two typical direct gold preparations.

4. There is good adaptation of the gold to the walls and margins, which discourages discoloration.

5. Cementing medium is not used for retention of the restoration, so is completed in one appointment.

6. Surface smoothness discourages plaque formation more effectively than other materials.

Disadvantages of Direct Golds

1. The yellow color is objectionable to many patients.

2. Thermal conductivity may be a problem in the newly restored tooth which is reduced in a few weeks with the formation of secondary dentin.

3. The manipulation of direct gold is considered too difficult.

CASE SELECTION FOR THE DIRECT GOLD RESTORATION

Case selection is significant in determining the success to be obtained with use of the direct gold restorations. The following are important factors to consider when choosing to do a direct gold restoration:

ESTHETICS: The restoration must be esthetically acceptable to the patient, which is not as restrictive as frequently indicated. Figure 3 shows an esthetically accepted Class III direct gold restoration.

SIZE OF LESION: This is limited by the time and skill required to place the restoration.

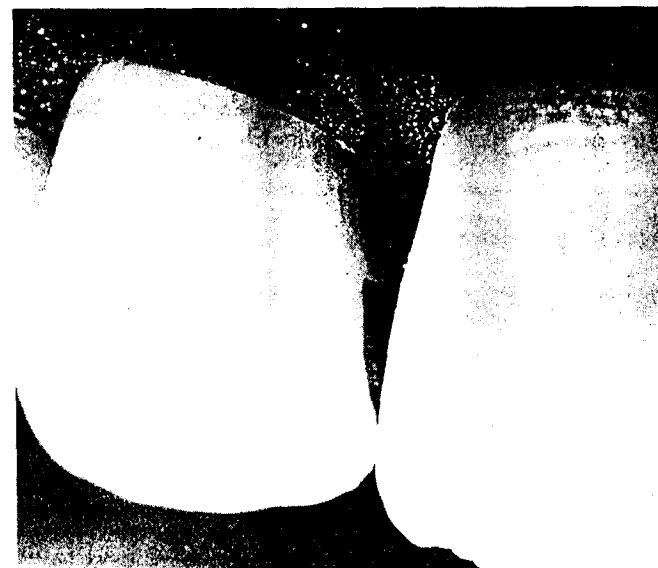
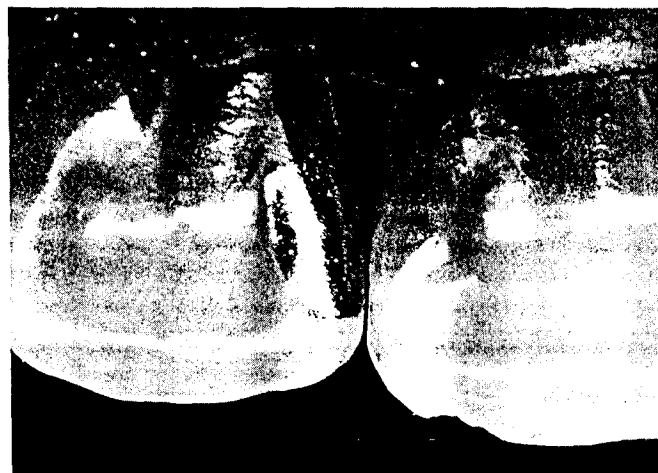


Figure 3. A, Lingual view of restored Class III with direct gold. B, Labial view shows esthetically accepted restoration.

ISOLATION: Complete convenience and isolation of the tooth needing treatment is required and is illustrated in Figure 4.

STRESS BEARING AREAS: The physical properties of the direct golds preclude placement where heavy occlusal stresses occur.

PERIODONTAL CONDITION OF THE TEETH:

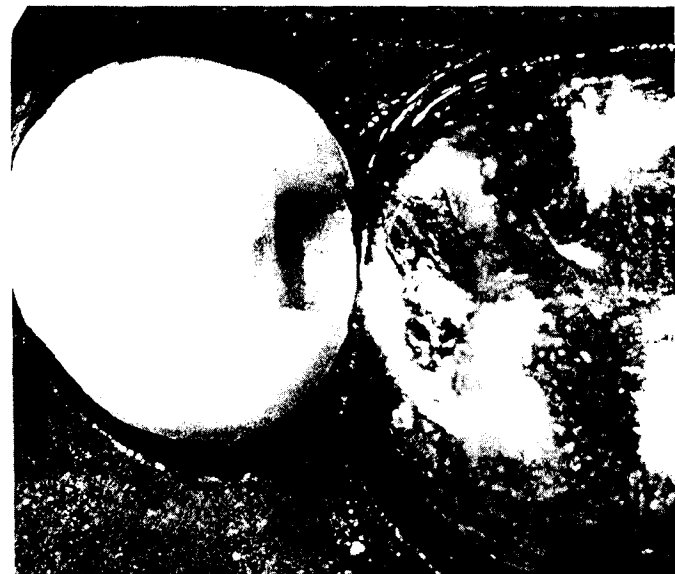


Figure 2. A, Conservative Class II direct gold preparation. B, Typical Class V outline form.

TYPES OF DIRECT GOLDS

The most common forms of direct gold are gold foil, mat gold and powdered gold (Goldent and Electraloy*). These golds can be used alone or in combinations. A five-year study was conducted that compared the physical properties (as tested in the laboratory) of four forms of pure gold with the clinical performance of these same forms of gold. The results suggested that the selection of any combination of the direct golds tested would produce an acceptable restoration.² This study emphasizes the importance of technique and proper operating procedures of the dentist, rather than the type of direct gold selected. The following articles discuss the handling properties and manipulative procedures of the direct gold.³⁻⁶

*Goldent and Electraloy, Williams Gold Refining Co., Inc., Buffalo, NY.

he teeth must be stable and in good health.

PATIENTS ATTITUDE, ORAL HABITS AND ECONOMIC SITUATION: These must be compatible with the time and energy which will be required.



Figure 4. Good access and proper isolation of Class V lesion.

PRIMARY LOCATION FOR DIRECT GOLD

Being familiar with the primary locations for direct gold is helpful in case selection. The following are locations where most direct golds are placed:

1. Defective pits and fissures (Fig. 5).
2. Small proximal lesions on anterior teeth and selected premolars (Fig. 6).
3. Erosion, abrasion, or caries in the gingival region of anterior and premolar teeth, as shown in Figures 7 and 8.
4. Incisal cusp tips that have exhibited wear through the enamel.
5. To repair accidental or intentional openings in a crown.
6. Margin repair of a casting is shown in Figure 9. Figure 10 which illustrates the restoring of an access opening following endodontics is another location for placing direct golds.

OVERCOMING RESISTANCE TO DIRECT GOLD

A clinical survey asking the practicality of compacted gold restorations, indicated that a large majority of those responding gave discouraging answers. The answers were based on patient resistance and lack of training and knowledge.⁷

Some of the reasons which are used to justify not using direct golds include the frustration of the rubber dam. Placing direct gold is time consuming and requires tedious attention to detail. It becomes emotionally connected to the state board examination which many dentists try to forget. They didn't re-

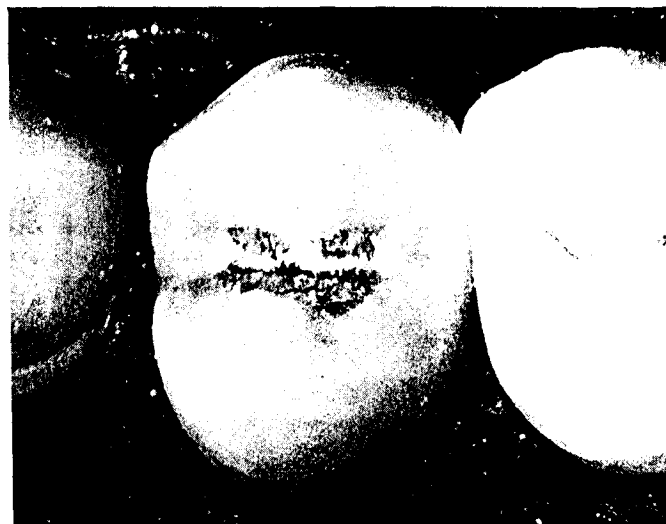
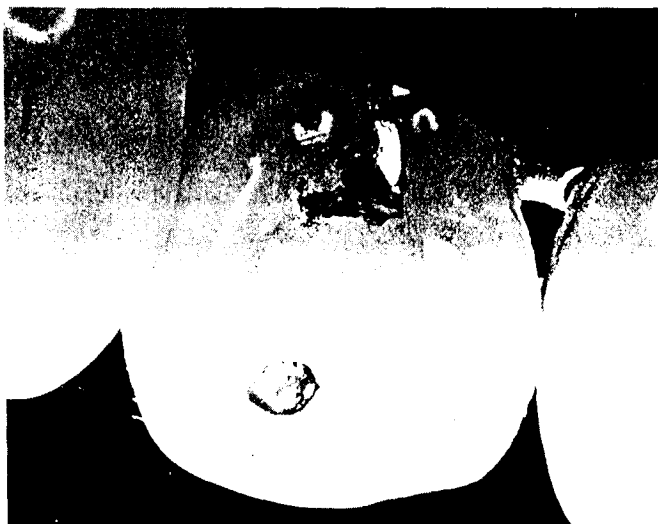


Figure 5. A, Use of direct gold to restore lingual pits. B, Conservative Class I restoration.

ceive enough instruction at school and do not have the proper instruments.

The negative factors presented have logical and positive responses. The utilization of the rubber dam has increased into all of operative dentistry because it does provide convenient operating conditions which are free of saliva. Dental assistants are very effective during the placement of the rubber dam and the skill needed to place it is easily developed. The following articles are helpful as background for the rubber dam.^{4, 8-11} The required knowledge leading to using direct gold is available in the literature.^{1, 4, 12-16} The additional instruments needed to make the preparation, place and finish the gold are easily available through suppliers and manufacturers. An exception to this is if a mechanical device is preferred to do the condensing of gold. This would be the leading item of expense. Other selected items include an alcohol burner and a fine nichrome wire to carry the gold through the flame and to the preparation. If placing interproximal restorations,

good separators are required which are now available through a new source.* Eighteen inch finishing strips** for interproximal restorations and an assortment of small disks complete the equipment needs.

If reticent to do direct gold restorations, do some practice work on a typodont or extracted teeth. A good answer for this problem is to become a member of a study club where clinical work is expected. This provides good professional stimulus and support as well as expanding the personal social framework. Clinical participation on a long-term basis represents an ideal way for a clinician to expand his level of ability and knowledge.



Figure 6. A, Class III direct gold restoration. B, Small distal lesion on bicuspid restored with direct gold.

OUTLINE OF TECHNICAL PROCEDURES

Some find it helpful to develop a cook-book approach to a procedure which is understood by both the operator and the assistant. A Class V direct gold restoration is given as an example of this approach.¹⁷

*Almore International, Inc., Portland, Oregon 97225

**Moyco, J. Bird Co., Inc., Philadelphia, PA

Adequate anesthesia: long term procedures—gingival anesthesia also important.

Reflect gingival tissues with cord or blunt instrument to relax circular fibers.

Punch rubber dam hole for tooth being restored to the facial for adequate interproximal rubber.

Isolate sufficient number of teeth for good access and visibility.

Check No. 212 clamp and make beak adjustments so it fits properly.

Apply clamp and position facial beak 1 mm from gingival wall of cavity preparation.

Use compound to secure clamp.

Outline tooth preparation with sharp pencil.

Establish gingival wall — width of No. 212 beaks — 1 mm for ideal depth.



Figure 7. A, Gingival erosion in bicuspid. B, Restored with direct gold.

Use bur to establish outline form — refine with hand instruments — disc occlusal margin.

Copalite the preparation if desired.

Alcohol lamp — trim wick so clean and pointed — light flame early and don't touch with match.

Proper annealing — hold pellet in flame until a color change is observed.

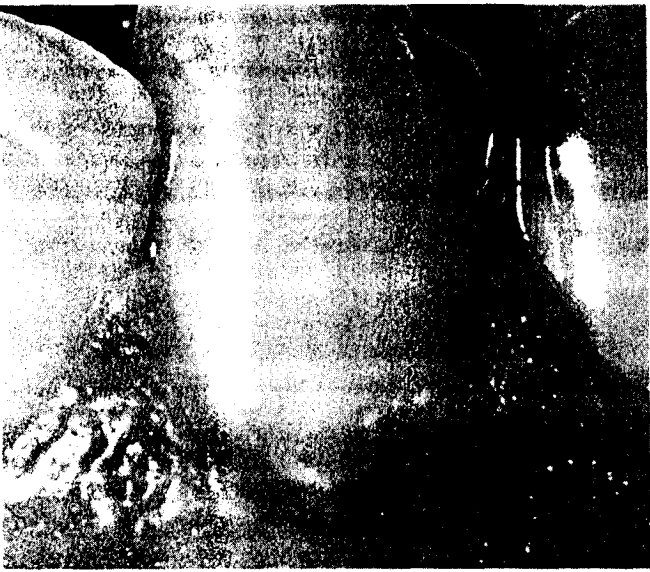


Figure 8. A, Gingival decay on lower cuspid. B, Restored with direct gold.

Use large or multiple pellets to start the insertion. Condensation – spread out the pellets – step the condenser – bank the walls and keep margins clear until final layer – use rectangular points near the surface – do not grossly overbuild the contour. Finishing – burnish – do any gross contouring with lubricated disks – reburnish – do final contouring with hand instruments (Spratley finishers) – can use back of gold knife as push instrument. Polishing – fine disks with lubricant – shofu points and cups – dry fine pumice and prophy cup – tin oxide/alcohol and prophy cup.

SUMMARY

Consider the direct gold restoration as a viable restorative option which does not make it necessary to begin with difficult restorations. Confidence can be built by beginning with occlusal or lingual pits, crown repairs and correction of margins. As confidence increases, then it is logical to go to the more

difficult applications. It is the same as beginning with the amalgam restorations by starting with the simple and evolving toward the more complex.

Direct gold has well documented ability regarding its high level of clinical performance when used within material and operator limits. Direct gold parallels the history of operative dentistry. When the option of using direct gold is feasible, it means that the shelf contains yet another option just waiting to be delivered.



Figure 9. A, Open margin in incisal region of a casting. B, Repair of marginal defect using direct gold.

The views expressed are those of the author and do not necessarily reflect the views of the Air University, the United States Air Force, or the Department of Defense.

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