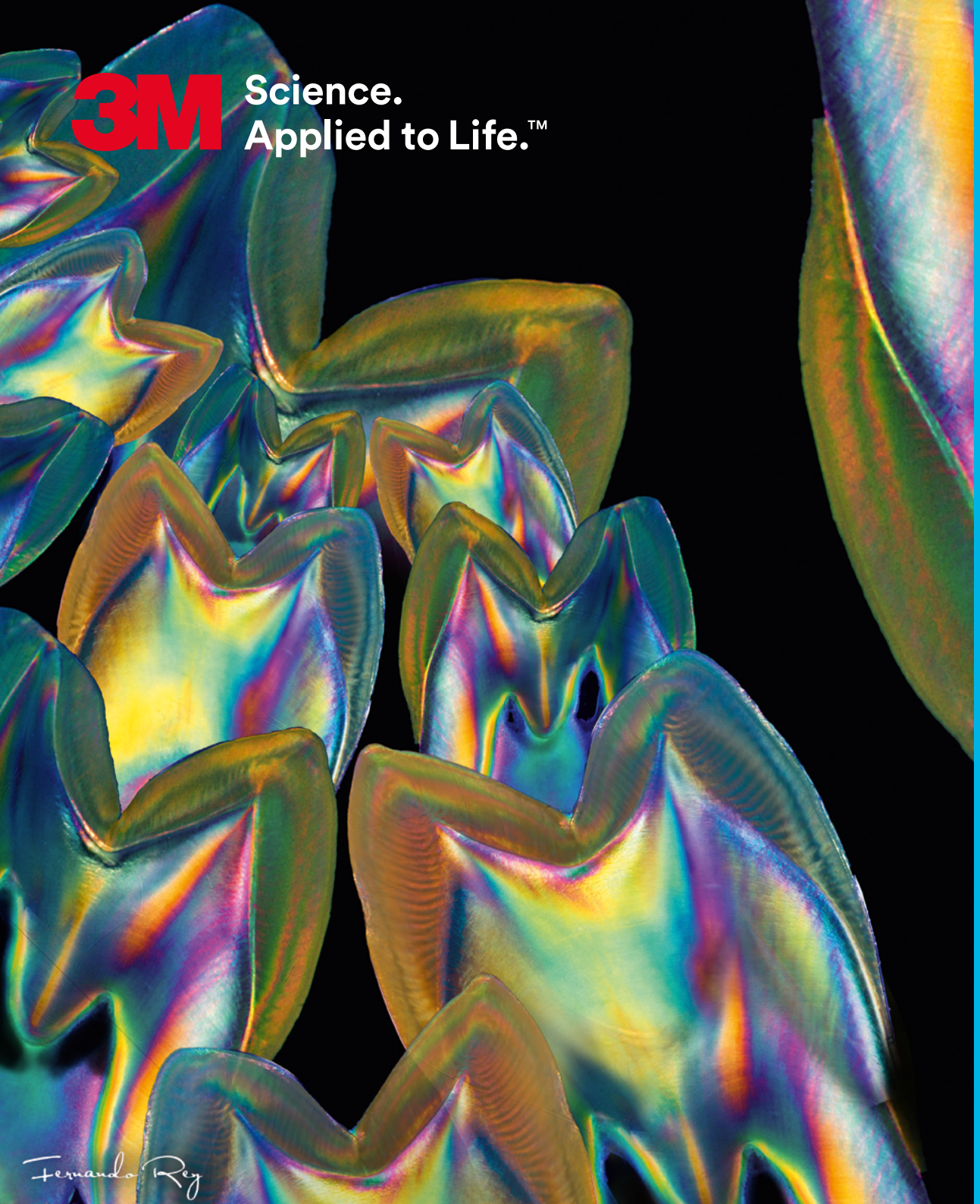

3M℠ Health Care Academy

Maintenance

Success Simplified

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Success Simplified

Consistent quality enabled by simplification and standardization

Success Simplified was created to help dental professionals find strategies that bring efficiency, reliability and predictability into prosthodontics workflows. This program was initiated by 3M and a group of experts from the clinical and scientific arena. It addresses the increasing complexity in the dental market with clinical guidelines aiming at simplification and standardization of the 7 main procedure steps. The objective of Success Simplified is to give clinicians an orientation on indication-specific material selection and tips for their efficient and successful use.

The recommendations are based on 3 basic rules:

1. **Select the simplest possible way that ensures reliable results**
2. **Be as minimally invasive as possible**
3. **Ensure cost-efficiency for the dentist and the patient**

Identify and remove process defects

Reduce complexity to a manageable level

Maintenance

Long-term success of indirect restorations is not only dependent on the right decisions and a proper execution of procedures during treatment, but also on suitable measures taken in the post-treatment phase. Preventive measures include the development of good oral hygiene practices at home and a regular recall schedule in the dental office. Treatment measures should be taken when small defects become apparent including polishing and repair with composite resin. The recommended clinical protocols may be different depending on the restorative material in use and the type as well as the size of the defect. This section gives guidance on how to proceed in specific clinical situations.

Oral hygiene practices

Medium and long-term studies show that ceramic restorations are a forgiving treatment option for patients struggling with oral hygiene. Still, it is essential that patients adhere to the recommended techniques of regular brushing and flossing to prevent early aging of the restoration and to maintain its quality. In addition, patients should be encouraged by the clinical staff to attend dental recall and professional tooth-cleaning appointments once every six to twelve months. During the recall appointment, the clinician can evaluate the oral hygiene status and the quality of the existing restorations besides hard and soft tissue conditions. Based on the findings, the need for interventional measures is assessed.

While at the moment, the decisions are usually based on a clinical examination, digital technologies are already available that enable clinicians to monitor restorations over time. By taking an intraoral scan at every recall and superimposing the different data sets, it is possible to detect small changes in the soft tissue, the restoration and the adjacent or opposing teeth. This allows clinicians to intervene at an early stage before clinical problems are present.

Professional tooth cleaning

Professional tooth cleaning is an essential part of every recall. In this context, care should be taken, not to harm the restoration and to minimize the risk for chipping or fractures. Clinicians should only carry out mechanical interventions such as scaling and polishing in absence of inflammation and plaque.

The following protocol is recommended by the experts:

- Removal of calculus or cement excesses with a curette or scaler in gentle tactile movements parallel to the gingiva (movement in root-crown direction might cause chipping of ceramic restoration margins)
- Supra- and subgingival plaque and stain removal using air-polishing with a prophy powder of low abrasiveness (e.g. 3M™ Clinpro™ Glycine Prophy Powder)

Instruments and materials not recommended for patients with ceramic restorations are

- Sonic or ultrasonic scalers, which might cause chipping or fracture
- Abrasive air-polishing powder (e.g. sodium bicarbonate), as it tends to roughen the surface and increases the staining potential

How to remove marginal discoloration

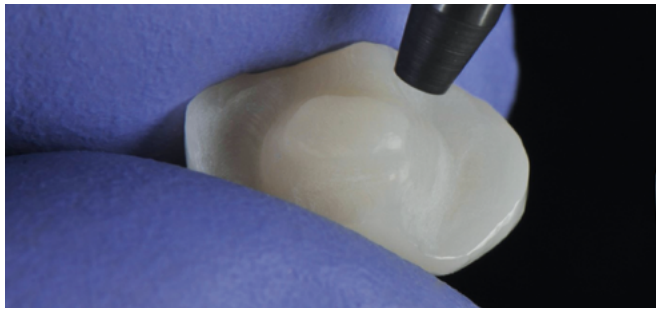
Marginal staining is a clinical sign of microleakage. As soon as some discoloration starts to appear at the margin, the area should be smoothened to restore the esthetic appearance and prevent progression of the phenomenon. For this purpose, the clinician should expose the margin and make the area to be polished accessible by placing a retraction cord or paste. Afterwards, a ceramic polishing rubber point may be used to polish the margins. If polishing paste is applied, an extra fine aluminum oxide paste should be selected. It is possible to protect the gingiva with a composite spatula during polishing. Afterwards, the retraction cord is carefully removed and the area is rinsed with water to clean the area from debris and excess paste.

Rubber polishing point for ceramic restorations.

Repair of ceramic restorations

Common complications that occur with indirect restorations include chipping, fracture, post-bonding cracks and debondings. In many cases, intraoral repair of the affected restorations is possible. All repair or rebonding procedures strictly require thorough cleaning of the restorative material and roughening of the surface. Sandblasting is the most common procedure used in this context.

Fractured crown. In this case, there is no getting around replacement.



Sandblasting is not only a recommended pre-treatment of zirconia and resin-based restorations prior to their placement, but also used intraorally to provide a favorable surface for bonding in the context of repair. (Images courtesy of Prof. Paulo Monteiro)

When chipping occurs, the size and the esthetic impact of the defect determine if polishing is sufficient or repair necessary. Small chipping defects with no metal frameworks showing through may be polished. Medium and large defects usually require repair. Repair procedures differ slightly depending on the restorative material in use. The decision criteria are summarized in Table 1.

Decision criteria and distinctive factors guiding procedure choice

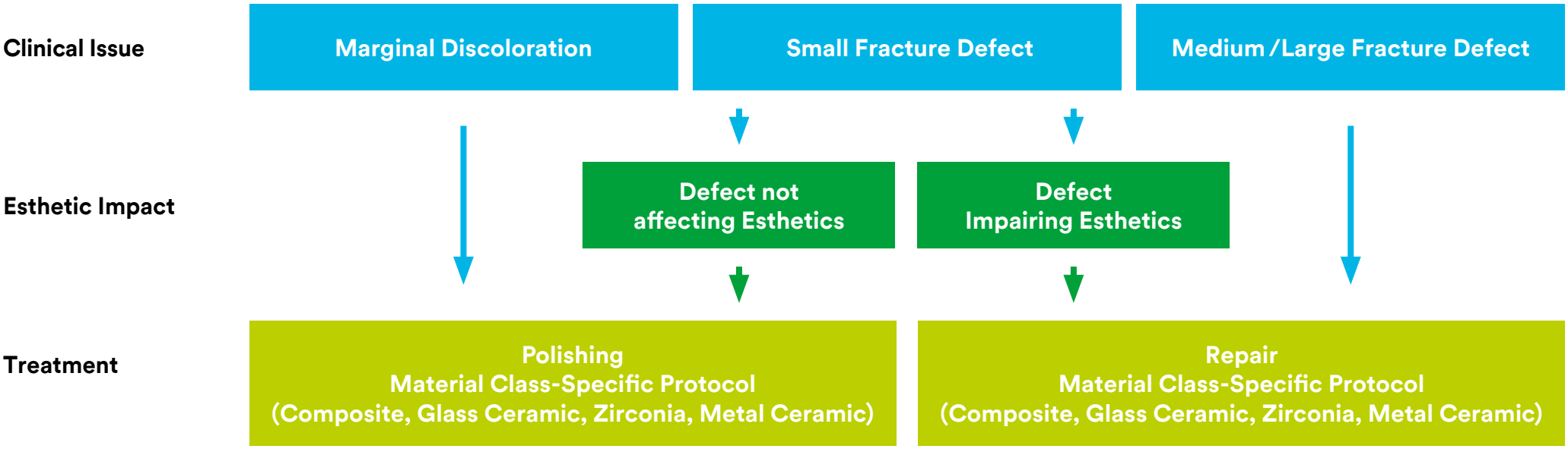


Table 1: Polishing or repair? Criteria for decision-making.

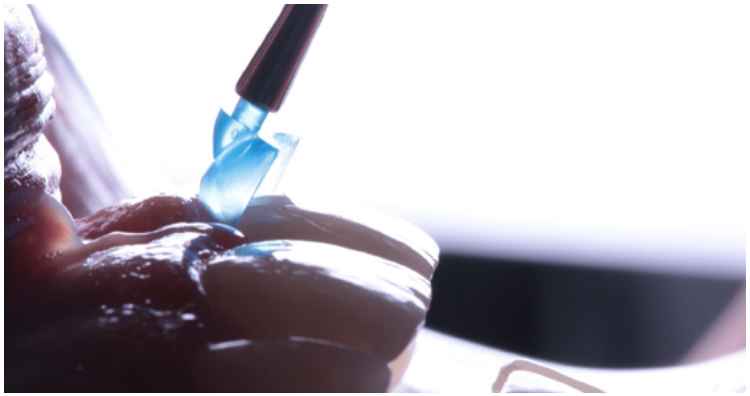
The polishing procedure in case of chipping is similar to that described for removal of marginal staining. If the defect is located at the restoration margin and close to the soft tissue, the area needs to be exposed with retraction paste or a retraction cord. A ceramic polishing rubber point and extra fine polishing paste are suitable for polishing. Finally, thorough rinsing and cleaning is important.

Selected parameters

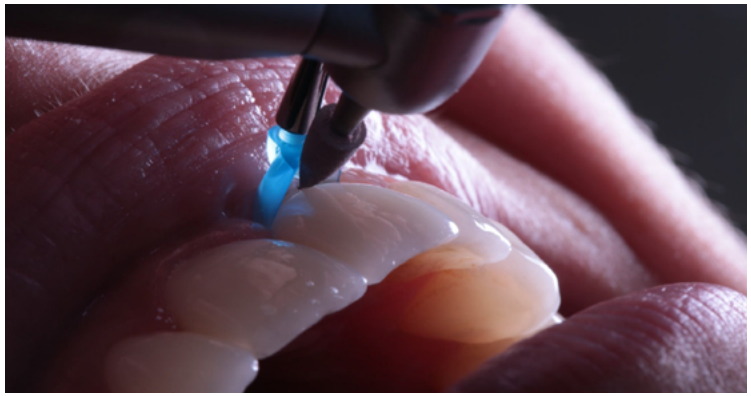
Marginal Discoloration

Polishing

Case 1: Polishing

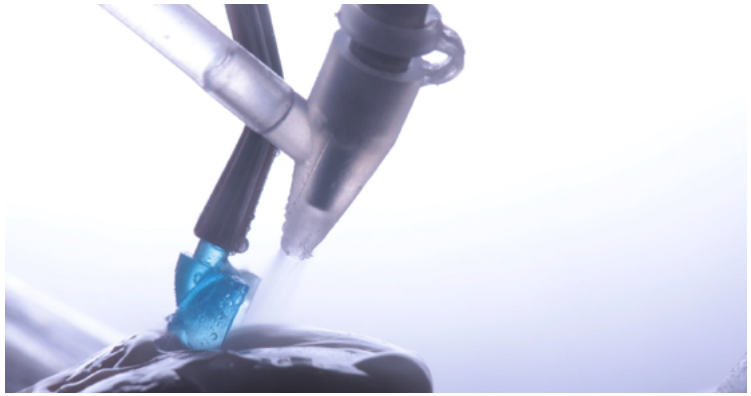


1. Expose the margins by placing a retraction cord or paste



2. Protect the gingiva with a composite spatula during polishing

3. Polish the margins with an adequate polish rubber point



4. Rinse with water to clean the area from debris and excess paste

Images courtesy of Prof. Paulo Monteiro

Clinical Issue
Treatment

Selected parameters

Medium /Large Fracture Defect

Repair

Case 2: Repair

A repair procedure of a ceramic restoration with a medium-sized to large defect should be carried out as follows:

1. Shade selection
2. Isolation of the affected tooth with rubber dam
3. Use a fine-grit diamond at the margins to be repaired under water cooling and create a bevel*
4. Sandblasting of the chipped area and the margins aluminum oxide 30-50 µm, max 2 bar, 90° angle
5. Rinsing with water and drying
6. MDP primer for metal/zirconia, silane for glass ceramics according to manufacturer's IFU**
7. Application of adhesive as recommended by the manufacturer
8. Application of the composite resin and polishing

Clinical Issue
Treatment

* Glass Ceramics ONLY – not zirconia
** If 3M™ Scotchbond™ Universal Plus is used, no separate primer is needed

Images courtesy of Prof. Paulo Monteiro

More information

3M.co.uk/ Success-Simplified

Training and education

Step-by-step videos

Product information

3M Brain Floss Blog

Clinical case examples

Educational articles

Conclusion

The recommended cleaning and repair protocols help to maintain a high quality of indirect restorations over time, which may lead to an extended life span of the restoration and the need for fewer replacements. This, in turn, serves the ultimate goal of preserving as much natural tooth structure as possible and enables the clinician to effectively prevent tooth loss in the long term.

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