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Direct Composite Resin Finishing & Polishing Technique

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Finishing and polishing is the last step of direct composite resin restorations and is critical for the long term success of the restorations. The surface finish of restoration has implications on oral health, function and aesthetics. Residual surface roughness associated with improper finishing and polishing of the dental restorations can result in clinical problems for both patient and dentist. They include excessive plaque accumulation, gingival irritation, increased surface staining and poor or compromised aesthetics of the restored teeth.

There are basically three stapes in finishing and polishing of direct composite resin.

1. Contouring: In this step the restoration is grossly reduced for the reproduction of the natural shape, size, grooves and other details of the tooth form. Re-establishing contact with adjacent and opposing teeth to a normal and functional form is achieved in this step.
2. Finishing: This step establish an even, well adapted junction between the tooth surface and the restoration and also includes necessary minor adjustments to achieve natural surface details like texture, grooves, pit etc.
3. Polishing: This step smoothens restorations to an enamel-like luster. For clinical convenience this process can be divided into three steps:
 - a. Pre-polishing – Removing the remaining surface scratches from the finishing process
 - b. Polishing – Achieving a blemish-free and smooth with no visible scratches
 - c. Super-polishing – Creating enamel-like luster.

Finishing & Polishing Instruments

A variety of instruments are commonly used for finishing and polishing tooth-colored restorative materials. They include carbide finishing burs, diamonds finishing burs, abrasive impregnated rubber cups and points, aluminum oxide coated abrasive discs, abrasive strips and polishing paste. The surface roughness associated with the use of individual instruments is material dependant.

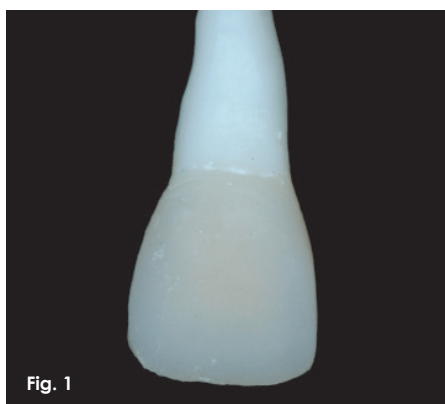


Fig. 1 - A sample tooth of composite resin(Giomer aesthetic restorative material Shofu, Inc, Japan) The root portion was restored with bleach white and the crown with A3 dentin and Inc enamel layer (Shofu, Inc, Japan) . Gross trimming of the sample tooth to develop outline form was completed using diamond burs (Direct Cosmetic Restorative Kit, Shofu, Inc, Japan)

Fig. 2 - Finishing and polishing materials used to complete the sample tooth case in this article

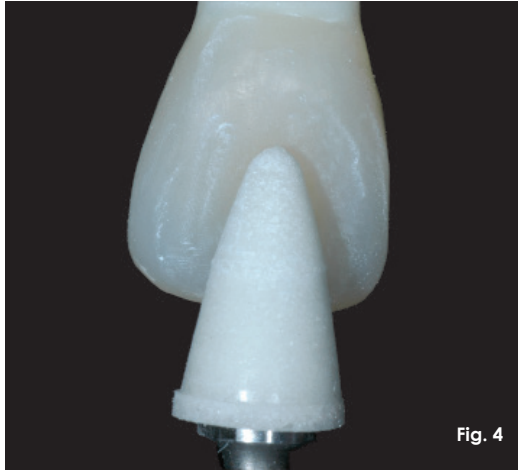
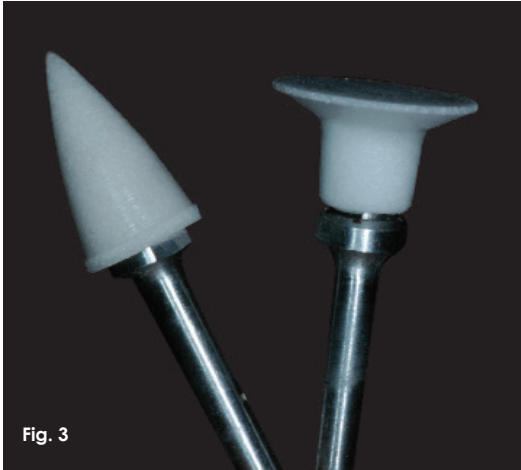


Fig. 3 - One Gloss
- Aluminum oxide
impregnated finishing
and polishing items

Fig. 4 - Finishing of labial
surface with light force
and slow speed using One
Gloss finishing & Polishing
item

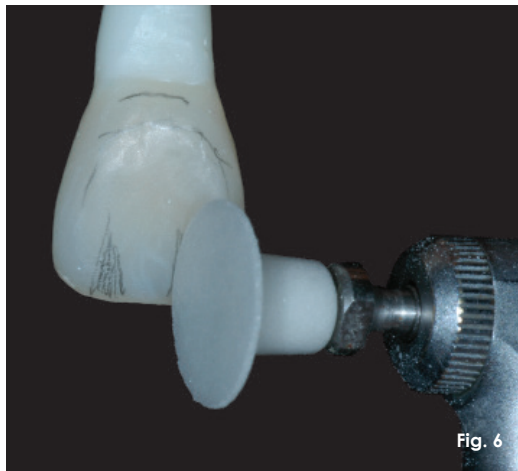
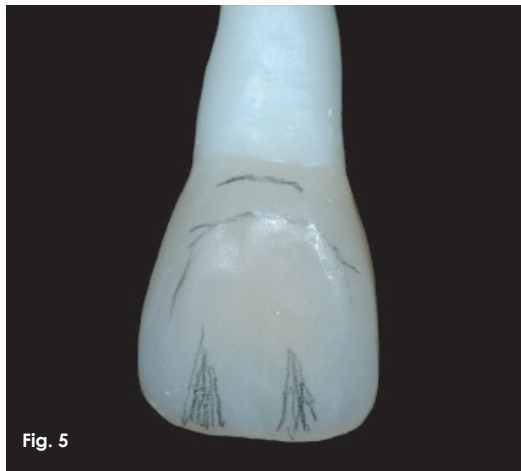


Fig. 5 - Outline marking
of proximal line angles
(primary anatomy) and
incisal surface lobe using
sharp pencil

Fig. 6 - Creating incisal
lobes using one gloss
wheel

Fig. 7 - Creating cervical
line angles using One Gloss
wheel

Fig. 8 - Labial view after
finishing with One Gloss

Fig. 9 - Mesio-labial view
after finishing with One
Gloss close view .

Fig. 10 - Checking surface
texture created after
finishing step using
articulating paper

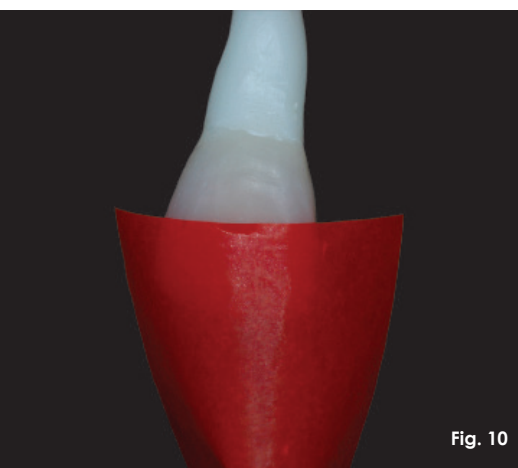
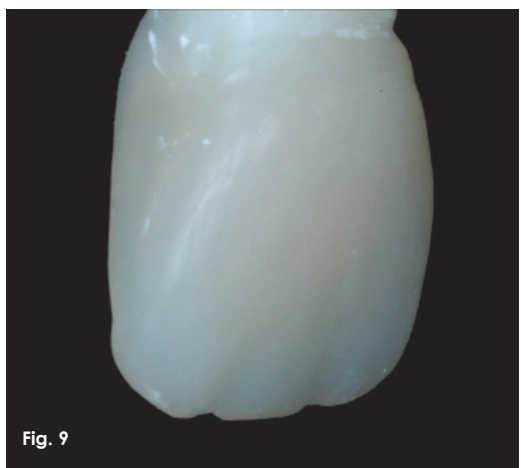
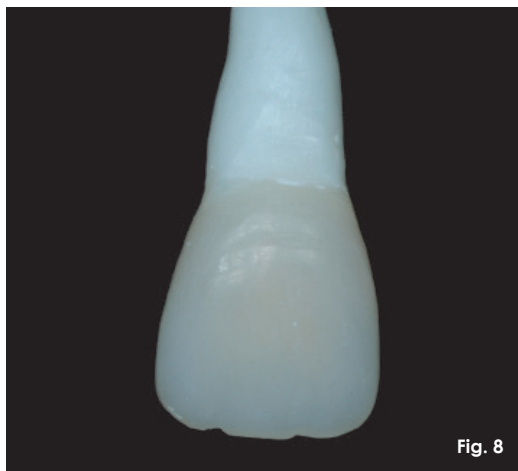


Fig. 11 - Note surface texture after completion of finishing steps

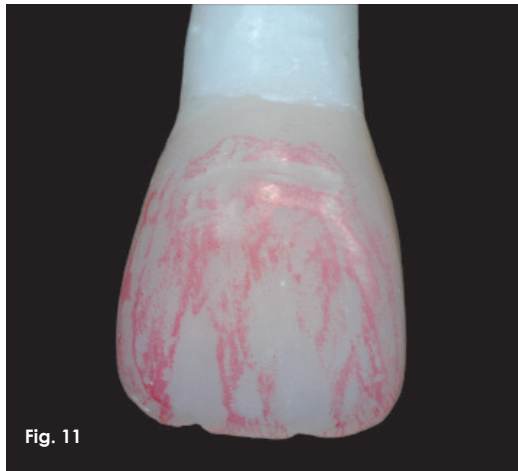


Fig. 11

Fig. 12 - Enhancing labial surface depression using One Gloss **Fig. 13** - Note reverse V shaped labial surface depression crated by fine touch up with One Gloss



Fig. 12

Fig. 14 - Pre-polishing of tooth surfaces using composite polisher to smoothen the surface. This step is very important to achieve scratches free surface ready for polishing steps



Fig. 13

Fig. 15 - Smooth and scratches free labial surface after pre-polishing with composite polisher. Note micro surface texture maintained after pre-polishing steps

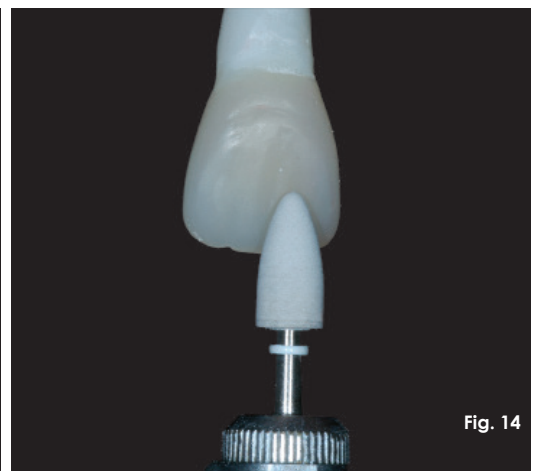


Fig. 14

Fig. 16 - Mesio- Labial view after pre-polishing step



Fig. 15

Fig. 17 - Super Snap X-trem finishing & Polishing Green discs for polishing

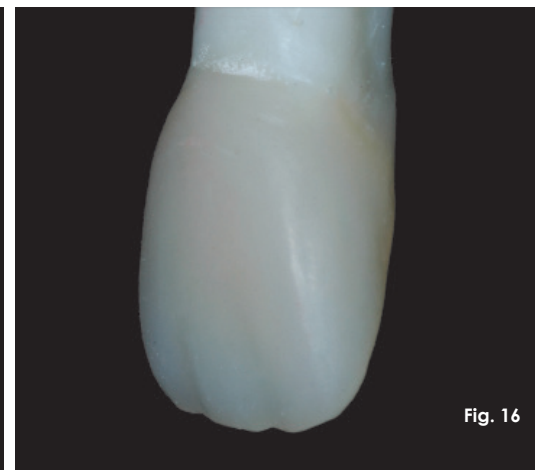


Fig. 16

Fig. 18 - Polishing of gingival surface area. Polishing should always be done using intermittent strokes in on direction



Fig. 17

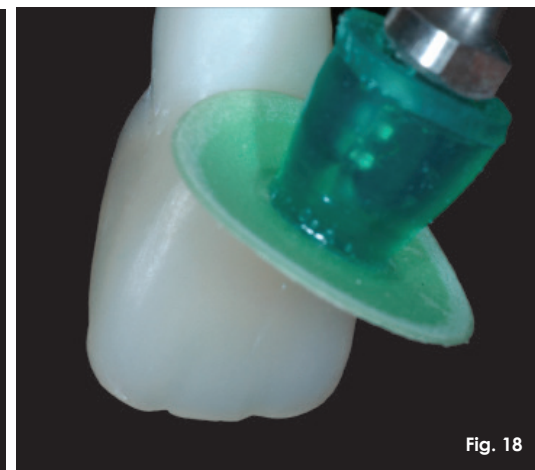


Fig. 18

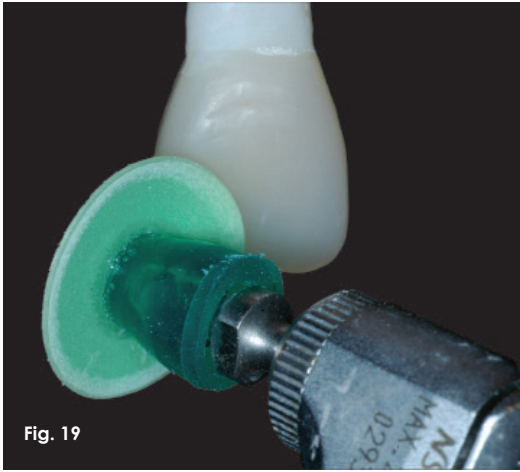


Fig. 19

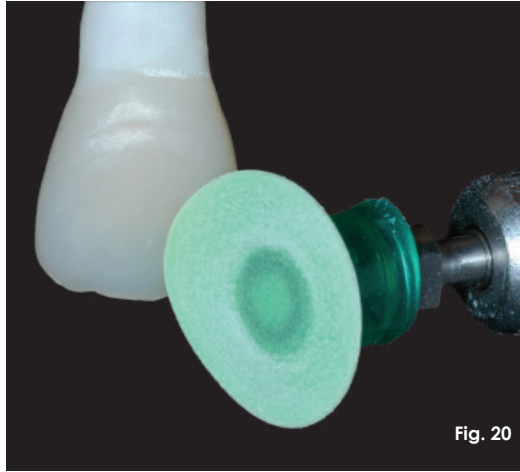


Fig. 20

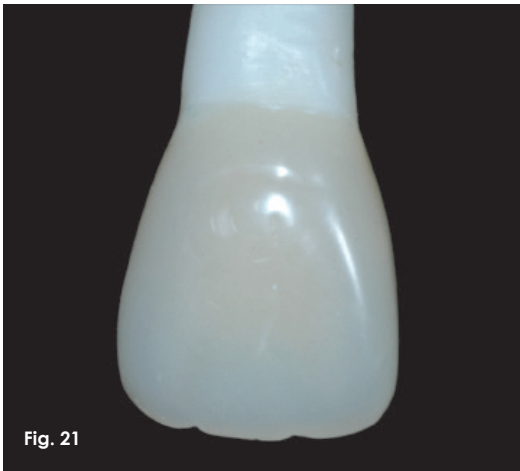


Fig. 21

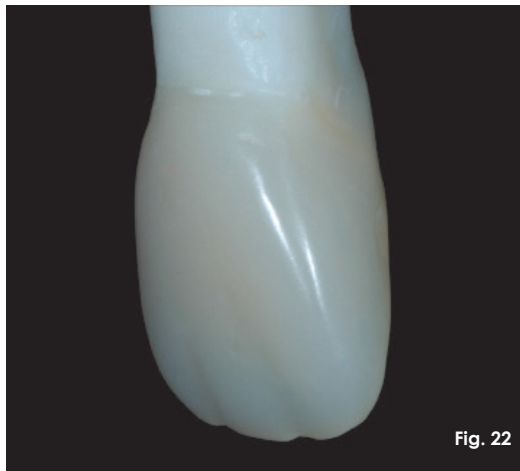


Fig. 22



Fig. 23



Fig. 24

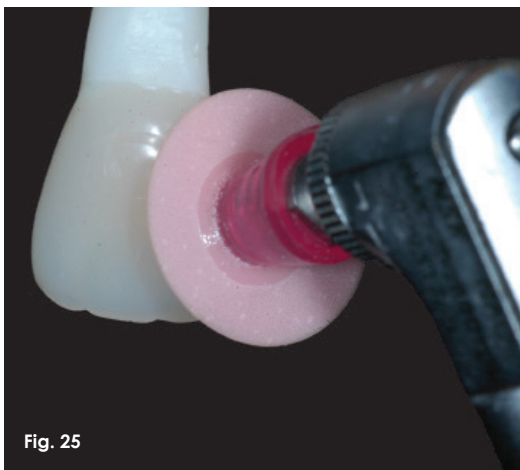


Fig. 25

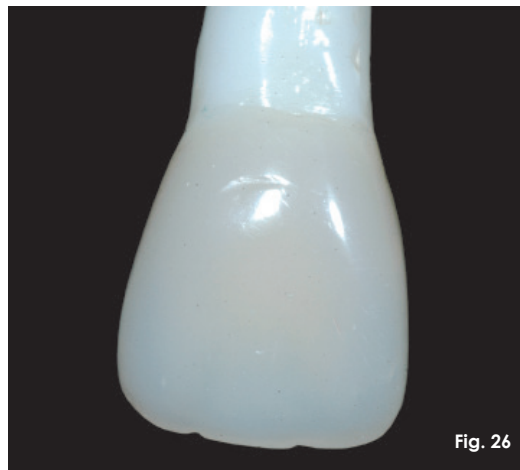


Fig. 26

- Fig. 19** - Polishing of labial surface
- Fig. 20** - Polishing of incisal surface
- Fig. 21** - Labial view of after polishing with Super Snap X-trem finishing & Polishing Green Disc. Note the shining surface created by green polishing disc
- Fig. 22** - Note mesio-labial line angle after polishing
- Fig. 23** - Disto-labial line angle after polishing
- Fig. 24** - Super Snap X-trem finishing & Polishing Pink Disc
- Fig. 25** - Super polishing the labial surface with Super Snap X-trem finishing & Polishing Pink Disc
- Fig. 26** - Super polished labial surface

Fig. 27 - Shining Buff.

This can be used with or without diamond paste



Fig. 27

Fig. 28 - Enhancing super

polished surface with super shining buff without any polishing paste

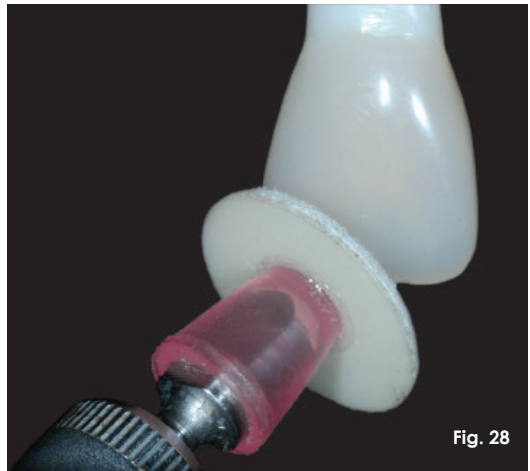


Fig. 28

Fig. 29 - Enamel like luster

after completion of super polishing steps. Note labial view



Fig. 29

Fig. 30 - Disto-labial view

after super polishing with buff

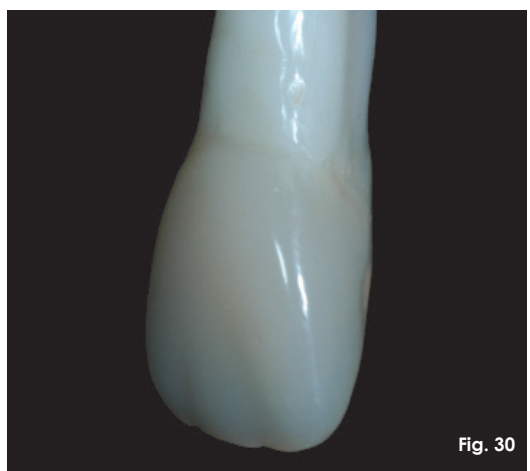


Fig. 30

Fig. 31 - Complete sample

(Giomer restorative material) tooth after finishing, pre-polishing, polishing and super polishing steps



Fig. 31

Fig. 32 - Note well polished

sample tooth with proper surface microstructures



Fig. 32

Clinical Tips

1. Contour restorations adequately before light curing to minimize finishing time and reduce damage to the composites
2. Tooth surface should be wet when using coarse grit instruments
3. Use coarse to superfine grits in sequence
4. Use light intermittent pressure
5. Use a unidirectional motion till completion of the finishing process
6. Polishing should be done at low speed in a dry field
7. Protect adjacent teeth surface and gingiva
8. Use fine grit near tooth margin
9. High and continuous pressure creates excessive heat and destroys the form or texture
10. Restorations should be polished till they are free from any surface scratches or other defects
11. The teeth should be dried and inspected from different angles to evaluate the polishing