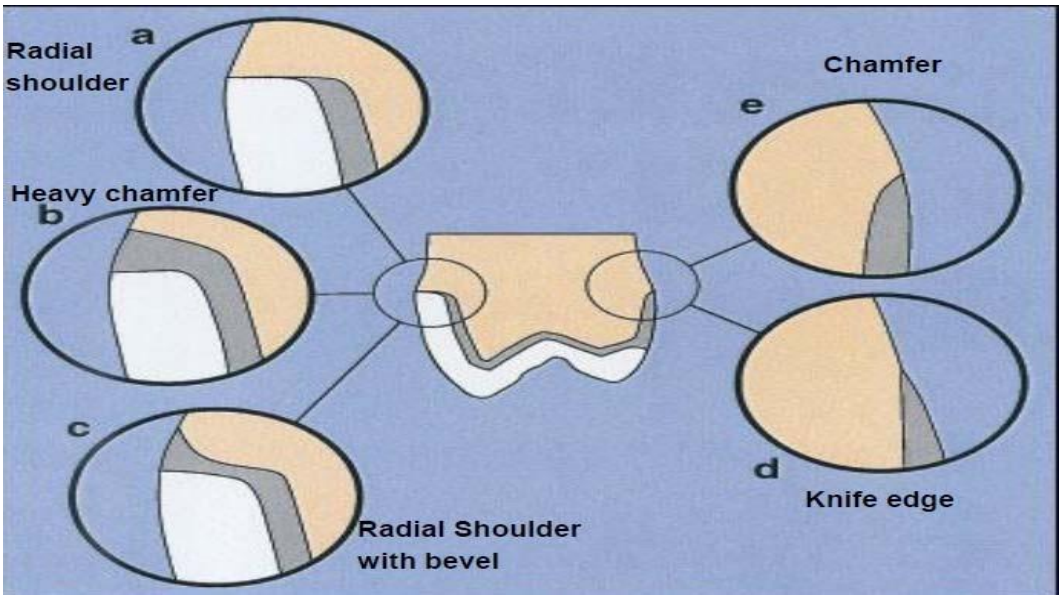
Finishing line of the preparation

The finishing line of the preparation (or the so called "The preparation margin") is the final margin that separates between the prepared and the unprepared tooth structure. This line should be smoothly continuous from one surface to another; otherwise, it will interfere with the seating of the crown if it is poorly done. The margin between the prepared and unprepared tooth structure is a very critical area as most failures start from this margin.

Types of finishing line according to its design or configuration

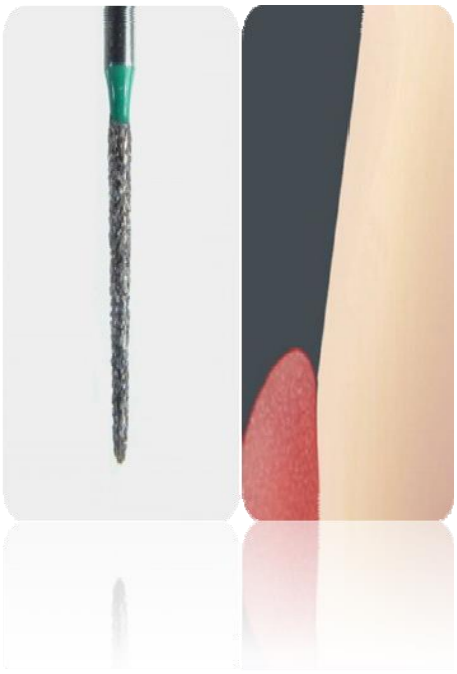
The following designs for finishing line could be used depending on the type of the crown restoration:

1. *Knife edge* (also named *"feather end"*)
2. *Chamfer*
3. *Heavy chamfer*
4. *Shoulder*
5. *Radial shoulder*
6. *Shoulder with bevel*



1. Knife edge or feather end finishing line

A pointed end tapered fissure bur (long needle diamond fissure bur) is used to provide this type of margin design. It is the most conservative type of finishing line since the least amount of tooth structure is removed, but the margin is weak since this margin design does not provide enough bulk or thickness for the material. It forms >135° cavo-surface line angle.



Advantages of knife edge finishing line

1. It is the most conservative type of finishing line.
2. It is easy to prepare.
3. It is a burnishable type of finishing line. i.e. it provides a burnishable margin.

Burnishing is the further adaptation of the margin of metal restoration to the tooth structure.

Disadvantages of knife edge finishing line

1. Difficult to be identified by the laboratory technician.
2. It provides a thin margin that is difficult to accurately wax and cast.
3. The margin of the restoration is susceptible to distortion since this type of margin design does not provide enough thickness.

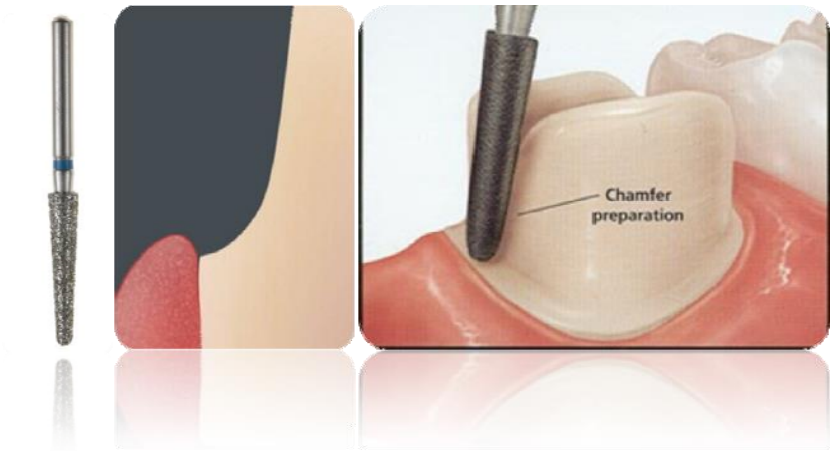
Indications of knife edge finishing line

It is mainly used for:

1. Full Metal Crown (All the surfaces).
2. The lingual and proximal surfaces of full veneer crown, three-quarter crown and post crown.

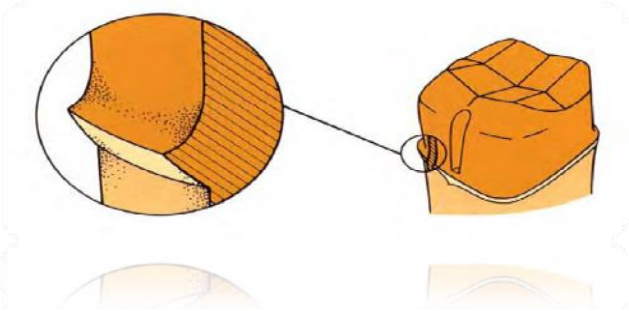
2. Chamfer finishing line

It is a well-defined finishing line somewhat like knife edge finishing line except that the cut is made deeper. It forms a 130-160° cavo-surface line angle. A round-end tapered fissure bur is used to obtain this preparation margin. It provides adequate space at the cervical region so can make the contour of the crown restoration within the contour of natural tooth without overcontouring of the final restoration. However, since the restoration margin obtained with this type of finishing line is thick, so it is unburnishable.



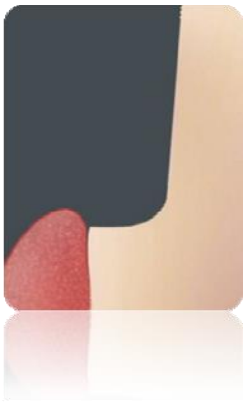
This type of finishing line is indicated for areas to be covered by metal only as the knife edge finishing line, so it is mainly used for:

1. Full Metal Crown (All the surfaces).
2. The lingual and proximal surfaces of full veneer crown, three- quarter crown and post crown.



3. Heavy chamfer finishing line

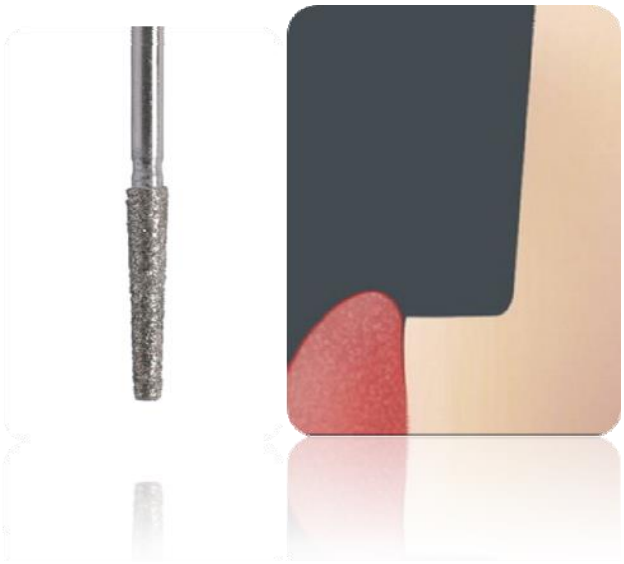
This type of finishing line provides a 90° cavo-surface line angle with a large radius internal angle, so it provides better support for the ceramic crown. It can be used with porcelain fused to metal (PFM) crown and All Ceramic crown.



4. Shoulder finishing line (Butt shoulder)

Shoulder finishing line is the least conservative type of finishing line due to the excessive amount of tooth structure removed to obtain this type of finishing line. In the "butt" type of shoulder finishing line, the axial walls meet the finishing line at a right angle. A flat-end tapered fissure bur is used to obtain this finishing line.

This type of finishing line is used when bulk is required for strength or esthetic, that's why it is almost used with jacket crown since jacket crown is made of either porcelain or acrylic resin, which are brittle materials and require enough thickness to withstand the occlusal forces without fracture. On the other hand, the increased thickness provides better shade of the material and so better esthetics.



5. Radial shoulder finishing line

Radial shoulder is a modification of the shoulder finishing line. It is a shoulder finishing line with rounded internal line angles. This will reduce the shoulder slightly and minimize stress concentration on the tooth structure from one hand and on the restoration itself from the other hand. This type of finishing line was introduced with the ongoing development in all ceramic materials in an attempt to increase the fracture strength of all ceramic crowns by decreasing stress concentration.

6. Shoulder with bevel finishing line

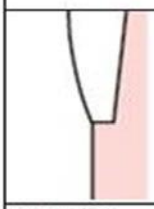
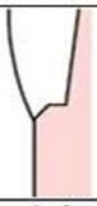
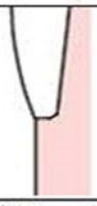
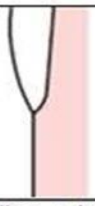
Shoulder with bevel is another modification of the shoulder finishing line by adding a bevel to the shoulder. The bevel is at 45° angle.

Objectives of adding a bevel to the shoulder finishing line

1. The bevel provides a burnishable margin for the metal that may extend sub-gingivally (The thinner it is, the more adaptable to the tooth surface).
2. To provide enough space for shape and contour.
3. To reduce marginal discrepancies.
4. To remove unsupported enamel.

Indications of shoulder with bevel finishing line

1. It is indicated when we use a combination of metal with facing material (acrylic or porcelain) as in full veneer crown, where it is used for the labial surface.
2. Shoulder with bevel is recommended for extremely short walls.

Shoulder	Bevelled Shoulder	Heavy Chamfer	Chamfer
			
Metal Ceramic Crown, All Ceramic/ Porcelain Jacket Crown	Buccal of Metal Ceramic Crown	High Strength Porcelain Crowns, Buccal of Metal Ceramic Crowns	Full Metal Crowns, Palatal/Lingual of MCC's, Resin Bonded Crowns