بسم الله الرحمن الرحيم

IN THE NAME OF ALLAH THE MOST GRACIOUS THE MOST MERCIFUL

Physiologic Form of the Teeth and The Periodontium

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Physiologic form of the teeth and The periodontium

It is assumed that the specific form of the teeth and their arrangement are related to *incising* or *crushing* food without causing damage to their supporting tissues (The periodontium).

The form of the teeth is consistent with

1- The function they are to perform.

2- Their position and arrangement in the structures involved in mastication.

The Periodotium

Is the system of attachment that includes the tissues supporting the teeth to their sockets and it includes :

1. Gingiva
2. PDL
3. Cementum
4. Alveolar bone

The physiolgic tooth form and arrangement may affect the periodontium either directly or indirectly .

I. The direct factors are:

1- Proximal contact relation

2- Interproximal spaces

3- Embrasures or spillways

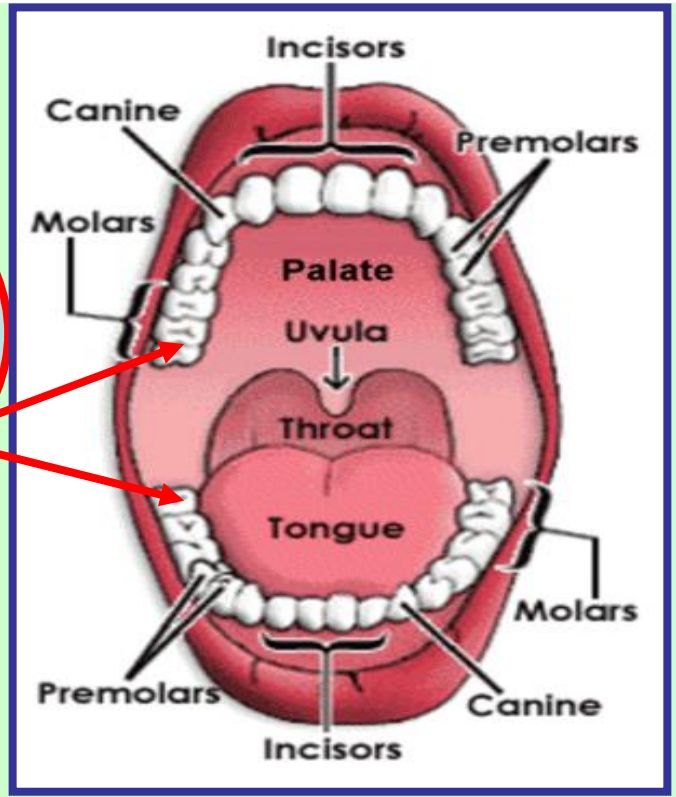
4- Facial and lingual contours of the crown

5- Curvature of cervical line

1- Proximal contact relation

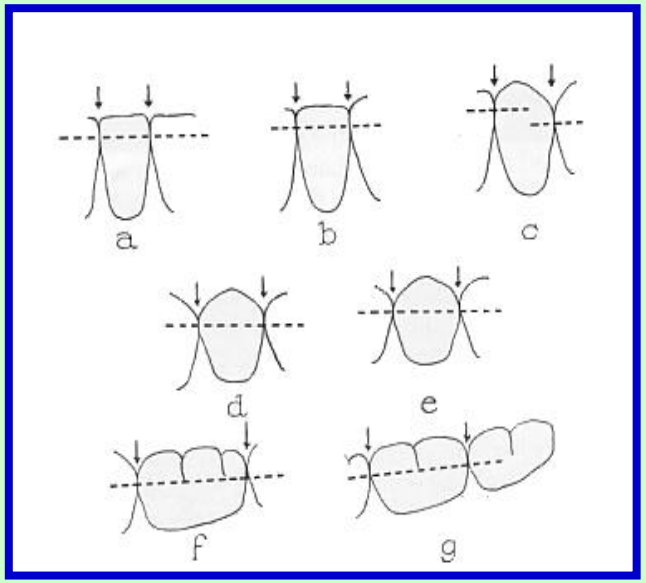
*When ***newly erupted,*** the teeth have a **tight** ***pointed contact*** at their proximal maximal contour.
*This pointed contact is **transformed into area of contact** ***by time*** due to continuous wear of the proximal maximal contour of adjacent teeth .

Each tooth has ***two*** contact areas one ***mesial*** and one ***distal*** except third molars



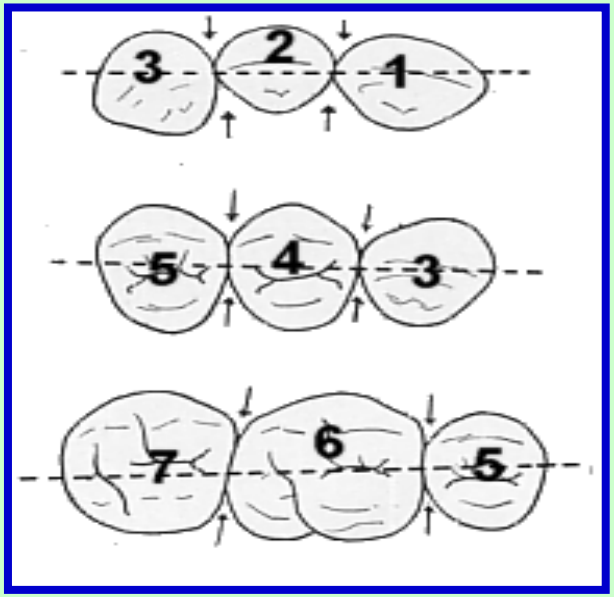
The contact areas must be observed from two aspects in order to locate them:

***The labial or buccal aspect* :**



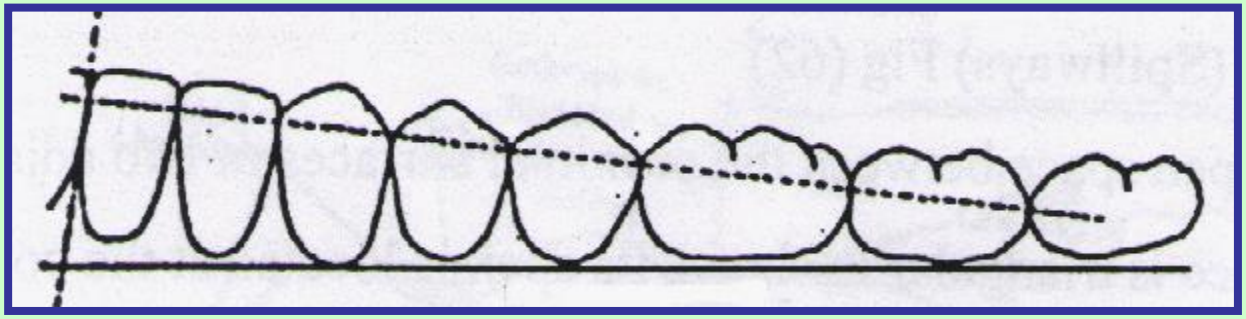
To demonstrate the relative position of the contact areas cervico-incisally or cervico-occlusally.

***The incisal or occlusal aspect* :**



To demonstrate the position of this contact areas labiolingually or buccolingually.

The normal location of the contact areas are as follows



On the individual teeth

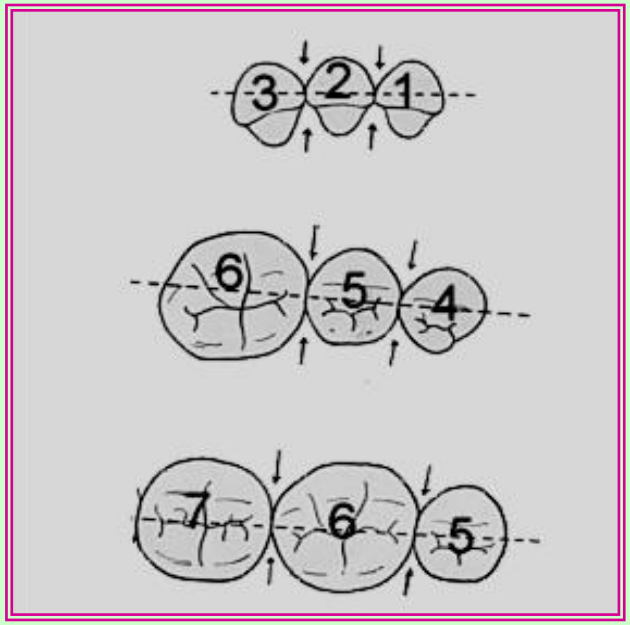
The distal contact area has a more cervical location than the mesial one (except the case of lower first premolar).

On all teeth

Contact areas become more cervically located in each quadrant.
The size of the contact areas increases in the same quadrant,

in *anterior teeth* Contact areas are centered in the faciolingual dimension.

in *posterior teeth* contact areas are located slightly buccal to the center of the faciolingual dimension.



Proximal contact relations are greatly influenced by:

1- Length &breadth of crown.
2- Level & height of proximal maximal contour.
3- Proximal wear.
4- Malocclusion.
5- Developmental anomalies.
6- Disproportional growth between teeth and jaw.
7-Extraction, unerupted or developmental missing teeth.

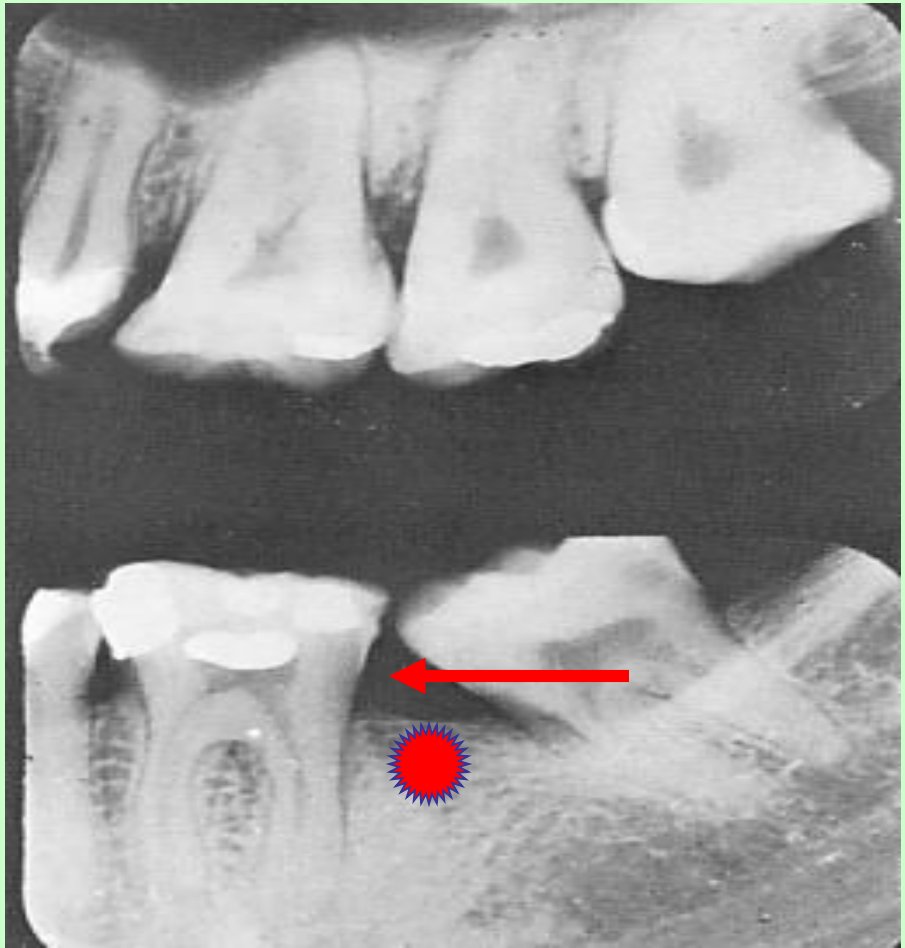
Significances of proper proximal contact relation

1-Prevents interproximal food impaction and subsequently its stagnation with its degenerative effect on the periodontium.

2- Protects the interdental gingiva from undue frictional trauma of food during mastication.

3-Distributes the masticatory forces among the adjacent teeth in the individual dental arch.

4-Stabilizes the dental arches by combined anchorage of all the teeth in either arch in positive contact with each other.



Sequence of abnormal proximal contact relation:

***Food impaction between the teeth with consequent gingival inflammation which ultimately leads to destruction of the investing and supporting tissues and loss of the tooth.

***Separation of teeth causes a change in tooth alignment, which bring about shifting of the forces of mastication to an angle that is not designed for the tooth to withstand.

This leads to occlusal trauma which, if prolonged, may cause destruction of the supporting tissues.

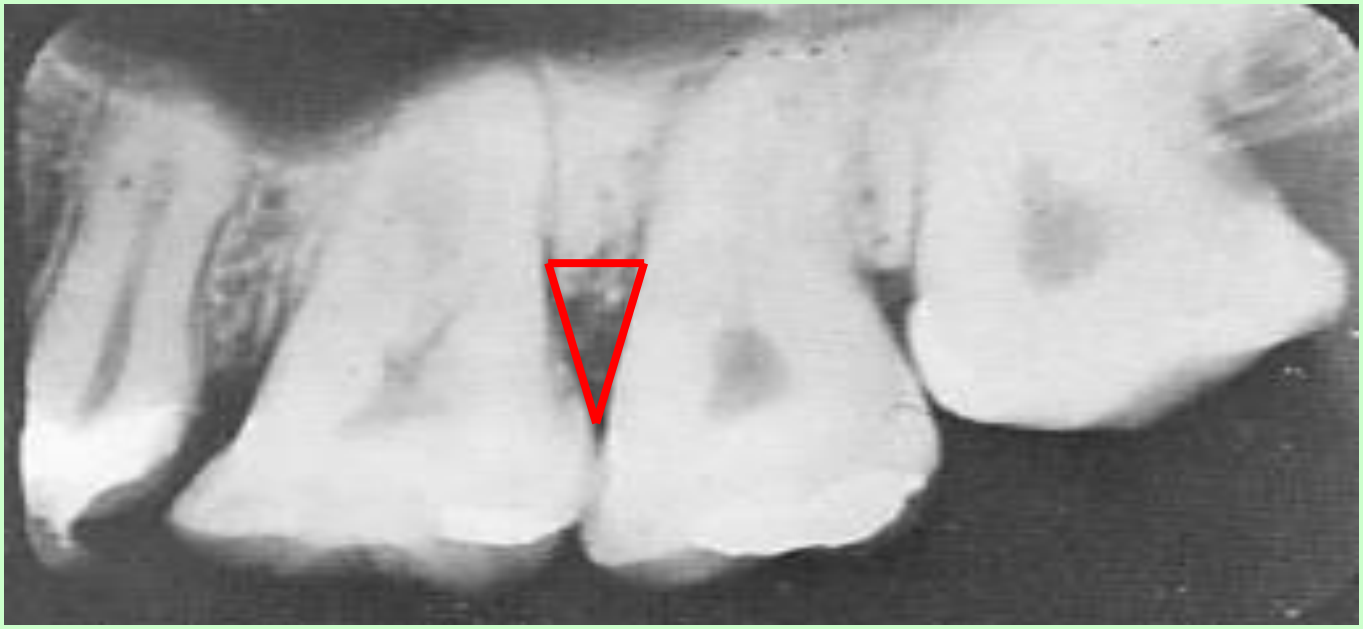
2- Interproximal spaces

These are triangularly shaped spaces found between the teeth .

The base of the triangle is the alveolar process

The sides are the proximal surfaces of contacting teeth and

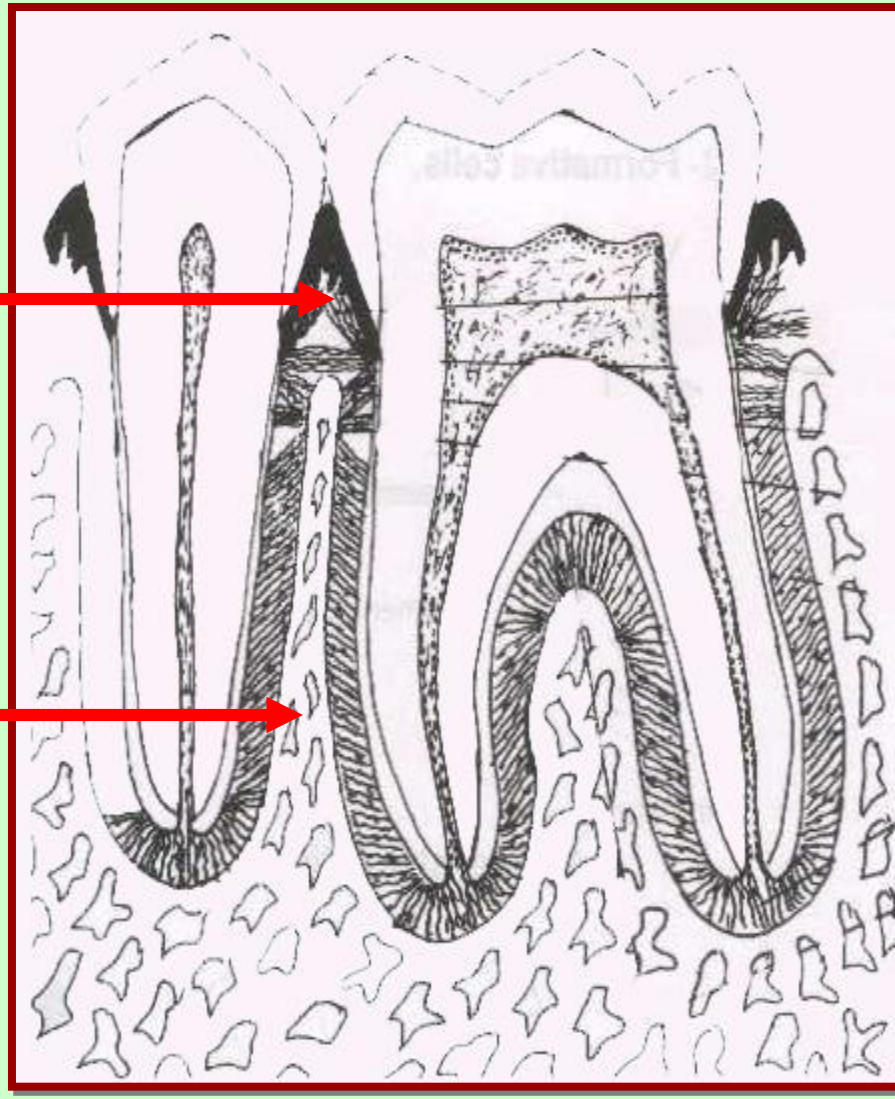
The apex of the triangle is the area of contact.



Significances of interproximal space

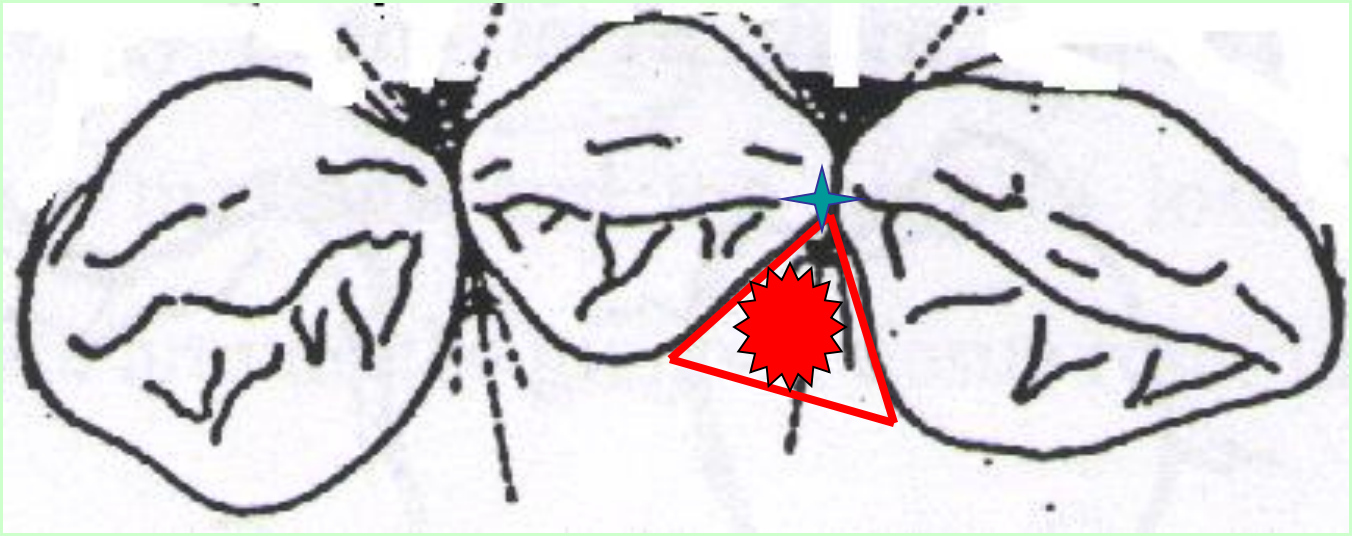
** provides space for the interdental gingival tissues .This tissue carries the blood vessels and nerve supply to all the investing tissue.

**provide considerable spacing for the alveolar bone between the neighboring teeth to support them in their sockets.



3- Embrasures or spillways

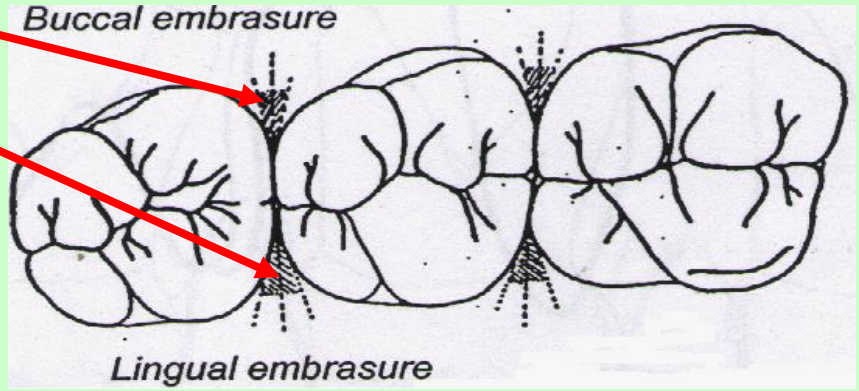
It is the open space between the proximal surfaces of two adjacent teeth.
This space is triangular in shape.
The size of embrasure is determined by the location of the contact area..

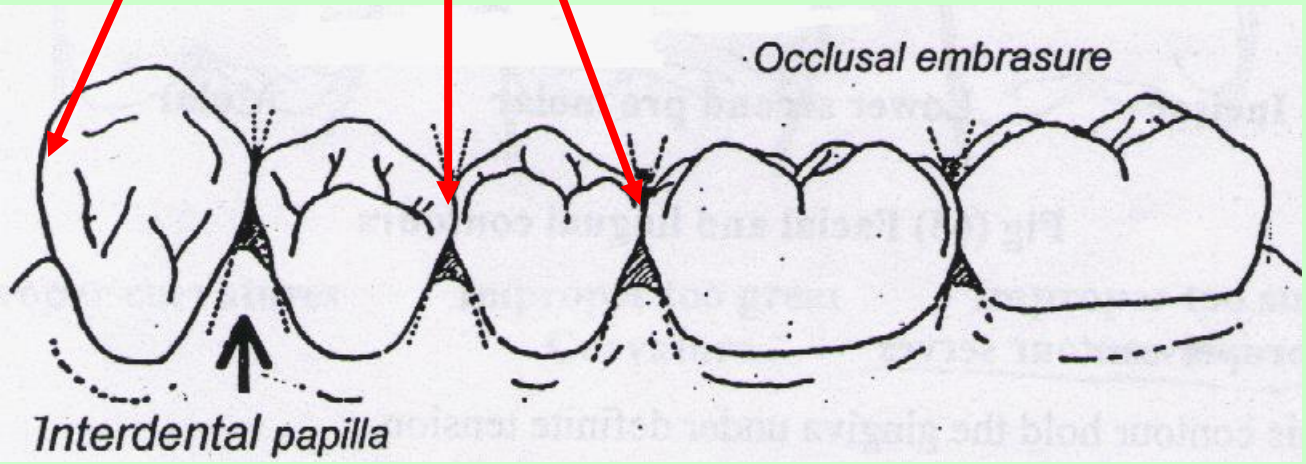


The apex is located at the contact area and then diverge occlusally (incisally), buccally (labially) and lingually.

According to the location of the embrasure there are different types of embrasure:

** Labial embrasure
** buccal embrasure.
** Lingual embrasure.
** incisal & Occlusal embrasure.





The ***cervical embrasure*** is not existings, it is filled by the interdental papillae.

Significance of Embrasures:

**It makes a *spillway* for the escape of food during mastication

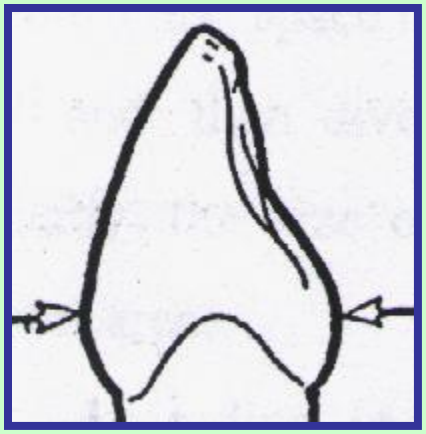
***Decrease* the occlusal table receiving the occlusal forces so they reduce these forces on teeth

**It makes the teeth *self cleansing* because the rounded, smooth surfaces of the crowns are more exposed to the cleansing action of foods fluids and friction of tongue, lip and cheeks.

***Protect* the gingival tissues from undue frictional trauma by allowing proper food sliding and thus food exerts physiologic friction of the gingiva.

4- Facial and lingual contours

In anterior teeth: **The height of contour on both labial and lingual surfaces of all anterior teeth is located in the cervical third.**

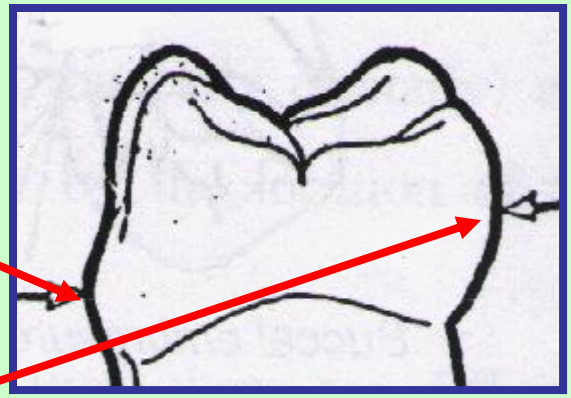


It measures approximately 0.5 mm in upper teeth and less than 0.5 mm in lower teeth

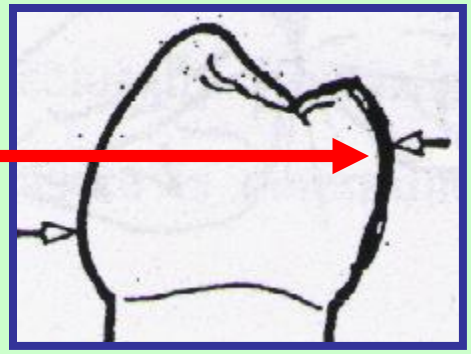
***In posterior teeth*:**

the height of contour of the buccal surfaces is located in the cervical third

On the lingual surface the height of contour is located at the middle third

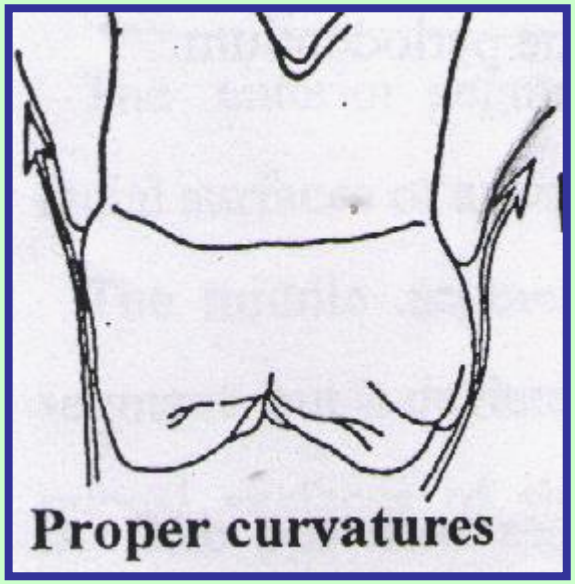


In the lower second premolar the height of contour lingually is located in the occlusal third.



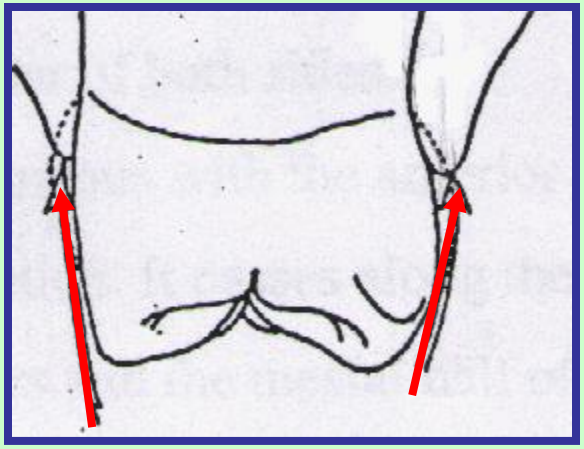
These uniform curvatures are of physiological significance because:

**Hold the gingiva under definite tension.
**Deflect the food away from the gingival margin to prevent food impaction and gingival recession.
**Deflect the food over the gingiva which allow some massage to it .


Proper curvatures

Wrong dental restorations replacing the normal contour of the teeth may lead to the followings:

Too small or absent convexity:
The food will push the gingival tissue apically leading to gingival recession.



Too large convexity:

This will provide too much protection to the gingiva.

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Gingiva will lose its tone.

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Food will accumulate around the gingival region

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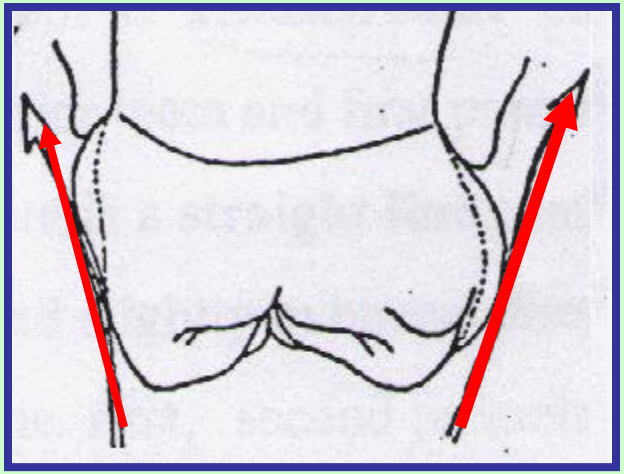
resulting in its inflammation.



5-Curvature of the cervical line mesially and distally (Dentogingival junction)

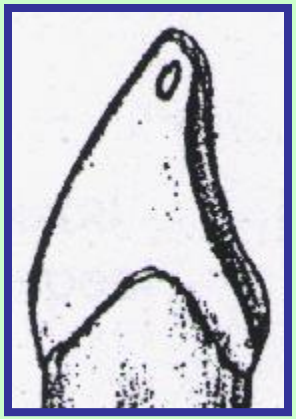
The curvature of the cervical line depends on:

****Height of contact area.**

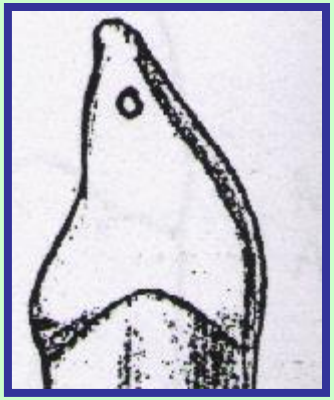
****Diameter of the crown buccolingually**

*****In individual teeth the curvature of the cervical line is greater mesially than distally.**

***** In different teeth, this curvature is greater in anterior than in posterior teeth.**



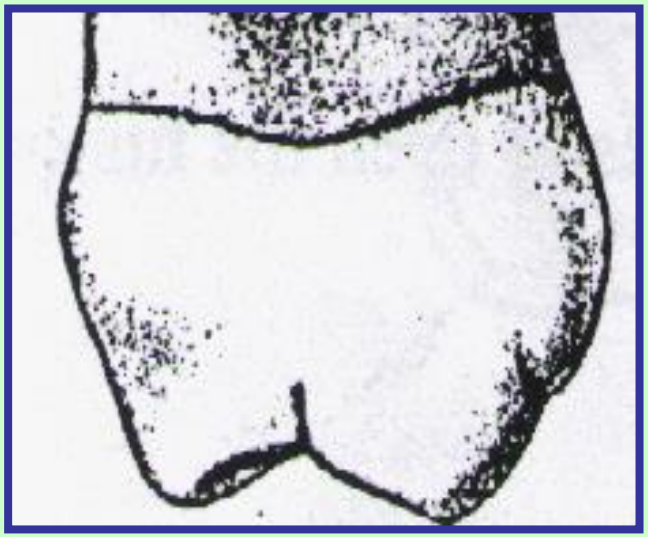
Mesial

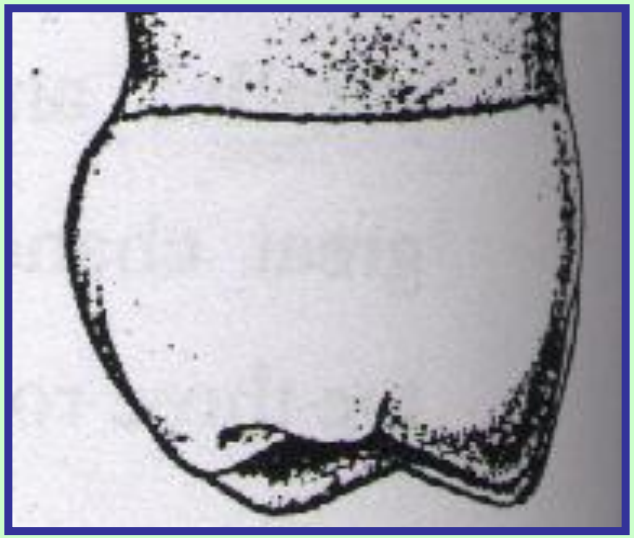


Distal

**In molars

In the distal surfaces, the curvature of the cervical line tends to be straight buccolingually or even in the mesial surfaces of some of the molars.





The importance of the curvature of cervical line:

Is the site of the attachment of the gingiva to the tooth (the attachment epithelium or the dentogingival junction).

***If the teeth are in normal alignment and contact, the attachment epithelium follows the curvature of the cervical line but not necessarily at the same level.

Any break in this epithelium

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penetration of bacteria or their toxins into the peridontium

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causing damage to the investing tissues of the tooth.

So it is important to the dentist to keep the gingival tissue in a normal healthy state.

Thank You

Any Question