

# A simple working type Integrated Rugoscopy Chart proposed for analysis and recording rugae pattern

Sir,

Palatal rugae patterns situated in the anterior third of palate have been studied for various purposes and reports have been published mainly in the fields of anthropology, comparative anatomy, genetics, forensic odontology, and dental specialties (specially prosthodontics and orthodontics).<sup>[1-5]</sup> Study of rugae is called as rugoscopy and rugae have been classified by various scientists according to the position, length, shape, direction, and unification.<sup>[6-8]</sup>

This letter calls for attention to propose a simple working Integrated Rugoscopy Chart (IRC) for analysis and recording rugae pattern, based on various earlier classifications of rugae [Figure 1]. IRC will be a useful resource as it has several advantages, among which are its ability to carry enormous volume of information and reproduce position, length, shape, direction and unification of rugae on dental casts unmistakably, and in detail on a cost-effective basis.

Integrated Rugoscopy Chart*							
Number	Position		Length		Shape Curved (C) / Wavy (W) / Straight (S) / Circular (Cr)	Direction Forward (F) / Backward (B) / Perpendicular (P)	Unification Diverging (D) / Converging (C)
	Side (Left/Right)	Quadrant (I-V)	In mm	Primary (P) / Secondary (S) / Fragment (F)			

\*IRC based on:  
Vengara VV, Valeriuoada JS, Gogaru MC, Galdames IC. Palatal rugae: Systematic analysis of its shape and dimensions for use in human identification. Int J Morphol 2009;27:1819-25.  
Thomas CJ, Kiser TS. The palatal rugae pattern: a new classification. Dent Assoc S Afr 1983;38 (3): 153-157.  
Lysell P. Plica palatinae transversae et papilla incisiva in man. A morphological and genetic study. Acta Odont. Scand. 1921;95 (Suppl. 18), p. 5-137.

Figure 1: Integrate Rugoscopy Chart

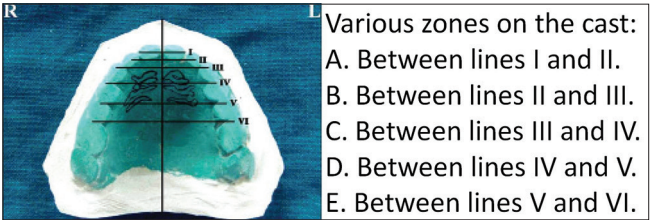


Figure 3: Five zones on the cast

Explanation of IRC (following sections describes how to go about filling each section of IRC):

- **Position:** This tells the address/location of the rugae. The rugae are designated as left/right and to which quadrant they belong. Palatal rugae area is divided into quadrants, with the goal of attaining the coordinates/position of palatal rugae. For this, six horizontal lines [Figure 2] divide the cast into five zones [Figure 3]
- **Length:** Rugae are measured in a straight line between the origin and termination and are grouped into three categories: primary (5 mm or more), secondary (3–5 mm), and fragmentary (2–3 mm). Rugae < 2 mm are disregarded
- **Shape:** Based on appearance rugae can be curved/wavy/straight/circular [Figure 4]
- **Direction:** Determined by measuring the angle formed by the line joining its origin and termination and the line perpendicular to the median raphe. On the basis of direction rugae can be: forward directed/backward directed/perpendicular [Figure 5]
- **Unification:** is said to have occurred when two rugae joined at their origin or termination [Figure 6].

Location of the 6 lines dividing palatal rugae area into 5 zones:  
I. Transverse line passing through the palatal cervical third of the central incisors.  
II. Transversal line that goes from the mesial side of the right lateral incisor to the mesial side of the left lateral incisor.  
III. Transverse line through the mesial side of the right canine and reaches to the mesial side of the left canine.  
IV. Transverse line through the mesial side of the right first premolar and reaching to the mesial side of the left first premolar.  
V. Transverse line through the mesial side of the right second premolar and reaching to the mesial side of the left second premolar.  
VI. Transverse line through the distal side of the second premolar and reaching to the right side of the distal left second premolar.

Figure 2: Location of six horizontal lines

**Various shapes of Rugae**

- Curved:** They had a crescent shape and curved gently.
- Wavy:** If there was a slight curve at the origin or termination of a curved rugae.
- Straight:** They run directly from their origin to termination.
- Circular:** Rugae that form a definite continuous ring.

Figure 4: Shape of rugae

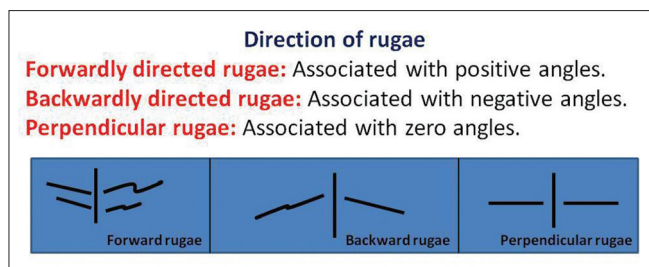


Figure 5: Direction of rugae

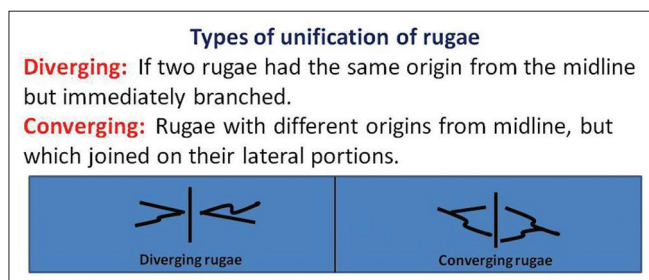


Figure 6: Unification of rugae

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Nil.

### Conflicts of interest

There are no conflicts of interest.

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### References

1. Shukla D, Chowdhry A, Bablani D, Jain P, Thapar R. Establishing the reliability of palatal rugae pattern in individual

identification (following orthodontic treatment). *J Forensic Odontostomatol* 2011;29:20-9.

2. Chowdhry A, Sircar K, Popli DB, Tandon A. Image manipulation: Fraudulence in digital dental records: Study and review. *J Forensic Dent Sci* 2014;6:31-5.
3. Kapoor P, Miglani R. Transverse changes in lateral and medial aspects of palatal rugae after mid palatal expansion: A pilot study. *J Forensic Dent Sci* 2015;7:8-13.
4. Kapali S, Townsend G, Richards L, Parish T. Palatal rugae patterns in Australian aborigines and Caucasians. *Aust Dent J* 1997;42:129-33.
5. Acharya AB. Is the research of lip prints and palatal rugae undertaken in India a misdirected endeavor? An opinion based on trends in publication in this journal and international journals. *J Forensic Dent Sci* 2014;6:149-50.
6. Lysell L. Plicae palatinae transversae and papilla incisiva in man; a morphologic and genetic study. *Acta Odontol Scand* 1955;13 Suppl 18:5-137.
7. Thomas CJ, Kotze TJ. The palatal ruga pattern: A new classification. *J Dent Assoc S Afr* 1983;38:153-7.
8. Venegas VH, Valenzuela JS, Lopez MC, Galdames IC. Palatal rugae: Systematic analysis of its shape and dimensions for use in human identification. *Int J Morphol* 2009;27:819-25.

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