



Palatal Rugae – Another Forensic Tool?

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Editorial

It is a well known fact that with changing times, an increase in the number of natural disasters, crimes and fatalities have taken place. In such a challenging time, identification of human remains is an issue which is the call of the hour and is a grave responsibility as well [1]. Teeth are highly resistant to fire, decomposition and other extreme conditions and so they are vital in forensic investigations. However, if required, other oral and peri-oral tissues can also serve the same purpose [1]. Palatal Rugae also referred to as plicae palatine transverse or Rugae palatine are asymmetrical and irregular elevations of the mucosa located in the anterior third of the palate, made from the lateral membrane of the incisive papilla arranged in transverse direction from palatine raphe located in the mid-sagittal plane [2].

Palatal Rugae are significant as they rarely change their shape with ageing and they reappear after surgical procedures or any trauma. They are well protected by oral and peri-oral tissues. They are highly resistant to heat, chemicals, trauma, diseases and other environmental factors. Also, they are unique to each individual because of their special anatomic features. For all these above reasons, rugoscopy has become a significant tool in forensic odontology. Rugae analysis may help in racial profiling and post-mortem identification. Many studies have been done to compare the palatal Rugae of different races. Hauser in his study found that the swazi population had a higher number of main ridge numbers as compared to Greeks [3]. The number of primary Rugae was higher in Australian Aborigines than Caucasians and the palatal Rugae were longer by 10 mm in Caucasians as compared to Australian Aborigines. It was also found that palatal Rugae were straighter in Caucasians and wavier in Aborigines. Also, it was found that there were no significant changes in palatal rugae shape between males and females.³

In a study conducted on Southern and western Indians showed that wavy and curvy forms were more common than straight palatal rugae. The same study concluded that palatal rugae shape is a better comparing variable as compared to palatal rugae length [4].

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In another study that was carried out to analyze the rugae patterns in two populations of Kodavas and Malayalees residing in and around Coorg (India) was taken and analysis was done gender-wise within each group. It was found out that the complete population of Kodavas had a wavy pattern of rugae. There was a significant difference between Malayalees and Kodavas for wavy pattern of rugae. Also, it was found out that significant difference between sexes for straight rugae pattern among Malayalees was there [5].

There have been many studies done on rugae pattern based on geographical location. A study carried out in the regions of Karnataka and Manipur [6]; Kerala and Madhya Pradesh [7] found that there were significant differences in the rugae pattern. Another study showed that the Indian population had a curvy palatal rugae and Tibetan population had a wavy palatal rugae [8].

In a study carried out to identify and compare the rugae pattern between males and females of two different communities in the city of Davangere, Karnataka showed that females showed a significantly higher diverging pattern of rugae as compared to males. It was also observed that males had a more significant number of circular and converging types of rugae as compared to females.

A study that was carried out to determine the effect of growth on palatal rugae patterns and to analyze uniqueness of palatal rugae in identification of pediatric patients over a period of time gave very significant results. It was found at the end of the study that palatal rugae patterns were unique and did not change with time in the study subjects. Furthermore, no statistically significant effect was seen on the position of the palatal rugae in orthodontically treated cases. It was concluded that palatal rugae pattern were sufficiently characteristic to discriminate between individuals [9].

Therefore it can be concluded that palatal rugae can serve as a great tool in preserving ante- mortem data in the form of dental casts, maxillary prosthetic devices and intra- oral radiographs [10]. Hence, consideration of palatal rugae analysis can be taken on a serious note along with DNA fingerprinting and forensic investigations in future.

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