

Brief report:

## Tooth Shape Deviations of Mandibular Premolars

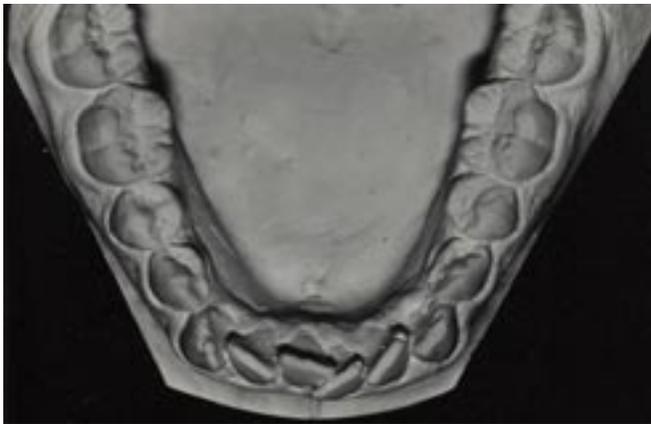
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In the last issue of *Dental Anthropology*, Edgar and Sciulli (2004) highlighted an interesting abnormality of human mandibular premolar (MnP) shape in their report, "Elongated mandibular premolar: a new morphological variant." They noted that the affected premolar is characterized by "either compressed... buccolingual dimension or longer ... mesiodistal dimension."

We show here that these observations have greater depth in the literature. For example, we identified and illustrated the same morphological crown anomaly in 1975 (Peck and Peck) in two North American white orthodontic patients, describing the occurrence as a tooth shape deviation (TSD) of MnP. One case was a female with bilateral MnP1-TSD (Fig. 1) and the other was a case of a male with bilateral MnP2-TSD (Fig. 2). In fact, this variation had previously been recognized by Dahlberg (1951) in a white female (bilateral MnP2) and by Suzuki and Sakai (1960) in a Japanese male (bilateral MnP2), each referring to the condition as "buccolingually compressed" mandibular premolars. To our knowledge, occurrences of this anomaly have not been demonstrated for the maxillary premolars.

We applied an MD/FL crown index ([mesiodistal



**Fig 1.** Tooth shape deviations of both mandibular first premolars (MnP1-TSD) in a white female (reproduced courtesy of *The Angle Orthodontist*).



**Fig 2.** Tooth shape deviations of both mandibular second premolars (MnP2-TSD) in a white male (reproduced courtesy of *The Angle Orthodontist*).

diameter in mm ÷ faciolingual diameter in mm] X 100) to quantify the extent of this tooth shape anomaly in our two subjects: deviant MnP1 teeth, with widened mesiodistal dimension and narrowed faciolingual dimension, had an MD/FL index of 122; deviant MnP2 teeth showed an MD/FL index of 120-127. This compares with MD/FL indices for unaffected MnP1 in whites of  $90 \pm 5$  and for unaffected MnP2,  $85 \pm 5$ .

We also found an association between MnP-TSD and a similar TSD of the mandibular incisors, commonly associated with the tendency for dental crowding (Peck and Peck, 1972a,b).

Here I report another case, a European white female showing unilateral expression of MnP1-TSD (Fig. 3).

From these several reported cases, I conclude that these peculiar deviations in mandibular premolar shape may derive from a developmental pinching of the faciolingual tooth mass with an associated enlargement of the mesiodistal tooth diameter. MnP-TSD is usually the product of reduced FL and increased

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**Fig 3.** Tooth shape deviation of the mandibular left first premolar (MnP1-TSD) in a white female.

MD dimensions. All elements of occlusal morphology of the affected teeth seem to be intact, just dimensionally shifted and distorted. The anomaly occurs in either sex, in either the first or second mandibular premolars independently, expressed mostly bilaterally and occasionally unilaterally. The MnP-TSD anomaly is found occurring in whites, blacks and Asians.

My co-workers and I are undertaking further studies of various phenotypes of this unusual dento-morphological condition.

#### ACKNOWLEDGMENT

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