

Shovel incisors, three-rooted molars, talon cusp, and supernumerary tooth in one patient

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Introduction

The simultaneous occurrence of various multiple dental anomalies has been reported previously, particularly in cases of chromosomal abnormalities that often manifest with multisystem involvement.^{1, 2} Additionally, multiple dental anomalies have been reported in individuals and within families, without evidence of other systemic manifestations.

Ekman-Westborg and Julin³ reported a case of macrodontia, multituberculism, central cusps and pulp invaginations in the permanent dentition. Reportedly, no hereditary factors were found. Mann et al.⁴ reported a variant of the Ekman-Westborg-Julin syndrome, discovered as part of an archaeological exploration. The skull of a 5-year-old Native American exhibited macrodontia, shovel-shaped maxillary central incisors, three-rooted mandibular primary molars, dens invaginatus, agenesis of maxillary permanent canines, and crenulated occlusal surfaces of the first permanent and second primary molars. Interestingly, only one of the other 56 skeletons unearthed exhibited any dental anomalies; one adult male had peg-shaped third molars.

Casamassimo et al.⁵ reported the simultaneous occurrence of microdontia, taurodontia, and dens invaginatus in a family. The distribution of cases in this family suggested an X-linked recessive transmission. Three-rooted mandibular molars in the primary or permanent dentition, talon cusp, shovel-shaped incisors, and mesiodens, individually have been previously reported. The simultaneous occurrence of these anomalies, however, has not been reported previously.

Case Report

E.C., a 7-year-old Hispanic male of European origin, presented with a chief complaint of multiple carious teeth and unilateral eruption of a maxillary central

incisor. Medical history and systems review revealed a history of asthma that was managed with a selective beta-adrenergic agent. There were no other pertinent positive findings.

Clinical Evaluation

Intraoral examination revealed a child in the early mixed dentition, with unilateral eruption of a maxillary central incisor that had an extremely shovel-shaped lingual surface. Additionally, the patient had a talon cusp on the lingual surface of the maxillary right primary lateral incisor. There also was clinical evidence of multiple carious lesions.

Radiographic Evaluation

Radiographs revealed furcation pathology of the mandibular right primary molar, and other carious lesions. Further evaluation indicated that all mandibular primary and permanent first molars displayed three roots (Figs 1 and 2). Additionally, an anterior supernumerary tooth was noted in the maxilla. The unerupted maxillary incisors also had a radiographic appearance consistent with the shovel shape exhibited by the erupted maxillary permanent central incisor. The maxillary primary lateral incisor exhibited radiographic evidence consistent with that seen in teeth with talon cusps (Fig 3, next page).

Discussion

The incidence of three-rooted permanent mandibular first molars has been reported to vary within racial groups, and reportedly is higher in Mongolian groups than in Caucasians.⁶ There is occasional mention of this finding in the primary dentition.⁷ However, such findings have been localized or isolated to specific teeth.⁸ The simultaneous occurrence in both the mandibular



Figs 1 and 2. Periapical radiograph illustrating three-rooted mandibular primary and permanent first molars.



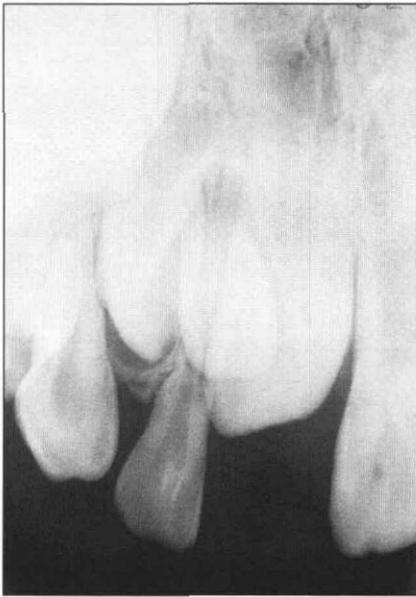


Fig 3. Maxillary occlusal radiograph showing primary incisor with talon cusp, shovel-shaped permanent incisors, and supernumerary tooth.

primary molars and first permanent molars has not been reported previously. The potential considerations in endodontic, orthodontic, or surgical management of such teeth have been addressed by Younes et al.⁶ Shovel-shaped incisors exhibit interpopulation variation. Moderate to heavy shoveling has been reported in 9% of American Caucasians.

However, in some populations, such as Native Americans, shovel teeth have been reported to occur 96–100% of the time. In such populations, shovel teeth are so common that they are considered to be a racial characteristic.⁹ However, Mann et al.⁴ did not report such findings in the other unearthed Native American skeletons. The low incidence of shovel-shaped incisors in offspring born of Japanese mothers and Caucasian fathers suggests autosomal inheritance.⁹ Its discovery in a patient of European origin is uncommon. However, although the patient was of European origin, there exists the possibility that some of the child's ancestors may have descended from Native South American lines. A truly accurate genealogy, tracing the centuries of possible intermarriage, is unlikely. It is possible that these shovel-shaped incisors are consistent with an ancestral racial norm.

Talon cusp has been reported to occur as an isolated finding and also as part of Rubinstein-Taybi syndrome.¹⁰ Mellor and Ripa¹¹ have described the potential impact of a talon cusp on the occlusion, and the considerations in altering coronal morphology, to better facilitate the achievement of centric relationship.

The incidence of maxillary anterior supernumerary teeth has been reported to vary from 0.15–1.4%. Although multiple supernumerary teeth may be seen in a number of syndromes, isolated mesiodens has been reported to be governed by an autosomal dominant trait with lack of penetrance, as evidenced by familial

reports.¹² The ability of a supernumerary tooth to impede the normal eruption of teeth has been well established.¹³

The patient had no siblings, and his mother was unaware of any other family members with dental anomalies. She noted that she and most members of her family had many of their teeth extracted at early ages. She did not recall any unusual difficulties in the extraction of mandibular teeth. Since no lineage was obtained, it is not possible to assess the occurrence of these dental findings on the basis of genetic transmission. The patient presented with dental anomalies that individually, could reasonably be expected to occur in the absence of a familial history. The patient's European origins, however, indicate that shovel-shaped incisors and three-rooted molars ordinarily would not be expected. The simultaneous occurrence of shovel-shaped incisors, three-rooted molars, talon cusp, and anterior supernumerary tooth is certainly rare and possibly unique.

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