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PREGLEDNI RAD
REVIEW

Jelena Dumančić[1], Zvonimir Kaić[1], Martina Tolj[2], Bernard Janković[3]

Kandžasta kvržica: pregled literature s prikazom slučaja

Talon Cusp: a Literature Review and Case Report

[1] Zavod za dentalnu antropologiju Stomatološkog fakulteta Sveučilišta u Zagrebu
Departments of Dental Anthropology School of Dental Medicine, University of Zagreb, Croatia
[2] Stomatološka ordinacija dr. Vladimira Protića, Dom zdravlja Zagreb-Zapad, Zagreb
Dental office dr Protić Vladimir, Health Center "Zagreb-Zapad", Zagreb, Croatia
[3] Zavod za endodonciju i restaurativnu stomatologiju Stomatološkog fakulteta Sveučilišta u Zagrebu
Departments of Endodontics and Restorative Dentistry School of Dental Medicine, University of Zagreb, Croatia

Sažetak
Kandžasta kvržica je akcesorna tvorba slična kvržici, a proteže se od vrata zuba ili cinguluma prema griznom bridu prednjeg zuba. Javlja se u objema denticijama - mliječnoj i trajnoj te kod obaju spolova. Ovaj rad donosi pregled literature te prikaz pacijenta s kandžastom kvržicom na oralnoj plohi maksilarnoga bočnog sjekutića. Navode se moguća etiologija, prevalencija, klasifikacija, klinička i radiološka obilježja ove anomalije te načini liječenja.

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Adresa za dopisivanje
Jelena Dumančić
Zavod za dentalnu antropologiju
Stomatološkog fakulteta Sveučilišta u Zagrebu
Gundulićeva 5, HR-10 000 Zagreb
dumancic@sfzg.hr

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Uvod

Kandžasta kvržica je akcesorna tvorba slična kvržici, a proteže se od vrata zuba ili cinguluma prema griznom bridu prednjeg zuba. Opisao ju je Mitchell godine 1892., a 1970. su Mellor i Ripa predložili naziv *talon cusp* zbog sličnosti orlovskoj kandži (1). Premda je taj naziv općenito prihvaćen, neki autori opisuju tu anomaliju pod imenom dens evaginatus (2).

Kvržica je obično građena od cakline i dentina normalne strukture, a u nju se može protezati i pulpno tkivo. Najčešće se nalazi na oralnoj plohi prednjeg zuba. Kvržica može srasti s incizalnim bridom formirajući T-oblik ili - ako se proteže kraće - Y-oblik konture krune zuba. Vrlo rijetko može

Introduction

Talon cusp is an accessory cusp-like structure projecting from the tooth neck or cingulum area towards the incisal ridge of an anterior tooth. Mitchell described this feature in 1892, and the term talon cusp was proposed by Mellor and Ripa in 1970 due to its resemblance in shape to an eagle's talon (1). Although this term has been widely accepted, some authors describe this anomaly as dens evaginatus (2).

Generally, talon cusp is composed of normal dentin and enamel, and the pulpal tissue may be present or absent. The accessory cusp is most frequently attached to the lingual surface of an anterior tooth. It may be connected to the incisal ridge forming a T-

se naći na labijalnoj plohi (3-5) ili i labijalno i oralno (X-oblik) (6-9).

Javlja se u objema denticijama i kod obaju spolova, češće kod muškaraca. Obično se nalazi unilateralno, ali približno u petini slučajeva može biti i bilateralno (10). Najčešća je na gornjim trajnim sjekutićima, osobito bočnima, ali opisani su i slučajevi na gornjim očnjacima te na donjim središnjim sjekutićima (1, 2, 10-14). U mliječnoj denticiji kandžasta se kvržica najčešće javlja na gornjim središnjim sjekutićima (15, 16), dok je samo u nekoliko opisanih slučajeva bila na gornjem bočnom sjekutiću (8, 17, 18) te u jednom na donjem bočnom sjekutiću (19).

Kandžasta kvržica može se pojaviti kao izolirana anomalija, ali i kao sastavni dio nekog poremećaja. Opisani su slučajevi trajnoga kandžastog sjekutića zajedno s drugim dentalnim anomalijama primjerice s odontomom (20), impaktiranim zubima (21), geminacijom (22-24), lopatastim sjekutićima (11, 25), koničnim bočnim sjekutićem (11), hipodoncijom (19, 26), prekobrojnim zubima (14, 16, 21, 25, 27) te s poremećajem dens invaginatus (16, 25). Uz mliječni kandžasti sjekutić opisani su prekobrojni zubi (15, 17) te rascjep usne i nepca (8, 18). Anomalija je česta kod pacijenata s Rubinstein-Taybijevim sindromom (28, 29), a može se pojaviti i s Mohrovim sindromom (30), Sturge-Weberovim sindromom (15) te s inkontitnencijom pigmenta (31).

Ovaj rad opisuje slučaj kandžaste kvržice iz naše ambulante, razmatra moguću etiologiju i upozorava na mnoge komplikacije koje se mogu pojaviti u vezi s tom anomalijom.

Prikaz slučaja

Dvadesetsedmogodišnji muškarac javio se stomatologu. Kliničkim pregledom ustanovljena je kompletna trajna denticija s izraženom kompresijom, okluzijom klase I prema Angleu, distopičnim gornjim umnjacima te donjim umnjacima u erupciji. Na oralnoj plohi gornjega desnog bočnog sjekutića uočena je akcesorna kvržica od ruba gingive pa preko više od polovice visine oralne plohe (Slika 1.). Bila je odvojena tamno pigmentiranim razvojnim brazdama, ali bez zubnog kvara. Kvržica je okludirala s mandibularnim očnjakom i bočnim sjekutićem, pa se njezin vrh preoblikovao u fasetu, ali pacijentu nije stvarala okluzijsku smetnju. Ortopantomogram nije pokazao dodatne patološke tvorbe. Na periapikalnoj snimci kandžasta se kvržica superponirala preko slike zahvaćene krune kao sjena tipičnog V-oblika (Slika 2.). Nije se moglo sa sigur-

shaped or, if lower in level, a Y-shaped crown contour. Rarely, the accessory cusp can be situated on the labial surface (3-5) or both on the labial and lingual surfaces (X-shape) (6-9).

Both primary and permanent dentition are involved, and both sexes are affected – males with higher incidence than females. Commonly it is unilateral but one-fifth of the cases are bilateral (10). Upper permanent incisors are most frequently affected, especially the lateral incisor. Talon cusps on maxillary canine and mandibular central incisors are also reported (1, 2, 10-14). In primary dentition the majority of talon cusps are found on the upper central incisors (15, 16), while only few are reported on maxillary lateral incisors (8, 17, 18) and one on mandibular lateral incisor (19).

Talon cusp may occur as an isolated anomaly or associated with other abnormalities. There are reports on talon cusps on permanent incisors associated with odontome (20), impacted teeth (21), gemination (22-24), shovel-shaped incisors (11, 25), peg-shaped incisor (11), hypodontia (19,26), supernumerary teeth (14, 16, 21, 25, 27) and dens invaginatus (16, 25). Supernumerary teeth (15, 17) and cleft lip and palate (8, 18) are reported with talon cusp on primary incisor. The anomaly is frequent in Rubinstein-Taybi syndrome (28, 29) and it may accompany Mohr syndrome (30), Sturge-Weber syndrome (15) and incontinentia pigmenti (31).

This paper presents a case of the talon cusp found out in our surgery, discusses possible etiology and draws attention to possible complications associated with this anomaly.

Case report

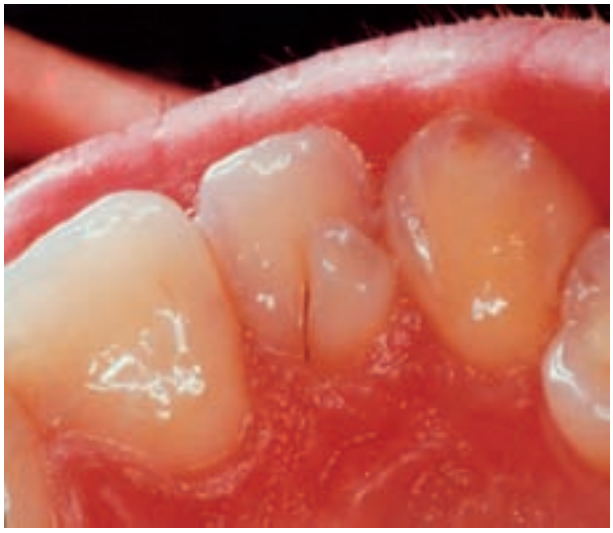
A 27-year-old male was seen for a routine dental check up. Clinical examination revealed complete permanent dentition with crowding, Angle class I occlusion, dystopia of maxillary third molars and erupting lower third molars. An accessory cusp was found on the lingual surface of the right maxillary second incisor (Figure 1). The cusp extended from the gingival margin to over half height of the lingual surface. It was separated by dark pigmented, but caries free, developmental grooves. The talon cusp was occluded with the mandibular lateral incisor and canine, causing reshaping of the tip to wear facet, but it did not cause occlusal trauma. Orthopantomogram did not show any associated pathology. On the periapical radiograph talon cusp had a typical V-shaped appearance and was superimposed over the image of the affected crown (Figure 2). It

nošću ustanoviti proteže li se pulpni rog u kvržicu. Pacijentu je predložen profilaktički postupak pečaćenja fisura.

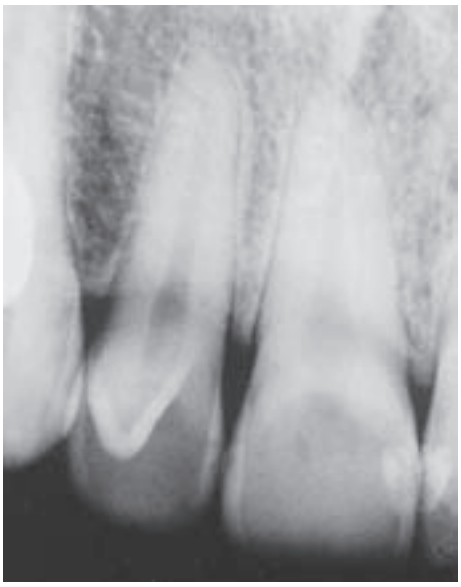
Na pregled su pozvani i pacijentovi roditelji. Kod njegova su oca svi zubi bili uobičajene morfologije, kao i kod majke – jedina je iznimka bio gornji lateralni desni sjekutić ekstrahiran zbog uznapredovale parodontne bolesti.

was not possible to determine whether pulp horn extended in talon cusp. Fissure sealing as prophylactic therapy was proposed to the patient.

The patient's parents were also examined. All the teeth were normal in shape in his father, as well as in his mother, with an exception of the right lateral incisor, which was extracted due to advanced periodontal disease.



Slika 1. Kandžasta kvržica na gornjem desnom bočnom sjekutiću, slika u zrcalu.
Figure 1 Mirror photograph showing talon cusp on the right maxillary lateral incisor.



Slika 2. Periapikalna snimka: preko slike zahvaćene krune superponira se kandžasta kvržica kao sjena tipičnog V-oblika.
Figure 2 Periapical radiograph showing talon cusp of a typical V-shaped appearance superimposed over the image of the affected crown.

Rasprava

Kandžasta kvržica nastaje u stadiju morfodiferencijacije zubnog zametka, ali etiologija i mehanizam nastanka nisu razjašnjeni. Pojava te anomalije kod članova obitelji (16, 32), blizanaca (33), potomaka iz konsangvinih brakova (10, 23, 34) te genetski uzrokovanih sindroma (28-31) potvrđuje pretpostavku o genetskoj etiologiji.

Budući da maksilarni bočni sjekutić često pogađaju anomalije, raspravlja se i o kompresiji njegova zametka između zametaka susjednoga središnjeg sjekutića i očnjaka (10). Kompresija bi mogla uzrokovati nabiranje dentalne lamine prema van u slučaju kandžaste kvržice ili prema unutra u slučaju dens invaginatus. Činjenica da se kandžasta kvržica može pojaviti i na središnjem sjekutiću i očnjaku, suprotna je hipotezi o kompresiji.

Drugi uzrok te anomalije mogla bi biti hiperproduktivnost anteriornog segmenta dentalne lamine,

Discussion

Talon cusp originates during the morphodifferentiation stage of dental development, but the exact etiology and genesis are unknown. Reports on talon cusps in family members (16, 32), twins (33), offspring from consanguineous marriages (10, 23, 34) and in some genetic syndromes (28-31) support genetic etiology of the condition.

Because of susceptibility of the maxillary lateral incisors to anomalies, compression of its tooth germ by the adjacent central incisor and canine is also discussed (10). Compression could cause outfolding of the dental lamina in case of talon cusp, or infolding of the dental lamina in case of dens invaginatus. Occurrence of the talon cusp in central incisor and canine is opponent to the compression hypothesis.

Another possible cause of the condition that is discussed is hyperproductivity of the anterior seg-

a tu hipotezu podupiru slučajevi kandžaste kvržice udružene s geminacijom (22-24), hiperdoncijom (14, 17) ili nalazom meziodensa (15, 16, 21, 23, 25, 27).

Kandžasta kvržica tri puta se češće javlja u trajnoj denticiji negoli u mliječnoj (10). Nekoliko radova obrađuje koliko je česta ta anomalija u različitim populacijama. Buenviaje i Rapp ističu da je kod američke djece prevalencija te anomalije 0,17%, ali nisu naveli kriterije kojima su se koristili (35). Chawla i suradnici opisali su kandžastu kvržicu kao „istaknuto uzdignuće od 1 mm ili više na oralnoj strani prednjih zuba“ i pronašli su prevalenciju od 7,7% kod sjevernoindijske djece (36). Hegde i Kumar pregledom 4.770 indijske djece pronašli su kandžastu kvržicu u 9 slučajeva (0,2%) - prema kriteriju Davisa i Brooka (19). Mavrodisz i suradnici pregledom 600 mađarske djece pronašli su prevalenciju od 2,5% i to sva tri oblika kandžaste kvržice prema definiciji Hattaba i suradnika (37). Prema dosad objavljenim opisima slučajeva, čini se da kandžasta kvržica nije rijetkost kod Arapa i Kineza (10, 11, 15, 16, 33). U hrvatskoj populaciji dosad je opisano nekoliko slučajeva, uključujući i rijetku pojavu na labijalnoj plohi središnjih trajnih sjekutića (4, 38).

Mader je prvi shvatio da je potrebna definicija te anomalije, pa ju je opisao kao morfološki dobro ograničenu kvržicu na oralnoj plohi trajnih sjekutića koja se proteže barem do polovice udaljenosti caklinsko-cementnog spojišta (CCS) i incizalnog brida (21). Davies i Brook uključuju mliječne zube u Maderovu definiciju (16), a Jowharji i suradnici predlažu da se u definiciju uključe akcesorne labijalne kvržice (3). Hattab i suradnici opisali su tri kategorije: 1) talon (prema definiciji Daviesa i Brooka); 2) semitalon – akcesorna kvržica visine ≥1 mm, ali ne dosiže polovicu udaljenosti CCS – incizalni brid; 3) trace talon – povećani cingulumi i varijacije (10). U dosad objavljenim prikazima slučajeva puna ekspresija kandžaste kvržice (kategorija talon) pronađena je samo na sjekutićima, a na očnjacima se anomalija javlja u oblicima semitalon i trace talon.

Mader smatra da je kandžasta kvržica više specifični dio kompleksa akcesornih kvržica negoli zasebni entitet (21). Davies i Brook kažu da je ona krajnost kontinuirane varijacije od normalnog cinguluma preko povećanog cinguluma, male akcesorne kvržice do kandžaste kvržice (16). Prednost definicije Hattaba i suradnika (10) jest u tome što opisuje sve oblike, pa omogućuje vrjednovanje i kod slabije ekspresije ovog obilježja.

ment of the dental lamina. Cases of talon cusp associated with gemination (22-24), hyperdontia (14, 17) or mesiodentes (15, 16, 21, 23, 25, 27) support this hypothesis.

Talon cusp is three times more frequent in permanent dentition than in primary dentition (10). There are several reports on incidence of talon cusp in different populations. Buenviaje and Rapp reported that the prevalence of talon cusp in American children was 0.17% but they did not specify the criteria used for diagnosis (35). Chawla et al defined talon cusp as a “demarcated projection of a millimeter or more present on the lingual surface of anterior teeth”, and established prevalence of 7.7% in a sample of North Indian children (36). Hegde and Kumar examined 4770 Indian children and talon cusp was found in 9 cases (0.2%) using the definition of Davis and Brook (19). Mavrodisz et al established the prevalence of 2.5% of all three categories described by Hattab et al in 600 Hungarian children (37). Reviewing of case reports reveals that talon cusp is not a rarity in Arabs and Chinese (10, 11, 15, 16, 33). There are few described cases in Croatian population, including the rare presentation on the labial surface of the maxillary central incisors (4, 38).

Mader was the first who recognized a need for establishing the criteria for diagnosing this condition. He described talon cusp as a morphologically well delineated anomalous cusp of succedaneous incisor teeth that prominently projects from the lingual surface and extends at least half the distance from the cementoenamel junction (CEJ) to the incisal edge (21). Davies and Brook included deciduous teeth in Mader’s definition (16). Jowaharji et al propose including the labial accessory cusps in the definition (3). Hattab et al defined three categories: 1) talon (according to the definition of Davies and Brook); 2) semitalon – accessory cusp ≥ 1 mm of height but not exceeding half the distance CEJ – incisal edge; 3) trace talon – enlarged cingula and their variations (10). In the published case reports the full expression of talon cusp (category talon) is seen only in incisors, while in canines semitalon and trace talon are expressed.

Mader considers the talon cusp as a specific part of the accessory cusps rather than a complete separate entity (21). Davies and Brook consider it as an extreme of a continuous variation progressing from a normal cingulum to an enlarged cingulum, and then from a small accessory cusp to a talon cusp (16). An advantage of the definition of Hattab et al (10) is in defining the whole range of forms en-

Kandžasta kvržica može biti od velikog kliničkog značenja, pa ju je vrlo važno rano dijagnosticirati. Izražena kvržica može narušavati estetiku, a oštar vrh može iritirati jezik tijekom govora i žvakanja. U slučaju okluzijske interference može se dogoditi rotacija i/ili naginjanje bilo zahvaćenog zuba bilo antagonista, fraktura kandžaste kvržice, a u konačnici i periapikalna upala te parodontno oštećenje. Rapidna abrazija zuba ili fraktura kvržice mogu uzrokovati ekspoziciju pulpe. Razvojne brazde predilekcijsko su mjesto za nakupljanje zubnog plaka, a ako se protežu na korijen zuba, moguća je parodontna upala. Na radiogramima neizniknutih zuba kandžasta se kvržica može zamijeniti s prekobrojnim zubom, što može završiti nepotrebnim operativnim zahvatom.

Ako se kod pacijenta pronađe kandžasta kvržica, preporučuje se ortopantomogram kako bi se isključile ostale anomalije koje se pojavljuju zajedno s kandžastom kvržicom (odontom, prekobrojni zub). U slučaju okluzijskih smetnji potrebno je nekoliko mjeseci postupno brusiti kvržicu kako bi se spriječilo otvaranje pulpe te površinu zuba premazivati sredstvima za desenzibilizaciju. Razvojne brazde treba očistiti od naslaga i plaka te preventivno zaštititi materijalima za pečaćenje, a u slučaju karijesa obaviti ekskavaciju i terapiju ispunom.

Zaključak

Kandžasta kvržica je morfološka anomalija prednjih zuba i može uzrokovati niz kliničkih smetnji, pa ju je potrebno što ranije dijagnosticirati i provesti odgovarajuću terapiju kako bi se izbjegle moguće komplikacije. Radi rasvjetljavanja etiologije i pojavnosti te anomalije poželjne su populacijske studije s primjenom opširnog i objektivnog kriterija koji omogućuje definicija Hattaba i suradnika.

abling the evaluation even in cases with weak expression of the trait.

Talon cusp may be of great clinical importance, and early diagnosis may be critical. Marked talon cusp can compromise aesthetics, and sharp tip can cause tongue irritation during speech and mastication. In case of occlusal interference, possible complications are rotation and/or angulation of affected tooth or antagonist, fracture of the talon cusp and, finally, periapical inflammation and periodontal damage. Rapid abrasion or cusp fracture can lead to pulpal exposure. Developmental grooves are susceptible to plaque accumulation and, in case they extend to the root of the tooth, periodontal inflammation is possible. On the X-rays of unerrupted teeth talon cusp can be misdiagnosed as a supernumerary tooth and lead to unnecessary surgery.

In case of finding a talon cusp, taking of an orthopantomogram is recommended for exclusion of association with other abnormalities (odontome, supernumerary tooth). Occlusal interference should be eliminated through gradual occlusal reduction over a period of months to avoid a pulpal exposure, and the tooth surface should be treated with a desensitizing agent. Deep developmental grooves should be cleaned of debris and plaque, and prophylactically sealed with fissure sealant or treated with excavation and filling in case of caries.

Conclusion

Talon cusp is a morphologic anomaly of the frontal teeth that can cause a number of clinical problems. Early diagnosis and treatment are needed to avoid possible complications. Further population studies, by using comprehensive and objective criterion offered by the definition of Hattab et al, are required to elucidate the etiology and prevalence of this condition.

Abstract
Talon cusp is an accessory cusp-like structure projecting from the tooth neck or cingulum area towards the incisal ridge of an anterior tooth. Both primary and permanent dentition are involved, and both sexes. This paper reviews the literature and presents a case of the talon cusp on the lingual surface of the maxillary lateral incisor in a male patient. Possible etiology, prevalence, classification, clinical and radiographic characteristics of this anomaly and modes of treatment are described.

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Address for correspondence
Jelena Dumančić
Department of Dental Anthropology
School of Dental Medicine University of Zagreb
Gundulićeva 5, HR-10 000 Zagreb, Croatia
dumancic@sfzg.hr

Key words
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