

https://dspace.org/

Clinical study of mandibular exostoses in South African caucasoids

Volchansky, A.

1986

http://hdl.handle.net/10539/19912

Volchansky, A. 1986. Clinical study of mandibular exostoses in South African Caucasoids. Journal of the dental association of South Africa; 41(3):139-41

Downloaded from a DSpace repository. https://dspace.org/

Journal of the Dental Association of South Africa, **41**, 139-141

Clinical study of mandibular exostoses in South African caucasoids

A. Volchansky

MRC/University of the Witwatersrand, Dental Research Institute, Johannesburg

Keywords: bone; exostosis

SUMMARY

Exostoses or bony protruberances may be found on the lingual surface of the mandible, with a reported occurrence in several population groups ranging from 0-100 percent. Four hundred and thirty-six South African Whites presenting for periodontal treatment in a periodontal practice, aged between 20 and 84 years were examined for the presence of lingual exostoses. Of these 205 (47,1 percent) were males and 231 (52,9 percent) females. Forty-two males (9,6 percent) and 29 females (6,7 percent) presented with exostoses. The prevalence in males was significantly higher than in the females in the sample (χ^2 = 5,02, $p<0.05$). The distribution of exostoses adjacent to the canines and premolars was similar to that seen in other studies, but the overall prevalences were different.

OPSOMMING

Eksostoses of benige uitgroeisels kan voorkom op die linguale oppervlakte van die mandibula. Volgens verslae wissel die voorkoms van 0 tot 100 persent. Vierhonderd ses-en-dertig Wit Suid-Afrikaners, met ouderdomme tussen 20 en 84 jare, wat vir periodontale behandeling aangemeld het, is vir die teenwoordigheid van linguale eksostoses op die mandibula ondersoek. In hierdie groep was daar 205 (47,1 persent) manlike en 231 (52,9 persent) vroulike persone. Eksostoses is gevind in 42 (9,6 persent) manlike en 29 (6,7 persent) vroulike pasiënte. Die voorkomsyfer in manlike persone was betekenisvol-hoër as in die vroulike persone (χ^2 = 5,02, $p<0,05$). Die verspreiding van eksostoses na aan die hoektande en premolaartande was soortgelyk aan die bevindinge van ander ondersoeke maar die algehele voorkomsyfer het verskil.

INTRODUCTION

Exostoses or bony protruberances may be found on the lingual surface of the mandible in the region of the canines and premolars. Such a protruberance is also termed a torus mandibularis and according to Moorrees, Osborne and Wilde (1952) was first described by Danielle in 1884.

Mandibular exostoses may be single or multiple, unilateral or bilateral. Clinically, they are usually well rounded, smooth surfaced, bony hard projections covered with normal or pale pink oral mucosa. They are generally viewed as developmental anomalies, benign in nature and of no pathological significance (Zegarelli *et al*, 1978), but it is important that these exostoses be diagnosed correctly as they may be confused with neoplasms. Blastomoid lesions, of which exostoses are one variety, are reactive in nature; they are well named since they produce a clinical picture similar to that of neoplasia. They are, however, common enough to be readily recognisable (Kerr, Ash and Millard, 1983). An aid to clinical diagnosis is the radiographic appearance of mandibular exostoses which are well circumscribed areas of increased radio-opacity superimposed on the roots of mandibular teeth (Kerr *et al*, 1983). Zegarelli *et al* (1978), have also reported that exostoses are well contoured dense radio-opacities projecting from the lingual surface of the mandible on occlusal films.

The prevalence of these mandibular exostoses has been reported in several population groups around the world and has varied considerably, with percentage prevalences ranging from 3,5 to 100 (Table I).

Recently, an investigation of a bony ridge on the lingual aspect of the third molars in South African Blacks (Volchansky and Makings, 1984) showed that the ridge occurred in 80 of the 100 mandibles examined, but no other bony exostoses were seen on the lingual aspect of the mandibles. This confirmed an observation made by Middleton-Shaw (1931), but was in contrast to the findings shown in Table I. No figures exist for South African White populations, so the present investigation was undertaken to determine the prevalence and distribution of mandibular exostoses in a group of South African Whites.

MATERIALS AND METHODS

Four hundred and thirty-six South African White patients, presenting for treatment in a periodontal practice, aged between 20 and 84 y, were examined over a 3-month period. They were examined in sequential order and the only criterion for inclusion in the study was that all the mandibular teeth, excluding the third molars,

Table I: **Percentage prevalence of lingual mandibular exostoses.**

Author	Year	Population examined	Number examined	% with trait
Drennan	1937	Bushmen	50	24,0
Hrdlicka	1940	Peruvian Pre-Columbian	455	3,5
		North American Indians	2 000	13,6
		American Whites	766	6,1
		Negroes	53	11,3
Kolas et al	1953	Hospital patients (all races)	2 478	7,8
Moorrees	1957	Western Aleuts	35	25,7
		Eastern Aleuts	44	61,4
Summers	1968	White American females	300	15,9
Mayhall	1971	Canadian Eskimos	433	38,5
Sawyer et al	1979	Pre-Columbian Peruvians	1 000	8,5
Sellevold	1980	Norsemen	53	100
		Greenland Eskimos	93	100

Table II: **Prevalence of mandibular lingual exostoses.**

Age	Without Exostoses Male n	Female n	Both Sexes	With Exostoses Male n	Female n	Both Sexes
20-29	7	17	24	2	3	5
30-39	32	43	75	11	9	20
40-49	60	58	118	16	5	21
50-59	40	49	89	7	8	15
60-69	21	26	47	6	3	9
70-79	1	9	10	0	1	1
80-89	2	0	2	0		
Total	163	202	365	42	29	71

Table III: **Distribution of Exostoses**

(The bars indicate the size of the exostoses when extending beyond a single tooth)

Type of Exostosis	Tooth 46	45	44	43	42	41
Nodular	0	1	3	5	1	1
Rounded-large	3	1	6	0	0	0
			14			
		1		10		
			6			
		1				
Rounded-small	1	1	10	4	1	0
	Tooth 36	35	34	33	32	31
Nodular	0	2	5	4	0	1
Rounded-large	2	5	10	0	0	0
			14			
		2		11		
			5			
		2				
Rounded-small	0	4	15	2	0	2

should be present.

While seated in a dental chair the lingual aspect of the patients' mandibles were examined in good tungsten light, visually, with a dental mirror and by finger palpation to the floor of the mouth at the base of the mandible and extending posteriorly beyond the second molars.

The exostoses were subdivided into the following three groups:

Group 1: Nodular; when the diameter of the nodule was 3 mm or smaller (Fig. 1).

Group 2: Rounded large; almond shaped and wider than a single adjacent tooth in a mesio-distal direction (Fig. 2).

Group 3: Rounded-small; marble shaped, and no larger than the width mesio-distally of an adjacent tooth (Fig. 3).

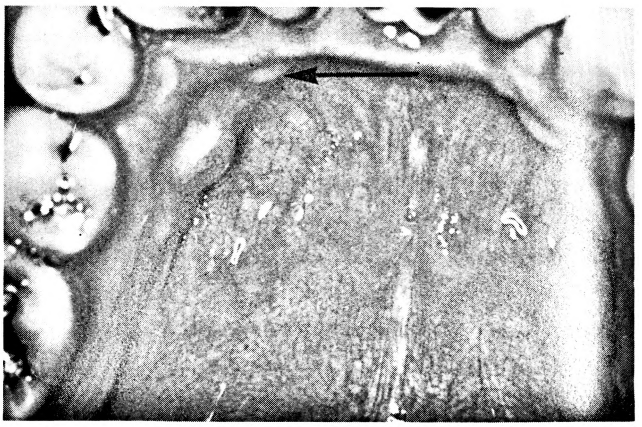


Fig. 1: **Nodular exostosis with a diameter of 3 mm or less (arrowed).**

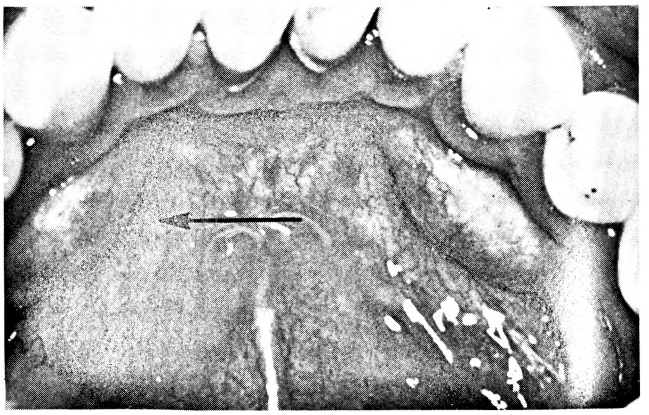


Fig. 2: **A large rounded exostosis, almond-shaped and wider than a single adjacent tooth in a mesio-distal direction (arrowed).**

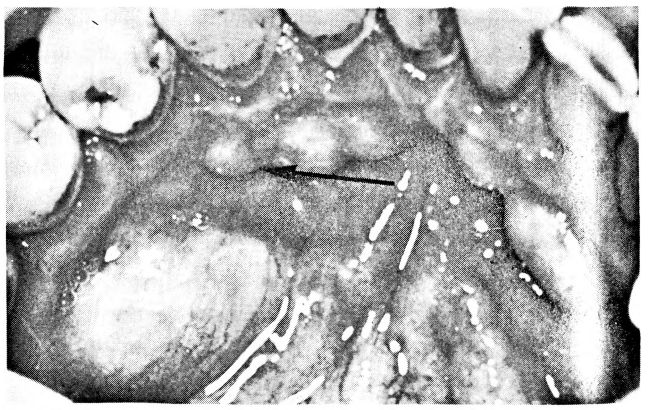


Fig. 3: **A small rounded marble-shaped exostosis (arrowed).**

RESULTS

Of the 436 patients examined, 205 (47,1 percent) were males and 231 (52,9 percent) females. Of these 42 males (9,6 percent) and 29 females (6,7 percent) presented with exostoses. The prevalence in males was significantly higher than in the females in the sample ($\chi^2 = 5{,}02$, $p<0.05$). The age distribution of the patients in decades and the presence of exostoses is shown in Table II.

No exostoses were seen on the mandible lingual to the second molars and only three were apical and lingual to the central incisors, and these were in the same patient.

Table III shows the number and type of exostoses seen in relation to the mandibular teeth. When the exostoses extended beyond a single tooth, this has been indicated.

DISCUSSION

This investigation has shown that in a sample of South African Whites, exostoses occur predominantly alongside the premolars, then the canines and to a much lesser degree lingual to the molars and incisors. This confirms the report of Zegarelli *et al* (1978) who stated that mandibular lingual exostoses are most often found in the cuspid and bicuspid regions.

Owing to the heterogeneous origin of the South African White population it is difficult to define which group of individuals would provide an unbiased sample. All of the patients used in this study were referred for periodontal or oral medicine diagnosis — none was referred, nor complained of the presence of exostoses. This fact may well reduce the bias in this sample.

The percentage overall prevalence of exostoses in this study of 16,3 percent is similar to the 15,9 percent seen by Summers (1968) in White American females but the prevalence for females only (6,7 percent) was lower in the present study.

The aetiology of bony exostosis is still in dispute even though authors such as Moorrees, Osborne and Wilde (1952), Suzuki and Sakai (1960), Gould (1961), and Sellevold (1980) feel that there is a genetic factor in determining the presence and morphology of mandibular torus.

It was however agreed that the condition is innocuous and falls within the normal range of human variations (Clarke and Bueltmann, 1971). Starshak (1971) stated that their surgical removal may be indicated when the size interferes with mouth function such as speech or eating, or when their presence would interfere with the placement of partial or full dentures. At the time of the present study none of the patients required removal of the exostoses.

ACKNOWLEDGEMENTS

The author wishes to thank Professor P. Cleaton-Jones for his assistance in the preparation of this paper and Mrs. H. Ball for typing the manuscript.

REFERENCES

Clarke, M.A. & Bueltmann, K.W. (1971) Anatomical considerations in periodontal surgery. *Journal of Periodontology*, **42**, 610-625.

Drennan, W.R. (1937) The torus mandibularis in the Bushman. *Journal of Anatomy*, **70**, 66-71.

Gould, A.W. (1961) An investigation of the inheritance of torus palatinus and torus mandibularis. *Journal of Dental Research*, **43**, 159-167.

Hrdlicka, A. (1940) Mandibular and maxillary hyperostoses. *American Journal of Physical Anthropology*, **27**, 1-55.

Kerr, D.A., Ash, M., & Millard, H.D. (1983) *Oral Pathology*, 6th ed. pp 230 and 263. Philadelphia: Lea and Febiger.

Kolas, S., Halperin, V., Jefferie, K., Huddleston, S. & Robinson J.R.G. (1953) The occurrence of torus palatinus and torus mandibularis in 2 478 dental patients. *Oral Surgery, Oral Medicine and Oral Pathology*, **6**, 1 134-1 141.

Mayhall, J.T. & Mayhall, M.F. (1971) Torus mandibularis in two Northwest Territories villages. *American Journal of Physical Anthropology*, **34**, 143-148.

Middleton-Shaw, J.C. (1931) *The Tooth, the Bony Pulate and the Mandible in Bantu Races of South Africa*, p 116. London: John Blake, Sons and Dinelson, Ltd.

Moorees, C.F.A., Osborne, R.H. & Wilde, E. (1952) Torus mandibularis. Its occurrence in Aleut children and its genetic determination. *American Journal of Physical Anthropology*, **10**, 319-328.

Sawyer, D.R., Allison, M.J., Elzay, P. & Pezzia, A. (1979) Study of torus palatinus and torus mandibularis in Pre-Columbian Peruvians. *American Journal of Physical Anthropology*, **50**, 525-526.

Sellevold, B.J. (1980) Mandibular torus morphology. *American Journal of Physical Anthropology*, **49**, 569-572.

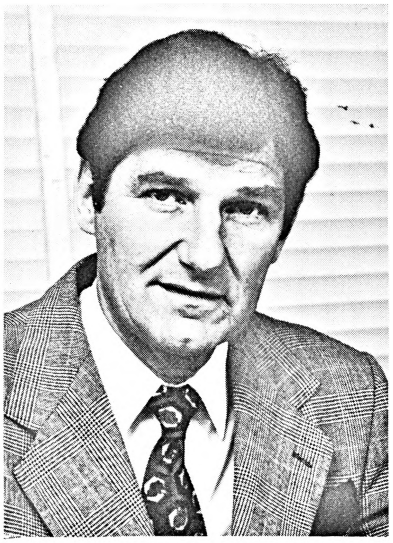
Summers, C.J. (1968) Prevalence of tori. *Journal of Oral Surgery*, **26**, 718-720.

Starshak, T.J. (1971) *Preprosthetic Oral Surgery*, p 94. St. Louis: C.V. Mosby Co.

Suzuki, M. & Sakai, T. (1960) A familial study of torus palatinus and torus mandibularis. *American Journal of Physical Anthropology*, **18**, 263-272.

Volchansky, A. & Makings, E. (1984) A new mandibular landmark? *Journal of Dentistry*, **12**, 221-224.

Zegarelli, E.V., Kutscher, A.H. & Hyman, G.A. (1978) *Diagnosis of Diseases of the Mouth and Jaws*, 2nd ed., pp 119-240. Philadelphia: Lea and Febiger.



UNIVERSITY OF HONG KONG
CHAIR OF CONSERVATIVE DENTISTRY

Professor C.E. Renson, first holder of the Chair of Conservative Dentistry, will retire from the University following an extension of his tenure, in June 1987. Applications are now invited for the Chair which will be vacant from July 1, 1987.

Annual salary (superannuable) will be within the professional range and not less than HK$546 000. At current rates, salaries tax will not exceed 17% of gross income. Housing at a rental of 7½% of salary, children's education allowances, leave, and medical benefits are provided.

Further particulars and application forms may be obtained from the Secretary General, Association of Commonwealth Universities (Appts), 36 Gordon Square, London WC1H OPF, England, or from the Appointments Unit, Secretary's Office, University of Hong Kong, Hong Kong. Closes: **May 15, 1986.**