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CLINICAL STATISTICS OF DENTAL CYSTS*

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A DENTAL cyst is one of inflammatory origin which arises at the apex of a non-vital tooth. Clinical investigations of large series of dental cysts have been undertaken by Darlington (1933), Stafne and Millhon (1945), Bernick (1949), and Bradley (1951).

This study is based upon certain clinical data which were available from the files of 200 patients who had been operated on for one or more apparent dental cysts, all of which had been examined histologically. Some of these cysts were found, on further assessment, to be not of dental, but of development origin. This fact has an influence on the statistical significance of these results, and further reference is made to the relevant cases later.

The data noted were:

- (a) Age of patient.
- (b) Sex of patient.
- (c) Position of cyst.
- (d) Whether a single cyst or more than one cyst was present.
- (e) The presence or absence of a sinus.
- (f) The presence or absence of pain.

Unfortunately not all of these facts had been recorded in the clinical notes of every case. In some instances these points were recorded sufficiently frequently to be of statistical value. In other instances there were too many omissions to draw any con-

clusions and these results have been discarded.

(a) *Age of Patients*

The age incidence of patients with dental cysts follows a fairly normal distribution curve (Table 1, Fig. 1). These results compare closely with those of Darlington (1933), while the average age of Bradley's patients was 29.2 years.

The incidence of dental cysts in the first decade is nil. In the second decade there is a rapid increase in incidence which increases to its maximum which is in the age groups 30-60 years. Thereafter there is again a rapid drop, so that in the age groups 61-70 years the incidence is roughly halved and after 70 the incidence is again negligible.

These findings are in accord with general clinical experience. Although dental caries is frequently found in children during the first decade, dental cysts are not commonly found associated with deciduous teeth. Harborow (1924) and O'Looney (1942) report cases of dental cysts associated with deciduous teeth, but as far as can be ascertained, these are the only such reports in an extensive litera-

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TABLE 1.—The age distribution of patients with Dental Cysts.

Age Group	No. of Cases	Percentage
0—10	0	0
11—20	20	11
21—30	31	17
31—40	39	21
41—50	36	20
51—60	36	20
61—70	18	10
71—80	3	2
81—90	1	0.6
Total	184	101.6

ture. The reason for this may be that drainage is more easily obtained when deciduous teeth are infected or that the time required for development of the cyst following pulp infection is not sufficient: that is, the tooth loosens and is exfoliated or extracted early.

The second decade is the period of greatest caries incidence and the occurrence of dental cysts during this period rises sharply. However, this figure may be abnormally high as it is probable that some of the cysts included in this survey are actually primordial cysts (Shear, 1960).

The incidence continues to rise and reaches its maximum over a lengthy period between the ages of 30 and 60. During

this period, teeth affected by caries, attrition, abrasion and trauma may be present in the mouth for an extensive period under conditions ideal for cyst formation.

The rapid decrease in the incidence in the older age group may be attributed to the fact that many of these people are edentulous. Those who are not edentulous have had regular and careful dental attention throughout their lives and these patients are unlikely to develop dental cysts. Another factor which is responsible for this decline in incidence is the natural population decrease of people in the older age groups.

(b) Sex of Patients

There is a significantly higher incidence of dental cysts in males than in females (Table 2). This is in accord with the findings of Darlington (1933) and Bradley (1951). Of 190 cases, in this series 119 (62.6 per cent) were in males and 71 (37.4 per cent) were in females.

(c) Positions of Dental Cysts

For purposes of determining the position of a cyst the jaws were divided into three zones: anterior, intermediate and posterior. The anterior zone included the incisor and canine regions; the intermediate zone the premolar and first molar regions; the posterior zone, the second

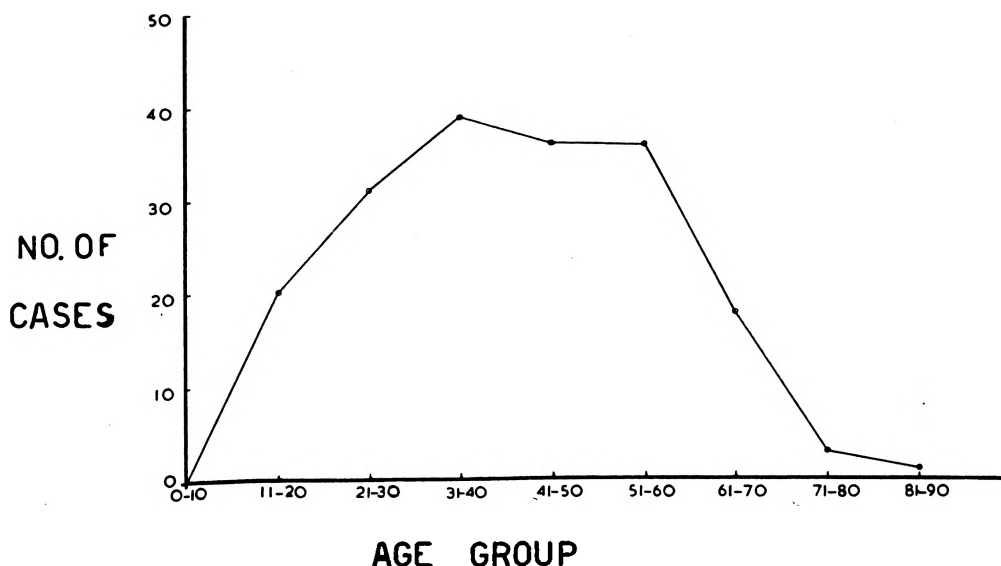


FIG. 1.—Frequency polygon showing the age distribution of patients with dental cysts.

TABLE 2.—The Sex incidence of patients with Dental Cysts.

Sex	No. of Cases	Percentage
Males	119	62·6
Females	71	37·4
Total	190	100

and third molar regions. In many cases a cyst extended to more than one zone. In such a case it was located in the zone which it had occupied to the greatest extent. For example, a cyst in the |3 4 5 region was placed in the "intermediate" zone while one in the 2 3 4| region was placed in the "anterior" zone. Where two zones were equally represented the cyst was located in the distal zone. Therefore a cyst in the 3 4| region was placed in the "intermediate" category and one in |6 7 region in the "posterior" category. Cases were excluded completely when their positions were not specifically stated or where their extent was so great that it was no longer possible to determine their origin.

The results (Table 3, Fig. 2) show that approximately 60 per cent of dental cysts are found in the maxilla and 40 per cent in the mandible. Of Darlington's series, 71 per cent occurred in the maxilla, and Stafne and Millhon (1945) showed that 63 per cent of the 500 dental cysts that they examined were from the maxilla. Fairhurst (1944) states that they are most common in the maxilla, particularly in the lateral incisor regions. By far the greatest incidence in this study is found in the maxillary anterior region (30·8 per cent) and Stafne and Millhon found that 42 per cent of their cases came from this area.

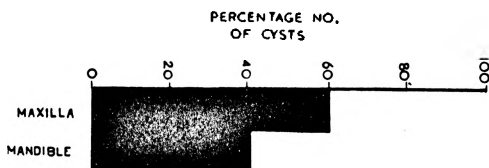


FIG. 2.—The relative incidence of dental cysts in the maxilla and the mandible.

The reason for the high incidence in the anterior region of the maxilla may be attributable to the frequency with which maxillary lateral incisors lose their vitality. An attempt was made to determine from the case records the cause of loss of vitality in each case. Unfortunately this was mentioned in only 41 cases and the results therefore have been discarded. Hallett (1953), Stephens (1953) and Kramer (1953) have drawn attention to the high incidence of palatal invaginations in the maxillary lateral incisor teeth and the frequency with which pulp death supervenes in these teeth.

A further reason for the high incidence in this region is that some of these cysts are possibly developmental and not dental cysts.

The mandibular anterior region has a very much lower incidence. This is to be expected as caries incidence in the lower incisor teeth is very low (Wallis and Pare, 1895).

The intermediate zones are almost equally involved in maxilla and mandible. 14·6 per cent of cases are found in this area in the maxilla and 13 per cent in the mandible.

There is a considerably lower incidence in the maxillary posterior region (2·7 per cent) and the comparatively high incidence in the corresponding region in the mandible (9·7 per cent) may be attributed to the fact that some of the cases which were previously considered dental cysts are now thought to be primordial cysts.

TABLE 3.—Positions of Dental Cysts.

Position	No. of Cases	Percentage
Maxilla:		
Anterior	57	30·8
Intermediate ..	27	14·6
Posterior	5	2·7
Unknown	23	12·4
Total Maxilla ..	112	60·5
Mandible:		
Anterior	10	5·4
Intermediate ..	24	13·0
Posterior	18	9·7
Unknown	21	11·3
Total Mandible ..	73	39·4
Total	185	99·9

(d) *Single and Multiple Cysts*

Numerous authors are of the opinion that the occurrence of dental cysts is influenced by an hereditary factor. The reasons for this hypothesis are: first that numerous individuals do not develop dental cysts despite the presence of infected teeth in their mouths for extensive periods; and secondly that some patients so frequently develop more than one cyst.

The simultaneous presence of more than one cyst of the jaws has been reported by Kershaw (1924), Tratman (1931), Coleman (1934), Straith (1939), Dillon (1939 and 1941), Powell-Cullingford (1942), Cash (1943), Shelfstein (1943), Thoma and Blumenthal (1946), Salman (1951), Knight and Manley (1955), Catania (1952), Orr and Browne (1954), Priestland (1955), Radden and James (1956), MacKay (1957), Korchin (1958), McKelvey *et al* (1960). Thoma and Blumenthal report on a family, the father of whom had one cyst and of the 32 progeny, 14 had one to six cysts in their jaws. McKelvey and Salman are both firmly of the opinion that cysts may occur as a familial disease and that certain individuals seem to have a predilection for them.

In 92 cases in this series there was mention in the clinical notes as to whether the cyst was a solitary lesion or whether more than one cyst was present. Of these, a single cyst was present in 71 cases (77 per cent) and more than one cyst was present in 21 cases (23 per cent).

(e) *Pain*

The presence or absence of pain was recorded in 71 cases.

Pain was present in 41 cases. Of these, clinical evidence of infection was present in 24 cases (58.5 per cent). There was histological evidence of acute inflamma-

tion in the epithelial linings of 19 of the cysts which produced pain (46 per cent) and in the fibrous cyst walls of 14 (34 per cent) of these cases.

Pain was reported absent in 30 cases. Of these, clinical evidence of infection was present in nine (30 per cent). Histological signs of acute inflammation in the epithelial lining were present in 14 cysts (47 per cent), and in 13 (43 per cent) evidence of acute inflammation was present in the fibrous wall (Table 4).

This data is too incomplete to form any conclusions. Clinical evidence of infection is more frequently found in the presence of pain than in its absence. However, presence or absence of pain seems not to be influenced by an acute inflammatory process at a histological level. There appears to be little evidence to support the frequently expressed opinion that dental cysts are painless unless infected. They do not often cause pain but when they do the reason may be something other than infection.

(f) *Sinus*

James and Counsell (1932) are of the opinion that because the epithelial linings of dental cysts bear a striking resemblance to the oral epithelium, these epithelial linings therefore have their origin in the oral epithelium. They state that the epithelium within the cyst or dental granuloma "is always associated with a pre-existing sinus which may still be present or have become obliterated". A sinus was present in 30 cases of this series; was absent in 30 cases and its incidence was not mentioned in the clinical notes of the other 140 cases. Very little significance can be attached to these results and there appears to be scanty evidence in support of the views expressed by James and Counsell.

TABLE 4.—Relationship between the symptom of Pain and Clinical and Histological Evidence of Infection.

	Total No. of Cases	Clinical Infection		Acute Inflammation in Epithelium		Acute Inflammation in Wall	
		No.	%	No.	%	No.	%
Pain present ..	41	24	58	19	46	14	34
Pain absent ..	30	9	30	14	47	13	43

SUMMARY

Some clinical statistics relative to dental cysts have been evaluated. The following conclusions have been made:

- (a) The age incidence of patients with dental cysts follows a normal distribution curve. The greatest incidence is in the age groups 30-60 years.
- (b) There is a significantly higher incidence of dental cysts in males than in females.
- (c) Dental cysts may occur in relation to any tooth in either jaw. However, they occur more frequently in the maxilla, particularly in the anterior region.
- (d) A single cyst was present in 77 per cent of cases, and multiple cysts in 23 per cent. It appears that certain individuals have a greater tendency to develop dental cysts than others, and it is thought that a hereditary factor may be responsible.
- (e) There was little evidence to support the opinion that dental cysts are painless unless infected.

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