

Obliterative otosclerosis

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Abstract

An analysis of 420 consecutive cases of obliterative otosclerosis seen in the Christian Medical College Hospital, Vellore is presented. The proportion of truly obliterative otosclerosis is 33.09 per cent (139 ears). Our male to female ratio in truly obliterative otosclerosis is 1.48:1, while in the non-obliterative group it is 1.34:1. The mean age at onset in the obliterative group was 19.14 while in the non-obliterative group it was 25.60. This is statistically significant ($P < 0.001$). The age at presentation was 25.90 in the obliterative group while in non-obliterative group it was 30.86; this is also statistically significant ($P < 0.001$). However the time interval between the age at onset and the age at presentation is not statistically significant.

Introduction

Obliterative otosclerosis is defined as a greatly thickened footplate where the oval window niche is filled, annular ligament invaded with no delineation to indicate the margins of oval window and where a burr or a trephine is required to penetrate the bone (Gristwood, 1966a). The 'incidence' varies from one per cent to 16 per cent (Gristwood, 1966b). Gristwood (1966a) found obliterative otosclerosis to be high in South Australia occurring in 11.1 per cent of a consecutive series of more than 1,000 otosclerotics. Fifty per cent of these cases developed hearing loss in childhood or adolescence and 80 per cent of this group noticed hearing impairment before the age of 25 years.

We have analysed 420 consecutive otosclerotic patients and have presented our results in Tables I–III. The proportion of truly obliterative otosclerosis is 33 per cent, not counting the solid delineated types. If the solid delineated type as described by Gristwood (1966a) is included, the proportion rises to 58 per cent. Our male to female ratio varies from 1.2:1 to 1.48:1 in obliterative type, solid delineated type, non-obliterative type as well

as the total group (Table I). We have compared the age at presentation and the age at onset between the truly obliterative and non-obliterative groups in Tables II and III.

The statistical analysis was carried out using the computer programme Minitab. Table II shows that the younger age group (11–20) has a higher proportion of obliterative otosclerosis as compared to age group 31–40 where non-obliteratives are more. Table III shows that the mean age at onset as well as age at presentation is significantly lower in the obliterative group ($P < 0.001$). However the time interval between the onset and age at presentation were similar in obliterative and non-obliterative otosclerosis ($P = 0.38$).

Discussion

This study is from a tertiary care hospital with patients distributed from all over India, the majority being from South India. The fluoride content in the ground water in these areas is high (4.00 parts per million) (Jalil and Tiwari, 1986). This is in contrast to the findings of Daniel (1969) where the incidence of otosclerosis was higher in low fluoride area. Since this study is only a comparison between obliterative and non-obliterative otosclerosis, it is not possible to comment on the role of fluorides in the high incidence of obliterative otosclerosis. The male to female ratio is also higher as compared to the usual ratio of males to females 1:2 in the Western world (Beales, 1981). The probable explanation would be the socioeconomic factor in that the males are the sole bread winners and hence the need to seek treatment more than the females! In view of the results of this study, though various pathological classifications have been suggested, Guild (1944), Mawson (1963), Garcia (1969), Morrison (1979), a simpler clinical surgical and prognostic classifi-

TABLE I
 MALE TO FEMALE RATIOS IN OTOSCLEROSIS

Total	420	Male = 244 Female = 176	M:F Ratio: 1.39:1
A Truly obliterative otosclerosis	139 (33%)	Total 139	M – 83 F – 56 Ratio: 1.48:1
B Non-obliterative otosclerosis	281	281	M – 161 F – 120 Ratio: 1.34:1
1. Solid delineated type	106	106	M – 58 F – 48 Ratio: 1.2 :1
2. Other types	175	175	M – 103 F – 72 Ratio: 1.43:1

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TABLE II
AGE DISTRIBUTION IN OTOSCLEROSIS

Type of otosclerosis	Age at presentation in years					Total
	<10	11–20	21–30	31–40	>41	
Obliterative	1 (0.7%)	45 (32%)	64 (46%)	23 (16.5%)	6 (4%)	139
Non-obliterate	0	41 (15%)	103 (37%)	94 (33%)	43 (15%)	281

Type of otosclerosis	Age at onset in years					Total
	<10	11–20	21–30	31–40	>41	
Obliterative	10 (7%)	77 (55%)	39 (28%)	10 (7%)	3 (2%)	139
Non-obliterate	5 (2.0%)	78 (28%)	125 (44%)	58 (21%)	15 (5%)	281

TABLE III
AGE AT ONSET, PRESENTATION AND TIME INTERVAL INCLUDING 95% CONFIDENCE LIMITS IN PARENTHESIS

	Age at onset		Age at presentation		Time interval in years	
	Mean	Standard error mean	Mean	Standard error mean	Mean	Standard error mean
Obliterative n = 139	19.14 (17.9 to 20.4)	0.63	24.90 (23.5 to 26.3)	0.72	5.75 (4.8 to 6.7)	0.47
Non-obliterate n = 281	25.60 (24.6 to 26.6)	0.51	30.86 (29.8 to 31.9)	0.55	5.26 (4.6 to 5.8)	0.31
Significance by Student's <i>t</i> -test	<i>P</i> <0.001 (significant)		<i>P</i> <0.001 (significant)		<i>p</i> = 0.38 (not significant)	

Figures in parentheses indicates 95 per cent confidence limits of the corresponding mean age in years.

cation would be truly obliterate and non-obliterate otosclerosis. A total stapedectomy may be preferable to a stapedotomy in the younger age group (second decade) even in non-obliterate type as there is no predictor available now for activity and maturity of these lesions into fully obliterate type later. Sodium fluoride may arrest the activity of the lesions given pre- and post-operatively particularly in this group of patients.

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