A-18: The histopathological spectrum of fibrous dysplasia in the jaws, with special reference to the distribution of lamellar bone

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Fibrous dysplasia in the jaws are characterized by a poorly circumscribed area of fibre-osseous replacement of normal bone in the jaw to form a swelling that starts in early childhood and typically undergoes arrest of growth at the time of skeletal maturation. Histopathologically early fibrous dysplasia is characterized by a predominance of fibrous tissue. Thereafter with advancing age the lesion changes its histology with coarse, fibrillar woven bone replacing the fibrous tissue. It is widely accepted that the woven bone trabeculae are arranged in the format of "Chinese character trabeculae" both in the jaws and in other long bones affected with fibrous dysplasia. A number of authorities have defined fibrous dysplasia histologically as a lesion showing arrest of maturation at the woven bone stage and will not render a histopathological diagnosis of fibrous dysplasia when lamellar bone is present. What histologic features are diagnostic for fibrous dysplasia of the jaws and skull however is considerably more controversial. Some pathologists will not accept the presence of mature adult lamellar bone and osteoblastic rimming of bony trabeculae as compatible with the diagnosis of fibrous dysplasia. Others accept a wide range of histopathologic features as acceptable for fibrous dysplasia.

As a rule jaw and skull lesions are thought to be more heavily ossified than lesions in other long bones and thus the bony trabeculae tend to be thicker and blunter than the slender trabeculae seen in the trunk and limb bone lesions. Accordingly, the presence of lamellar bone and osteoblastic rimming could be acceptable for a diagnosis of fibrous dysplasia in the jaws.

The present study was undertaken in order to assess the histopathological spectrum of fibrous dysplasia with particular reference to the presence and distribution of lamellar bone. In addition the presence or absence of osteoblastic rimming, presence of a capsule and presence of areas of haemorrhage were investigated.

For this study cases with fibrous dysplasia were selected from the files of the Dept. of Oral Pathology, University of Peradeniya from 1978-1994. Among 13,272 cases 70 cases were histologically diagnosed as fibrous dysplasia. Criteria for inclusion in the study were:

1. Adequate historical data from requisition forms.
2. Radiographs displaying ground glass appearance and
3. Microscopic slides showing the typical features of fibrous dysplasia of bone.

All slides available were reviewed. From cases without slides fresh slides were cut from the wax blocks. Entire slides were sampled to assess the pathology. In selected cases Masson's trichrome stain was used to differentiate osteoid and osteoblastic streaming.

Fibrous dysplasia accounted for less than 1% of all cases seen in the Faculty of Dental Science. Out of the 70 cases of fibrous dysplasia one case was reported as polyostotic fibrous dysplasia. Age at diagnosis ranged from 7 to 57 years with a mean age of 25 years and with a predilection for the second decade of life accounting for 48% of the sample. Less than 10% occurred in persons under the age of 10 years while 47% of patients exceeded 30 years of age. The female to male ratio was 1.5:1 and the ratio of maxilla to mandible was 2:1. Lesions arose most frequently in the left side of the maxilla. Duration was unknown in 20 cases and varied from one month to over 15 years in the remainder of cases.

Assessment of histologic features was undertaken using routine light microscopy. Three basic hard tissue configurations were observed: (1). Woven bone trabeculae (2). Lamellar bone trabeculae and (3). Calcospherites.

The detailed microscopic features are outlined in *Table 1*. All the lesions elaborated various types of bone. Rimming of bone trabecula by osteoblasts occurred only in 14% of the cases. There were stromal variations with regard to cellularity and collagen fibre orientation. The predominant pattern was that of hypercellularity with moderate vascularity and haphazard collagen fibre bundle orientations. About 70% of cases showed typical "Chinese letter appearance". None of the cases showed a capsule or presence of giant cells. Chronic inflammatory cells were seen only in one case, and the presence of granulation tissue was seen in 3 cases.

Table 1 : The Histopathological spectrum of fibrous dysplasia in jaws

No.	*Histological features*	*Total no of cases*	*%*
1.	Fibrous tissue only	0	0
2.	Calcospherites only	1	1.93
3.	Predominantly woven bone with calcospherites	9	12.9
4.	predominantly woven with osteoblastic rimming	10	14.3
5.	Predominantly woven bone without osteoblastic rimming	41	58.6
6.	Predominantly woven bone with Lamellar bone	7	10
7.	Predominantly Lamellar bone with woven bone	2	2.8
8.	Lamellar bone only	0	0

Fibrous dysplasia originates in childhood but may persist into adult life (7-57 years). It is a specific histopathologic entity characterized by an arrest of bone maturation at the woven bone stage. Histopathologically the commonest presentation is one of predominantly woven bone without osteoblastic rimming (58.6%). However in a few cases (12.8%) lamellar bone could be seen. This is more commonly seen in association with woven bone. The presence of lamellar bone with woven bone may be seen occasionally in certain cases complicated by surgery, fracture or post extraction wound healing. There was not a single case of lamellar bone only.