Fibrous dysplasia (fibro-osseous metaplasia) is one of a diverse group of diseases that are characterized by alterations in bone growth. It is a developmental, tumor-like process of unknown etiology. Its initial clinical sign is usually a painless enlargement of the affected bone. It occurs in equal proportions in males and females, most often during the first two decades of life.

Fibrous dysplasia is subclassified into two main clinical subtypes: monostotic and polyostotic. The monostotic type, which accounts for 80% of cases, affects only one bone, usually the maxilla; the polyostotic type affects multiple bones. Polyostatic fibrous dysplasia is seen in both Jaffe-Lichtenstein and McCune-Albright syndromes, along with skin hyperpigmentation (café au lait tan macules) and sexual precocity (the most common endocrine disturbance). Radiologic studies typically demonstrate a poorly defined, ground-glass-type lesion; in the polyostotic form, multilocular radiolucencies may be seen.

Histologically, fibrous dysplasia features irregularly shaped trabeculae of immature, woven bone in a background of variably cellular, loosely arranged fibrous stroma (figure 1). The spicules of bone are often curvilinear or branching, and they have a "Chinese character" or "alphabet soup" appearance. The delicate trabeculae do not have osteoid rims, but they do have minimal osteoblastic rimming (figure 2). The fibroblasts usually have plump, ovoid nuclei, although elongated, narrow nuclei are sometimes also seen.

Treatment of fibrous dysplasia is challenging. Bone growth can stop spontaneously, but by then it might have already resulted in a cosmetic deformity that requires surgical excision. Regrowth occurs in as many as 50% of patients over time. Irradiation is not indicated.
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