## *Tooth – Dental Dysplasia*

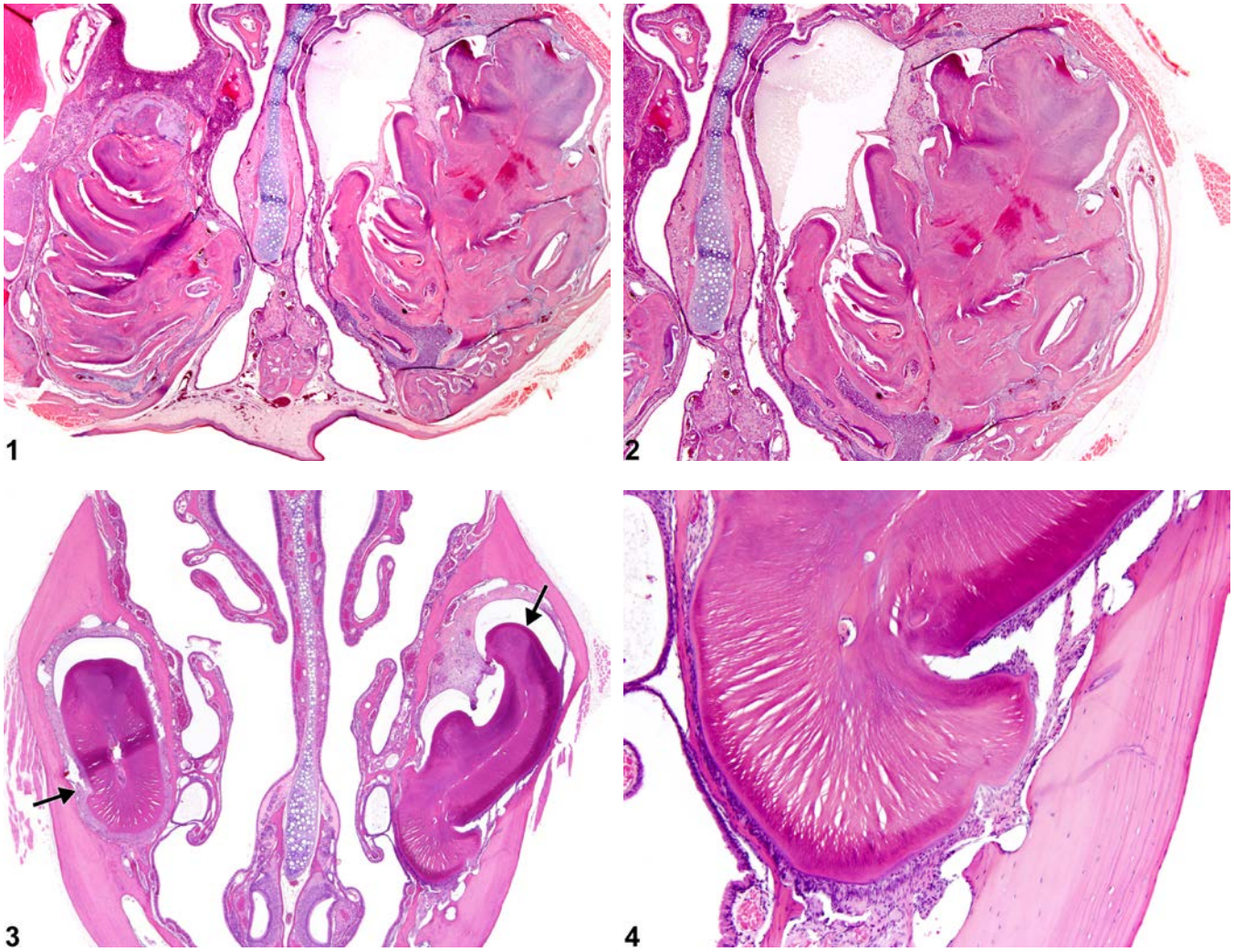


**Figure Legend: Figure 1** Tooth - Dental dysplasia, Bilateral in a male B6C3F1 mouse from a subchronic study. There is abnormal growth of dental tissues characteristic of dental dysplasia. **Figure 2** Tooth - Dental dysplasia, Bilateral in a male B6C3F1 mouse from a subchronic study (higher magnification of Figure 1). There is abnormal growth of dental tissues characteristic of dental dysplasia. **Figure 3** Tooth - Dental dysplasia, Bilateral in a male B6C3F1 mouse from a subchronic study. There is abnormal growth of dental tissues characteristic of dental dysplasia (arrows). **Figure 4** Tooth - Dental dysplasia, Bilateral in a male B6C3F1 mouse from a subchronic study (higher magnification of Figure 3). There is abnormal growth of dental tissues characteristic of dental dysplasia.

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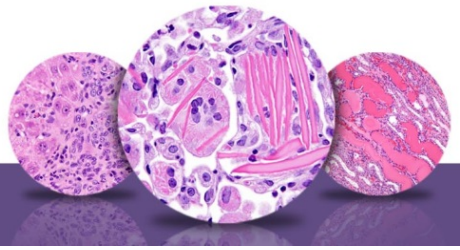
**Comment:** Dental dysplasia (Figure 1, Figure 2, Figure 3, and Figure 4) is a common, chronic, degenerative change of the teeth, mainly the incisors, that can occur after trauma or inflammation. It represents abnormal development of injured or displaced odontogenic tissues and is characterized by abnormal deposits of dentin, cementum, and osteoid (from the alveolar bone). It can be unilateral or bilateral. The incisors of species with hypsodont dentition are particularly prone to dysplastic changes because of the persistence of the formative organ throughout the animal's life. The upper incisors of rodents are more susceptible to traumatic injury than the lower teeth because the bones of the skull provide a less stable base of support. The dorsal bony support of the maxillary incisors, which is needed for normal function, is solid, but the lateral support of the teeth is derived mainly from the soft tissue and is susceptible to traumatic injury and displacement. When an incisor is injured, what remains of the dental organ may continue to attempt tooth formation, although it is abnormal because of cell or tissue displacement. In addition, there is often a general healing response, similar to fracture healing, and this often accounts for the increased bone, dentin, or osteodentin in these lesions. In some animals, dysplastic dental material forms large solid masses adjacent to the normal tooth position. Dentin, cementum, and osteoid cannot always be readily distinguished from one another. Periodontal abscesses, some with perforation into the nasal cavities and severe rhinitis, were observed in association with the dental masses. Feeding powdered ration, which reduced the normal wearing of the incisors, and repeated clipping of overgrown incisors were believed to contribute to the incidence of this condition.

Dental dysplasia must be differentiated from odontoma. The term "odontoma" refers to what most authorities consider a hamartomatous malformation that resembles a neoplasm. Odontomas are characterized by proliferative redundancies of the dental organ that progress to the stage of both enamel and dentin formation. Size and cellularity/proliferative activity are criteria for differentiating odontomas from dental dysplasia. In general, dental dysplasia resembles attempted repair (reminiscent of a fracture callus with abundant dense bone/osteodentin) with some residual active dental organ tissue. The diagnosis of "odontoma" is reserved for larger, more cellular masses that appear to be proliferating beyond what one would expect for a developing tooth or attempted repair of a tooth fracture. Because of expansion, odontomas can be destructive masses.



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**Recommendation:** Dental dysplasia should be diagnosed and graded based on the number and size of the dysplastic teeth.

**References**

Levy BA. 1968. Effects of experimental trauma on developing first molar teeth in rats. J Dent Res 47:323-327.
Abstract: http://jdr.sagepub.com/content/47/2/323

Long PH, Leininger JR. 1999. Teeth. In: Pathology of the Mouse (Maronpot RR, ed). Cache River Press, Vienna, IL, 13-28.
Abstract: http://www.cacheriverpress.com/books/pathmouse.htm

Losco PE. 1995. Dental dysplasia in rats and mice. Toxicol Pathol 23:677-688.
Abstract: http://www.ncbi.nlm.nih.gov/pubmed/8772253

Shafer WG, Hine MK, Levy BM. 1983. Cysts and tumors of odontogenic origin. In: Oral Pathology, 4th ed (Shafer WG, ed). Saunders, Philadelphia, PA , 258-317.

**Authors:**

Linda H. Kooistra, DVM, PhD, DACVP
Pathologist
Charles River Laboratories, Inc.
Research Triangle Park, NC

Abraham Nyska, DVM, Diplomate ECVP, Fellow IATP
Expert in Toxicologic Pathology
Visiting Full Professor of Pathology
Sackler School of Medicine, Tel Aviv University
Timrat Israel