Abstract: Class V cavities were prepared on dog teeth by either Er:YAG laser with output energy ranging from 100 to 200 mj at 10 pulses per second or by conventional, high-speed cutting method with water-cooling equipment. Test cavities were filled with glass ionomer cement after preparation. One day postoperatively, all preparations showed varying degree of histopathologic reactions: there were displacement and aspiration of odontoblasts, infiltration of inflammatory cells, and hemorrhage below the prepared cavities. These histopathologic changes were more severe in teeth treated by the Er:YAG laser. In the 7-day postoperative specimen, pulpal reactions were generally mild under the shallow cavities, compared with the deep–cavity preparations group. Histopathologic changes were limited to the area of the pulp below the cavities both in the laser and the high speed handpiece groups. In general, there were little or no noticeable pulpal reactions in both groups, suggesting that complete healing took place and that the cavity preparation by Er:YAG lasing is safe to the pulp. With the safety of the Er:YAG laser for cavity preparation confirmed, the question to be asked now is whether the laser is more efficient than the high-speed handpiece for this purpose.