

Third molar clinical studies were initiated because of the scarcity of published scientific data on the incidence of pathology associated with retained third molars, and on outcomes after third molar surgery. These targeted studies focused in three areas:

1. analyses of outcomes with subjects who retained third molars;
2. analyses of the impact of third molar surgery on the subjects' quality of life; and,
3. analyses of third molar data from population and clinical studies conducted for other purposes.

Two-thirds of the young adult subjects with symptom-free third molars, were found to have periodontal pathology in the third molar region. This indicates that an absence of symptoms does not equate to an absence of disease.

In a subsequent study, periodontal pathology affected four-fifths of the subjects who had third molar symptoms when they enrolled. Over time, those subjects had increased odds of a deteriorating periodontal condition not just around the third molars but also other teeth.

These findings are compatible with known models of periodontal inflammatory disease, which results when the anaerobic pathogens that have collected in deep periodontal probing sites react to the patient's immune system. Tissue

adjacent to the periodontal site contains immune system cells that, in response to the threat posed by the pathogens, produce what are called "inflammatory mediators." Unfortunately these mediators destroy local tissue and produce a systemic inflammatory response.

Periodontal probing depth refers to the space between gum and tooth, and reaching under the gum line that is readily accessible with a dental probe. The more shallow the depth, the better. Once deep periodontal probing depths exist around third molars, third molar removal is effective treatment. In study subjects with third molar periodontal pathology, removal has improved periodontal status not only on teeth adjacent to third molars but also on teeth more forward in the mouth.

The prevalence of periodontal pathology encountered in the studies suggests that few individuals are without third molar pathology. Eighty percent of young adult subjects (averaging 25 years of age) with no previous symptoms had developed periodontal pathology or caries experience within seven years. Cross-sectional data were obtained from 800 seniors who averaged 72 years of age and were studied for oral health status; a fifth had retained at least some third molars pathology free. In contrast, cross-sectional oral health data of retained third molars from a study of 6,700 subjects enrolled to study

cardiovascular disease suggested that few subjects, less than 2%, had disease-free third molars.

*Why are third molars, particularly lower third molars, prone to accumulate periodontal pathogens?*

When all other teeth erupt, the jaw is still growing and sufficient jaw space to accommodate the teeth is not a problem. The situation differs for third molars.

On average, jaw growth is complete by age 18; yet, the peak eruption of third molars at 19.5 years. Thus, third molar emergence is often incomplete, leaving deep probing depths that are conducive to the collection and reproduction of anaerobic pathogens. Once established, these bacteria can spread to adjacent molars and other teeth.

A recent review of population and clinical studies totaling over 8,000 subjects suggests that the presence of third molars is associated with a worsened periodontal status on other teeth as compared to when third molars are absent. In addition, average third molar probing depths were always deeper than average probing depths on teeth toward the front of the mouth.

Data from those subjects having third molar surgery confirmed that more difficult surgery leads to delayed clinical healing, and older age at surgery is associated with more post-surgery pain and delayed return to usual lifestyle and oral function.

*Why are data on third molar pathology so limited?*

No clear answer exists. In a recent review of periodontal studies by Savage et al, third molar periodontal data were either not collected, or they were excluded from analyses. Subsequently, Eke et al studied methods for estimating the prevalence of periodontal

pathology in population and clinical studies, and suggested that the current reported prevalence may be higher if third molar data were collected.

*Do options exist to third molar surgery since so many individuals are affected?*

Currently, no. However, studies currently underway suggest that,

in the future, the anaerobic bacteria colonized in deep periodontal probing sites might be altered in such a way that virulence factors are not expressed, which, in turn, would lead to an immune system response that does not destroy tissue.