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Study:



# Study: Retaining or Replacing Molars with Furcation Involvement: a Cost-effectiveness Comparison of Different Strategies

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Relevant background to study:

In recent years there has been significant debate concerning the retention of periodontally compromised furcation involved (FI) molars versus extraction and replacement with implant supported

crowns (ISCs). Besides evidence-based data relating to therapeutic decision making, the comparative cost-effectiveness of these two therapeutic approaches remains unexplored.

Study Aims:

The aim of this study was to evaluate the cost-effectiveness of retaining vital FI molars with various forms of periodontal treatment, both

non-surgical and surgical or replacing them with ISCs.

Methods:

A simulation was performed using a private payment scheme within the German Healthcare System as a model, and applied to a 50-year-old male patient with an average remaining life expectancy of 29.7 years, who had FI molar teeth and was followed through his lifetime using a Tooth Level Markov Model. Periodontal treatment alternatives (scaling and root planing, flap debridement, root resection, guided tissue

regeneration and tunneling) were compared with ISCs in terms of cost, time until first re-treatment and total time of tooth or implant retention. Based on current literature, transition probabilities were calculated, Monte-Carlo micro-simulations were performed. The robustness of the model and effects of heterogeneity were evaluated using sensitivity analyses.

Results:

- Scaling and root planing was found less costly and more effective than ISCs in the treatment of FI I molars.
- ISCs were retained for a shorter time period than furcation involved teeth irrespective of the degree of furcation involvement.
- Periodontal treatments aimed at tooth retention were found to be more effective and less costly than tooth replacement with ISCs in the treatment FI II/III molars.

- Despite the need for different intervals of supportive periodontal treatment for furcation involved teeth, retaining such teeth was less costly than ISCs, with the exception of root resection.
- Despite long-term retention of FI molars, leading to local bone loss requiring additional surgical procedures, the costs were still found to be less than ISCs.

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**Limitations,  
conclusions  
and impact:**



**Limitations:**

- Cost estimates are limited to a German Health Care model.
- Tooth retention does not reflect functional rehabilitation or quality of oral health, however there is a lack of evidence in the literature on patient related outcomes in this area.
- Most of the studies included in the analysis were performed in university conditions, therefore may be subject to selection, performance and reporting bias. The external validity of the findings is a matter for debate.

**Conclusions:**

Retaining molar teeth with furcation involvement using various periodontal therapeutic approaches was found to be more cost-effective than tooth removal and then replacement with implant supported crowns.

**Impact:**

Retention of furcation involved teeth appears to be more cost effective and more successful than their replacement with implant supported crowns. However, clinical decision making in the treatment of furcation involved molars should be guided not only by cost-effectiveness but also by patient preference, treatment conditions and practitioner related factors.