

## **Survival of Fixed Space-maintaining Appliances**

Zhao, MH<sup>1</sup>, Campbell, K<sup>1</sup>, Harrison, RL<sup>1</sup>, Kennedy, DB<sup>1</sup>, Koroluk, L<sup>2</sup>

<sup>1</sup> *Oral Health Sciences, Faculty of Dentistry, University of British Columbia, Vancouver, Canada;*

<sup>2</sup> *Division of Orthodontics, School of Dentistry, University of North Carolina, U.S.A.*

### **Objective:**

Few studies have examined the longevity of a large sample of space maintainers. The aim of this research was to compare survival times of various types of commonly-used fixed laboratory fabricated space maintainers.

### **Methods:**

A retrospective chart review was conducted of laboratory-fabricated fixed passive space maintainers inserted between 1 Jan 2000 - 31 Dec 2003 in a metro Vancouver pediatric dentistry/orthodontic practice. Appliances were followed until removal or, if still in use, to study's end point. Patients lost to follow-up were eliminated. All appliances had been prepared and inserted using consistent, meticulous technique. If an appliance failed before the desired time of treatment, reasons for failure e.g. cement loss, solder breakage, eruption interference were recorded. Other data collected included child's DOB, gender, cement type, caries rate, oral hygiene and patient cooperation at the time of appliance placement. Statistical analyses included descriptive statistics, chi-squared tests and Log-rank survival analysis.

### **Results:**

Of the original sample of 1218, 892 appliances were analysed. These appliances, band-loop (B&L), lingual arch (LHA) and Nance, were from 692 subjects who were grouped by specialty: pediatric (n=370), orthodontic (n=322). The mean age at insertion was 9(2) years. For sixty-five percent of subjects, n=452, appliances were successful i.e. maintained the needed space. After controlling for effect of other explanatory variables: type of space maintainer (p<0.03), patient gender (p=0.003) and age at insertion (p<0.0001) were all significantly related to success. Mandibular B&Ls had the highest median survival time (time for half of appliances to fail, MST) of 38 months; maxillary B&Ls, the lowest MST of 22 months. The MST of LHA and Nance were 25 months and 26 months, respectively.

### **Conclusion:**

The majority of the space maintainers lasted their anticipated lifetime. Appliance type, patient gender and age at insertion all played significant roles in likelihood of success.