

AAO Foundation Award Final Report

Principal Investigator: Dr. Kathy Russell, BSc, DDS, MSc

Consultants: J. Michael Lee, Ph. D.
Ross D. Anderson, D.D.S., M.Sc. MRCD(C)
Ken Wilson, M.D. FRCS(C)

Award Type: 1999 Orthodontic Faculty Development Fellowship Award.

Project Title: Clinically Based Craniofacial Research Programme

Project Year: 1999

Institution: Dalhousie University

Summary/Abstract (from original application):

Epidemiologic Investigation: A craniofacial patient database needs to be developed to answer the 2 following questions: 1) What are the prevalence and incidence of craniofacial anomalies such as unilateral and bilateral clefts, submucous clefts, and hemifacial microsomia in the Canadian Maritime Provinces? 2) What are the health care and educational needs of patients and health care providers in the Maritime Provinces?

Alveolar Bone Grafting and The Periodontal Health of the Teeth in the Cleft Region:

The periodontal health of the teeth adjacent to the cleft has yet to be assessed following EMD-ABG. It is hypothesized that there is no difference in the periodontal health of the cleft and non-cleft side incisors and canines following EMD-ABG. A split mouth study of ~ 30 patients who have received EMD-ABG but have not yet received comprehensive orthodontic treatment is proposed to test this hypothesis. The periodontal assessments, conducted six months apart, will assess: (1) attached gingiva, (2) probing depths, (3) bleeding on probing, and (4) bone levels. Patient screening will be completed to eliminate those from the sample who have existing periodontal disease.

Morphologic Studies: It is hypothesized that EMD-ABG has no detrimental effect on palatal morphology and occlusion. To test

this hypothesis, maxillary plaster casts will be analyzed for 3 age-matched samples of 30 patients at least 12 months following bone grafting: a) one with complete unilateral cleft lip and palate (CUCLP) who had EMD-ABG, b) one with CUCLP who had late alveolar bone grafting (9-12 years old), and c) one non-cleft sample. The casts will be analyzed using the video-imaging technique to assess palatal and arch morphology including: height, width, shape, and palatal curvature in 3-D, and the data will then be statistically analyzed using ANOVA and ANCOVA.

Were the original aims of the proposal realized?:

The primary aim to establish the database for patients in Nova Scotia and the Canadian Atlantic provinces was met. This database is used on a daily basis for activities related to the Cleft Palate Team patient population including both clinical care as well as research. The database was first established and customized to that of the 11 care providers on the Team and then the historical data dating back to 1972 was entered. The up-to-date data is entered weekly by the clinic co-ordinator. Custom research data is entered and linked via various projects.

Following the creation of the database, it was used in conjunction with two other previously available databases at the IWK Health Centre (fetal and antenatal data), to complete the study "A Population-based Evaluation of Antenatal Diagnosis of Facial Clefts" which was presented and published (see below). This study also involved a student who had previously received a PhD in basic science and was enrolled in the Medical Programme at Dalhousie University. She was funded as a post-doctoral fellow for two summers and one academic year in-between to work on our project.

The database was also used for a study involving the alveolar bone grafting and dental development of our patients. Although the original plan was to assess the periodontal health, the research objective changed and was focused on the development and eruption of the maxillary canine through the cleft site. This study was designed with the aid of the database (objective 1) and was the *altered* project #2. This project involved a dental student for a summer research project and the work has been published in the Cleft Palate Journal "Canine Eruption in Patients with Complete Cleft Lip and Palate" in 2008. The database

continues to be a source of data and support for on going research projects.

Although the third project as yet to come to fruition, it is still in the planning stage.

There has been an initiative that started with presentation at the American Cleft Palate meeting "Standardized Records to Assess Orthodontic Treatment and Alveolar Grafting for Patients with Cleft Lip and Palate in Multi-centre Studies, Part 1 in 2003 and Part 2 in 2004". This was based on the creation of the database and using it to support the initiative for a multi-centre assessment of cleft palate treatment in North America for which we are one centre (IWK Health Centre, Halifax, N.S.). This has expanded into what is now known as "Americleft" which is a funded 6 centre group of researcher addressing the treatment of patients with cleft lip and palate in a similar manner to Eurocleft. The creation of the database was fundamental in the initiative and now the on-going involvement I have with this research group. There have been presentations over the past three years by AmeriCleft at the annual Cleft Palate Meeting and publications are pending.

Were the results published? Yes

Russell, K.A., Allen, V.M., MacDonald, M.E., Smith, K., Dodds, L. A Population-based Evaluation of Antenatal Diagnosis of Facial Clefts. The Cleft Palate-Craniofacial Journal: 2008;45 (2):148-153.

Kathleen A. Russell, D.D.S., M.Sc., Catherine E. McLeod, B.Sc. Canine Eruption in Patients with Complete Cleft Lip and Palate. The Cleft Palate-Craniofacial Journal: 2008;45 (1):73-80.

Nasal Shape Parameters as Predictors of Facial Aesthetics in Individuals with Complete Unilateral Cleft Lip and Palate. Russell KA, Waldman SD, Tompson B, Lee JM. The Cleft Palate - Craniofacial Journal, 2001: 38(5)

Have the results of this proposal been presented? When and Where?:

KA Russell, VM Allen. Comparison of subjective and objective health outcomes for patients with antenatally and postnatally diagnosed facial clefts. Society of Pediatric Research Scientific Meeting. Honolulu, Hawaii, May 2008
http://www.abstracts2view.com/pas/view.php?nu=PAS08L1_227

Comparison of subjective health outcomes for patients with antenatally and postnatally diagnosed facial clefts. Russell KA, Allen VM. 65th Annual American Cleft Palate Meeting. Philadelphia, Penn, April 2008.

Incidence and Type of Canine Impaction in Patients with Repaired Complete Cleft Lip and Palate-A Retrospective Pilot Study. Russell KA, Macleod C, DS Precious. 63rd Annual American Cleft Palate Meeting. Vancouver, British Columbia, April 2006.

Cleft lip and palate in Nova Scotia. ME MacDonald, KA Russell, VM Allen, KL Smith, L Dodds. Proceedings: International Cleft Lip and Palate Foundation 2004:135.

Mathematical Analysis of 3-D Datasets Representing Nasal Morphology: A Tool For Objective Assessment of Nasal Aesthetics in Patients with Complete Unilateral Cleft Lip and Palate. Russell KA, Milne A, Varma D, Josephson KEM, Lee JM. 61st Annual ACPA Meeting. Chicago, Illinois, March 2004.

Standardized Records to Assess Orthodontic Treatment and Alveolar Grafting for Patients with Cleft Lip and Palate in Multi-centre Studies-Part 2. Russell, KA, Daskalogiannakis, J. 61st Annual ACPA Meeting. Chicago, Illinois, March 2004.

A population-based study of antenatal diagnosis of facial clefts. KL Smith, KA Russell, VM Allen. Proceedings: Soc Obstet Gynaecol Can 2003:5.

Standardized Records to Assess Orthodontic Treatment and Alveolar Grafting for Patients with Cleft Lip and Palate in

Multi-centre Studies. Russell, KA, Daskalogiannakis, J. 60th Annual ACPA Meeting. Asheville, North Carolina, April 2003.

Three-dimensional Morphologic Assessment of Nasal Surface Characteristics that Predict Aesthetics in Patients with Repaired Unilateral Cleft Lip and Palate. Russell K.A., Milne A.D., Varma D., Lee, J.M., Dalhousie University. American Cleft Palate Association, April, 2001. 58th Annual ACPA Meeting. Minneapolis, Minnesota.

Comments:

The fellowship was a pivotal component in the development and success of my academic career. It was obtained at a point prior to tenure that supported my research activities and substantially led to my promotion and tenure. I cannot thank the Foundation and its supporters enough for the support both in a financial manner as well as the recognition the fellowship provides. Without these awards, the status of academics would suffer greatly and the future would be even more uncertain. The AAO and other affiliated organizations have recognized the need to attract and sustain the academics and such academic programmes across North America and the AAO Foundation Awards are an excellent demonstration of this in progress.