COMPARISON OF THREE DIMENSIONS OF INTERRADICULAR AREAS AND CORTICAL BONE THICKNESS IN THAI PATIENTS WITH CLASS I AND THAT WITH CLASS II SKELETAL PATTERN USING CONE BEAM COMPUTED TOMOGRAPHY

NATTIDA KHUMSARN

All rights reserved

GRADUATE SCHOOL CHIANG MAI UNIVERSITY MAY 2014

COMPARISON OF THREE DIMENSIONS OF INTERRADICULAR AREAS AND CORTICAL BONE THICKNESS IN THAI PATIENTS WITH CLASS I AND THAT WITH CLASS II SKELETAL

PATTERN USING CONE BEAM COMPUTED TOMOGRAPHY

NATTIDA KHUMSARN

A THESIS SUBMITTED TO CHIANG MAI UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN ORTHODONTICS

1. I

Copyright[©] by Chiang Mai University All rights reserved

GRADUATE SCHOOL, CHIANG MAI UNIVERSITY MAY 2014

COMPARISON OF THREE DIMENSIONS OF INTERRADICULAR AREAS AND CORTICAL BONE THICKNESS IN THAI PATIENTS WITH CLASS I AND THAT WITH CLASS II SKELETAL PATTERN USING CONE BEAM COMPUTED TOMOGRAPHY

NATTIDA KHUMSARN

THIS THESIS HAS BEEN APPROVED TO BE A PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN ORTHODONTICS

Examination Committee:

Chit Car Chairman

(Assoc. Prof. Dr. Chairat Chalermrattanaroj)

D. Jotikailin Member

(Prof. Dhirawat Jotikasthira)

Am totu Member

(Assoc. Prof. Virush Pattanaporn)

Approxim. Janhom. Member (Asst. Prof. Dr. Apirum Janhom) Advisory Committee:

... Advisor (Assoc. Prof. Virush Pattanaporn)

tolikallin Co-advisor

(Prof. Dhirawat Jotikasthira)

Mom. Co-advisor (Asst. Prof. Dr. Apirum Janhom)

19 May 2014 Copyright © by Chiang Mai University

b

ACKNOWLEDGEMENT

I would like to express my sincere thanks and appreciation to my advisor, Assoc. Prof. Virush Patanaporn for his warm support, precious suggestions, improvement of this thesis, and supporting me in attaining the goal of this project.

I would like to express my grateful thanks to my co-advisors, Prof. Dhirawat Jotikasthira and Asst. Prof. Dr. Apirum Janhom for their suggestions, helpful guidance, cheering and brightening me up throughout this study.

I would like to thank Dr. M. Kevin O Carroll, Professor Emeritus of the University of Mississippi School of Dentistry, USA and Faculty Consultant at Faculty of Dentistry, Chiang Mai University, for his assistance in this thesis preparation.

I would like to acknowledge Dr. Narumanas Korwanich, Department of Family and Community Dentistry, and Dr. Thanapat Sastraruji, Dentistry Research Center, Faculty of Dentistry, Chiang Mai University, for their kind suggestions about statistical analysis.

I would like to acknowledge Accord Corporation Limited for the support of CBCT unit using in this study and Ms. Ratikorn Kitthada, Oral and Maxillofacial Radiology Clinic, Dental Hospital, Faculty of Dentistry, Chiang Mai University, for kindly support in preparing the CBCT images.

My sincere appreciation is expressed to Faculty of Dentistry, Chiang Mai University, for equipment and financial support and Graduate School, Chiang Mai University, for research grants.

I am grateful to all of the patients and their families for their kind participation in this study. My special thanks are also extended to all the staff of the Department of Orthodontics and Pediatric Dentistry, Faculty of Dentistry, Chiang Mai University, for their support and suggestions.

Lastly, I am deeply grateful to everyone in my family, my parents and husband, who always give love, support and encouragement. Without their support, I am not able to accomplish this thesis.

Nattida Khumsarn