

CHAPTER 1

INTRODUCTION

1.1 Significance of the problem

Cleft lip and/or palate are the most common anomalies of head and neck. In Thailand, treatment protocols for cleft patients are different. One step in the protocol is alveolar bone grafting in cleft area. Grafted bone resorption always occurs after bone grafting procedure. There are many factors influencing this process. Lip repair is one of those, resulting in lip morphology and function e.g. thickness, tension and force that affect the underlying structures. Many studies of lip properties on craniofacial growth, especially the maxilla, are available but rarely found in the aspect of lip thickness on the treatment outcomes of alveolar bone grafting. Lip thickness can be measured from cephalometric radiograph in routine orthodontic assessment, whereas three dimension computerized tomogram is not well presented. In the last decade, calculation assisted computer programs are become popular to solve complex measurements. Finite element analysis is one of those. It is based on the complex matrix equation for solving structural architecture. In recent years, many mechanical engineering structures were analyzed by finite element method because of its benefits such as complex structure analysis ability and greater visualizing output. Thereafter, many medical researchers have used finite

element method to emphasized complex behavior in medical biology, also for dental experiment, to reach better treatment and management of patients in the future.

This study therefore aims to reveal whether there is any effect of lip thickness on alveolar bone graft outcome in cleft patients using a finite element analysis. Results from the study will be useful in the improvement of treatment protocol for the particular patients.

1.2 Research Objective

This study was aim to define effects of lip thickness on alveolar bone grafting outcome in patients with complete unilateral cleft lip and palate.

1.3 Research Hypothesis

H_0 = Lip thickness does not has effect on grafted alveolar bone in with complete unilateral cleft lip and palate.

H_1 = Lip thickness has affect grafted alveolar bone in with complete unilateral cleft lip and palate.