CHAPTER I

INTRODUCTION

1. Background and rationale

The two orbital cavities are situated between the cranium and facial skeleton and are separated from each other by the nasal cavities, ethmoidal and sphenoidal air sinuses. They are sockets that accommodate and protect the globes and extraocular muscles, serve to transmit the nerves and vessels that supply the intraorbital contents and periorbital structures. Each bony orbit separates the intraorbital contents from the surrounding brain and paranasal sinuses and is made up of seven bones namely zygomatic, maxilla, palatine, lacrimal, frontal, ethmoid and sphenoid. The orbital shape is roughly quadrilateral pyramid whose base is the orbital margin or rim and whose apex is at the bar of the bone between the superior orbital fissure and the optic canal. The walls of the orbit have floor, roof, medial wall and lateral wall. There are many apertures in each orbit such as the optic canal, superior and inferior orbital fissures, anterior and posterior ethmoidal foramina. They transmit the significant blood vessels and nerves [1-3]. (In details, see Appendix A)

In clinical aspect, there are many diseases within orbital cavity and periorbital region [4-7], such as orbital and periorbital trauma with or without orbital fractures, inflammation and infection within orbit or spreading from related structures (for example, paranasal sinusitis and Graves orbitopathy), orbital and periorbital tumors, vascular diseases and optic neuropathy. So that, there are many procedures for operating the above diseases [7-10], such as orbital decompression, orbital exploration and reconstruction, optic nerve

decompression, enucleation or exenteration with or without an orbital prosthesis, excision of lacrimal gland, ethmoidal vessels ligation and transethmoidal sphenoidal hypophysectomy. (In details, see Appendix A)

A precise understanding of anatomy of orbit is important in the orbital and periorbital surgeries. The distances between the orbital margin and the orbital apertures provide surgeons, ophthalmologists and related physicians with a map to guide the dissection in safe and to reduce the complications of surgery. The studies about these distances have been described in international publication [11-17], but the data remained incomplete, for example, some studies have been too imprecise and the number of subjects are not sufficient, the results of the gender and side differences remained unclear. In Thailand, it has not ever been reported. The objectives of this study are to determine the distances from the constant landmarks on the orbital rim to the orbital apertures and to investigate the gender and side differences. The new data may be useful in the orbital and periorbital surgeries and also helpful in human anthropological study.

2. Research Questions

What are the distances from the constant landmarks on the orbital rim to the orbital apertures?

Are there any gender and side differences in those distances?

3. Objectives

1. To determine the distances from the constant landmarks on the orbital rim to the orbital apertures.
2. To investigate the gender and side differences in those distances.

4. Hypothesis

There are the gender and side differences in the distances from the constant landmarks on the orbital rim to the orbital apertures.

5. Key Words

Surgical anatomy

Orbit

Orbital apertures

6. Research Design

Descriptive study

7. Expected Benefits and Applications

A better understanding of the distances from the constant landmarks on the orbital rim to the orbital apertures together with the gender and side differences are important in providing surgeons and ophthalmologists with a map to guide the dissection for safety and reducing the complications of the orbital and periorbital surgeries. This data may be also useful in human anthropological study.