



# CHAPTER I

## INTRODUCTION

Shoulder arthroplasty has been established for several decades to restore comfortness and function of the shoulder for many afflictions that derange the normal anatomy. Rigorous study of shoulder anatomy in terms was relevant to prosthetic geometry, however, did not begin until the 1990s. It had become apparent that normal anatomy was highly variable from individual to individual and variable from left to right in the same individual that it was aligned somewhat differently than the early modular prosthetic devices. Several studies have shown that retroversion was markedly variable ranging from 0 degree to 55 degree. The inclination of the proximal humeral articular surface relative to the shaft (head shaft angle) was also variable, ranging from 30 degree to 55 degree. The center of rotation was variably offset in 3 dimensions. The radius of curvature ranges from 20 to 30 mm. and was smaller in women than in men. The thickness of the articular surface, head height, was equally variable but showed a striking proportionality to the radius of curvature. The last decade has seen a proliferation of humeral implants aiming to serve a better understanding of variation of shoulder anatomy. Second and third generation had occur and more sizes and more modular of implant for surgeon to be selected. Head size selection was dependent on multiple factors. The selection of head size most important of these, other than the patient's original head size, was the osteotomy performed by the surgeon and the inclination angle(s) of the prosthetic system. Systems with variable inclination angles instruct the surgeon to resect the humeral head along the anatomic neck as best possible and then provide either adjustable or variable prosthetic geometries to match the resultant inclination angle. Other prosthetic systems had a fixed inclination angle somewhere within the normal range and instruct the surgeon to make an osteotomy at this inclination, adjusting the fit with additional preparation of the canal and revising the osteotomy as necessary. So many surgeons with experience using modern systems feel a greater sense of predictability in achieving their surgical goals to anatomical reconstruction when using these systems as compared with the earlier ones.

Anatomical reconstruction was termed to call surgery that restores the same or nearly same anatomical and dimension of patient's shoulder. This helps to avoid complications and maximizes outcome. Nowadays we have many cases that perform shoulder arthroplasty but there is no data concerning about morphological dimensions of the proximal humerus in this population. Every shoulder prostheses systems are designed for Western population and have been introduced to use in Thai and Asian population without specific modification. The objective of this study was to compare the anthropometric data of proximal humerus in Thai population with the western population data and compare with the dimensions of current shoulder prosthetic systems

## OBJECTIVE

The objective of this project was to analyze the exact anatomic data collected from Magnetic Resonance imaging of Thai patient shoulders and to compared anatomic data with previous study. Data from this study were used to compare to geometry of the shoulder prosthesis. Dimensions provided from this study can be used to assist implant manufacturers in evaluating current and future designs.