INTRODUCTION:
In the past decade, the practice of shoulder arthroscopy achieved the status in the orthopaedic armamentarium of a well accepted, if not essential, adjunct for the diagnosis and management of simple and complex shoulder problems. Consequently, the need to develop the requisite skills to perform basic diagnostic shoulder arthroscopy and, in many cases, arthroscopic surgical reconstruction has become more important than ever for any orthopaedic surgeon whose practice includes caring for patients with shoulder problem. The first step in performing the arthroscopic evaluation of the glenohumeral joint is to insert the posterior cannula. Choose the insertion point after palpating the posterior shoulder anatomy and balloting the humeral head. The exact position and direction to insert the posterior cannula cannot be measured from the surface anatomy; it must be determined after considering the thickness of the soft tissues around the shoulder and the size of the bony anatomy. The second step is to create the anterior portal. The anterior portal is necessary to complete the diagnostic examination of the joint by palpating the anatomy and surgical reconstruction. There are two major anterior portals named a high anterior-superior portal for superior labrum anterior to posterior (SLAP) lesion repair, and an anterior mid-glenoid portal for anterior capsular reconstruction. Both of these anterior and posterior portal creations are essential basic techniques for shoulder arthroscopy. However it is extremely difficult for beginners to accomplish them correctly. If these two portals are created in the wrong position and direction, it makes shoulder arthroscopy to become more difficult as well as to increase the risk of nerve and vessel injuries around the shoulder joint. Recently, navigation and computer assisted placement techniques have been developed in the field of hip, knee and spine surgeries. It is reported and it helped surgical procedures to become more accurate and safe. However, there is not well known about the usefulness of navigation system for shoulder surgery. It is important to evaluate the possibility to use the navigation system for the development of shoulder arthroscopy. The aim of this study is to elucidate the advantage of the navigation system for shoulder arthroscopy with reference to the anterior and posterior portal creations.

RESULTS:
Required time decreased with frequency to create both anterior and posterior portals. (Fig. 2) Average required time for the creation of anterior portal was 92.2 seconds at the first time and decreased to 15.5 seconds at the last time. Average required time for the creation of posterior portal was 107.0 seconds at the first time and decreased to 32.3 seconds at the last time. The required time for both of the portals at the last time was significantly decreased than the first time. (P <0.05)

DISCUSSIONS:
The shoulder navigation system used in this study is a passive navigation system, which provides the surgeon with additional information prior to and during the surgical procedure. Our data showed that navigation system could dramatically assist the beginners ascend the steep learning curve for the creations of both anterior and posterior portals in shoulder arthroscopy. Under the navigation control, all the residents could create anterior portal within 30 seconds and posterior portal within 70 seconds. It might help experienced shoulder surgeons as well as beginners to insert anchors for arthroscopic shoulder reconstruction surgeries. Computer assisted surgery may allow surgeons to be more precise and minimally invasive, in addition to being an excellent research tool. Therefore, future studies have to focus on integrating, arthroscopy, 3-D image-enhanced computer navigation, and virtual kinematics, as well as to increase precision in surgical technique.

CONCLUSION:
Shoulder navigation system could dramatically assist the beginners ascend the steep learning curve for the acquisition of the basic shoulder arthroscopy techniques.

REFERENCES: