INTRODUCTION:
Lateral patellofemoral ligament (MPFL) has been identified as the major mediolateral restraining mechanism in preventing lateral patella subluxation and/or dislocation [2]. Ruptures of the MPFL can occur either at the femoral or the patellar insertion site. However, it is commonly believed by orthopedic surgeons that rupture of the MPFL in acute lateral patella dislocations occur most often at the femoral insertion site [3]. Although this statement has some support in the literature based on operative findings, to our knowledge, there are few epidemiology studies evaluating injury patterns of the MPFL in patients with acute lateral patella dislocation. Our study aim is focused on evaluating the extent and location of injury to the MPFL and associated knee pathology using Magnetic Resonance Imaging studies in patients with the diagnosis of acute patella dislocation.

METHODS:
A computer search of all patients from Jan, 2007 to Jan, 2008 using the diagnosis of closed patella dislocation (ICD-9 coding - 836.3) performed in the Shields Health Care MRI database (Framingham, MA) yield a total of 324 patients/MRI studies. These imaging studies were carefully evaluated retrospectively by three independent reviewers (musculoskeletal radiologist, orthopedic surgery attending, and orthopedic surgery sports medicine fellow). Only patients with acute lateral dislocation via evidence of bone marrow edema were included in our study (N=195). MPFL tear location (patella vs. femoral) or attenuation without tear, patella avulsion/fracture, osteochondral defects, loose bodies, MCL and meniscus tears were recorded. The MPFL was divided on the axial MRI images into two sections (patella vs. femoral) at the half way point. The injury patterns were analyzed as a whole and also compared by gender. The student t-test was used for statistical analysis. Institutional review board approval was obtained for this study.

RESULTS:
Our study population consisted of 127 males and 68 females; mean age of 23 yrs. Tear of the MPFL at the patellar attachment occurred in 93/195 knees (47%), at the femoral attachment in 50/195 knees (26%), and at both the femoral and patella attachment sites in 26/195 knees (13%). Attenuation of the MPFL without rupture occurred in 26/195 knees (13%). Associated findings included loose bodies in 23/195 (13%), meniscus tears 41/195 (21%), patella avulsion/fracture in 14/195 (7%), medial collateral ligament sprains/tears in 37/195 (19%) and OCD lesions in 96/195 knees (49%). Statistical analysis showed females had significantly more associated meniscus tears than the males (27% vs. 17%, p<0.04). Although not statistically significant, OCD lesions were seen more in male patients with acute patella dislocation (52% vs. 42%, p=0.08). Please see Table 1 and 2 for additional information.

DISCUSSION:
Medial Patellofemoral ligament originates of the adductor tubercle on the vastus medialis obliques to attach onto the superior two thirds of the medial aspect of the patella. This ligament accounts for 60% of the restraining forces to lateral patella dislocation at 20 degrees of knee flexion [4]. Injury to the MPFL are seen in >90% of patients who underwent open surgery for lateral patella dislocation [5]. It is commonly believed by orthopedic surgeons that rupture of the MPFL will likely occur at the femoral site [3,6]. Optimal management of this patient population is dependant on the injury pattern of the MPFL. Our retrospective review of 195 patients with acute patella dislocation showed that rupture of the MPFL occurred at the patella insertion site in 47% of the patients vs. 26% at the femoral insertion site. Ruptures occurring at both sites was seen in 26/195 (13%) patients. Also female patients are significantly more likely to have an associated meniscus tear than males (27% vs. 17%, p<0.04); however, more males have underlying OCD lesions (52% vs. 42%).

Contrary to popular belief, our study showed that the MPFL will likely rupture at the patella insertion site in acute lateral patella dislocation. Associated OCD lesions were commonly seen with MPFL injury (49%) and may predispose a patient to lateral patella dislocation. However, we can not rule out the possibility that the patella dislocation may be the underlying cause of these OCD lesions. More associated knee pathologies were seen with male patients, which may due to the higher energy injury pattern observed in this population. Meniscus tears occurred significantly more in female patients. Therefore, it is highly recommended to obtain an MRI study on all patients with acute patella dislocation to rule out associated pathology and especially if surgical repair is planned.

Our study had several limitations. One being that it is retrospective in nature and we do not have the clinical history of these patients to correlate the mechanism of injury, underlying medical history, previous dislocations, and the time elapsed between injury to MRI; with the injury patterns seen on MRI.

REFERENCES: