Introduction: Arthroscopic anterior cruciate ligament (ACL) repair is a minimally invasive procedure of the knee. Three-in-one and femoral nerve blocks are proven modalities for postoperative analgesia following ACL reconstruction. This prospective randomised study aimed at evaluating the efficacy of magnesium as an adjuvant to bupivacaine in 3-in-1 block for ACL reconstruction.

Methods: 60 ASA 1 & 2 patients (18-60 years) scheduled for arthroscopic ACL reconstruction were randomly allocated to Gr C (3-in-1 block with 30 ml of 0.25% bupivacaine+ 1.5 ml of intravenous saline), Gr IvMg (block with 30 ml of 0.25% bupivacaine+ 1.5 ml of solution containing 150 mg magnesium intravenously) and Gr BlMg (block with 30 ml of 0.25% bupivacaine and 150 mg of magnesium + 1.5 ml of intravenous saline). All the patients received general anaesthesia and the blocks were performed after induction, under nerve stimulator guidance. Fentanyl boluses (1µ/ kg) were used to supplement intraoperative analgesia. Postoperatively visual analog scale (VAS) scores were monitored for 24 hours, and patients were given nurse controlled analgesia with boluses of 3 mg morphine when they had VAS sores ≥ 4.

Results: Demographics, haemodynamic parameters, intraoperative fentanyl requirement, postoperative VAS scores and total morphine requirement were comparable between groups. The time to first analgesia was significantly prolonged in Gr BlMg (789 ± 436 mins) compared to Gr C (466 ± 290 mins) and Gr IvMg (519 ± 274 mins), [p= 0.02 and 0.05 respectively]. Significantly less number of patients in Gr BlMg (1/20) received morphine in the first 6 hours postoperatively, compared to Gr C (8/20) and Gr IvMg (6/20) [p= 0.008 & 0.03 respectively]. Post operative nausea and vomiting occurred in one patient in each group. No other side effects were noted.

Discussion: Magnesium as an adjuvant to bupivacaine in three-in-one block for ACL reconstruction significantly prolongs the time to first analgesia and reduces the number of patients requiring morphine in the immediate postoperative period.