INTRODUCTION:

The open angle glaucomas are a group of asymptomatic and potentially sight threatening conditions, for which Intraocular Pressure (IOP) is the only modifiable risk factor. The main modalities for lowering IOP include topical anti glaucoma medication and surgery. Even in seemingly well controlled patients, fluctuations in IOP over the 24 hour period pose a significant risk factor for progression of the disease. Very few studies have been undertaken to compare the efficacy of surgery and medical management with regard to controlling the circadian peaks and fluctuations in IOP.

OBJECTIVES:

This study aimed to compare the 24 hour IOP profiles, peak IOPs and IOP fluctuations in patients with open angle glaucoma, who had achieved target IOP with topical anti glaucoma medication, versus those who had undergone trabeculectomy.

METHODS:

This was a prospective cross sectional observational study which included 40 eyes of 22 patients who had achieved target IOP as per IOP measurements performed in the outpatient department. 20 patients were on various topical anti glaucoma medication (medical group), whereas 20 had undergone trabeculectomy (surgical group). Patients were hospitalized for a 24 hour period to undergo phased IOP measurements with both Goldmann Applanation Tonometry and Tonopen, at 10 am, 2 pm, 6 pm, 10 pm, 2 am and 6 am. To study the effect of posture on night time IOP, Tonopen readings at 2 am and 6 am were performed in the supine position.
RESULTS:

The mean 24 hour IOP in the medical group was found to be $15.40 \pm 1.95$ mm Hg, with a range of IOP fluctuation of $6 \pm 1.97$ mm Hg. In the surgical group, the mean IOP was $12.69 \pm 2.30$ mm Hg, with the range of IOP fluctuation being $4.25 \pm 1.91$ mm Hg. The peak IOPs in the medical group and surgical group were $18.65 \pm 2.39$ mm Hg and $15.05 \pm 2.98$ respectively. At all times, though the surgical group had lower IOPs, these differences were not statistically significant. Comparison of the diurnal IOP curves showed an early morning peak in the medical group, but no peak in the surgical group, with the nocturnal IOP also being lower in habitual supine position in the surgical group. Short term change in posture did not seem to affect IOP measurement.

CONCLUSION:

The surgically controlled, as well as lower IOP fluctuation over a 24 hour period with no IOP peaks, as compared to medical management, although these differences were not statistically significant.