

Blood pressure changes in patients undergoing 23G vitrectomy under local anaesthesia.

Cheuk Lam Ho, Zachariah Koshy, Kaleena Bulan Michael
University Hospital Ayr, NHS Ayrshire and Arran



Introduction

- The effect of elevated blood pressure during ophthalmic surgery is associated with significant vision-threatening complications^{1,2}.
- This results in cancellation and postponement, adding to the strain of limited resources.
- Blood pressure changes in patients undergoing vitreoretinal surgery under local anaesthetic remains poorly studied³.
- This study aims to investigate blood pressure changes during patients' admission for 23G vitrectomy under local anaesthetics.

Methodology

- This is an observational prospective study with a sample size of 117 consecutive patients.
- Blood pressure measurements were taken on arrival at day surgery unit (DSU), pre-operation, intra-operation and 30 minutes post-operation.
- Blood pressure changes were correlated to patient co-morbidities (e.g. hypertension, diabetes, cardiovascular events, cerebrovascular event, chronic kidney disease, anxiety, smoking status) and surgical factors (e.g. duration of surgery, number of staff present).
- Number of staff was included to evaluate if this can precipitate anxiety in patient, subsequently leading to raised blood pressure.

Results

- 2 out of 117 patients were cancelled due to systolic blood pressure (SBP) of ≥ 200 mmHg pre-operatively.
- 21% of patients experienced SBP of ≥ 180 mmHg pre-operatively (Figure 1).
- 5% of patients have persistently elevated SBP of ≥ 180 mmHg 30 minutes post-operatively.

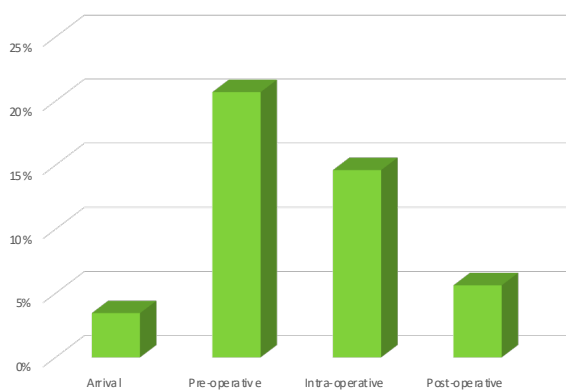


Figure 1. Percentage of patients with systolic blood pressure of greater than 180mmHg at arrival to DSU, pre-operatively, intra-operatively and post-operatively.

Results

- Trend of blood pressure changes according to various stages were demonstrated with blood pressure peaked at pre-operative stage (Figure 2).
- 27% experienced ≥ 20 mmHg SBP increase pre-operatively.

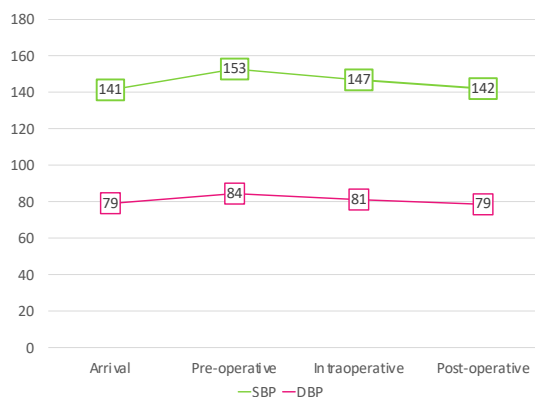


Figure 2. Average systolic blood pressure (SBP) and diastolic blood pressure (DBP) readings for patients at arrival to DSU, pre-operatively, intra-operatively and post-operatively.

- Average duration of surgery was 46.5 minutes. Average staff present at surgery was 6.
- BP changes were not correlated with patient co-morbidities or surgical factors.

Discussion

- Our study demonstrates a pattern for patient's blood pressure during their admission: average of 11mmHg increase from arrival to pre-operative, 5mmHg decrease from pre-operative to intra-operative and a further 5mmHg decrease from intra-operative to post-operative.
- Our study has a large sample size with 74% of patients having two or co-morbidities, reflecting a realistic patient population.
- Currently, there is no guideline indicating a cut-off value of blood pressure for vitreoretinal surgery regarded to be safe to proceed³.
- Most patients experienced blood pressure changes within safe thresholds, but those with very high blood pressure are at risk of systemic events and serious complications such as heavy intraoperative bleeding and choroidal haemorrhage².
- Along with close monitoring of blood pressure, tight scleral wound closure, examination of globe tonicity and appropriate use of endotamponade can further reduce risk of surgical complication⁴.

References

1. Ambati NR, Chernyavskiy P, Cai X, Duong RT, Shildkrot EY. Perioperative systemic blood pressure parameters and clinical outcomes following 27g vitrectomy for diabetic tractional detachment repair. *BMJ Open Ophthalmol.* 2023;8(1):1-9.
2. Tsukikawa M, Stacey AW. A review of hypertensive retinopathy and chorioretinopathy. *Clin Optim.* 2020;12:67-73.
3. Royal College of Ophthalmologists. High Flow Cataract Surgery. 2022;(January).
4. Foo R, Tsai A, Lim L. Management of Suprachoroidal Hemorrhage. *EyeNet Mag.* 2018;35-7.