

Introduction

Vitreomacular traction (VMT) is defined as anomalous posterior vitreous detachment accompanied by anatomic foveal distortion (1). Isolated VMT has a prevalence of 22.5 per 100,000 population (2). Management of VMT is varied but options include observation, pneumatic vitreolysis or surgical treatment. The surgical techniques used in the treatment of isolated VMT are varied, with lack of consensus regarding optimal surgical timing, benefits of internal limiting membrane (ILM) peeling, or the need for gas tamponade.

This study audited the techniques and outcomes of VMT surgery, to assess whether ILM peel and the use of gas affect outcomes.

Aim

To determine whether ILM peeling and/or injection of gas in combination with vitrectomy for VMT results in improved surgical outcomes and complication rates.

Methods

Retrospective factorial cohort study of patients undergoing vitrectomy for isolated VMT over a ten-year period between 2014 and 2023 within a single tertiary vitreoretinal service (King's College Hospital NHS Foundation Trust). Patients with co-existing full-thickness macular hole (FTMH), or VMT with concurrent alternative vitreoretinal disease (other than epiretinal membrane (ERM)) were excluded. If ERM was present at time of surgery, this was also peeled.

Results

65 eyes of 64 patients were included. Mean interval from diagnosis to surgery was 2 months with mean follow-up duration of 9 months. Concurrent ERM was present in 29 (45%) of eyes, all of which underwent ERM peeling. In eyes with gas tamponade 12 patients had SF₆ (41%), 12 C₂F₆ (41%) and 5 C₃F₈ (17%).

Anatomical resolution of VMT on OCT was achieved in all eyes.

Mean VA Change LogMAR, [95% CI], (n)	ILM Peel	No ILM Peel	Aggregate
Gas	-0.23 [-0.40, -0.05] (n=24)	-0.60 [-0.98, -0.22] (n=5)	-0.41[†] [-0.63, -0.20] (n=29)
No Gas	-0.13 [-0.35, 0.09] (n=15)	-0.26 [-0.45, -0.08] (n=21)	-0.20[†] [-0.34, -0.05] (n=36)
Aggregate	-0.18* [-0.32, -0.04] (n=39)	-0.43* [-0.65, -0.22] (n=26)	

Visual Acuity

Mean VA change (LogMAR) (final follow-up VA minus pre-operative VA) in each subgroup can be found in the table above.

Although there is an apparent favourable mean VA change in the aggregate Gas (vs No Gas) and No ILM Peel (vs ILM peel) groups, there was no statistically significant influence of ILM peel (p=0.06*) or gas tamponade (p=0.10[†]) on VA change (two-way ANOVA).

Complications

See table below for full list of intraoperative and post-operative complications. No patient developed significant macular damage in the ILM Peel group.

Intraoperative Complications	
ILM Peel, Gas	Retinal touch with Intraretinal haemorrhage (n=1)
	Iatrogenic retinal break (n=1)
No ILM Peel, Gas	Suprachoroidal haemorrhage (limited) (n=1)
Post operative Complications	
ILM Peel, No Gas	FTMH (n=1)
	ERM formation (n=2)
No ILM Peel, No Gas	ERM formation (n=1)

Limitations

Small numbers in each intervention group increase the likelihood of type II error. Retrospective, non-blinded nature of this study introduces potential bias. Further studies may include an adequately powered randomised controlled trial to limit the risk of bias and statistical error.

Conclusion

High success rates and low complication rates are seen for vitrectomy surgery in the treatment of isolated VMT, with or without ILM peeling or gas tamponade. There is possibly a benefit to avoiding ILM peel.

ILM peeling and gas tamponade may not be required when performing vitrectomy for isolated VMT