



# **JOURNAL OF THE COLLEGE OF OPHTHALMOLOGISTS OF SRI LANKA**

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- EYE BANKING IN SRI LANKA  
THEN AND NOW
- HYDROXY APATITE ORBITAL  
IMPLANTS
- AMNIOTIC MEMBRANE  
TRANSPLANTATION (AMT)
- POSTNATAL WEIGHT GAIN  
FOR THE PREDICTION OF  
SEVERE RETINOPATHY OF  
PREMATURITY

## Changing patterns in post-op vitrectomy follow-up

### A UK based survey and a clinical audit

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#### Abstract

*A UK national survey was conducted to assess the post operative (post-op) management patterns of vitrectomy patients. The response was 54% (70/129). 37% (26/70) surgeons confirmed that not all vitrectomy patients are reviewed the following day. Survey suggested that resource pressure does appear to affect practice.*

*An audit of consecutive 121 vitrectomies was done to assess the post op findings on day 1. 14% (17) had intra ocular pressure <10 mmHg and was exclusively found in 23G vitrectomies. 14/17 patients had normal IOP in 2 weeks, while 3 developed >30 mmHg requiring medication. 2 patients had IOP>30 mmHg on D1 and both had 20G vitrectomies with gas tamponade. Other adverse findings such as increased inflammation, hyphema, vitreous hemorrhage were found in patients undergoing retinal detachments.*

#### Introduction

Since it was first introduced in the early 1970's, Vitreo-retinal surgery has gone through tremendous advances. The last decade in particular has seen major advances in not only technology, but in technique as well. This has resulted in the results of vitreo-retinal surgery having higher success rates as well as more predictable outcomes. The safety profiles of various procedures have increased and morbidity related to surgery has dramatically come down with a decrease in the hospital stay of the patients.

In the United Kingdom, following uncomplicated vitrectomy surgery the patient is seen the following day and if findings are as predicted the patient would usually be seen in 2 weeks and then in 2 months. With surgeons becoming more comfortable with the new procedures and technology, there had been anecdotal evidence that some surgeons are not seeing their vitrectomy patients on the day following surgery. There is no standard protocol or industry benchmark to guide surgeons on the best practice and no records on safety to justify such a change.

To assess what percentage of VR surgeons have shifted their practice to newer protocols and regimens, it was decided to conduct an online survey. Following this it was decided to audit our VR procedures to assess whether such a change in the practice protocol is viable.

#### Methodology

This study was carried out at the Ophthalmology Department of the University Hospital of Wales, Cardiff, UK.

Vitreo retinal surgeons in UK are registered in the British and Eire Association of Vitreo Retinal Surgeons (BEAVRS). Emails were sent to BEAVRS member inviting them to take part in an online survey. Anonymity was assured and the returned surveys were analyzed using MS Excel. The survey inquired into the current practice patterns of the surgeons and the units they worked in. It also inquired into the various vitrectomy indications the surgeons may operate on and how these patients would be followed up during the immediate post op period.

We also conducted a prospective audit involving vitrectomies performed or supervised by the second author at the University Hospital of Wales, Cardiff, UK. All / consecutive procedures were taken into consideration between the July 2011 and March 2012. Data was entered in to a collection sheet (Annex 1) on the following day. Information on surgical details, post op findings and interventions were entered into the sheet. The follow up details were gathered from the clinic notes and general practitioner letter. Data was analyzed using MS Excel.

#### Results

##### Results of the online survey

129 emails were sent to all the BEAVRS members to take part in the online survey. 70 surgeons have replied and had taken part in the survey (54%). The majority

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of surgeons (43%) performed 100-200 vitrectomies per year. There were 5 surgeons who had more than 400 vitrectomies performed under their care. 40% of surgeons performed a majority (>75%) of their vitrectomies using the 23G/ 25G system, whereas 29% exclusively used the 20G vitrectomy system. In a majority of the units (56%), the patients were reviewed on the first post op day (D1) by the consultant himself or in a consultant led clinic. When considering in-patient facilities, 39% had dedicated ophthalmic wards and 36% had wards shared with other specialties. 9% of the respondents had no in-patient facilities.

Out of the 70 responses 26 (37%) had confirmed that they do not see all of their vitrectomy patients on the first post operative day (D1). Inquiries were made into what type of surgeries the participants would be happy not to see the immediate post op day. It was quite evident that surgeons were more relaxed about not seeing patients following a simple diabetic vitrectomy or epiretinal membrane peeling (see figure). They were more concerned when a tamponade agent (gas/silicone oil) was used for either a retinal detachment or macular hole surgery.

When considering facility resources, 5 out of the 6 surgeons who did not have in-patient facilities did not see all of their patients on D1 (83%). This was in contrast to the 28% of the surgeons with dedicated ophthalmic wards who would not be seeing patients on D1. At the same time 56% of single surgeon units did not see all their patients on D1 compared to only 37% of the units which had 3 or more surgeons.

Out of the surgeons who did not see all of their patients on D1 (37%), 24% saw the patients in 2-3 days. 29% saw the patient in 4-7 days and 43% saw the patients in 1 to 2 weeks. Surgeons who did not see the patients the following day advocated different protocols for patient care. Written instructions to patients (69%) and a phone call to the patient on the first post op day (38%) were the most common.

#### Results of the D1 post op audit

121 surgeries in total was audited and post op details were available for 120 at 2 weeks (1 patient defaulted after the D1 review). 87% of the surgeries were performed using the 23G vitrectomy system and 13% of them were using the 20G system. Of the surgeries audited, 45% (55) were for retinal detachments. Other indications were epiretinal membrane peeling-12% (14), macular hole surgery-7% (8), diabetic retinopathy-14% (17) and dropped lens/IOL-9% (11).

Intra ocular pressure (IOP) on D1 was between 10-

20mmHg in 78% (94). 14% (17) had IOP lower than 10mmHg. 6% (8) had IOP between 21-30 mmHg and 2% (2) had IOP over 30 mmHg. Patients with IOP<10mmHg was exclusively found in 23G vitrectomies. These were observed without further intervention. 14/17 reached normal IOP within 2 weeks. 3/17 went onto develop IOP>30mmHg and required anti-glaucoma medication. 2 patients who had IOP>30 on D1 had anti glaucoma medication and this normalized within 2 weeks.

Other adverse findings on D1 were increased inflammation (2), Hyphema (3), epithelial defect (2), vitreous hemorrhage (1). These were exclusively found in patients who underwent retinal detachment surgery. 99 patients had routine follow up and were seen in 2 weeks following the D1 review. 7 of the patients had elevated IOP and required treatment. 4 patients developed vitreous haemorrhage. 2 patients had cystoids macular oedema and 4 others developed retinal detachments.

#### Discussion

Single case series as well as multi-center studies conducted to compare the success rates of vitrectomy over sclera buckling has not demonstrated a significant difference. But the vitrectomy rates over the past few years have been gradually increasing while the sclera buckling has gradually reduced. The 20G system was widely used at the initial stages and the 23G and 25G systems were introduced quite recently. The 23G vitrectomy system appears to be embraced by vitreo-retinal surgeons all over the country. Though it has just been a few years since its introduction, the online survey was good evidence that more and more surgeons are using the 23G system. 40% of surgeons were using 23/25G systems >75% of the time and only 29% were using the 20G system exclusively. This is a significant change compared to the previous years.

The standard protocol used for follow up of vitrectomy patients include the patients being reviewed on the following day (D1) and if all is as expected these patients would be reviewed again in 2 weeks. After the 2 month follow up visit the patients would be sent back to the referring unit. The online survey confirmed that surgeons were more relaxed about not seeing their patients the following day, so much that 37% confirmed that they are not seeing all their vitrectomy patients the following day. When no tamponade agent was used the surgeons were more relaxed about not seeing their patients compared to the patients having gas/oil. This could be related to the fact that these agents may be associated with intra ocular pressure issues and surgeons were concerned of IOP spikes.

83% of units which did not have in-patient facilities did not see all patients on D1 compared to 37% in larger units. This indicates that resource pressure does appear to affect the practice patterns. Surgeons who do not see patients the following day tend to advocate mechanisms to safeguard patient wellbeing. Majority would be giving written instructions and advice (69%), while others would be phoning patients up the following day and some would have patients' IOP measured at a local clinic or by the optician. The general comments made by surgeons show that most have changed their practice over the last couple of years and this may be because more have become confident of the 23/25G vitrectomy systems. Yet due to the lack of evidence most are uncertain of how to change the post op review protocols and there is wide variation in the practice patterns.

The audit of the post op patients was conducted to find some of the answers to these questions and to help in formulating some protocol for post op review of vitrectomy patients. Of the 121 surgeries audited, 87% was using the 23G system and the rest was using the 20G system. Majority was for retinal detachments (45) and the other indications included epiretinal membranes (14%), macular holes (7%), diabetic retinopathy (14%) and dropped crystalline lenses/ IOLs (9%).

Intra ocular pressure on D1 was between 10-20mmHg in a majority (78%) of patients. Only 2% had pressures more than 30. This is in contrast to the reviews stating D1 IOP being more than 30 in as much as 30% of patients. One of the reasons could be that earlier studies were on the 20G system where all the vitrectomy ports were closed. The 23G system appears to allow some leakage of fluid/gas possibly preventing undue pressure spikes. Low IOP (<10 mmHg) was found in 14% of patients and these were all 23G vitrectomies. It was evident from the follow up of these patients that no intervention was necessary as 14/17 had normal IOP in 2 weeks. Close observation of IOP is necessary as occasionally the IOP can spike requiring intervention despite an initial low IOP.

Other adverse findings such as hyphema, vitreous hemorrhages and increased inflammation was mostly found in patients undergoing retinal detachment surgery.

99/121 had routine 2 week follow up after the D1 review. Only 7 have developed high IOP requiring intervention at that stage. 4 others had developed retinal detachments requiring further surgery.

The D1 review also gave a chance for the patient to ask any questions regarding the surgery as well as any

post op management protocols. The surgeon also got a good opportunity to explain things to the patient as the patient would be less anxious than before the surgery.

These findings go on to show that D1 review of vitrectomy patients do play an important role in post op management. It also does show that in a few carefully selected vitrectomy patients not having gas as a tamponade, we may be able to drop the D1 review and possibly review them on the 2nd or 3rd post op day. There has to be robust mechanism in place, not to miss any adverse effects and a way of rectifying it.

### Conclusion

With the advances in surgical equipment and possibly surgical techniques, vitrectomy outcomes have become more predictable. Post op pressure spikes following 23G system appear to be significantly less than previously reported data. D1 review provides an invaluable opportunity for detecting surgical outcome and adverse effects as well as a chance for the surgeon and the patient to interact. At the same time it may be possible to drop the D1 review in a few carefully selected vitrectomy patients who may not have undergone gas tamponade.

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**Annex 1**

**Patients undergoing uncomplicated TPPV**

**Post Op- D1 review**

Pt. Details
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01. Indication for surgery:

- RD     ERM     MH     DR     Dropped lens

Other.....

02. Ports

- 20G     23G     25G

03. Tamponade

None

- Gas     SF<sub>6</sub>     C<sub>2</sub>F<sub>6</sub>     C<sub>3</sub>F<sub>8</sub>

Non-Expansile-     Y     N

Silicone oil

04. Post-Op prophylactic Acetazolamide:     Yes     No

05. Pain:     Yes     No .... go to 07.

06. Need for analgesia

- Paracetamol     NSAID     Narcotics

07. IOP on D-1

- <10     10-20     21-30     >30

Did D1 exam alter the routine follow up of the patient?

08. Ant. Seg and IOP-     No     Yes (Details.....)

09. Lens / IOL-     No     Yes (Details.....)

10. Post. Seg-     No     Yes (Details.....)

11. If 'Yes' to 08,09 or 10, what were the interventions taken?

- Needed closer observation  
 Needed IOP control  
 Needed pain relief  
 Needed further surgical intervention  
 Other.....