In developing countries, retinal diseases have had a low priority in blindness-prevention programs because it is assumed that they are not a common cause of blindness and the outcome of treating retinal diseases do not justify the effort and expense involved. The huge cost of equipment and shortage of trained manpower are also factors limiting the growth of this field of ophthalmology. Retinal diseases are likely to become more common in the developing world for a number of reasons. The prevalence of diabetes is projected to increase from 171 million in 2000 to about 366 million by the year 2030, with the greatest relative increase occurring in Sub-Saharan Africa, Middle East and India. The increase in number of cataract surgeries performed yearly, which is projected to hit 30 million by the year 2020, in order to meet the global initiative for elimination of avoidable blindness target, with most of this growth taking place in developing countries is also likely to lead to more posterior segment complications of cataract surgery. The increasing life expectancy in

### ABSTRACT

**Objective:** To review the indications and visual outcome of the first one hundred pars plana vitrectomies performed at the newly established surgical retina unit of Makkah Specialist Eye Hospital, Kano, Kano State, Nigeria.  

**Materials and Methods:** A retrospective chart review was performed. Data recorded from the patient chart include demography, pre and postoperative visual acuity, indication for surgery and associated systemic or ocular co-morbidities of first hundred consecutive patients, who underwent pars plana vitrectomy between March 2012 and January 2013.  

**Result:** One hundred eyes of 97 patients underwent pars plana vitrectomy including 75 (77%) males and 22 (23%) females with a mean age of 45.62 ± 16.1 years. Preoperatively, presenting visual acuity in the affected eye was <3/60 in 80 eyes (80%), while that in the contralateral eye was <3/60 in 24 eyes (24%). Postoperatively, 41 eyes (41%) had unaided visual acuity of <3/60. The most common indications for surgery were rhegmatogenous retinal detachment 49 eyes (51%) and vitreous hemorrhage 20 eyes (21%).  

**Conclusion:** Rhegmatogenous retinal detachment and vitreous hemorrhage are the major indications for pars plana vitrectomy in this environment. As vitreoretinal disorders have become more common in this part of the world, there would be a corresponding increase in demand for vitreoretinal services. There is therefore a need for more eye care providers with sub-specialty training in retinal diseases.  

**Keywords:** Pars plana, retinal detachment, vision, vitrectomy

### INTRODUCTION

The field of vitreoretinal surgery has undergone considerable evolution since 1962, when Kasner introduced the concept of removing the vitreous gel from the eye as a therapeutic modality. Dr Robert Machemer performed the first closed system vitrectomy in 1972, using a prototype instrument called the VISC (vitreous infusion cutter system). In 1974, Connor O’Malley proposed the three port vitrectomy, this led to a reduction in the size of the instruments and the incisions needed to insert them.

In developing countries, retinal diseases have had a low priority in blindness-prevention programs because it is assumed that they are not a common cause of blindness and the outcome of treating retinal diseases do not justify the effort and expense involved. The huge cost of equipment and shortage of trained manpower are also factors limiting the growth of this field of ophthalmology. Retinal diseases are likely to become more common in the developing world for a number of reasons. The prevalence of diabetes is projected to increase from 171 million in 2000 to about 366 million by the year 2030, with the greatest relative increase occurring in Sub-Saharan Africa, Middle East and India. The increase in number of cataract surgeries performed yearly, which is projected to hit 30 million by the year 2020, in order to meet the global initiative for elimination of avoidable blindness target, with most of this growth taking place in developing countries is also likely to lead to more posterior segment complications of cataract surgery. The increasing life expectancy in
developing countries would likely lead to an increase in cases of posterior segment pathologies which are age related.

In Nigeria, reported percentage of patients seen in ophthalmic outpatients clinics with posterior segment disorders range from 3.9% to 13%.7,8

Pars plana vitrectomy is not a commonly performed procedure in this environment, hence data on its indications and visual outcome not readily available. This study aims to identify the common indications and visual outcome associated with this procedure in our part of the world.

**MATERIALS AND METHODS**

This was a retrospective study conducted at the newly established surgical retina unit of Makkah Specialist Eye Hospital, Kano. A review of the case records of the first 100 consecutive patients who had pars plana vitrectomy between March 2012 and January 2013 was done. Demographic data, pre and postoperative visual acuity, indication for surgery, type of surgery and associated ocular or systemic conditions if any, were recorded.

Surgeries were performed using the DORC dual associate 2500 vitrectomy machine, while endolaser was with the Iridex IQ 532 green laser system. The unit converted from 20 to 23 gauge sutureless vitrectomy over the period of the study, hence the initial 78 were done using 20 gauge, while the last 22 cases were 23 gauge.

Data was analyzed using statistical pack for the social sciences (SPSS) version 16.

**RESULTS**

There were 100 eyes of 97 patients, including 75 males and 22 females with a male to female ratio of 3.4:1. The age ranged from 7 to 73 years with a mean age of 45.62 ± 16.1 years. The 51-60 years and 41-50 years age group accounted for the highest percentage of patients. The age and gender distribution of patients is shown in Table 1. Pre and postoperative visual acuity is shown in Table 2.

The number of eyes with visual acuity of <3/60 reduced from 80 (80%) to 41 (41%) after surgery, while those with visual acuity of ≥6/18 improved from 2 (2%) to 8 (8%).

About one quarter of patients had visual acuity <3/60 in the contralateral eye with less than half of them (45%) having normal vision. Visual acuity in the contralateral eye is shown in Table 3.

Rhegmatogenous retinal detachment (RRD) was the major indication for surgery, followed by vitreous hemorrhage and tractional retinal detachment. The main indications for pars plana vitrectomy is shown in Table 4. The types of surgical procedures are shown in Table 5. Fifty-seven percent of eyes had pars plana vitrectomy, endolaser and silicon oil tamponade. The associated systemic and ocular conditions of reviewed patients are shown in Table 6. Twenty-two (22.7%) were diabetic, 7 (7.2%) were hypertensive, while 26 (26.8%) of patients had no associated systemic or ocular conditions.

**DISCUSSION**

This study reports the major indications and visual outcome of pars plana vitrectomy in the first one
The percentage of eyes with preoperative visual acuity <3/60 (80%) at presentation was in agreement with what obtained in Nigeria[9] (79.6%) and Nepal[10] (92%), while postoperatively the percentage of eyes with such vision (39%) was lower than that reported by Oderinlo et al. (49.5%) but higher than in Nepal (21%). The leading indication for surgery in this study was similar to that in Nepal[10] and Brazil,[12] where RRD accounted for 75% and 46.3% of surgeries, respectively. In the USA[13] epiretinal membrane (39.1%) was leading indication for surgery, while in other studies in Nepal[11] and Israel[14] vitreous hemorrhage accounted for the highest percentage accounting for 53.13% and 71.4%, respectively. The second leading indication for surgery was similar in most of the studies with vitreous hemorrhage accounting for 18.5% in the USA,[13] 19% in Nepal,[10] and 22.5% in Brazil.[12] In Israel[14] RRD and macula hole came joint second with each accounting for 11.9% of cases, while in another study in Nepal,[11] endophthalmitis was the second most common indication for surgery (12.5%). More than half of the eyes operated (57%) underwent pars plana vitrectomy, endolaser and injection of silicon oil, about a quarter of eyes (23%) had phacoemulsification in addition to PPV while 9 eyes (9%) had PPV and endolaser only. Three eyes had internal limiting membrane peeling in addition to PPV, while 2 eyes in a patient with marfans syndrome had pars plana lensectomy.

The percentage of patients that were diabetic (30%) and hypertensive (10%) in this study was much lower than that recorded in Israel,[14] where 69.1% of patients were diabetic and 71.4% hypertensive. There was a history of trauma in 17.5% of cases that had surgery in this study with an average age of about 23 years, in Nepal,[11] trauma was associated with 23.4% of cases.

Postoperatively, unaided visual acuity measured at 6 weeks follow up improved in 69 eyes (69%), remained the same in 13 eyes (13%) and decreased in 18 eyes (18%). These values were similar to what was obtained in a Nigerian[9] study, where vision improved in 59.2%, no change in 27.5% and worsened in 13.7% of patients that underwent surgery for RRD at 2 months postoperative follow up, though only about 75% of patients in this study had PPV alone with an additional 11% having scleral buckle in addition to PPV. A study in Turkey[15] also recorded similar findings with improvement in post-operative BCVA in 75.4%, no change in 11.3% and a decrease in 13.2% of cases at 12 months, while a similar study in India[16] reported 78%, 16% and 6%, respectively at 6 weeks. Considering the fact that most of the eyes in this study had silicon oil tamponade (85%), BCVA would probably have resulted in a better visual outcome as it is known that silicon oil induces hypermetropic
shift by an average of +5.07 to +7.6 D in phakic eyes,[17-19] a mean of +5.69 D in pseudo-phakic eyes[20] and a mean myopic shift of -6.63 to -6.67 D in aphakic[17,19] eyes, but this information was not available in many of the records reviewed. The major limitation of this study was its retrospective nature but nevertheless most of its results are in keeping with findings from similar studies in other parts of the world.[9-10]

CONCLUSION

Reghmatogenous retinal detachment and vitreous hemorrhage were the most frequent indications for pars plana vitrectomy and this procedure was associated with improvement in postoperative visual acuity in majority of patients. There is a growing need to give retinal disorders the priority it deserves in blindness prevention programs in developing countries. This requires concerted efforts by stakeholders to ensure eye care workers are positioned to meet, not only the present but also future challenges in eye care. There is therefore a need for more ophthalmologists with sub-specialty training in retinal diseases in order to meet the need for patient care and manpower development.

REFERENCES