DISCUSSION
Cataract surgery with IOL implantation has evolved into a very successful procedure. Since Harold Ridley implanted the first IOL in 1949, various IOL types have been developed and various lens materials having clinically good tolerance in the eye are widely used.

The most common delayed complication of ECCE with or without IOL implantation, is PCO. It occurs in 18.4%-50% of cases in 3months to 4 years postoperatively. The patient typically presents with gradual diminution of vision or problems with glare after some duration of surgery. Posterior capsular opacification may manifest as Elschnig’s pearls, moderate capsular opacification or thick capsular fibrosis.

In our study 60 eyes of 60 patients were selected for Nd:YAG laser posterior capsulotomy. All of the 60 patients presented with chief complaints of painless, progressive
diminution of vision after a successful cataract extraction surgery.

As table I shows out of 60 patients, 20 had Elschnig's pearls, 44 moderate posterior capsular opacification and 6 patients had thick fibrotic posterior capsule. The basic power setting of Nd:YAG laser and total amount of laser energy needed for making an adequate opening in the posterior capsule depend on the type of capsule opacification. In present study we used the minimal initial energy for Elschnig's pearls i.e. 1-2 mj. This initial energy was increased to 2-3 mj in few cases having Elschnigs pearls & moderate capsular opacification. While in 6 patients with thick fibrotic PCO, initial power setting required to make an opening was 2-3 mJ in 2 patients and increased later to 3-5 mJ in 4 patients. This is in accordance with the literature. L'Esperance, Frank Goes (Nd:YAG laser posterior capsulotomy. Recent Advances in Ophthalmology India 1990; 77:102) who also described that the intensity and number of YAG energy application depend on the type of
capsule opacification. To begin a capsulotomy start low and if necessary, gradually increase the energy. Fibrotic opacification may require higher energy.

Table 2 shows that in our study out of 60 patients, 52 patients were pseudophakic and 8 patients were aphakic.

In his study of pathogenesis of PCO Frezzotti R et al. (1990) examined 895 eyes having ECCE surgery, 403 had an IOL implantation and 492 did not. The incidence of PCO was 7.69% in the eyes with an IOL and 14.23% in the eyes without an IOL.

In another study Apple DJ et al. (1991) who concluded that PCIOL loops create a radial stretch on the posterior capsule after in the bag placement, forming a barrier against central migration of epithelial cells into the visual axis, leading to a more complete contact between the posterior surface of the IOL optic and the lens capsule.

Nishi O (1986), also noted that a significantly lower incidence of PCO after ECCE with PCIOL than in eyes
without PCIOL. He also reported a much denser PCO formation in aphakics than in pseudophakics.

Liesegans and co-authors (1985) also noted the opacification with and without IOL to be 14.5% and 22.1% respectively.

Table 3 shows the time from cataract extraction surgery to usually significant opacification. In our study out of 60 patients 20 patients presented with visually significant PCO within 6 months of cataract surgery; 24 in 6-12 months, 10 in 1-2 year; 4 patients in 2-3 year; 2 patients in 3-5 years after the surgery.

The different authors have reported different incidence of PCO which varies from 5% to more than 50%. To evaluate correctly the incidence of capsular opacification, one has to select a series of patients operated by surgeons at a similar level of experience using the same technique and same type of IOL.

Table 4 describes the total amount of Nd:YAG laser energy used for laser posterior capsulotomy. In present
study out of 60 eyes, 10 eyes required the total laser energy between 0-30 mJ for an adequate posterior capsular opening, 44 eyes between 31-50 mJ and rest 6 eyes between 51-100 mJ. The total amount of laser energy used was comparatively more in eyes with moderate and thick fibrotic capsular opacification.

This result is also comparable with the Frank Goes (1987) study, which states that denser posterior capsule opacification require more laser energy for a good posterior capsulotomy.

Aufforth GU et al. (1986) conducted a study to analyse the energy levels for Nd:YAG laser capsulotomy in secondary cataract. They concluded that the different ocular conditions of the anterior and posterior segment showed a different profile for Nd:YAG laser capsulotomy energy level and Nd:YAG laser repetition rate. They also showed that sulcus fixation of an IOL resulted in earlier capsulotomies with higher energy levels.
Table 5 shows the number of eyes with IOP rise by more than 5 mm of Hg with respect to different laser energy used. The IOP recordings were taken prior to laser capsulotomy and 1 hour, 4 hours & 24 hours after the laser capsulotomy procedure. Later they were assessed in their follow-ups.

The rise in IOP was seen in 5 eyes. 1 eye of them belongs to the group who received energy in between 30-50 mj & 4 eyes belong to them who received the energy level in between 50-100mj.

So in our study it was found that with the increasing amount of total laser energy for posterior capsulotomy, there is more rise in IOP from the baseline IOP.

Those patients who developed IOP rise by more than 5 mm Hg than their baseline reading, were given Tab Acetazolamide 250 mg twice daily for 5 days. In all the 5 patients IOP was controlled within 1 week post-laser.

Our study supports the study by Channell MM et al. (1984) where they performed Nd:YAG laser posterior
capsulotomy on 33 aphakic or pseudophakic eyes. They noticed that all eyes in which IOP increased more than 5 mmHg showed the increase within the first 48 hours. In some eyes, IOP remained elevated more than 10 mmHg above preoperative levels for several weeks. They describe that higher pressures were associated with larger capsulotomies and increased laser energy.

Different authors in different studies have advised role of premedication to prevent the IOP rise after Nd:YAG laser posterior capsulotomy. Pollack JP et al., Cullan RD JR et al. (1989) supports the role of topical 1% apraclonidine to prevent post laser IOP rise, Lodan ID et al. (1987) favour effectiveness of low dose acetazolamide, Lachmann C et al. (1994) described the role of local carbonic anhydrase II inhibitor – Dorzolamide HCl, Seong GJ et al. (1996) determined the prophylactic role of 0.2% Brimonidine eye drops to prevent IOP rise following Nd:YAG laser capsulotomy.
We found that there is no need to start antiglaucoma treatment before laser procedure because in most of the cases, with low laser energy an adequate laser posterior capsulotomy can be achieved. This does not cause a very high rise in IOP in post laser period, however if laser energy used is greater during the procedure then an IOP monitoring should be done & treatment should be given accordingly.

In our study post laser visual acuity results were very encouraging & were equivocal to some of the studies done earlier.

Pre laser visual acuity was less than 6/60 in 32 patients, 6/24-6/60 in 22 patients & in 6 patients it was 6/18-6/24. We excluded the patients with visual acuity better than 6/18.

Out of 60 eyes who underwent YAG capsulotomy 57 (95%) had improvement in their best corrected visual acuity. 3 eyes showed no improvement.

In 2 of these 3 eyes capsular opacification was very thick, which did not showed any improvement even after 3-4
sittings & in 1 eye, pre laser age related macular
degeneration, which was not ascertained earlier, prevented
the appreciable visual recovery.

Our study is in accordance with the study by Joel C.
Axt(1987) where out of 213 patients, 196 patients (92%)
were with visual acuity better than 6/9.

Terry AC et al. (1983) where with Nd:Yag capsulotomy
the visual results were encouraging, with an improvement in
visual acuity of one or more Snellen’s lines in 45 eyes and
an improvement of three or more Snellens line in 33
eyes.

Slomovic AR et al. (1985) also supported this view
by performing 67 Nd:YAG laser posterior capsulotomies. The
visual acuity improved by one or more Snellens line in 90%
of the eyes and the final visual acuity was 6/12 or better in
78% of the eyes.

The complications in our study were very few. We
encountered mild iritis in 1 case, glare in 2 cases, mild lens
pitting in 4 cases & vitreous floaters in 2 cases.
Mild iritis in 1 case responded well to Flurbiprofen eye drops thrice daily for 2 weeks post laser.

A study by Bath PE et al. (1987) supports our study by explaining the fact that Nd:YAG laser IOL damage results in opacities in the pseudophakos when located in the visual axis. These opacities may cause glare and image degradation. They found excessive glare in 4 patients and this was also related to accidental pitting over IOL.

The other reported complications after Nd:YAG capsulotomy are cystoid macular oedema, rhegmatogenous retinal detachment, Propionobacterium acnes endophthalmitis.

In our study none of the patient developed above described complications following Nd:YAG laser capsulotomy.