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# IRIS PROLAPSE; WHO? WHEN? WHY?

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## SUMMARY

A 12-month period was reviewed to identify the incidence of iris prolapse following cataract surgery, and any predisposing factors. Of 1408 routine manual extracapsular cataract extractions, 29 eyes (2.06%) sustained an iris prolapse. Iris prolapse was commoner in Asian patients and when less experienced surgeons were operating. Twenty-five per cent of cases occurred in patients with obstructive airways disease or post-operative cough. Thirty-four per cent of iris prolapses were identified on the first post-operative day and 86% within 2 weeks. Prolapse probably occurs because of raised intraocular pressure in association with poor wound construction or closure. More emphasis should be given to wound construction and closure during surgical training, with extra diligence when operating on patients likely to cough post-operatively. Clinicians must ensure non-English speaking patients understand about ocular aftercare following cataract surgery.

As a complication of cataract surgery, post-operative iris prolapse has received little attention. However, as the duration of inpatient stays lessens and day case cataract surgery becomes more popular, the problem may become more significant. Iris prolapse may predispose to endophthalmitis and, if long standing, epithelial ingrowth syndrome should the offending iris be repositioned.<sup>1</sup> Repair usually requires further suturing which may induce excessive astigmatism, thereby prolonging the period of visual rehabilitation.

To identify when iris prolapse occurs and whether there are any predisposing factors which could be identified and corrected, a 12-month period was reviewed.

## PATIENTS AND METHODS

The operating theatre record book was reviewed for the period April 1990 to March 1991, during which 1408 extracapsular cataract extractions were performed by surgeons of varying experience. All patients underwent

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planned extracapsular extraction, most with insertion of a posterior chamber implant using viscoelastic which was routinely aspirated prior to or following wound closure with either a continuous or interrupted 10/0 nylon suture. Patients requiring iris prolapse repair were identified and the case notes reviewed to identify any predisposing factors. The data were analysed statistically using the chi-squared test.

## RESULTS

In total, 29 cases of iris prolapse were identified, which is a rate of 2.06%. A further 6 patients required wound resuturing, 4 because of 'broken' sutures, one because of a loose suture and 1 because of a leaking section, all without iris prolapse. None of the iris prolapse patients had broken sutures.

As shown in Table I the rate of iris prolapse was highest when junior surgeons were operating (Senior House Officers), and becomes lower the more experienced the surgeon (a significant linear trend  $p = 0.02$ ). The rate was significantly higher ( $p = 0.002$ ) amongst Asian patients (from the Indian sub-continent) than among white Caucasians (Table II). This difference could not be accounted for on the basis of operating surgeon (Table III). Ten of the iris prolapses were identified on the first post-operative day, the rate being similar in the Asian and non-Asian groups (Table IV).

Eight patients had their surgery performed under local anaesthesia, 11 under general anaesthesia, 4 through a corneal incision, and the remainder through a limbal incision under a fornix-based conjunctival flap. No history of trauma was obtained although 1 patient with dementia sustained a late iris prolapse and a further patient was seen rubbing the eye following an iris prolapse repair. Five patients were noted to have obstructive airways disease

**Table I.** Rates of iris prolapse by grade of operating surgeon

Consultant	0.85%
Senior Registrar	1.79%
Registrar	2.33%
Senior House Officer	3.62%

**Table II.** Breakdown of patients undergoing cataract extraction and rates of iris prolapse in Asian and non-Asian groups

	Total patients undergoing cataract surgery	Total patients with iris prolapse	Rate of iris prolapse
Asian	16%	37.9%	4.9%
Non-Asian	84%	62.1%	1.5%

and a further 2 patients a severe cough after general anaesthesia. Six cases (21%) required selective suture cutting or removal for astigmatism of more than 3 dioptres (range 3.25 to 8 dioptres), all with the rule.

Four of the 29 patients had a final visual acuity of less than 6/12. One was lost to follow-up post-operatively and 1 was demented. Of the remaining 2, one had required iris abscission for a late iris prolapse and the other had a distorted pupil following prolapse repair. There was no documented clinical evidence of cystoid macular oedema in either of these cases, and no specified reason for their relatively poor visual outcome. Thus 74% attained a final acuity of 6/12 or better. There were no cases of endophthalmitis or epithelial ingrowth.

## DISCUSSION

To my knowledge this is the first study to look specifically at iris prolapse as a complication of cataract surgery.

Previous studies from the United States have concentrated on rates of vitreous loss and visual results in patients undergoing extracapsular cataract surgery by surgeons in training (Residents). However, as part of those studies Sappenfield and Driebe<sup>2</sup> reported a 1.7% incidence of late post-operative wound dehiscence with a further 1.5% developing a wound leak without prolapse but requiring suturing; Browning and Cobo<sup>3</sup> reported a 3.1% incidence of wound complications. In this series, the rate of prolapse amongst surgeons in training (SHOs, Registrars and Senior Registrars) was 2.5%. If the 6 cases requiring resuturing are included the overall rate is 3.0%, which compares closely with the American figures.

Ten cases of iris prolapse (34%) were present on the first post-operative day. Of the remainder, at least 6 (31%) were noted by day 3 and 16 (84%) by 2 weeks. Despite the increasing frequency of day case cataract surgery it is therefore advisable that all patients continue to be seen on day 1 so that any cases of prolapse are identified. The timing of subsequent visits (with respect to iris prolapse) is more debatable, but an assessment at 1 week rather than 2 weeks would identify at least 30% more cases earlier.

It is likely that iris prolapse occurs because of raised intraocular pressure (due to trauma, coughing or retained

**Table III.** Operating surgeons in Asian and non-Asian groups

	Cons.	SR	Reg.	SHO
Asian	20%	25%	36%	19%
Non-Asian	25%	20%	40%	15%

Cons., Consultant; SR, Senior Registrar; Reg., Registrar; SHO, Senior House Officer.

viscoelastic) in association with inadequate wound construction or closure. Only 1 of our patients was documented as having a raised intraocular pressure at the time the iris prolapse was noted, but one would expect any pressure rise to have been relieved by the prolapse. It is also not uncommon to have a markedly raised intraocular pressure post-operatively without inducing iris prolapse.

Of the 11 patients with iris prolapse in the Asian group, 10 spoke very little English. Lack of comprehension about aftercare and the avoidance of rubbing the eye might account for the increased rate. All cataract cases wore a cartella and/or pad which was removed from the operated eye by the nursing staff the following morning prior to ophthalmological examination. Therefore, even the cases of prolapse present on the first post-operative day may have been due to rubbing or touching the eye.

Obstructive airways disease or post-operative cough was noted in 7 patients (25%). Sappenfield and Driebe<sup>2</sup> also found one-third of patients with wound problems to have obstructive pulmonary disease in their series of extracapsular cataract surgery by Residents. It is likely, therefore, that coughing post-operatively is a risk factor in developing iris prolapse.

The incidence of iris prolapse in this study is inversely proportional to surgical experience, suggesting that wound construction and closure play an important role. Although 25 cases (86%) occurred through a limbal incision, this is the preferred section for most surgeons at this hospital. As it is not known which type of incision was employed in the cases without prolapse, statistical analysis is not possible. However, it would seem that iris prolapse would be more likely if an incision is made straight through the limbus to enter the anterior chamber at the iris root, rather than with a stepped self-sealing limbal incision which enters the anterior chamber anterior to the iris plane.

Small-incision cataract surgery, particularly with scleral tunnel incisions, should protect against iris prolapse. However, these advanced surgical techniques are performed by experienced surgeons, a group in whose patients iris prolapse is uncommon, and are not applicable to less experienced surgeons in training, the group in whose patients prolapse is more frequent.

The overall increased incidence of prolapse with less experienced surgeons suggests that the major factors are poor wound construction and closure. More emphasis should be placed on wound construction and closure during training; they are skills that can be improved in wet

**Table IV.** Post-operative time at which iris prolapse was noted

	Non-Asian	Asian
Day 1	6	4
Day 2	2	2
Day 3	2	—
1st visit (2 weeks)	4	5
2nd visit (8 weeks)	2	—
Casualty		
1 week	1	—
3 weeks	1	—

laboratory situations. Particular care should be taken when operating on patients with respiratory problems, when coughing post-operatively is likely. Clinicians must also ensure that non-English-speaking patients understand how to care for the eye following surgery.

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Key words: Cataract complications, Cataract extraction, Iris prolapse, Surgical training.

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