

A REVIEW OF INTRAOCULAR FOREIGN BODIES TREATED AT THE UNIVERSITY HOSPITAL KUALA LUMPUR

G.H. TEOH

C.S. YOW

SUMMARY

*A retrospective study of intraocular foreign bodies treated at the University Hospital over 10 years from 1970 - 1979 was carried out. Of the 48 cases reviewed, nine were anterior chamber foreign bodies while the rest were posterior segment foreign bodies. The anterior chamber foreign bodies had better visual prognosis as compared to the posterior segment foreign bodies. Most of the patients were young Chinese males and most of the injuries were due to accidents at work involving the 'hand hammer'**.

INTRODUCTION

Perforating ocular injury with retained intraocular foreign body is a serious eye injury which often leads to severe impairment of vision or loss of sight. Although relatively uncommon, such injuries are a significant cause of monocular blindness particularly in young adults.¹

This report is based on a retrospective study of the cases of perforating eye injuries with retained

intraocular foreign bodies treated at the University Hospital, Kuala Lumpur, over a ten year period from 1970 - 1979.

MATERIALS AND METHODS

There were 48 cases treated during this period comprising 9 with anterior chamber foreign bodies and 39 with the foreign bodies sited in the posterior segment of the eye. Orbital foreign bodies after double perforations and non-penetrating corneal and scleral foreign bodies were excluded. Follow up ranged from one month to 4 years with an average of 13 months. The final visual acuity was that as recorded at the latest follow up visit to the eye clinic.

RESULTS AND DISCUSSION

Incidence, Age and Sex

The 48 cases in this series were seen over ten years giving an annual incidence of 4.8 cases per year. Twenty seven of the cases were from the state of Selangor and the Federal Territory while the rest comprised referrals from other hospitals throughout Peninsular Malaysia.

All cases except one were males and they were predominantly Chinese (75 percent). This over representation of Chinese in this series probably is a

G H Teoh, M.B., B.S., (Mal.), F.R.C.S. (Edin)
C S Yow, M.B., B.S., (Mal.), F.R.C.S. (Glasg.)
Department of Ophthalmology
Faculty of Medicine
University of Malaya

* includes other implements used as a hammer.

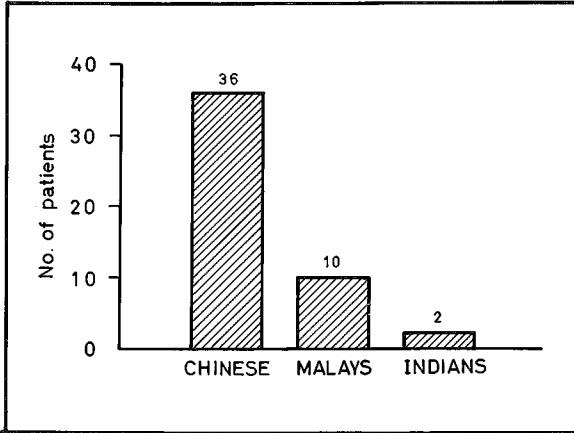


Fig. 1 Ethnic distribution of cases of 10FB.

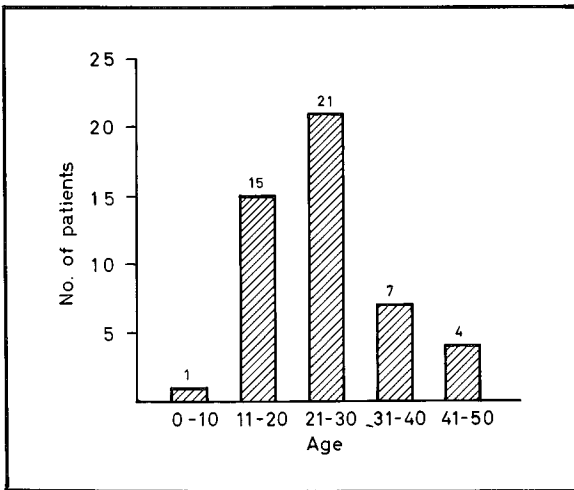


Fig. 2 Age distribution of cases of 10FB.

reflection of the preponderance of the Chinese in the occupations and trades more at risk to such injuries. The cases were mainly adults in the economically active age group (age 15 to 40 years). (Figs. 1 & 2).

Occupation and Cause of Injury

Most of the injuries were reported to have occurred at work (82 percent), mechanics, machine operators and manual labourers appear to be the occupational groups most at risk (44 percent, Table I).

The great majority of the cases were due to accidents involving the hand hammer (80 percent, Table II). This figure is higher than that reported

by other series (72 percent ² and 63 percent ³). The left eye was affected in 66 percent. This slightly more frequent involvement of the left eye has also been reported by other series. ^{3,4} Goulden in 1908 explained that a hand hammer tends to be unilaterally aligned by the master eye, usually the right eye, which would therefore be further away from the area of danger. As most of our injuries were due to hand hammer accidents it is not surprising that more left eyes were involved.

Visual outcome and prognosis

All the 9 anterior chamber foreign bodies were successfully extracted either with the use of the hand magnet or forceps or by way of a sector iridectomy and 88 percent had final visual acuity of 6/12 or better.

Of the 39 posterior segment foreign bodies, 84 percent were successfully removed with the use of the giant magnet either via a pars plana or direct posterior approach or via the scleral entry wound. In one case the giant magnet failed to function and the patient was referred to another hospital for further management. In 5 cases the foreign bodies could not be removed with the giant magnet. Surgery had been delayed for 5 days or more in 4 of these cases (Table V).

The prognosis for cases where the foreign body cannot be removed is generally bad although there are reports of exceptions ⁵(Table V).

The high rate of successful removal of the foreign bodies (84 percent) was however not matched by an equally high rate of successful visual outcome. This was often due to the severe mechanical damage caused by the initial injury and subsequent complications and sequelae.

Overall only 38 percent had a final visual acuity of 6/12 or better (26 percent if anterior chamber foreign bodies are excluded), while 52 percent had vision of 6/60 or worse. However, only one eye was excised because of panophthalmitis. The low excision rate probably reflects the great reluctance of both the patients and the doctors in this country towards excision of an eye (Table IV).

The cases where surgery was delayed (usually as a result of delay in referral) appeared to have a poorer visual prognosis (Table V).

TABLE I
OCCUPATION OF PATIENTS TREATED FOR
INTRAOCULAR FOREIGN BODIES

Occupation	No. of patients	%
1. Mechanic	9	19
2. Manual labourer	8	17
3. 'Foreman'	5	11
4. Machine Operator	4	8
5. Welder	3	6
6. Fitter	3	6
7. Lorry driver	3	6
8. Carpenter	2	4
9. Army Personnel	2	4
10. Others	9	19
TOTAL	48	100

TABLE II
CAUSES OF INJURY

Cause of Injury	No. of patients	%
1. Hand Hammer* and chisel or other instrument	38	80
2. Nailing gun	2	4
3. Machine tool	2	4
4. Booby trap	1	2
5. Others	3	6
6. Not stated	2	4
TOTAL	48	100

* Includes other implements used as hammer

Complications

The commonest complications seen were cataracts (20) and vitreous haemorrhage (18). Retinal detachments developed in 11 patients and 9 had severe inflammation/infection. One patient had siderosis at presentation.

CONCLUSIONS

Perforating ocular injury with retained intraocular foreign body appears to be an industrial disease predominantly affecting young Chinese males in Malaysia. Mechanics, machine operators and manual labourers appear to be most at risk.

The vast majority of intraocular foreign bodies are fortunately magnetic in nature and this is reflected in the high rate of successful removal of the foreign bodies.

TABLE III
COMPARISON OF VISUAL OUTCOME OF ANTERIOR
CHAMBER AND POSTERIOR SEGMENT FOREIGN
BODY

	No. of patients	No. of patients with visual acuity of 6/12 or better	No. with acuity of 6/60 or worse	No. of eyes excised
Anterior Chamber Foreign bodies	9	8	0	1
Posterior Segment Foreign bodies	39	10	25	0
TOTAL	48	18	25	1

The anterior chamber foreign bodies had very good visual prognosis (88 percent)

For the posterior segment foreign bodies, the high rate of successful removal of the intraocular foreign bodies, however, was not accompanied by an equally high rate of successful visual outcome. Only 26 percent of our cases had a final visual acuity of 6/12 or better. There is thus a significant wastage of sight and a good number of young adults end up with monocular blindness in this series (as in other series too). The visual prognosis deteriorated with delay in surgery.

Although some improvement in the visual prognosis may be expected in the future years with a further increase in surgical expertise to deal with the primary repair and with the complications of intraocular foreign bodies, the greater contribution towards reducing this wastage of sight must come from the prevention of such accidents. Those most at risk must be made aware of the danger and encouraged to adopt avoidance procedures and use protective lenses and goggles.

ACKNOWLEDGEMENTS

We would like to thank Professor S. Chandran for his help and encouragement in the preparation of this paper and Mrs. Lai for secretarial assistance and the Medical Illustrations Department for preparing the Illustrations and Tables.

TABLE IV
VISUAL OUTCOME : UNIVERSITY HOSPITAL AND
OTHER SERIES

	% of patients with acuity 6/12 or better	% of patients with acuity 6/60 or worse	% of eyes excised
1. University Hospital, K.L. 1979 (48 cases)	38%	52%	2%
2. Percival, ^{3,4} Birmingham 1972 (245 cases)	61%	29%	10%
3. Stewart Johnston ⁶ Belfast 1971 (81 cases)	57%	16%	23%
4. Chisholm, ⁷ Glasgow 1964 (73 cases)	48%	24%	16%

TABLE V
VISUAL OUTCOME FOR POSTERIOR SEGMENT
FOREIGN BODIES IN RELATION TO TIME OF
SURGERY

Time of surgery	No. of patients	No. with V.A. 6/12 or better	No. with V.A. 6/60 or worse	No. of failed extractions
Within 24 hrs of injury	13	4	6	2
Between 2 to 4 days after injury	11	4	6	0
5 days or more after injury	15	1	10	4*
TOTAL	39	9	22	6

REFERENCES

¹ Chandran S and Ooi E S (1971), A survey of Ocular Injuries at the University Hospital. *Med. J. Mal.* Vol. 25, No. 4, Pg. 278-281.

² Roper Hall M J (1954) Review of 555 cases of Intraocular Foreign Bodies with special reference to prognosis, *B.J.O.*, 38, 65 - 99.

³ Percival S P B (1972) Late complications from posterior segment intraocular foreign bodies. *Brit. J. Ophthalmol.*, 56, 462 - 468.

⁴ Percival S P B (1972) A decade of Intraocular foreign bodies. *Brit. J. Ophthalmol.* 56, 454 - 461.

⁵ P L Tan (1980) Retained intraocular foreign bodies and visual prognosis, *Med. J. Malaysia*, V. 35, No. 1., 58 - 60.

⁶ Stewart Johnston (1971) Perforating Eye Injuries - a five year survey. *Trans. Ophthalm. Soc. U.K.* 91, 895 - 921.

⁷ Chisholm I A (1964) Intraocular metallic foreign bodies, *Brit. J. Ophthalmol.* 48, 364 - 372.