

Outcomes of cataract surgery in patients previously treated with orbital radiotherapy



Jennifer Hind¹, Aaron Jamison¹, Stefano Schipani², Julie Connolly¹, Paul Cauchi¹, Vikas Chadha¹

1. Scottish Ocular Oncology Service, Tennent Institute of Ophthalmology; Glasgow, Scotland.

2. Department of Radiation Oncology, Beatson West of Scotland Cancer Centre, Glasgow.

jennifer.hind1@nhs.net. No relevant disclosures exist



INTRODUCTION

- External beam radiotherapy (EBRT) is used to treat various orbital and ocular diseases.
- These include thyroid eye disease, lymphoma and choroidal metastasis.
- A common side effect of orbital EBRT is cataract. [1]
- The risk of complications following cataract surgery in this cohort is poorly understood. [2]

AIMS

- This study aims to quantify the risks of cataract surgery in patients who have previously undergone EBRT.

METHODS

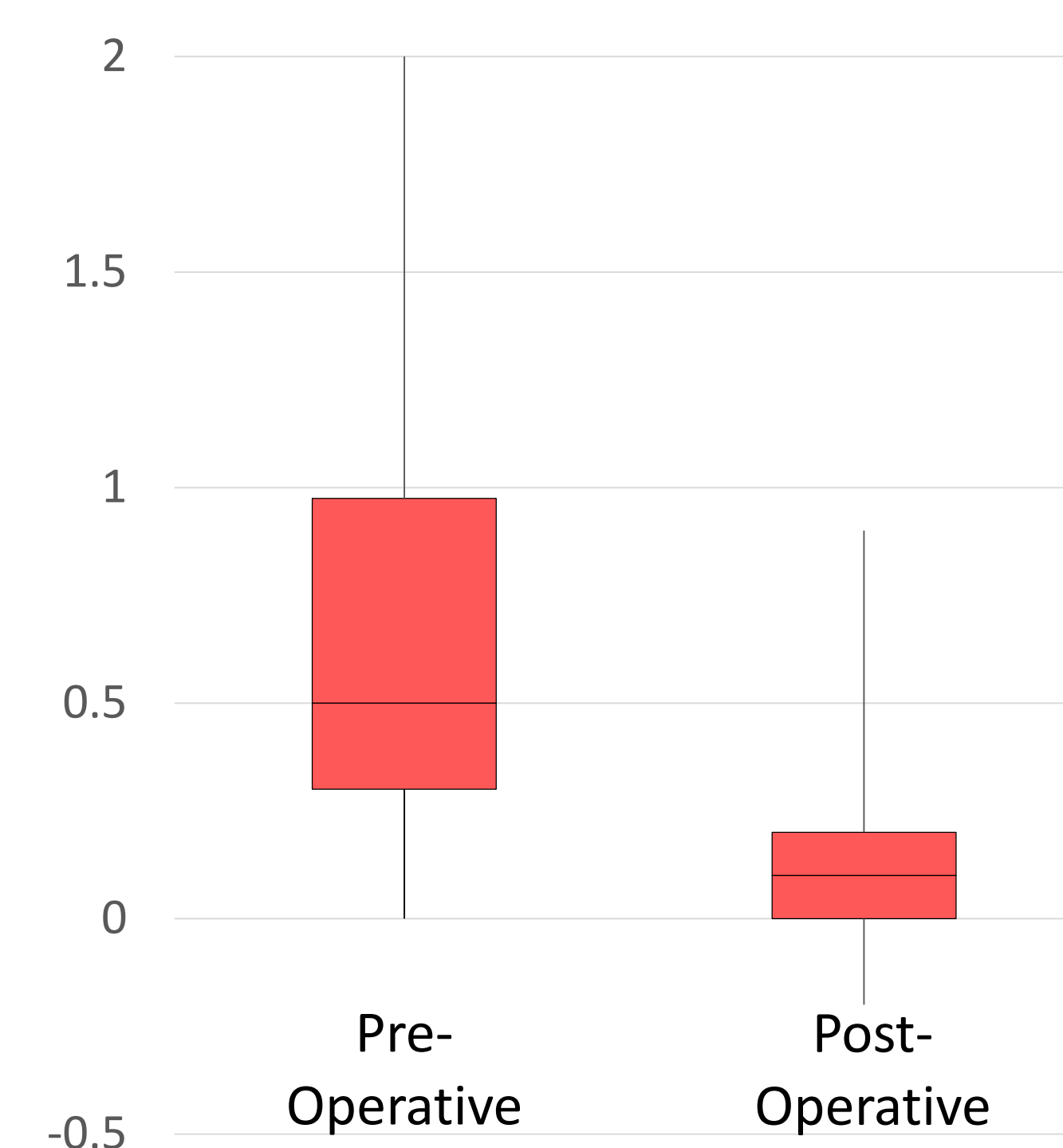
- Patients treated with orbital EBRT at the Beatson West of Scotland Cancer Centre between 2001 and 2019 were identified
- Clinical records were reviewed to identify those who had subsequently undergone cataract surgery.
- Pre- and post-operative case records, and operation records, were reviewed to identify demographic data, and data regarding complications and surgical outcomes.

DEMOGRAPHICS

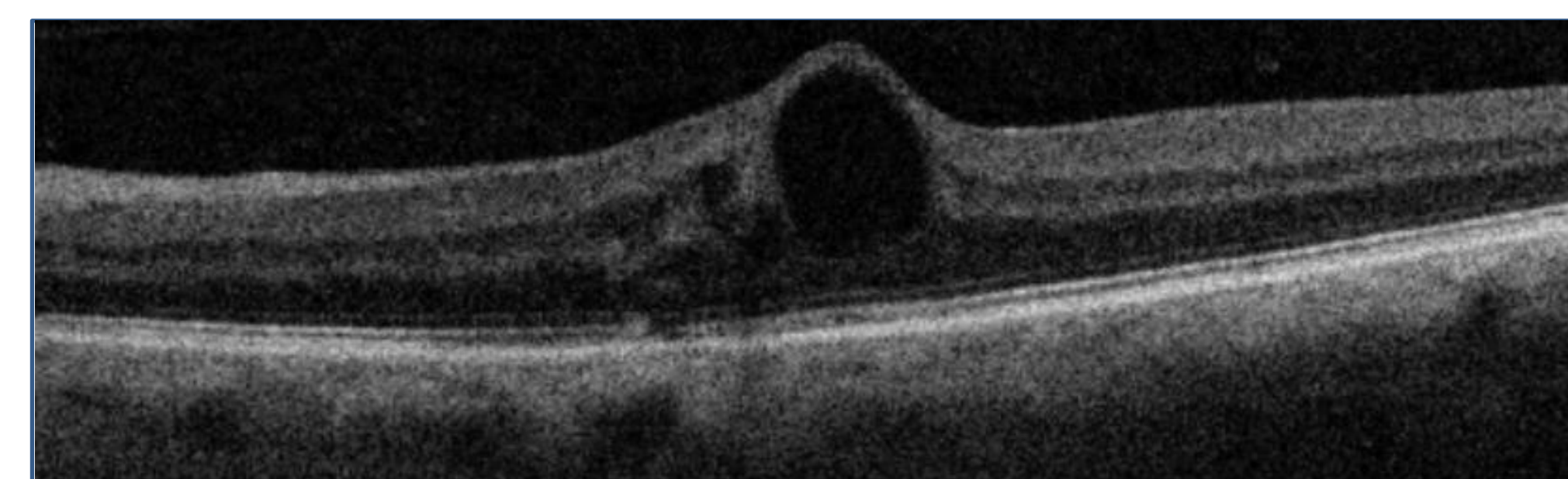
- 502 individuals treated with radical or palliative EBRT to the orbit
- 62 eyes of 43 patients (8.6%) had cataract surgery
- Full operative record in 46 eyes of 33 patients for further analysis
- Radiation dose (mean): 27.8Gy (range 10-65)
- 64% (n=21) of patients were female
- Mean age of patients at time of first eye cataract surgery was 70 (range 46-92) years old.

RESULTS

Pre-operative and post-operative LogMAR VA (median)



- Pre-operative VA: 0.5 (range 0-2.0)
- Post-operative VA: 0.1 (-0.2 to 0.9)
- Visual gain (LogMAR): 0.4 (-0.9 to 1.9).
- Pre-op vs post-op VA: one-way ANOVA $p < 0.01$



OCT demonstrating cystoid macular oedema

- There was one case of posterior capsule (PC) rupture with vitreous loss (2%).
- Dense PC plaque was noted intra-operatively in 19.5% (n=9).
- 13% (n=6) required Nd:YAG laser posterior capsulotomy.
 - 2.4 to 10.9% in general population post-op [3]

CMO

6 cases (13%, 5 patients)

- None in cases with pre-existing radiation retinopathy
- One case of pre-existing diabetes (and despite prophylactic post-operative nepafenac).
- 1 patient required corneal suture; no other intra-operative complications
- Rates of CMO in NOD dataset 1.0-1.25% [4]

Outcomes

- 4 cases resolved completely (with topical treatment)
- 1 case required repeated courses of topical treatment (final BCVA 0.2 LogMAR)
- 1 case persisted (final VA 0.9 LogMAR, reduction of 0.7)

DISCUSSION

- Visual outcomes following cataract surgery are similar in this cohort of patients to those obtained in a nationwide cohort undergoing routine phacoemulsification. [4]
- EBRT is associated with an increased incidence of intra-operative PC plaque, post-operative CMO (which in most cases settled with treatment), and need for posterior capsulotomy.

REFERENCES

1. Park HH, Lee SW, Sung SY, Choi BO. Treatment outcome and risk analysis for cataract after radiotherapy of localized ocular adnexal mucosa-associated lymphoid tissue (MALT) lymphoma. *Radiat Oncol J*. 2017;35(3):249-56.
2. Bozkurt TK, Tang Q, Grunstein LL, McCannel TA, Straatsma BR, Miller KM. Outcomes of cataract surgery in eyes with ocular melanoma treated with iodine-125 brachytherapy. *Journal of Cataract & Refractive Surgery*. 2018;44(3):287-94.
3. Ursell PG, Dhariwal M, Majirska K, Ender F, Kalson-Ray S, Venerus A, et al. Three-year incidence of Nd:YAG capsulotomy and posterior capsule opacification and its relationship to monofocal acrylic IOL biomaterial: a UK Real World Evidence study. *Eye*. 2018;32(10):1579-89.
4. Donachie PHJ, Sparrow JM. National Ophthalmology Database Audit: Year 4 Annual Report - the Third Prospective Report of the National Ophthalmology Database Audit. 2019.