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Real World Long-term Outcomes of Laser Peripheral Iridotomy for Acute Primary Angle Closure: The Leicester Experience

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Introduction:

Acute primary angle closure (APAC) is an ophthalmological emergency. There is limited published data on the long term visual and intraocular pressure (IOP) outcomes for APAC treated by laser peripheral iridotomy (PI) [1-3]. We conducted a real-world study to explore these outcomes.

Methods:

Retrospective cohort study at Leicester Royal Infirmary walk-in Eye Casualty

Data collection

- A list of all patients diagnosed with primary angle closure (PAC) or primary angle closure glaucoma (PACG) presenting to eye casualty over a 5-year period was obtained: 01/01/2019 – 31/12/2023
- Only those with a minimum of 12 months follow up were included.
- Data was gathered from electronic and paper notes.

Main outcome measures

- The main outcome measure was IOP at presentation and final visit
- Secondary outcome measures included final visual acuity (VA), visual field index (VFI), cup-to-disc ratio (CDR) at presentation, proportion that were diagnosed with PACG at presentation and subsequent cataract surgery or clear lens extraction.

Statistical analysis

- IOP changes were statically analysed using a paired t-test.
- Regression analysis was performed to check for associations between initial CDR, IOP, delay to presentation, and final VFI

Results:

51 eyes of 47 patients were included, as four patients had bilateral APAC. 29 patients were female, 18 were male. Mean age at presentation was 66 years (SD: 12 years; range: 34-90). Mean follow-up was 2.3 years (SD 1.0; range: 1.0-4.8). 15 patients (32%) were diagnosed with primary angle closure (PAC), and 32 (68%) with PACG.

Mean IOP was 52mmHg (SD: 15) at presentation, and 16mmHg (SD: 8) at final visit, representing a statistically significant mean reduction of 36mmHg (95% confidence interval: 31-41; P<0.0001). Mean final VA was 0.64 (SD: 0.84; N=49). Mean final VFI was 73% (SD: 28%; N=36). 18 patients (60%) has CDR 0.6 or greater at presentation. 28 eyes (55%) underwent subsequent cataract surgery or clear lens extraction during the follow-up period.

CDR at presentation was inversely correlated with long-term VFI (R square=0.52; F=19; P=0.0003). IOP at presentation and delay to presentation did not correlate with long-term VFI.

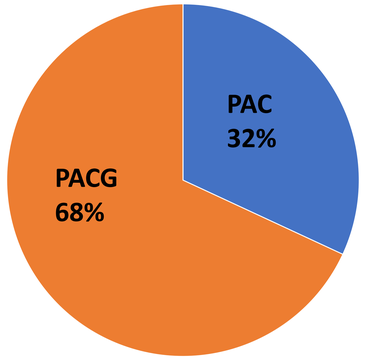


Figure 1: Diagnosis at presentation with 68% Primary angle closure glaucoma and 32% primary angle closure.

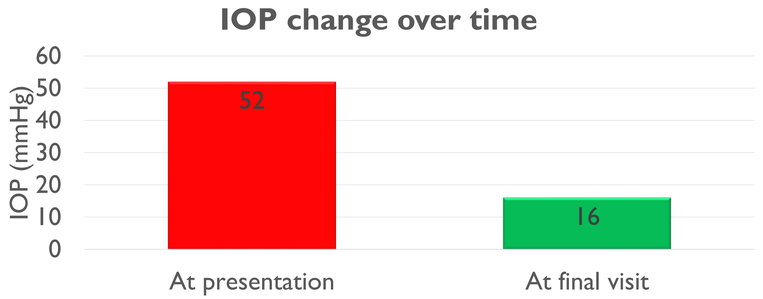


Figure 2: Bar chart showing the mean IOP at presentation and at the final visit. representing a statistically significant mean reduction of 36mmHg (95% confidence interval: 31-41; P<0.0001). IOP = intraocular pressure.

Conclusion:

Our study demonstrated that laser peripheral iridotomy was associated with significant long-term reduction of IOP by 36mmHg on average. CDR at presentation was inversely correlated with long-term VFI.

Reference:

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3. Nessim M et al., V. Kumar, I. Kyprianou, E. O'Neill, P. Shah; Five Year Consecutive Series of Acute Angle Closure Glaucoma . Invest. Ophthalmol. Vis. Sci. 2004;45(13):4500.

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