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CO2 Laser-Assisted Sclerectomy Surgery (CLASS) Improves the Safety of Glaucoma Surgery

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Introduction

Conventional trabeculectomy is the most commonly performed filtration surgery for the lowering of intraocular pressure (IOP) for glaucoma patients. However, it is associated with potential vision-threatening complications, including hypotony, suprachoroidal hemorrhage, endophthalmitis, wipe-out and malignant glaucoma. CO2 laser-assisted sclerectomy surgery (CLASS) is an enhanced adaptation of a non-penetrating surgery, offering a comparable efficacy while avoiding some of the severe complications of a penetrating trabeculectomy. Kowloon West Cluster Ophthalmology Centre is the first center in Hong Kong introduced the use of CLASS to improve the safety of surgery for patients with moderate to advanced glaucoma.

Objectives

(1)To enhance surgical safety especially for patients with moderate to advanced glaucoma. (2)To improve the quality of care by preventing glaucoma progression through effective IOP control while reducing medication use.

Methodology

Glaucoma patients from the KWC Ophthalmology Center who had moderate to advanced disease with suboptimal IOP control despite maximally tolerated anti-glaucoma eye drops were offered CLASS surgery for IOP lowering. Outcome measures include: changes in IOP and medication use before and after the procedure as well the safety profile including any intra-operative or post-operative complications.

Result

Results: 25 eyes of 22 glaucoma patients with a mean age of 66.7 ± 12.8 years (range: 41-91 years old) were recruited. The mean retinal nerve fiber layer thickness was 60.8 ± 16.9 μm with an IOP of 24.8 ± 2.68 mmHg while on 2.7 number of eye drops pre-operatively. One patient had iris prolapse during the use of CO2 laser intra-operatively. There were no post-operative complications including wound leak, hypotony, shallow anterior chamber, hemorrhage, nor infection. IOP was significantly ($P < 0.05$) reduced by 16.0% (3.96 ± 7.35 mmHg) and 14.8% (3.67 ± 7.93 mmHg) at 1 and 3 months, respectively post-operatively and medications were reduced by 51.9

% (1.3 numbers of eye drops) at 3 months ($P < 0.001$). 4 patients (16%) required post-operative enhancement procedures including needling or laser goniopuncture and 2 patients (8%) required further glaucoma filtration surgery to IOP optimization. Conclusion: KWC Ophthalmology Centre introduced the use of the CLASS procedure, which effectively reduced IOP and medication use in the early post-operative period, while maintaining a high safety profile during the surgical treatment of glaucoma in those with moderate to advanced disease.