

Point/Counterpoint: Is Cost a Viable Reason to Perform Glaucoma Surgery First?

Yes, early surgery offers economic as well as health benefits.



By Thomas Patrianakos, DO, and Elizabeth Martin, MD

Currently, lowering IOP is the only evidence-based method of halting glaucomatous progression. Early treatment of the disease has traditionally been achieved through the use of topical ocular hypotensive medications. Intervening surgically earlier in the course of the disease, however, might improve vision outcomes and significantly decrease the health-economic burden of glaucoma.

LESS EXPOSURE TO EYE DROPS MEANS LESS OCULAR SURFACE DISEASE

Ocular surface disease (OSD) is a common problem among patients with glaucoma.¹ In a survey of 630 glaucoma patients, 48% of those using topical medications experienced symptoms related to the ocular surface. OSD often leads individuals to discontinue topical medical therapy. It may also prompt a switch to a more expensive, preservative-free, alternative treatment as well as additional telephone calls and office visits, all of which can increase the overall cost to both the patient and the provider.²

Moreover, it has been hypothesized that the long-term use of topical glaucoma medications is linked to higher rates of trabeculectomy failure. Lavin and colleagues showed a 20.9% failure rate in primary trabeculectomies

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No, we must consider the risk of complications and their impact on patients' quality of life.



By Sarwat Salim, MD

Glaucoma is one of the leading causes of blindness worldwide. Because both its incidence and prevalence continue to rise, the economic impact on health care of treating this chronic disease is an important consideration. Cost, however, should not be the sole criterion driving our clinical decision making. Glaucoma management is complex, and initiating therapy requires a careful balance of safety, efficacy, and cost. As physicians, we need to consider the patient's overall quality of life with any proposed treatment. The intervention we recommend should be the one that provides the greatest value to the patient.

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Is cost a viable reason to perform glaucoma surgery first?

- ☐ Yes
☐ No

INDIVIDUALIZED CARE

There is tremendous heterogeneity among glaucoma patients. They present with different types and stages of glaucoma, dissimilar rates of progression, and variable responses to interventions in terms of both effectiveness and tolerance. We therefore must tailor our medical and surgical decisions to the characteristics of each individual patient.

OPTIONS FOR TREATMENT

The standard options for treatment include medical therapy, laser trabeculoplasty (LTP), and incisional glaucoma surgery. Each has a role in select patients. Randomized clinical trials such as the Glaucoma Laser Trial (GLT), Ocular Hypertension Treatment Study (OHTS), Early Manifest Glaucoma Trial (EMGT), Collaborative Initial Glaucoma Treatment Study (CIGTS), and Advanced Glaucoma Intervention Study (AGIS) have demonstrated that lowering IOP with these treatment modalities can reduce both the development and progression of glaucoma.¹⁻⁵

Early to moderate glaucoma may be controlled by a medical regimen or LTP. Patients with advanced glaucoma may require surgery for optimal lowering of IOP and a better diurnal curve to preserve their visual function. CIGTS investigators assessed the role of initial medical therapy versus surgery in newly diagnosed, open-angle glaucoma (OAG); both interventions were found to be equally effective with comparable visual field outcomes.⁶ Although both treatment groups demonstrated a decline in symptomatic impact over time, the surgical group experienced more local eye symptoms initially.⁷ The investigators concluded that CIGTS outcomes did not support changes in current approaches to the treatment of OAG, and they recommended further follow-up for more definitive data on quality-of-life parameters.

RISKS AND BENEFITS

We must weigh the risks and benefits of any intervention. Medications' side effects are often self-limiting with discontinuation of the offending agent. On the other hand, surgical complications can range in severity from mild to vision threatening. These include bleb dysesthesia, bleb leaks, endophthalmitis, and hypotony and its related sequelae.

In CIGTS, cataract extraction occurred in 20% of patients in the surgical group, which was about twice the rate observed in the medical group.⁸ In the Collaborative Normal-Tension Glaucoma Study (CNTGS), the highest incidence of cataract formation occurred in eyes that underwent trabeculectomy.⁹ Not only do postoperative interventions for such problems use more resources

and add to overall cost, but they also compromise our patients' quality of life. Initial surgery for the purpose of curtailing cost is therefore clearly not an answer for all glaucoma patients.

COST-EFFECTIVENESS

It would be helpful to understand which treatment offers greater incremental cost-effectiveness over time, but we currently lack sufficient data to justify surgery as our initial intervention. The cost of glaucoma care is difficult to compare across studies because of differences in methodological approaches. Nonetheless, more data are emerging on the economic evaluation of glaucoma. Stein et al reported similar cost-effectiveness for prostaglandin analogues and LTP in patients with newly diagnosed OAG.¹⁰ The researchers concluded that prostaglandin analogues may confer greater value with optimal medical adherence. With poor adherence, LTP may be a more cost-effective alternative.

Orme et al reported that drug acquisition costs are not responsible for the majority of the total cost of glaucoma but rather account for approximately 8% to 13%.¹¹ The investigators suggested that the economic and clinical benefits can be optimized by minimizing switches in therapy and, therefore, extra visits to the clinic.

Recently, Quigley et al estimated the cost of glaucoma care from a 5% random sample of Medicare billing information from 2002 to 2009.¹² They reported that office visits—mostly return visits—accounted for one-half of glaucoma-related costs. One-third of payments were for diagnostic testing, and surgical and laser procedures composed about 10% of the total cost. Interestingly, the investigators also found that other coexisting eye conditions such as cataract or retinal disease substantially exceeded the cost of patients' glaucoma care. Of note, the researchers did not include the cost of glaucoma medications, as these may be inconsistently covered by Medicare programs. Although we need to be cautious in generalizing these results from a small subset of Medicare beneficiaries, the data do provide essential information on the role of factors other than surgery in cost-effectiveness.

In another analysis, Stein et al showed that the odds of undergoing ocular imaging for glaucoma increased by 147% from 2001 to 2009.¹³ The researchers pointed out that financial incentive may be driving this trend. It is possible that more tests are being ordered because the equipment is expensive. Stein et al also expressed concern that ocular imaging has not been shown to be as effective as visual field testing at detecting glaucoma

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(Drs. Patrianakos and Martin, continued from page 34) at 18 months among patients who had previously used topical medication versus 2% in those who had never received topical treatment.³ The upshot is the need for further glaucoma surgery, the use of additional health care resources, and increased cost. The adverse effects of conventional topical treatment (eg, side effects, higher surgical failure rates, and OSD) can largely be avoided with early glaucoma surgery. It is important to note, however, that surgical intervention is not without its own set of side effects and risks, including cataract formation, a loss of visual acuity, endophthalmitis, and bleb failure.

LACK OF ADHERENCE CAN BE COSTLY

One of the toughest things for physicians to ensure is patients' adherence to prescribed medical therapy. An estimated 22% to 59% do not use their drops as prescribed, which ultimately means progression of the disease.⁴ A prospective study looking at 5,300 patients newly diagnosed with glaucoma found that nearly half of those who began topical ocular hypotensive therapy discontinued treatment within 6 months.⁵

Adherence decreases incrementally as more topical medications are added to the regimen.⁶ Over 50% of patients with elevated IOP require more than two drops to achieve adequate pressure control.⁷

In a long-term multinational study examining resource utilization in glaucoma, Traverso et al found a direct correlation between disease severity and increasing cost.⁸ Early surgical intervention removes the burden of adherence from patients, which could have a profound impact on progression and, in turn, significantly reduce the economic burden of the disease.

SURGERY MAY BE LESS EXPENSIVE THAN TOPICAL THERAPY

Glaucoma remains the second leading cause of blindness in the United States, and treatment has proven to be cost-effective compared to no treatment.⁹ In 1991, Ainsworth and Jay performed a cost analysis of early trabeculectomy versus conventional medical therapy in the management of patients with open-angle glaucoma.⁹ Despite an average 6.8-day inpatient stay for trabeculectomy, the total expenditure for the 8-year period was similar between the two treatment arms. Furthermore, the researchers found that the cost of early trabeculectomy was primarily upfront and that conventional management was more costly each year after year 1. In the modern era of outpatient surgery, it is conceivable that early upfront glaucoma surgery would pose a much lower economic burden than conventional management. The aforementioned study also found a significant benefit in terms of the preservation of visual field with early surgery.¹⁰

"In the modern era of outpatient surgery, it is conceivable that early upfront glaucoma surgery would pose a much lower economic burden than conventional management."

CONCLUSION

The topical medical management of glaucoma can be highly effective but is not without problems. Drug-related OSD is a chronic and costly side effect for as many as 48% of patients. In some cases, the side effects of topical medication can compromise surgical outcomes, requiring additional costly procedures for optimal glaucoma management.¹ Poor adherence to topical therapy is a problem for 22% to 59% of patients. It is a major cause of glaucomatous progression, and as the severity of the disease increases, so does the economic burden it imposes.

No randomized controlled trial has compared the cost-effectiveness of early trabeculectomy and conventional therapeutic management. Previous studies conducted when inpatient stay was the standard of care show that, although trabeculectomy was initially more expensive upfront, the cost of surgery versus medical management was similar in the long term. The modern era of outpatient surgery may well have tipped the scale in favor of early surgery. ■

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and its progression, and they noted that an increased reliance on imaging may not necessarily provide patients with the best care.

CONCLUSION

We definitely share a social obligation to curtail medical costs—but not at the expense of our patients. Many factors contribute to the total cost of glaucoma care. The notion that surgery saves money is somewhat misleading. Although justified in many cases, especially in eyes with advanced glaucoma, surgery should not be recommended as an initial intervention because of its potential complications and their negative impact on patients' quality of life.

Perhaps we need to adopt other approaches to minimizing cost. We can focus on strategies to improve patients' adherence to prescribed medical therapy for more effective outcomes, develop better drug delivery systems, decrease unnecessary diagnostic testing, or schedule office visits more efficiently. More studies of cost-effectiveness are needed.

For now, cost should not supersede our clinical judgment. Medications, LTP, and surgery are all viable options for the treatment of patients with glaucoma, as long as the therapy is tailored to each individual. ■

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