One of the biggest advantages of SLT is that, in addition to being an effective approach for first-line glaucoma treatment, as adjunct therapy with drugs, and as alternative therapy when drugs or surgery fail, it has also been found to be a more economical approach when compared to topical medications. Not only can SLT alleviate the ongoing expense of medications for the patient, but it also offers significant economic benefit for the wider healthcare system.
With the increasing costs of healthcare in the United States, there is currently a big push towards accountable care costs. Health care providers and health plans alike are trying to give the best care they can to their patients at the most economical price. Patients too are beginning to demand cheaper treatment alternatives. This is equally true in the case of glaucoma, a long-term chronic disease, in which treatment costs can escalate for doctors, insurance plans, and patients.

Current estimates of the cost of glaucoma management in the United States place this number at $2.5 billion annually, of which $1.9 billion are in direct costs and $600 million are in indirect costs.\(^1\) A major part of the direct costs, between 38% to 52%, can be attributed to glaucoma medication alone.\(^2\) Currently glaucoma management is also expected to increase. To that end, the time is ripe to identify more cost-effective therapies in the treatment of glaucoma.

From Drugs to Lasers

Selective Laser Trabeculoplasty (SLT) has been proposed as just such a therapy that can alleviate the costs of glaucoma management while still providing effective treatment. SLT, as the name suggests, selectively targets pigmented trabecular meshwork (TM) cells without causing thermal damage to non-pigmented structures. The Glaucoma Laser Trial performed in 1995 and published in the American Journal of Ophthalmology showed that Laser Trabeculoplasty (LTP) is at least as effective as medication as a primary therapy.\(^6\)

Early studies with SLT have demonstrated that it can safely and effectively reduce intraocular pressure (IOP). For example, a prospective, non-randomized study by Melamed, et al., published in the Archives of Ophthalmology in 2003 showed that SLT decreased IOP by 30% or 7.7 ± 3.5 mm Hg in 45 eyes of 31 patients with open angle glaucoma or ocular hypertension.\(^7\) Furthermore, a recent prospective, randomized trial by Katz, et al., published in the Journal of Glaucoma comparing 360° SLT to prostaglandin analogs, the mainstay medication for glaucoma treatment, showed that the IOP lowering effects of the two treatments are comparable.\(^8,9\)

Reducing Global Healthcare Costs with SLT

One of the biggest advantages of SLT is that in addition to being effective, it has also been found to be a more economical approach to treating glaucoma when compared to topical medications. A recent study by Seider, et al., published in the Archives of Ophthalmology (2012) and sponsored by the Proctor foundation in San Francisco, performed a cost-benefit analysis comparing the long-term costs of SLT as compared to the use of brand name and generic medications.\(^10\)

Seider and colleagues calculated the cost of bilateral SLT using the national average Medicare fee schedule and found that SLT costs in the range of $600. This included the cost of additional topical medication that may be necessary to manage minor side effects associated with SLT, such as transient uveitis and IOP spikes. Their findings suggest that SLT may prove more cost-effective than medications in the long-run.

Table 1: Cost of Topical Glaucoma Medications and Break-Even Point of SLT

<table>
<thead>
<tr>
<th>Medication</th>
<th>Median Drug Cost</th>
<th>Lowest Drug Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Xalatan 107.06</td>
<td>107.06</td>
<td>6.3</td>
</tr>
<tr>
<td>Lumigan 102.58</td>
<td>102.58</td>
<td>6.6</td>
</tr>
<tr>
<td>Travatan Z 99.12</td>
<td>99.12</td>
<td>6.8</td>
</tr>
<tr>
<td>Alphagan P, 0.15%</td>
<td>88.85</td>
<td>7.6</td>
</tr>
<tr>
<td>Azopt 61.01</td>
<td>61.01</td>
<td>11.1</td>
</tr>
<tr>
<td>Trusopt 41.88</td>
<td>41.88</td>
<td>16.1</td>
</tr>
<tr>
<td>Combigan 90.16</td>
<td>90.16</td>
<td>7.5</td>
</tr>
<tr>
<td>Cosopt 76.84</td>
<td>76.84</td>
<td>8.8</td>
</tr>
<tr>
<td>Latanoprost, 0.005%</td>
<td>51.65</td>
<td>13.1</td>
</tr>
<tr>
<td>Brimodine tartrate, 0.2%</td>
<td>32.62</td>
<td>20.7</td>
</tr>
<tr>
<td>Dorzolamide hydrochloride, 2%</td>
<td>33.28</td>
<td>20.3</td>
</tr>
<tr>
<td>Timolol maleate, 0.5%</td>
<td>17.00</td>
<td>39.8</td>
</tr>
<tr>
<td>Timolol maleate/dorzolamide</td>
<td>61.25</td>
<td>11.0</td>
</tr>
</tbody>
</table>

\(^a\) Median average wholesale price in the 2011 Red Book.\(^3\)
\(^b\) Represents the threshold at which the topical medication becomes less cost-effective than selective laser trabeculoplasty; this is also the minimum duration of time that selective laser trabeculoplasty would need to be effective in order to be cost equivalent to the specified medication.
\(^c\) Lowest price listed in the 2011 Red Book.\(^3\)

The manufacturers of the brand-name drugs are as follows: Xalatan (brinzolamide), Pfizer; Lumigan (bimatoprost), Allergan; Travatan Z (travoprost), Novartis; Alphagan P (brimonidine tartrate), Allergan; Azopt (brimodine tartrate), Merck and Co.; Combigan (brimodine tartrate/timolol maleate), Allergan; and Cosopt (dorzolamide hydrochloride/timolol maleate), Merck and Co.
the cost of both brand name and generic medications using the Red Book, one of the most reliable sources for pricing information for drugs in the United States, and comparing this to the costs of SLT, the study found that the break-even point for SLT as compared to brand name prostaglandin analogs was as little as 6 months, and as compared to generics such as latanoprost and timolol, it was 13 and 40 months, respectively.

In fact, another study by Cantor, et al., published in Current Medical Research and Opinion found this to be true even over the longer term.11 The authors of this study calculated that the five-year cumulative cost of SLT was considerably less than the cost of medications and filtering surgery - $4838 for SLT versus $6571 and $6363 respectively for medications and surgery. Furthermore, most glaucoma patients using medications to control their IOP use two or even three drugs simultaneously.

"The five-year cumulative cost of SLT was considerably less at $4838, compared to $6571 and $6363 respectively for medications and surgery."

A study by Lee and Hutnik published in the Canadian Journal of Ophthalmology found that SLT could provide 6-year cumulative savings of $206.64, $1666.64, and $2992.67 over mono-, bi-, and tri-drug therapy.

Reducing Patient Healthcare Costs with SLT

There is sufficient data to position SLT as an early treatment option in the algorithm of glaucoma treatment, and there is indeed a trend today towards the use of SLT as a primary therapy. Ophthalmologists need to discuss the use of SLT with their patients early on. Some patients may shy away from this option because of an inherent fear of lasers, but by explaining the safety and effectiveness of the therapy and the potential cost benefits, I have noticed that more patients are willing to opt for SLT. Clearly, the cost benefits for each patient will be different depending upon their insurance plans; however, on average the out-of-pocket cost for patients with SLT is a few hundred dollars per year, whereas with medications this number is close to $1000 per year. Therefore, SLT provides a clear cost incentive to patients.

Reducing Ophthalmologists' Healthcare Costs with SLT

In addition to reducing global and patient glaucoma costs, SLT may also alleviate the cost of glaucoma treatment borne by ophthalmologists. Since SLT is more economical than medications, ophthalmologists prescribing SLT may be more attractive to health care plans than an ophthalmologist prescribing two or three medications. However, understanding whether acquiring a laser will provide a return on your investment will require a thorough financial analysis.

To do so, you will need to consider four factors:

1. Your volume of patients: A higher volume of patients will mean performing the procedure more often, which will directly economize the investment to acquire a laser.

2. Your patient/payer mix: Whether your patients are covered by Medicare or a commercial insurance will also impact your return on investment. In my practice for instance, 75% of patients are Medicare beneficiaries whereas the rest are covered by commercial insurance. The reimbursement provided by the different payers will also affect your revenue and hence your return on investment.

3. Where the procedure is performed: Performing the procedure at your office versus at an ambulatory service centre (ASC) can also affect your revenue from SLT. Although ASC procedures are generally reimbursed less than office procedures, performing the SLT procedure in an ASC may make more financial sense than performing SLT in the office due to up-front costs for laser acquisition. However, if you own a stake in an ASC, performing SLT in an ASC would make more financial sense than performing the procedure in the office due to additional revenue in terms of facility fees.

4. When the procedure is performed: Whether you choose to perform SLT in the same visit as when you see the patient or schedule it on a separate day also affects your revenue. Some health care plans may reimburse less for a same day procedure; however, scheduling a laser day can inconvenience the patient. Therefore, you will need to weigh all options to see what works best for you and your patient.
respectively, even if SLT needs to be repeated in two years’ time. The savings were greater if SLT did not need to be repeated for three years following the initial treatment. Furthermore, an economic study from the Centre for Eye Research Australia (CERA) found that the order of treatment options used could also affect overall costs. Using SLT as the first-line therapy, followed by medications and trabeculectomy, was found to be cost-effective, returning $2.50 for every $1.00 spent. This was true even if the cost of SLT treatment increased 4-fold. In such a case, they found that the return of investment was $1.74 for each $1.00 spent.

“Using SLT as the first-line therapy, followed by medications and trabeculectomy, was found to be cost-effective, returning $2.50 for every $1.00 spent. This was true even if the cost of SLT treatment increased 4-fold.”

Cost-benefits aside, SLT has other advantages for the patient. Patients no longer need to worry about going to the pharmacy to get their prescription filled, a fact which has a large impact on patient compliance. In fact, better compliance with SLT can also have an effect on overall glaucoma costs. A study by Stein, et al., published in the Archives of Ophthalmology showed that laser trabeculoplasty (LTP) is more cost effective than prostaglandin analogs over a 25-year period assuming patient compliance to medication is 75%, which is a rather optimistic estimate.

SLT is also a rather benign procedure and patients have a very short recovery time after surgery. It is also largely free of complications, and minor complications such as IOP increase and uveitis are quite quickly and easily resolved. Additionally, SLT is a much safer and less invasive technique than surgical interventions such as trabeculectomy.

**Economically Sound with SLT**

In summary, SLT is changing ophthalmologists’ definition of maximal medical therapy for glaucoma. Not only is SLT as effective as medication, but it is also a more economical option and promises to reduce the long-term costs of glaucoma treatment for the patient, ophthalmologist, and the health care system.

“Not only is SLT as effective as medication, but it is also a more economical option and promises to reduce the long-term costs of glaucoma treatment for the patient, ophthalmologist, and the health care system.”

E. Randy Craven, MD

Dr. Craven is the Chief of Glaucoma at the King Khaled Eye Specialist Hospital in Saudi Arabia and is an Associate Professor at the Wilmer Eye Institute in Baltimore, MD.
Resources:


To learn more about SLT visit: slt-ellex.com