Clinical Policy Title: Canaloplasty and viscocanalostomy in treatment of glaucoma

Clinical Policy Number: 10.03.03

Effective Date: April 1, 2014
Initial Review Date: October 15, 2014
Most Recent Review Date: October 19, 2016
Next Review Date: October 2017

Related policies:
None.

ABOUT THIS POLICY: AmeriHealth Caritas Northeast has developed clinical policies to assist with making coverage determinations. AmeriHealth Caritas Northeast’s clinical policies are based on guidelines from established industry sources, such as the Centers for Medicare & Medicaid Services (CMS), state regulatory agencies, the American Medical Association (AMA), medical specialty professional societies, and peer-reviewed professional literature. These clinical policies along with other sources, such as plan benefits and state and federal laws and regulatory requirements, including any state- or plan-specific definition of “medically necessary,” and the specific facts of the particular situation are considered by AmeriHealth Caritas Northeast when making coverage determinations. In the event of conflict between this clinical policy and plan benefits and/or state and federal laws and/or regulatory requirements, the plan benefits and/or state and federal laws and/or regulatory requirements shall control. AmeriHealth Caritas Northeast’s clinical policies are for informational purposes only and not intended as medical advice or to direct treatment. Physicians and other health care providers are solely responsible for the treatment decisions for their patients. AmeriHealth Caritas Northeast’s clinical policies are reflective of evidence-based medicine at the time of review. As medical science evolves, AmeriHealth Caritas Northeast will update its clinical policies as necessary. AmeriHealth Caritas Northeast’s clinical policies are not guarantees of payment.

Coverage policy

1. AmeriHealth Caritas Northeast considers the use of canaloplasty in the treatment of glaucoma to be investigational and, therefore, not medically necessary.
2. AmeriHealth Caritas Northeast considers the use of viscocanalostomy in treatment of glaucoma to be investigational and, therefore, not medically necessary.

Limitations:

All other uses of canaloplasty and viscocanalostomy are not medically necessary.

Note: The following CPT/HCPCS codes are not listed in the Pennsylvania Medicaid fee schedule:

66174 - Transluminal dilation of aqueous outflow canal; without retention of device or stent
66175 - Transluminal dilation of aqueous outflow canal with retention of device or stent

**Alternative covered services:**

- Approved pharmacotherapy as ordered by primary care provider (PCP) and/or specialist.
- Approved conventional treatments (e.g., trabeculectomy).

**Background**

Glaucoma describes a complex group of eye diseases characterized by damage to the optic nerve, leading to irreversible vision loss and blindness. Glaucoma affects more than 60 million people worldwide, and approximately 4 million people in the United States (Quigley, 2006; Weinreb, 2010). Glaucoma usually begins with subtle loss of peripheral vision and, if left undiagnosed and untreated, will eventually progress to complete blindness. It is estimated that 12.3 percent of all cases of blindness globally are due to glaucoma, making it the second leading cause of blindness after cataracts (Resnikoff et al., 2004).

Because glaucoma is treatable, and because the visual impairment from glaucoma is irreversible, early detection of the disease is critically important. There are several types of glaucoma, all associated with optic nerve damage, leading to visual impairment. The most common type is primary open-angle glaucoma (POAG), thought to account for up to 75 percent of all cases of glaucoma diagnosed worldwide and up to 90 percent of glaucoma diagnosed in the United States (Quigley, 2006; GRF, 2011). Prevalence of POAG in adults over age 40 in the United States is estimated to be approximately 2 percent (Friedman et al., 2004).

POAG is usually, though not always, associated with increased intraocular pressure (IOP), which can potentially damage the delicate fibers of the optic nerve head, located at the back of the eye. A fluid, known as aqueous humor, is produced in the eye by the ciliary body, located behind the iris. Most of this fluid flows through the pupil and drains away at the open angle between the cornea and the iris. The aqueous humor then passes through a porous tissue, known as the trabecular meshwork, and into a collector channel known as Schlemm’s canal.

The eye keeps its shape and is maintained by the constant production and drainage of the aqueous humor. Open-angle glaucoma describes a condition in which there is no physical obstruction of the drainage angle of the eye, but there is characteristic damage to the optic nerve, and the presence of visual field loss (Foster, 2002). The early stages of POAG are often asymptomatic, and both eyes are usually affected, though typically asymmetrically (Weinreb and Khaw, 2004). Increased IOP is one of the main risk factors for POAG, although it is not a requirement for diagnosis, and POAG often occurs in patients with IOPs within the normal range (Sommer et al., 1991). Other risk factors for POAG include older age, family history, African or Latino ancestry, and Type 2 diabetes (Leske, 2007).
Despite the fact that not all patients diagnosed with POAG have elevated IOP, current evidence suggests that reducing IOP has a significant preventive effect on the progression of the disease, irrespective of whether IOP is abnormal at diagnosis (CNTGS Group, 1998; Maier et al., 2005; Peeters et al., 2010). Medications (eye drops), laser treatments, and surgery can all be used to lower IOP, which is currently the only known modifiable risk factor for POAG (Burr et al., 2005).

Current options for medical therapy include prostaglandin analogs, alpha-adrenergic agonists and parasympathomimetic agents, which all work by increasing fluid outflow; and beta-blockers and carbonic anhydrase inhibitors, which act to decrease aqueous production (Vass et al., 2007; AAO Glaucoma Panel, 2010). If a single medication does not lower IOP to the target level, alternate therapies may be selected, or a combination of agents may be appropriate. Side effects are generally minimal with topical medication; however, adequate treatment requires a high level of adherence to prescribed therapy, and often this is not achieved (Okeke et al., 2009). In addition, instilling eye drops correctly may be difficult for some patients, and may become more difficult as their glaucoma worsens (Aptel et al., 2009).

Laser treatment is another alternative for lowering IOP in POAG patients. The most common procedure is laser trabeculoplasty, which uses laser light directed at the trabecular meshwork to reduce resistance to aqueous humor outflow. Although many patients respond initially to this type of therapy, the effect may be lost over time, especially in younger patients (Shingleton et al., 1993). Another laser intervention is the cyclophotocoagulation procedure; this technique decreases aqueous production by damaging the ciliary body with laser energy (Chen et al., 1997). Laser cyclophotocoagulation may be useful in patients with advanced cases of POAG for whom other medical and surgical treatments have failed (Quigley, 2011).

The most common incisional surgical treatment for POAG is a type of filtration surgery, known as trabeculectomy. In this technique, a small portion of the trabecular meshwork, or surrounding tissue, is removed, creating an alternative path for the release of aqueous humor into an outer cyst (or bleb). Antifibrotic agents, such as mitomycin-C and 5-fluorouracil, may be used intraoperatively and postoperatively, to reduce scarring and prevent closure of the new channel (Singh et al., 2000).

Trabeculectomy is often effective in lowering IOP, but complications may include infection, bleb leakage and progressive worsening of cataracts (Hylton et al., 2003; AAO Glaucoma Panel, 2010). Despite potential complications, trabeculectomy remains the current standard against which newer surgical techniques are measured. Viscoanalogostomy and deep sclerectomy are two nonpenetrating surgical techniques that may be considered in POAG patients. Both procedures involve deroofing Schlemm's canal and removing a deep block of scleral tissue, leaving a thin membrane through which aqueous humor diffuses.

**Canaloplasty:**
Canaloplasty procedures are increasing over time. From 2007 to 2012, the number of Medicare beneficiaries undergoing the surgery rose from 161 to 2,426. However, this number is still far below related procedures. For example, 142,682 trabeculoplasties were performed on Medicare patients in 2012 (Arora et al., 2015).

The canaloplasty procedure (iTrack™ 250A Canaloplasty Microcatheter; iScience Interventional Inc.) is a nonpenetrating surgical technique that takes advantage of the eye’s natural drainage system to reduce IOP in patients with POAG (Lewis et al., 2007). In 2008, the iTrack received U.S. Food and Drug Administration (FDA) clearance for the indication of “catheterization and viscodilation of Schlemm’s canal to reduce intraocular pressure in adult patients with open angle glaucoma.” (Keamey J et al., 2006).

During the procedure, which can be done under local or general anesthetic, a flap is made in the sclera, and the entrance to the canal of Schlemm is exposed. A microcatheter with an illuminated tip is introduced into the canal and advanced around its entire circumference. As the catheter is advanced, viscoelastic fluid is injected to dilate the canal. Once the distal tip of the catheter emerges after circumferential catheterization, a suture is attached to the tip of the catheter and retracted, pulling the suture into the canal. The suture is then cut from the microcatheter and tied in a loop, putting tension on the inner wall of the canal and distending the trabecular meshwork.

High-resolution intraoperative ultrasound (iUltraSound™ Ophthalmic Imaging System; iScience Interventional Inc.) is then utilized to assess suture tension and visualize the canal distention (National Institute for Health and Care Excellence [NICE], 2008; Khaimi, 2009; iScience Interventional Inc., 2011a). The overall aim of canaloplasty is to widen Schlemm’s canal to improve aqueous humor outflow, thereby reducing IOP. Canaloplasty can also be combined with phacoemulsification cataract surgery in patients who require both procedures (Shingleton et al., 2008). The canaloplasty procedure takes about 30 minutes and is typically performed by an ophthalmologist, using local anesthetic with sedation in a hospital operating room or outpatient surgery center.

The goal of treatment for POAG is to maintain IOP in a range at which further optic nerve damage is unlikely to occur, while minimizing side effects. In general, the initial target is to lower IOP by 20 percent to 50 percent of the original pressure at which damage occurred (AAO Glaucoma Panel, 2010). The first line of treatment for POAG is often medicated eye drops, which act to reduce IOP by either increasing fluid drainage or reducing production of aqueous humor.

Canaloplasty is an option for patients with POAG, particularly those at high risk for infection or bleeding and those who have had previous complications in the other eye from trabeculectomy. Patients who wear contact lenses may also be good candidates for this procedure (Lewis, 2011).

Bull et al. (2011) reported three-year results investigating the safety and efficacy of canaloplasty in a prospective, multi-center, interventional study of 109 eyes of 109 adults, open-angle glaucoma patients, undergoing canaloplasty or combined cataract-canaloplasty surgery. IOP and medication use results for
all study eyes were significantly decreased from baseline. According to the authors, canaloplasty demonstrated significant and sustained IOP reductions accompanied by an excellent short- and long-term safety profile in adult patients with open-angle glaucoma. Findings reported in earlier prospective studies also indicate that canaloplasty may be a safe and effective procedure to reduce IOP in adult patients with open-angle glaucoma (Shingleton et al., 2008; Lewis et al., 2007; Lewis et al., 2009; Kearney et al., 2006).

A 2008 guideline from NICE states that the current evidence on the safety and efficacy of canaloplasty for primary open-angle glaucoma is inadequate in both quality and quantity, and this procedure should only be used in the context of research or formal prospective data collection.

According to an Agency for Healthcare Research and Quality (AHRQ) Comparative Effectiveness Review evaluating treatment for glaucoma, trabeculectomy lowers IOP more than non-penetrating surgeries. The authors also state that, based on a systematic review, trabeculectomy results in more complications than non-penetrating surgeries (Boland et al., 2012).

**Viscocanalostomy:**

Viscocanalostomy is a relatively new technique developed for glaucoma surgery and was first proposed in 1991. It is a procedure used to treat glaucoma that involves surgical incisions and injection of a viscous, elastic material into the eye. The goal of this procedure is to reduce intraocular pressure by creating a channel that allows excess fluid to drain from the eye. Viscocanalostomy can be performed under peribulbar or retrobulbar anesthesia, and should be performed by an ocular surgeon who has been specifically trained in this technique.

During this procedure, a limbal-based, half-thickness scleral flap is dissected deeply into clear cornea and a second flap is dissected near the ciliary body. Schlemm's canal is unroofed by gentle pulling on the scleral flap, and by simultaneously peeling the fibrotic lining from the bottom of the canal and the juxtacanalicular trabecular meshwork. After the membrane is cleaved from the cornea to create a corneal “window,” the inner scleral flap is excised. A cannula is then inserted in Schlemm's canal, the canal is filled with sodium hyaluronate, the cannula is removed and the flaps are sutured closed (Hayes, 2003).

Viscocanalostomy involves the additional step of injecting high-viscosity fluid into Schlemm's canal to encourage fluid egress (Stegmann et al., 1999). The complication rate for viscocanalostomy is lower than for trabeculectomy; however, viscocanalostomy is not as effective in lowering IOP (Carassa et al., 2003; Yalvac et al., 2004). Other surgical procedures that may be used in POAG patients include trabeculotomy, insertion of trabecular meshwork stents, and insertion of aqueous shunts. A meta-analysis conducted by Cheng et al. (2009) concluded that viscocanalostomy and deep sclerectomy were less effective than trabeculectomy in the treatment of open-angle glaucoma. However, viscocanalostomy and deep sclerectomy were associated with fewer complications than trabeculectomy. In their Preferred Practice Pattern for POAG, the American Academy of Ophthalmology
(AAO) (2005) cites limited studies of nonpenetrating glaucoma surgery, but does not specifically address canaloplasty. The AAO concludes: "The precise role of nonpenetrating surgery in the surgical management of glaucoma remains to be determined."

In the Canadian Journal of Ophthalmology, the Canadian Ophthalmological Society presented the following evidence-based clinical practice guidelines for the management of glaucoma in the adult eye:

Recently, interest has developed in the use of non-penetrating filtration surgery as an alternative to trabeculectomy surgery. This includes viscocanalostomy and non-penetrating deep sclerectomy.

Proposed advantages of these procedures include a potential lower rate of bleb-related complications and hypotony. There are a few randomized prospective studies comparing non-penetrating surgery with trabeculectomy, which suggest a technically more challenging procedure with special instrumentation that has a lower complication rate than standard trabeculectomy. Non-penetrating filtration surgery in the hands of most surgeons probably does not lower IOP to the same degree as trabeculectomy. This would suggest that trabeculectomy is a better choice, particularly for patients in whom a low target IOP is desired. More studies on this technique should further clarify its role.

**Searches**

AmeriHealth Caritas Northeast searched PubMed and the databases of:
- UK National Health Services Centre for Reviews and Dissemination.
- Agency for Healthcare Research and Quality's National Guideline Clearinghouse and other evidence-based practice centers.
- The Centers for Medicare & Medicaid Services (CMS).

We conducted searches on September 28, 2016. Search terms were “glaucoma,” “canaloplasty,” and “viscocanalostomy.”

We included:
- **Systematic reviews**, which pool results from multiple studies to achieve larger sample sizes and greater precision of effect estimation than in smaller primary studies. Systematic reviews use predetermined transparent methods to minimize bias, effectively treating the review as a scientific endeavor, and are thus rated highest in evidence-grading hierarchies.
- **Guidelines based on systematic reviews**.
- **Economic analyses**, such as cost-effectiveness, and benefit or utility studies (but not simple cost studies), reporting both costs and outcomes — sometimes referred to as efficiency studies — which also rank near the top of evidence hierarchies.
Findings

The literature search identified numerous studies that evaluated the safety and efficacy of the canaloplasty and viscocanalostomy procedures compared to the more established trabeculectomy. Overall, results of the available studies provide preliminary evidence that canaloplasty and viscocanalostomy are relatively safe and efficacious for the treatment of uncontrolled glaucoma. Numerous studies showed no difference in reduction in intraocular pressure. However, some showed that patients with trabeculectomy experienced more adverse events after surgery. Studies rarely went beyond one year post-op, and thus more long-term analyses are needed.

Canaloplasty is a nonpenetrating blebless surgical technique for open-angle glaucoma, in which a flexible microcatheter is inserted within Schlemm's canal for the entire 360 degrees. When the microcatheter exits the opposite end, a 10-0 prolene suture is tied and it is then withdrawn, by pulling the microcatheter back through the canal in the opposite direction. Ligation of the prolene suture provides tension on the canal and facilitates aqueous outflow. The main advantage of canaloplasty is that this technique avoids the major complications of fistulating surgery related to blebs and hypotony. Currently, canaloplasty is performed in glaucoma patients with early to moderate disease and, in combination with cataract surgery, is a suitable option in patients with clinically significant lens opacities (Cagini et al., 2016).

The results of canaloplasty and Hydrus Microstent (HM) implantation were retrospectively compared at 24 months' follow-up in a cohort of subjects referred for uncontrolled IOP in primary or secondary (e.g., pseudoexfoliative and pigmentary) open-angle glaucoma. The outcome was labelled as "complete" success, "qualified" success, or "failure" if, two years after surgery, the eyes operated on needed "no" hypotensive medications, "some" hypotensive medications, or further glaucoma surgery to attain the target IOP, respectively. Both CP and HM implant allowed significant IOP reductions, with comparable rate of clinical success and safety profile. A slightly (albeit not significant) better trend for a "complete" clinical success was observed in the canaloplasty group (Gandolfi et al. 2016)

Policy updates:

2016 — Added new references and findings.

Summary of clinical evidence:

<table>
<thead>
<tr>
<th>Citation</th>
<th>Content, Methods, Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Matlach (2015)</td>
<td></td>
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<tr>
<td>Outcomes of canaloplasty vs. trabeculectomy</td>
<td>Key points:</td>
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<tr>
<td></td>
<td>• Thirty patients with canaloplasty, 32 with trabeculectomy.</td>
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<td></td>
<td>• Complete success greater for trabeculectomy (74.2% vs. 39.1%).</td>
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<td></td>
<td>• Mean IOP reduction greater for trabeculectomy after two years.</td>
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<td></td>
<td>• Complications more frequent after trabeculectomy.</td>
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</tbody>
</table>
### Rekas (2015)
**Outcomes of canaloplasty vs. sclerectomy**

**Key points:**
- Twenty-nine eyes with canaloplasty, 30 eyes with sclerectomy.
- Followed on days one, seven, 30, 60, 90, 180, 365 post-op.
- No difference in reduction in IOP, number of meds used, or success rate.

### Schoenberg (2015)
**Outcomes of canaloplasty vs. trabeculectomy**

**Key points:**
- Thirty-six eyes with canaloplasty, 41 eyes with trabeculectomy, all also underwent phacoemulsification, followed 12 months.
- No difference in mean IOP, reduction in IOP, med use, or failure rate.

### Brusini (2014)
**Outcomes of canaloplasty over four years**

**Key points:**
- Canaloplasty in open-angle glaucoma surgery: four-year follow-up.
- Cohort of 214 patients; % of eyes that obtained postoperative IOP ≤ 21 mmHg, ≤ 18 mmHg and ≤ 16 mmHg, with or without medical therapy after two and three years, were 88.7%, 73.7%, and 46.2% (two years) and 86.2%, 58.6%, and 37.9% (three years), respectively.
- The most frequent complications observed included hyphema, descemet membrane detachment, IOP spikes, and hypotony.
- Advantages of canaloplasty over trabeculectomy include (1) no subconjunctival bleb; (2) no need for antimetabolites; (3) fewer postoperative complications; and (4) a simplified follow-up.
- Disadvantages include (1) a long and rather steep surgical learning curve; (2) the need for specific instruments; (3) the tendency for average postoperative IOP levels not to be very low; and (4) the impossibility of performing the entire procedure in some cases.

### Eldaly (2014)
**Outcomes of trabeculectomy vs. sclerectomy vs. viscocanalostomy**

**Key points:**
- Meta-analysis, five studies, 311 eyes (247 patients).
- One hundred sixty trabeculectomy, 101 sclerectomy, 50 viscocanalostomy.
- Odds of success lower in viscocanalostomy.
- No difference in achieving target IOP.
- Trabeculectomy has more complications.

### Klink (2014)
**Outcomes of canaloplasty vs. trabeculectomy**

**Key points:**
- One hundred seventy-five patients with canaloplasty, 152 with trabeculectomy.
- Outcomes assessed two years post-op.
- Canaloplasty patients had higher satisfaction, fewer second surgeries, lower reported stress.

### Bruggemann (2013)
**Outcomes of canaloplasty vs. trabeculectomy**

**Key points:**
- Fifteen patients with one eye canaloplasty, one eye trabeculectomy.
- Six- and 12-month post-surgical follow-up.
<table>
<thead>
<tr>
<th>Procedure</th>
<th>Key points</th>
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<tbody>
<tr>
<td>trabeculectomy</td>
<td>- Both effective in reducing IOP; canaloplasty had fewer follow-up visits and complications.</td>
</tr>
<tr>
<td><strong>Chen (2013)</strong></td>
<td><strong>Key points:</strong></td>
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<tr>
<td>Outcomes of canaloplasty vs. trabeculectomy</td>
<td>- Forty-three patients with canaloplasty or trabeculectomy.</td>
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<td></td>
<td>- Examined before surgery, post-op days one, seven, 30, 180, 365.</td>
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<td>- No difference in IOP reductions.</td>
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<td><strong>Rulli (2013)</strong></td>
<td><strong>Key points:</strong></td>
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<tr>
<td>Outcomes of trabeculectomy vs. other procedures</td>
<td>- Meta analysis, 18 articles, six-month post-op comparing trabeculectomy vs. other procedures.</td>
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<td>- Trabeculectomy is most effective procedure for reducing IOPs, has higher incidence of complications.</td>
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<tr>
<td><strong>Ayyala (2011)</strong></td>
<td><strong>Key points:</strong></td>
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<tr>
<td>Outcomes of canaloplasty vs. trabeculectomy</td>
<td>- Thirty-three patients with canaloplasty, 46 patients with trabeculectomy.</td>
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<td>- Outcomes reviewed post-op, same surgeon.</td>
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<td>- Cananoplasty had greater reduction in IOP, greater risk reduction.</td>
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<td>- Canaloplasty has more failures, more meds needed.</td>
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<td><strong>Chai (2010)</strong></td>
<td><strong>Key points:</strong></td>
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<tr>
<td>Outcomes of viscocanalostomy vs. trabeculectomy</td>
<td>- Meta-analysis, 10 trials, 458 eyes (397 patients).</td>
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<td></td>
<td>- Viscocanalostomy vs. trabeculectomy outcomes, six months post-op.</td>
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<td></td>
<td>- Trabeculectomy had greater IOP reduction.</td>
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<td>- Trabeculectomy had more post-op adverse events.</td>
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<tr>
<td><strong>Chakib (2010)</strong></td>
<td><strong>Key points:</strong></td>
</tr>
<tr>
<td>Outcomes of viscocanalostomy</td>
<td>- One hundred seven consecutive eyes of 67 patients who underwent viscocanalostomy were followed (range 12 – 18 months). The criteria for success were defined as intraocular pressure (IOP) less than 21 mmHg without treatment.</td>
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<td>- Mean preoperative intraocular pressure was 28.3 mmHg vs.5.4 mmHg on the first day post-op and 10.2 at 13 months.</td>
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<td>- Complete success rate with and without treatment was 98% and 80% at 13 months.</td>
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<td>- Viscocanalostomy is a promising procedure, because, in the short term, it provides good tonometric results in glaucomatous patients without the complications of trabeculectomy.</td>
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<tr>
<td><strong>Kobayashi (2007)</strong></td>
<td><strong>Key points:</strong></td>
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<tr>
<td>Outcomes of viscocanalostomy vs. trabeculectomy</td>
<td>- Forty patients with viscocanalostomy or trabeculectomy.</td>
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<td>- After one year post-op, no difference in IOP reduction.</td>
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<td><strong>Park (2006)</strong></td>
<td><strong>Key points:</strong></td>
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</table>
## Glossary

**Angle-closure glaucoma** — Narrowing or closure of the anterior chamber angle of the eye. The normal anterior chamber angle provides drainage for the aqueous humor (the fluid that fills the eyeball). When this drainage pathway is narrowed or closed, inadequate drainage leads to elevated intraocular pressure and damage to the optic nerve.

**Canaloplasty** — A procedure used on glaucoma patients, wherein the main drainage canal of the eye is widened to help prevent the buildup of fluid, restore natural drainage, and reduce eye pressure.

**Glaucoma** — A complex group of conditions that cause progressive damage to the optic nerve; glaucoma is often associated with an abnormal rise in intraocular pressure.

**Hyphema** — Bleeding in the eye.

**Intraocular pressure (IOP)** — The fluid pressure inside the eye, often defined as 10 – 20 mmHg.

**Open-angle glaucoma** — An optic neuropathy characterized by progressive peripheral visual field loss followed by central field loss, in a characteristic pattern. This is usually but not always in the presence of elevated intraocular pressure (IOP), perhaps in part related to increased aqueous production and decreased outflow.

**Primary open angle glaucoma (POAG)** — The most common glaucoma type; a multifactorial optic neuropathy that is chronic and progressive, with a characteristic acquired loss of optic nerve fibers.

**Schlemm’s canal** — The main drainage channel for aqueous humor; situated in the angle between the iris and the cornea.

**Trabecular tissue** — A mesh-like structure inside the eye at the irisscleral junction of the anterior chamber angle; filters aqueous fluid and controls its flow into the canal of Schlemm.
Trabeculoplasty — Laser plastic surgery of the trabecular tissue. Done specifically to create small openings in the trabecular meshwork of the eye from which aqueous humor can drain, thus reducing intraocular pressure caused by open-angle glaucoma.

Trabeculectomy — The most common surgical procedure to treat glaucoma to relieve intraocular pressure by removing part of the eye’s trabecular meshwork and adjacent structures.

Viscocanalostomy — A procedure involving injection of thick fluid (visco-elastic) in the Schlemm’s canal, and removal of a block of sclera, to leave a thin membrane (Descemet’s membrane), through which the aqueous humor percolates. The aqueous humor then drains through Schlemm's canal or under the conjunctiva.

References

Professional society guidelines/other


Peer-reviewed references:


**Clinical trials:**

Searched clinicaltrials.gov on September 28, 2016 using terms canaloplasty and viscocanalostomy | Open Studies four studies found, none relevant. No studies found for viscocanalostomy.
CMS National Coverage Determinations (NCDs):

No NCDs identified as of the writing of this policy.

Local Coverage Determinations (LCDs):

No LCDs identified as of the writing of this policy.

Commonly submitted codes

Below are the most commonly submitted codes for the service(s)/item(s) subject to this policy. This is not an exhaustive list of codes. Providers are expected to consult the appropriate coding manuals and bill accordingly.

<table>
<thead>
<tr>
<th>CPT Code</th>
<th>Description</th>
<th>Comments</th>
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<tbody>
<tr>
<td>66174</td>
<td>Transluminal dilation of aqueous outflow canal without retention of device or stent.</td>
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<tr>
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<td>H40.10X0-H40.10X4</td>
<td>Unspecified open-angle glaucoma,</td>
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<td>H40.11X0-H40.11X4</td>
<td>Primary open-angle glaucoma</td>
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<td>H40.151-H40.153</td>
<td>Residual stage of open-angle glaucoma,</td>
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<tr>
<td>H40.152</td>
<td>Residual stage of open-angle glaucoma, left eye</td>
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<td>H40.153</td>
<td>Residual stage of open-angle glaucoma, bilateral</td>
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<td>H40.159</td>
<td>Residual stage of open-angle glaucoma, unspecified eye</td>
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<td>Unspecified primary angle-closure glaucoma,</td>
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<td>Acute angle-closure glaucoma,</td>
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<td>Residual stage of angle-closure glaucoma, right eye</td>
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<td>Absolute glaucoma, right eye</td>
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<td>Q15.0</td>
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