Macular/Foveal Translocation

Number: 0409

Policy

"Please see amendment for Pennsylvania Medicaid at the end of this CPB.

Aetna considers macular/foveal translocation experimental and investigational for age-related macular degeneration (AMD) and for all other indications because the safety and effectiveness of this procedure has not been established in the medical literature.

See also
CPB 0111 - Indocyanine Green Angiography
CPB 0490 - Transpupillary Thermal Therapy
CPB 0594 - Visudyne (Verteporfin) Photodynamic Therapy
CPB 0609 - Laser Photocoagulation of Drusen

Policy History

Last Review
07/23/2019
Effective: 04/11/2000
Next Review: 04/10/2020

Definitions

Additional Information

Clinical Policy Bulletin
Notes
Subfoveal choroidal neo-vascularization (CNV) secondary to age-related macular degeneration (AMD) can result in legal blindness. Currently, there is no satisfying treatment for CNV. Photocoagulation has been shown to be effective, but it causes a decrease in vision immediately after treatment. Surgical removal of the choroidal neovascular membrane is effective in selected cases, but it restores useful vision for reading (20/40 or better) only in a small number of cases.

Macular/foveal translocation is a technique first developed in the 1980s to treat this condition following surgical removal of subfoveal choroidal neovascular membrane. This procedure entails translocation of the fovea to a macular region with intact/healthier retinal pigment epithelium before permanent retinal damage occurs. Available data in the peer-reviewed medical literature have not demonstrated the safety and effectiveness of this procedure. Charles (2001) has commented that whereas the natural history of subfoveal CNV never results in total blindness, this outcome is "all too frequent" with macular translocation and submacular surgery. Further investigations are warranted to refine this procedure -- determining the amount of translocation needed, and reducing the incidence of complications such as retinal detachment, proliferative vitreoretinopathy, corneal astigmatism, cataract, metamorphopsia, diplopia and tilted image, loss of peripheral visual field, as well as recurrence of CNV.

In a retrospective analysis of non-randomized interventional clinical study, Glacet-Bernard and co-workers (2007) compared the results of limited macular translocation and photodynamic therapy (PDT) in subfoveal CNV attributable to pathologic myopia with a 24-month follow-up. These investigators performed review of 66 consecutive patients: 34 myopic eyes with subfoveal CNV treated by PDT and 32 operated on with the translocation technique. Translocation was considered principally when the lesion size was adequate (nasal inferior margin of the membrane less than half a disk diameter away from the center of the fovea) with duration of
symptoms of less than 4 months. Main outcome measure was the post-operative change in visual acuity. In the translocation group, mean gain in visual acuity was greater than in the PDT group (+2.8 lines and -1.8 lines, respectively, \( p = 0.001 \)). In the translocation group, 55% of eyes gained 3 lines or more at 2 years compared with 10% in the PDT group. Sixty percent of eyes in the translocation group versus 40% in the PDT group had an improvement of at least five letters. Mean foveal displacement after translocation was 906 mum; post-operative complications included retinal detachment (3 eyes), macular fold (1 eye), and transient diplopia (4 eyes). In young patients, the post-operative gain was better in both groups. In the translocation group, mean survival time for CNV recurrence was 40 months for patients younger than 40 years and 20 months for older patients. The authors concluded that translocation showed better results than PDT at 2 years. Moreover, they stated that further studies are needed to confirm these findings.

In a pilot study, Gelisken and colleagues (2007) compared full macular translocation (FMT) with PDT in the treatment of neovascular AMD. A total of 50 eyes of 50 patients were assigned to either FMT or PDT. Baseline and control examinations in 3-monthly intervals over a 12-month period included standardized protocol refraction, visual acuity testing and fluorescein angiography. Primary outcome measurements were made to establish the change in distant visual acuity from the baseline to the 12-month examination. The statistical analyses were carried out on the intent-to-treat principle. The improvement of 1 or more lines on the Early Treatment Diabetic Retinopathy Study (ETDRS) scale was 56% (14/25) of the eyes in the FMT and 16% (4/25) of the eyes in the PDT arm (\( p = 0.007 \)). Twenty eyes (80%) in the FMT and 16 eyes (64%) in the PDT group had less than 3 ETDRS lines of vision loss (\( p = 0.35 \)). Retinal detachment (6 eyes) and diplopia (5 patients) were recorded in the FMT group. None of the eyes treated in the FMT group had phthisis. The authors concluded that this pilot study showed that no
statistically significant difference existed between the FMT and PDT in terms of the vision loss of less than 3 ETDRS lines in eyes with neovascular AMD. The chance of vision improvement was significantly higher for the patients in the FMT group. However, the authors stated that in the era of promising therapy with anti-vascular endothelial growth factor for neovascular AMD, FMT should not be offered as a standard primary procedure for neovascular AMD. These investigators (Luke et al, 2007) noted that FMT and PDT can achieve a stabilization in vision-related quality of life (QOL), in which FMT was superior to the PDT after 1 year. The discrepancy between the amount of patients with an increased visual acuity after FMT and a moderate improvement in QOL might be caused by the onset of complications related to this surgical procedure. They noted that besides visual acuity, the impact of therapy-related complications has to be taken into consideration when evaluating new therapeutic concepts in exudative AMD.

Nguyen and associates (2007) evaluated the power of magnification required, reading performance with low-vision aids and vision-related QOL with reference to reading ability and ability to carry out day-to-day activities in patients after macular translocation. This study included 15 patients who had undergone macular translocation with 360-degree peripheral retinectomy. The mean length of follow-up was 19.2 +/- 10.8 months (median of 11 months). At the final examination, the impact of visual impairment on reading ability and QOL was assessed according to a modified 9-item questionnaire in conjunction with a comprehensive clinical examination, which included assessment of best corrected visual acuity (BCVA), the magnification power required for reading, use of low-vision aids and reading speed. Patients rated the extent to which low vision restricted their ability to read and participate in other activities that affect QOL. Responses were scored on a scale of 1.0 (optimum self-evaluation) to 5.0 (very poor). In the operated eye, overall mean post-operative BCVA (distance) was not significantly
better than mean pre-operative BCVA (0.11 +/- 0.06 and 0.15 +/- 0.08, respectively; p = 0.53). However, 53% of patients reported a subjective increase in visual function after treatment. At the final visit, the mean magnification required was x 7.7 +/- 6.7. A total of 60% of patients needed optical magnifiers for reading and in 40% of patients closed-circuit TV systems were necessary. All patients were able to read newspaper print using adapted low-vision aids at a mean reading speed of 71 +/- 40 words per minute. Mean self-reported scores were 3.2 +/- 1.1 for reading, 2.5 +/- 0.7 for day-to-day activities and 2.7 +/- 3.0 for outdoor walking and using steps or stairs. Patients’ levels of dependency were significantly correlated with scores for reading (p = 0.01), day-to-day activities (p < 0.001) and outdoor walking and using steps (p = 0.001). The authors concluded that the evaluation of self-reported visual function and vision-related QOL in patients after macular translocation is necessary to obtain detailed information on treatment effects. These results indicated improvement in patients’ subjective evaluations of visual function, without significant improvement in visual acuity. The post-operative clinical benefits of treatment coincide with subjective benefits in terms of reading ability, QOL and patient satisfaction.

Luke et al (2009) reported the outcome of BCVA, near visual acuity (NVA), contrast sensitivity (CS) and vision-related quality of life (VRQOL) in patients 2 years after undergoing PDT or FMT for the treatment of neovascular AMD. A total of 50 patients with predominantly classic subfoveal CNV secondary to AMD were randomized to PDT or FMT. Best-corrected visual acuity was determined according a standardized protocol with ETDRS charts; NVA were calculated after testing with SNAB (Swiss National Association of and for the Blind) visual acuity cards; and CS was measured with Pelli-Robson charts. The 39-item National Eye Institute Visual Function Questionnaire (NEI-VFQ-25 plus supplement) was performed. Primary end points were the changes of BCVA, NVA, CS and VRQOL at 24-month examination. A
stabilization of BCVA (+0.3 letters) was found in the FMT group, whereas a decrease of more than 12 letters (-12.6 letters) was found in the PDT group (p = 0.052). Mean NVA improved by 7.0 letters in the FMT group and was superior to the PDT group (-9.6 letters, p = 0.036), while mean CS showed a time-dependent decrease in both treatment groups (FMT: -3.3 letters, PDT: -3.8 letters, p = 0.726). Considering the results of the VRQOL scores, the improvement of the subscales scores for general vision (p = 0.015), mental health (p = 0.028) and near activity (p = 0.020) were significantly higher in the FMT group. The authors concluded that FMT can stabilize BCVA and improve NVA over a period of 2 years in patients with subfoveal classic CNV secondary to neovascular AMD, whereas a decrease of BCVA and NVA was found in the PDT group; and CS did not differ between FMT and PDT. A significant increase of VRQOL scores was only found in the FMT group and not in the PDT group. They stated that FMT appears to be a therapeutic approach that can increase visual function resulting in an improvement of patient's VRQOL, but exhibits a higher number of severe complications compared to PDT.

In a retrospective, interventional case series, Yamada and colleagues (2010) reported the long-term (greater than 5 years) results of FMT in patients with CNV. This study involved 32 eyes of 32 patients who had undergone FMT for CNV. The median follow-up was 6.5 years (range of 5.2 to to 7.7 years). These investigators assessed the BCVA, fundus examination results obtained before and 1 and 5 years after operation, and post-operative complications. At the 1-year follow-up, foveal retinal pigment epithelium atrophy was observed in only 3 eyes (12 %), and the mean logarithm of the minimal angle of resolution (logMAR) visual acuity (VA) at that time (1.39 +/- 0.67) was not significantly changed from that before surgery (logMAR, 1.31 +/- 0.66) in 25 eyes with AMD. However, at 5-year follow-up, foveal retinal pigment epithelium atrophy increased (18 eyes; 72 %), and final mean logMAR VA (1.88 +/- 0.76) was significantly lower (p < 0.01). Five eyes
with myopic CNV maintained their VA from before operation (mean logMAR, 0.88 +/- 0.35) until final follow-up (mean logMAR, 0.73 +/- 0.31). The final VA was significantly better in myopic CNV than in exudative AMD on multiple regression analysis (p = 0.019). The authors concluded that long-term follow-up of FMT showed that the final VA was poor in AMD, but relatively better in myopic CNV.

In a Cochrane review on macular translocation for neovascular AMD, Eandi et al (2008) concluded that there is insufficient evidence from randomized controlled trials on the effectiveness of macular translocation, which is also not free of important risks. Furthermore, this technique is difficult to perform and a long surgical training is required. The authors stated that future studies might include patients with small neovascular lesions that failed to respond to current pharmacological therapies and are willing to accept the risks associated with surgery to try to improve visual acuity.

Interventional Procedure Guidance from the National Institute for Health and Clinical Excellence (NICE, 2010) concluded that current evidence for macular translocation for wet AMD "shows that this procedure is efficacious only in a proportion of patients and that there is a potential for serious adverse events. Therefore the procedure should only be used with special arrangements for clinical governance, consent and audit or research."

An UpToDate review on "Age-related macular degeneration: Treatment and prevention" (Arroyo, 2012) states that "[m]acular translocation surgery is experimental and involves moving the macula to a less diseased area of the retina in patients with subfoveal choroidal neovascularization. The advent of effective pharmacologic therapy has limited the use of this surgical modality to patients with large submacular hemorrhages. The surgical risks are substantial (retinal detachment, proliferative vitreoretinopathy, diplopia)".

(Affirmed February 2013, 2014).
Sakimoto et al (2014) examined the long-term outcomes of FMT for myopic CNV (mCNV). These investigators evaluated a consecutive case series of 60 eyes with mCNV that underwent FMT. They assessed the BCVA, fundus photographs and fluorescein angiography images, and evaluated the anatomic and visual outcomes. The mean follow-up period was 76.3 months. The macula was relocated successfully in all eyes. The mean distance of macular translocation was 2,842 um. The baseline BCVA was 0.78 logarithm of the minimum angle of resolution (logMAR) unit; the logMAR BCVA values at 1, 3 and 5 years post-operatively significantly (p < 0.001) improved to 0.54 at 1 year and then remained stable. The new fovea was associated with enlargement of the myopic chorio-retinal atrophy in 19 (31.7 %) eyes. Subfoveal or juxtafoveal CNV at the translocated new fovea developed in 5 (8.3 %) eyes. The authors concluded that FMT for mCNV maintained the improvement in VA for more than 5 years. However, post-operative complications and progression of chorio-retinal atrophy due to myopia still seem to limit the visual improvement after FMT for mCNV.

In a retrospective, uncontrolled, case-series study, van Romunde et al (2015) examined the long-term outcome of FMT for neovascular AMD and identified predictive factors. Patients were considered for FMT if they had low vision in the fellow eye and CNV along with (i) no response to vascular endothelial growth factor (VEGF) inhibitors, (ii) retinal pigment epithelium (RPE) tear, (iii) subretinal hemorrhage, (iv) foveal scar tissue of recent onset, or (v) CNV before the availability of VEGF inhibitors. From 2004 through 2012, a total of 255 patients underwent FMT. Exclusion criteria were patients younger than 60 years, FMT for disease other than AMD, and a follow-up of less than 12 months. Pre-operative, annual, and last distance BCVA were obtained retrospectively from patient files. Complications were recorded using funduscopy, optical coherence tomography (OCT), auto-
fluorescence, and angiography. Main outcome measures included distance BCVA at 1 year and 5 years after surgery and at last visit compared with pre-operative BCVA. A total of 158 patients (mean follow-up of 45 months) were included. Median BCVA improved from 0.90 logarithm of the minimum angle of resolution (logMAR) before surgery to 0.70 logMAR 1 year after FMT (2 lines gained; p = 0.000). In a subgroup of 56 patients followed-up for 5 years or more, median BCVA improved from 0.95 logMAR before surgery to 0.70 logMAR 1 year after surgery, and remained improved 5 years after FMT with a median BCVA of 0.80 logMAR (1.5 lines gained compared with pre-operative BCVA; p = 0.000). The main complications were foveal RPE atrophy (n = 73; 47 %) and CNV recurrence (n = 47; 30 %). Foveal RPE atrophy (odds ratio [OR], 7.0), CNV recurrence (OR, 2.6), and proliferative vitreo-retinopathy (PVR; OR, 17.6) were statistically significant predictors (p < 0.05) for losing 1 line or more at last visit. The authors concluded that in this study, BCVA was improved up to 5 years after FMT. Foveal RPE atrophy, CNV recurrence, and PVR carried a worse prognosis. They stated that in patients who are unlikely to benefit from VEGF inhibitors, FMT can be considered for second eyes with neovascular AMD. The main drawback of this study was its retrospective design (lack of a control group). These findings need to be validated by well-designed studies.

The most current version of UpToDate’s review on “Age-related macular degeneration: Treatment and prevention” (Arroyo, 2016) stills maintains that “Macular translocation surgery is experimental …. The advent of effective pharmacologic therapy has limited the use of this surgical modality to patients with large submacular hemorrhages, or patients unresponsive to VEGF inhibitors. The surgical risks are substantial (retinal detachment, proliferative vitreoretinopathy, diplopia”).

Limited Macular Translocation
Oshima and colleagues (2017) evaluated the long-term results of limited MT (LMT) surgery with radial chorio-scleral out-folding in patients with wet AMD and subfoveal CNV. In addition, these investigators identified the factors associated with the final BCVA. The medical records of 20 eyes of 20 consecutive patients (65.2 ± 9.8 years) who had undergone LMT for the treatment of wet AMD and were followed for at least 5 years, were reviewed. The surgical outcomes including the BCVA, degree of foveal displacement, and complications were recorded. The mean foveal displacement was 1,332 ± 393 μm after the LMT. The CNV was removed in 16 eyes and photocoagulated in 4 eyes. The mean pre-operative VA was 0.83 ± 0.33 logMAR units, which significantly improved to 0.59 ± 0.37 logMAR units at 1 year after the surgery (p = 0.015). This BCVA was maintained at 0.59 ± 0.41 logMAR units on the final examination. The final BCVA was significantly correlated with that at 1 year after the surgery (r = 0.83, p < 0.001). Multiple linear regression analysis showed that the final BCVA was significantly correlated with the BCVA at 1 year after the surgery (p < 0.001), a recurrence of a CNV (p = 0.001), and the age (p = 0.022). The authors concluded that LMT improved the BCVA significantly at 1 year, and the improved BCVA lasted for at least 5 years. These results indicated that the impaired function of the sensory retina at the fovea can recover on the new retinal pigment epithelium (RPE) after the displacement for at least 5 years. The ability to maintain good retinal function on the new RPE for a long period was important for future treatments of CNVs such as the transplantation of RPE cells and stem cells. They noted that in the future, cost-effectiveness analyses and combination/rescue therapies may be developed based on these findings.

The authors stated that one of the main drawbacks of LMT surgery is that the degree of foveal displacement is unpredictable. They also stated that this study had several limitations. First, this study was a non-randomized and retrospective study with a small sample size (n= 20).
However, it is difficult to increase the sample size because the number of eyes that require LMT surgery is limited, and intra-vitreal injections of anti-VEGF agent is the preferred treatment at present. Second, LMT surgery significantly improved the BCVA, but the BCVA after LMT is lower and the complication rate is higher in comparison to intra-vitreal anti-VEGF treatment at 5 years. Third, the CNV was not surgically excised in all of the cases because the foveal displacement was not sufficient and part of the CNV was still on the new fovea.

### CPT Codes / HCPCS Codes / ICD-10 Codes

Information in the [brackets] below has been added for clarification purposes. Codes requiring a 7th character are represented by "+":

<table>
<thead>
<tr>
<th>Code</th>
<th>Code Description</th>
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<tbody>
<tr>
<td></td>
<td>There are no specific CPT or HCPCS codes for macular/foveal translocation:</td>
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<tr>
<td></td>
<td>ICD-10 codes not covered for indications listed in the CPB (not all inclusive):</td>
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<tr>
<td>H35.051 - H35.059</td>
<td>Retinal neovascularization</td>
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<tr>
<td>H35.30 - H35.3293</td>
<td>Age-related macular degeneration</td>
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</tbody>
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The above policy is based on the following references:

2. de Juan E Jr., Loewenstein A, Bressler NM, Alexander J.


34. Chen FK, Patel PJ, Uppal GS, et al. Long-term outcomes following full macular translocation surgery in


36. Arroyo JG. Age-related macular degeneration: Treatment and prevention. UpToDate [online serial]. Waltham, MA: UpToDate; reviewed February 2012.


39. Arroyo JG. Age-related macular degeneration: Treatment and prevention. UpToDate [online serial]. Waltham, MA: UpToDate; reviewed February 2016.

AETNA BETTER HEALTH® OF PENNSYLVANIA

Amendment to
Aetna Clinical Policy Bulletin Number: 0409 Macular/Foveal Translocation

There are no amendments for Medicaid.

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