IEHP UM Subcommittee Approved Authorization Guidelines

Genicular Nerve Neurotomy

(Genicular Nerve Denervation, Genicular Nerve Radiofrequency Ablation)

Policy:

Based on a review of the currently available literature, there is insufficient evidence to support the use of Genicular Nerve Neurotomy in the treatment of chronic knee pain due to Osteoarthritis. Therefore, the IEHP UM Subcommittee has decided not to endorse this as a covered benefit at this time.

Non-covered CPT Codes:

64640, 64999

MEDICARE:
As of May 01, 2016, Medicare does not have a National Coverage Determination (NCD) or a Local Coverage Determination (LCD) for California regarding the use of Genicular Nerve Neurotomy for the treatment of chronic knee pain due to Osteoarthritis.

MEDI-CAL:
As of May 01, 2016, a search of the Medi-Cal website failed to detect any documents regarding the use of Genicular Nerve Neurotomy for the treatment of chronic knee pain due to Osteoarthritis. This included relevant guidelines, medical reviews or policy statements.

APOLLO GUIDELINES 2016:
A search of Apollo Managed Care Guidelines, 2016, failed to show any discussion of the use of Genicular Nerve Neurotomy for the treatment of chronic knee pain due to Osteoarthritis. This includes relevant guidelines, medical reviews or policy statements.

BLUE SHIELD:
Blue Shield of California states, “Radiofrequency ablation of peripheral nerves to treat pain associated with…knee osteoarthritis is considered investigational.”
Background:

Osteoarthritis is the most common type of joint disease in the world. It affects more than 250 million people worldwide, including over 20 million Americans at an annual cost of $100 billion to the United States alone\(^\text{11}\). Osteoarthritis is the leading cause of chronic disability of those older than 70 years, and is thought to arise from the breakdown of articular cartilage on the ends of bones in the synovial joints that occurs over time\(^\text{11}\). It is characterized by morning joint stiffness (lasting less than 30 minutes), and deep achy joint pain that becomes worse with activity.

Initially, pain can be relieved by rest and OTC analgesics, such as Acetaminophen and Ibuprofen. However, as the disease progresses the pain becomes more severe and may only respond to prescription strength pain medications. Other modalities exist that may slow the disease process, such as weight loss, physical and occupational therapy, and knee bracing. Eventually these various modalities are not enough, and patients require invasive procedures such as intra-articular injections (with corticosteroid or hyaluronic acid), arthroscopy, osteotomy, and finally joint replacement surgery\(^\text{12}\).

Genicular Nerve Neurotomy is currently being evaluated for the treatment of chronic knee pain due to Osteoarthritis. When an individual exhibits knee pain, the pain signals are found to arise from the genicular nerves, sensory nerve branches of the tibial, common peroneal and obturator nerves. They supply the capsule of the knee joint, as well as the intra-articular and extra-articular ligaments. A diagnostic genicular nerve block is first done. If there is sufficient pain relief in the knee then a Genicular Nerve Neurotomy is performed to alleviate the knee pain, thereby restoring function\(^\text{10}\).

A search of the peer-reviewed medical literature demonstrated that there is a lack of adequately designed trials concerning the use of this modality in the treatment of chronic knee pain due to Osteoarthritis\(^\text{8}\).

**CLINICAL TRIALS:**

<table>
<thead>
<tr>
<th>Reference</th>
<th>Number of Patients</th>
<th>Treatment</th>
<th>Results</th>
<th>Conclusions</th>
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<tr>
<td>Choi et al. 2011(2)</td>
<td>38 elderly patients with severe refractory knee OA pain lasting more than 3 months</td>
<td>Percutaneous RF genicular neurotomy vs. no Neurotomy</td>
<td>“VAS scores showed that the RF group had less knee joint pain at 4 (p&lt;0.001) and 12 (p&lt;0.001) weeks compared with the control group. Oxford knee scores showed similar findings (p&lt;0.001). In the RF group 10/17 (59%), 11/17 (65%) and</td>
<td>“RF neurotomy of genicular nerves leads to significant pain reduction and functional improvement in a subset of elderly chronic knee OA pain, and thus may be an effective treatment in such cases.”</td>
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10/17 (59%) achieved at least 50% knee pain relief at 1, 4, and 12 weeks, respectively. No patient reported a post-procedure adverse event during the follow-up period."

Further trials with larger sample size and longer follow-up are warranted."

### Nonrandomized Controlled/Comparison Studies

<table>
<thead>
<tr>
<th>Study</th>
<th>Patients Information</th>
<th>Intervention</th>
<th>Outcome Measures</th>
<th>Results</th>
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<td>Shen et al. 2016(3)14</td>
<td>54 patients with chronic knee pain</td>
<td>RF thermocoagulation (RFTC) vs. Standard care.</td>
<td>&quot;At the termination of treatments and 3-month follow-ups, cases gained significantly increased scores in vitality, bodily pain, general health perceptions, physical functioning, and social role functioning by SF-36 scaling and in pain, range of motion, stability, walking, and stair climbing by AKSS [American Knee Society Score] (all P&lt;0.05). Controls received higher scores by AKSS in pain at the termination of treatments and in pain, range of motion, and walking at the termination of 3-month follow-ups (all P&lt;0.05). Both cases and controls presented significant difference between visual analog scale scores before treatments and those at the termination of 3-month follow-ups (both P&lt;0.05). All patients felt less pain after treatments, cases presenting better improvement (P&lt;0.05). Pain was stronger in females compared with males and in positive correlation with age while had no obvious relation to disease course.&quot;</td>
<td>&quot;In conclusion, RFTC may have better efficacy in relieving refractory pain and promoting function recovery in patients with knee OA than regular treatment.&quot;</td>
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<td>Ikeuchi et al. 2011(4)</td>
<td>35 patients with refractory anteromedial knee pain associated with moderate or severe radiologic OA</td>
<td>RFTC (n=18) vs. Nerve block (n=17)</td>
<td>&quot;[RF] treatment significantly decreased knee pain as measured by VAS [visual analog scale] for 12 weeks compared with the control group. In terms of responders, more patients in the RF group responded to &quot;</td>
<td>&quot;Some patients were able to benefit substantially from [RF] treatment. Even if its effective period is limited, radiofrequency application is a promising treatment to</td>
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the treatment than in the control group. The differences were statistically significant at 4 weeks, 8 weeks, and 12 weeks in pain VAS. Eight patients (44%) treated with radiofrequency rated excellent or good but only three (18%) in the control group rated good, although the difference was not statistically significant.”

**Definitions**

**Ablation:** the removal or destruction of a body part or tissue or its function. Ablation may be performed by surgery, hormones, drugs, radiofrequency, heat or other methods.

**Denervation:** also known as ablation (please see above).

**Genicular Nerve:** Sensory nerves arising from branches of the tibial, common peroneal and obturator nerves. The tibial and common peroneal nerve arise from the sciatic nerve, while the obturator nerve arises from the anterior division of the L2-L4 spinal nerves.

**Neurotomy:** the destruction of nerves or nerve tissue by heat, cutting or by chemical injection.

**Percutaneous:** a medical procedure where access to tissue is done via a needle-puncture of the skin.

**Radiofrequency:** an invasive procedure that involves heating tissue in order to destroy it.

**Thermocoagulation:** also known as ablation, or denervation (please see above).

**Effective Date:** May 11, 2016  
**Reviewed Annually:** November 9, 2016

**Revised:**

**Bibliography:**

1.) CMS.gov Centers for Medicaid and Medicare Services website: Medicare Coverage Database: http://www.cms.hhs.gov/mcd/search

2.) CA.gov Department of Health Care Services: Medi-Cal Coverage Database: http://www.medi-cal.ca.gov/


5.) Blue Shield of California: Providers – Guidelines and resources (guidelines and standards)


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