

Implantable Shock Absorber for Treatment of Knee Osteoarthritis

Date of Origin: 08/23/2024

Last Review Date: 02/26/2025

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Dates Reviewed: 02/2025

Developed By: Medical Necessity Criteria Committee

I. Description

Knee osteoarthritis (OA), also known as degenerative joint disease, results from wear and tear and progressive loss of articular cartilage. Knee osteoarthritis can be primary and secondary. Primary is articular degeneration without any apparent underlying reason. Secondary osteoarthritis is the consequence of either an abnormal concentration of force across the joint as with post-traumatic causes or abnormal articular cartilage, such as rheumatoid arthritis (RA).

Articular cartilage is composed primarily of type II collagen, proteoglycans, chondrocytes, and water. Healthy articular cartilage constantly maintains an equilibrium between each of the components so that any degradation of cartilage is matched by synthesis. In the process of osteoarthritis, matrix metalloproteases (MMPs), or degradative enzymes, are overexpressed, disrupting the equilibrium and resulting in an overall loss of collagen and proteoglycans.

An implantable shock absorber such as the MISHA Knee System (Moximed Inc, Fremont CA) has been developed and is being studied as an alternative treatment to knee arthroplasty. This device is implanted under the skin alongside the knee joint and is intended to provide physical support, decrease joint load and pain, and slow or stop progression of osteoarthritis. It is intended to reduce load on the knee while allowing for natural joint motion. The implant is a titanium and polycarbonate urethane device which reduces the load on the medial compartment of the knee by acting as an extra-articular load absorber while preserving the joint itself. The implantable shock absorber device is implanted outside the knee capsule and extends from the distal femur to the proximal tibia. It employs a shock absorbing mechanical system and is stabilized by plates and screws. The use of screws may lead to failure over time. Also, since the device is anchored on one side of the knee joint it may lead to asymmetric wear and tear on the knee.

Diduch *et al* noted the drawbacks of a prospective, open-label, nonrandomized study, and important research remains to determine generalizability of the study findings. Gomoll *et al* examined the 5-year rate of survival without undergoing arthroplasty or HTO in subjects with mild to moderate medial compartment knee OA who were treated with an ISA system. Study conclusions indicated that the ISA system may be suitable therapeutic option for working age patients with medial knee OA who are not candidates or desire for a more invasive surgical approaches or younger patients with mild to moderate symptomatic medial compartment knee OA. The available literature addressing the safety, efficacy and clinical utility of implantable shock absorbers for knee osteoarthritis consists predominantly of retrospective matched control studies and a lack of head-to-head comparisons between treatment modalities.

II. Criteria:

- A. Moda Health considers the use of an implantable shock absorber device for treatment of knee osteoarthritis investigational and not medically necessary. There is insufficient evidence in peer reviewed literature that has not established safety, efficacy, and effect on net health outcomes.

III. Information Submitted with the Prior Authorization Request:

- 1.

IV. CPT or HCPC codes NOT covered when requested with ISAS:

Codes	Description
27599	Unlisted procedure, femur or knee [when specified as implantation of a medial knee implanted shock absorber]
For the following HCPCS codes when specified as supply of a medial knee implanted shock absorber	
A4649	Surgical supply, miscellaneous
C1734	Orthopedic/device/drug matrix for opposing bone-to-bone or soft tissue-to-bone (implantable)
No specific code	Leukotape, Knee implanted shock absorber (MISHA) – no specific code
C1776	Joint device (implantable)
C1889	Implantable/Insertable device, not otherwise classified
L8699	Prosthetic Implant, not otherwise specified

V. CPT or HCPC codes NOT covered:

Codes	Description

V. Annual Review History

Review Date	Revisions	Effective Date
8/2024	New policy	5/1/2025

VI. References

1. Diduch DR, Crawford DC, Ranawat AS, Victor J (2023). Implantable Shock Absorber Provides Superior Pain Relief and Functional Improvement Compared With High Tibial Osteotomy in Patients with Mild-to-Moderate Medial Knee Osteoarthritis: A 2-Year Report. Retrieved from

https://www.researchgate.net/publication/368778392_Implantable_Shock_Absorber_Provides_Superior_Pain_Relief_and_Functional_Improvement_Compared_With_High_Tibial_Osteotomy_in_Patients_with_Mild-to-Moderate_Medial_Knee_Osteoarthritis_A_2-Year_Report

2. Hsu H, Siwiec RM (2023). Knee Osteoarthritis. National Library of Medicine. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK507884/>
3. Pareek A, Parkes CW, Slynarski K, et al. Risk of arthroplasty in patients with subchondral insufficiency fractures of the knee: A matched study of the implantable shock absorber using a validated predictive model. J Knee Surg. 2024;37(1):73-78. Retrieved from <https://pubmed.ncbi.nlm.nih.gov/36417980/>

Appendix 1 – Applicable Diagnosis Codes:

Codes	Description
N17.0-M17.9	All diagnoses, including but not limited to Osteoarthritis of knee

Appendix 2 – Centers for Medicare and Medicaid Services (CMS)

Medicare coverage for outpatient (Part B) drugs is outlined in the Medicare Benefit Policy Manual (Pub. 100-2), Chapter 15, §50 Drugs and Biologicals. In addition, National Coverage Determination (NCD) and Local Coverage Determinations (LCDs) may exist and compliance with these policies is required where applicable. They can be found at: <http://www.cms.gov/medicare-coverage-database/search/advanced-search.aspx>. Additional indications may be covered at the discretion of the health plan.

Medicare Part B Covered Diagnosis Codes (applicable to existing NCD/LCD):

Jurisdiction(s): 5, 8	NCD/LCD Document (s):

NCD/LCD Document (s):

Medicare Part B Administrative Contractor (MAC) Jurisdictions		
Jurisdiction	Applicable State/US Territory	Contractor
F (2 & 3)	AK, WA, OR, ID, ND, SD, MT, WY, UT, AZ	Noridian Healthcare Solutions, LLC