



OCT 17 2012

Food and Drug Administration  
10903 New Hampshire Avenue  
Document Control Room W-066-0609  
Silver Spring, MD 20993-0002

Paradigm Spine, LLC  
% Musculoskeletal Clinical Regulatory Advisers, LLC  
Glenn Stiegman, M.S.  
Vice President, Regulatory Affairs  
1331 H Street Northwest, 12<sup>th</sup> Floor  
Washington, District of Columbia 20005

Re: P110008  
coflex<sup>®</sup> Interlaminar Technology  
Filed: March 3, 2011  
Amended: March 10, April 6, May 11, June 2, June 29, August 25, September 1, 2011;  
February 8, March 26, April 20, 2012  
Procure: NQO

Dear Mr. Stiegman:

The Center for Devices and Radiological Health (CDRH) of the Food and Drug Administration (FDA) has completed its review of your premarket approval application (PMA) for the coflex<sup>®</sup> Interlaminar Technology. This device is indicated for use in one- or two-level lumbar stenosis from L1-L5 in skeletally mature patients with at least moderate impairment in function, who experience relief in flexion from their symptoms of leg/buttocks/groin pain, with or without back pain, and who have undergone at least 6 month of non-operative treatment. The coflex is intended to be implanted midline between adjacent lamina of 1 or 2 contiguous lumbar motion segments. Interlaminar stabilization is performed after decompression of stenosis at the affected level(s). We are pleased to inform you that the PMA is approved. You may begin commercial distribution of the device in accordance with the conditions of approval described below.

The sale and distribution of this device are restricted to prescription use in accordance with 21 CFR 801.109 and under section 515(d)(1)(B)(ii) of the Federal Food, Drug, and Cosmetic Act (the act). The device is further restricted under section 515(d)(1)(B)(ii) of the act insofar as the labeling must specify the specific training or experience practitioners need in order to use the device. FDA has determined that these restrictions on sale and distribution are necessary to provide reasonable assurance of the safety and effectiveness of the device. Your device is therefore a restricted device subject to the requirements in sections 502(q) and (r) of the act, in addition to the many other FDA requirements governing the manufacture, distribution, and marketing of devices.

Expiration dating for this device has been established and approved at five years. This is to advise you that the protocol you used to establish this expiration dating is considered an approved protocol for the purpose of extending the expiration dating as provided by 21 CFR 814.39(a)(7).

Continued approval of this PMA is contingent upon the submission of periodic reports, required under 21 CFR 814.84, at intervals of one year (unless otherwise specified) from the date of approval of the original PMA. Two copies of this report, identified as "Annual Report" (please use this title even if the specified interval is more frequent than one year) and bearing the applicable PMA reference number, should be submitted to the address below. The Annual Report should indicate the beginning and ending date of the period covered by the report and should include the information required by 21 CFR 814.84.

In addition to the above, and in order to provide continued reasonable assurance of the safety and effectiveness of the device, the Annual Report must include, separately for each model number (if applicable), the number of devices sold and distributed during the reporting period, including those distributed to distributors. The distribution data will serve as a denominator and provide necessary context for FDA to ascertain the frequency and prevalence of adverse events, as FDA evaluates the continued safety and effectiveness of the device.

In addition to the Annual Report requirements, you must conduct two Post-Approval Studies to provide long-term device performance and to evaluate device performance under actual conditions of use.

1. Extended Follow-up of Premarket Cohort: You must perform a 5-year post-approval study (PAS) to evaluate the longer term safety and effectiveness of the coflex Interlaminar Technology as compared to posterolateral fusion by following all patients from the pivotal investigational device exemption (IDE) study with device survival to 24 months (191 coflex subjects, and 104 fusion subjects) annually through 5 years. At each annual ( $\pm 4$  month) visit, you will collect the following data: Oswestry Disability Index (ODI), leg (right, left, and max) and back pain Visual Analog Scale (VAS), Zurich Claudication Questionnaire (ZCQ), health status survey (SF-12), neurological status as determined by physical exam, radiographic information, and all adverse events regardless of cause. Radiographic information collected will include: range of motion on lateral standing flexion/extension films (at implanted and adjacent level(s)), radiolucency, device displacement or migration, and radiographic observations such as spinous process fractures or heterotopic ossification. Any coflex patients with radiographic observations of spinous process fracture will be examined via CT at 5 years.

The primary objective of the study is to evaluate the overall success rate, where an individual patient is considered a success if all the following criteria are met:

- Improvement of at least 15 points in the Oswestry Low Back Pain Disability Index (ODI) at 5 years compared to baseline;
- No reoperations, revisions, removals, or supplemental fixation;

- No major device-related complications, including but not limited to permanent new or increasing sensory or motor deficit at 5 years; and
- No epidural steroid injections in the lumbar spine.

Success rates between the randomized investigational and control groups will be compared and assessed for non-inferiority based on a ten percent non-inferiority margin for the overall success analysis at 5 years. Several sensitivity analyses will also be done to better assess success rates. FDA will expect at least 85% follow-up at the 5-year time point to provide sufficient data to evaluate safety and effectiveness.

2. Real Conditions of Use: You must perform a 5-year real conditions of use study of the coflex<sup>®</sup> Interlaminar Technology to fully characterize safety and efficacy when the coflex device is used in the intended patient population under general conditions of use. You will evaluate the safety and efficacy of the coflex device by comparing at 5 years, decompression alone versus decompression with additional stabilization with the coflex Interlaminar Technology in 230 patients (115 each in the device and comparison group), at 5 study centers in Germany and 5 US centers (20-30 patients per site). Clinical visits will occur pre-operatively, the day of surgery, and 3 months, 6 months, 12 months, 24 months, 36 months, 48 months and 60 months postoperatively. At each visit, you will collect the following data: Oswestry Disability Index (ODI), leg (right, left, and max) and back pain Visual Analog Scale (VAS), Zurich Claudication Questionnaire (ZCQ), neurological status as determined by physical exam, radiographic information, and all adverse events regardless of cause. Radiographic information collected will include: range of motion on lateral standing flexion/extension films (at implanted and adjacent level(s)), radiolucency, device displacement or migration, and radiographic observations such as spinous process fractures or heterotopic ossification. All coflex patients at US sites will be examined with CT at 24 months. Any coflex patients with any radiographic observations of spinous process fracture will be again be examined via CT at 5 years. You will also assess improvement of walking distance on a treadmill after 24 and 60 months.

The primary objective of the study is to assess the treatment group for superiority compared to the control group, considering:

- Mean improvement of Oswestry Low Back Pain Disability Index (ODI) after 24 months; and
- Rates of reoperations, revisions, removals, or supplemental fixation;

Means and rates between the randomized investigational and control groups will be compared and assessed for superiority for the overall success analysis. Patients with reoperations, revisions, removals, and supplemental fixations will not be assessed for Oswestry Disability Index. Several sensitivity analyses will also be done to assess impact

on success rates. FDA will expect at least 85% follow-up at the 5-year time point to provide sufficient data to evaluate safety and effectiveness.

Please be advised that the results from these studies should be included in the labeling as these data become available. Any updated labeling must be submitted to FDA in the form of a PMA Supplement.

FDA would like to remind you that you are required to submit separate PAS Progress Reports for each of the Post-approval studies listed above, every six months during early stages of the study implementation up to two years and annually thereafter. The reports should clearly be identified as Post-Approval Study Report. Two copies for each study, identified as "PMA Post-Approval Study Report" and bearing the applicable PMA reference number, should be submitted to the address below. For more information on post-approval studies, see the FDA guidance document entitled, "Procedures for Handling Post-Approval Studies Imposed by PMA Order"

([www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/ucm070974.htm#2](http://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/ucm070974.htm#2)).

Be advised that the failure to conduct any such study in compliance with the good clinical laboratory practices in 21 CFR part 58 (if a non-clinical study subject to part 58) or the institutional review board regulations in 21 CFR part 56 and the informed consent regulations in 21 CFR part 50 (if a clinical study involving human subjects) may be grounds for FDA withdrawal of approval of the PMA.

Within 30 days of your receipt of this letter, you must submit a PMA supplement that includes complete protocols of your post-approval studies. Your PMA supplement should be clearly labeled as a "Post-Approval Study Protocol" and submitted in triplicate to the address below. Please reference the PMA number above to facilitate processing. If there are multiple protocols being finalized after PMA approval, please submit each protocol as a separate PMA supplement. For more information on post-approval studies, see the FDA guidance document entitled, "Procedures for Handling Post-Approval Studies Imposed by PMA Order"

([www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/ucm070974.htm](http://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/ucm070974.htm)).

Before making any change affecting the safety or effectiveness of the device, you must submit a PMA supplement or an alternate submission (30-day notice) in accordance with 21 CFR 814.39. All PMA supplements and alternate submissions (30-day notice) must comply with the applicable requirements in 21 CFR 814.39. For more information, please refer to the FDA guidance document entitled, "Modifications to Devices Subject to Premarket Approval (PMA) - The PMA Supplement Decision-Making Process"

([www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/ucm089274.htm](http://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/GuidanceDocuments/ucm089274.htm)).

You are reminded that many FDA requirements govern the manufacture, distribution, and marketing of devices. For example, in accordance with the Medical Device Reporting (MDR) regulation, 21 CFR 803.50 and 21 CFR 803.52, you are required to report adverse events for this device. Manufacturers of medical devices, including in vitro diagnostic devices, are required to report to FDA no later than 30 calendar days after the day they receive or otherwise becomes aware of information, from any source, that reasonably suggests that one of their marketed devices:

1. May have caused or contributed to a death or serious injury; or
2. Has malfunctioned and such device or similar device marketed by the manufacturer would be likely to cause or contribute to a death or serious injury if the malfunction were to recur.

Additional information on MDR, including how, when, and where to report, is available at [www.fda.gov/MedicalDevices/Safety/ReportaProblem/default.htm](http://www.fda.gov/MedicalDevices/Safety/ReportaProblem/default.htm).

In accordance with the recall requirements specified in 21 CFR 806.10, you are required to submit a written report to FDA of any correction or removal of this device initiated by you to: (1) reduce a risk to health posed by the device; or (2) remedy a violation of the act caused by the device which may present a risk to health, with certain exceptions specified in 21 CFR 806.10(a)(2). Additional information on recalls is available at [www.fda.gov/Safety/Recalls/IndustryGuidance/default.htm](http://www.fda.gov/Safety/Recalls/IndustryGuidance/default.htm).

CDRH does not evaluate information related to contract liability warranties. We remind you; however, that device labeling must be truthful and not misleading. CDRH will notify the public of its decision to approve your PMA by making available, among other information, a summary of the safety and effectiveness data upon which the approval is based. The information can be found on the FDA CDRH Internet HomePage located at [www.fda.gov/MedicalDevices/ProductsandMedicalProcedures/DeviceApprovalsandClearances/PMAApprovals/default.htm](http://www.fda.gov/MedicalDevices/ProductsandMedicalProcedures/DeviceApprovalsandClearances/PMAApprovals/default.htm). Written requests for this information can also be made to the Food and Drug Administration, Dockets Management Branch, (HFA-305), 5630 Fishers Lane, Rm. 1061, Rockville, MD 20852. The written request should include the PMA number or docket number.

Within 30 days from the date that this information is placed on the Internet, any interested person may seek review of this decision by submitting a petition for review under section 515(g) of the act and requesting either a hearing or review by an independent advisory committee. FDA may, for good cause, extend this 30-day filing period.

Failure to comply with any post-approval requirement constitutes a ground for withdrawal of approval of a PMA. The introduction or delivery for introduction into interstate commerce of a device that is not in compliance with its conditions of approval is a violation of law.

You are reminded that, as soon as possible and before commercial distribution of your device, you must submit an amendment to this PMA submission with copies of all approved labeling in final printed form. Final printed labeling that is identical to the labeling approved in draft form will not routinely be reviewed by FDA staff when accompanied by a cover letter stating that the final printed labeling is identical to the labeling approved in draft form. If the final printed labeling is not identical, any changes from the final draft labeling should be highlighted and explained in the amendment.

All required documents should be submitted in triplicate, unless otherwise specified, to the address below and should reference the above PMA number to facilitate processing. One of those three copies may be an electronic copy (eCopy), in an electronic format that FDA can process, review and archive (general information:

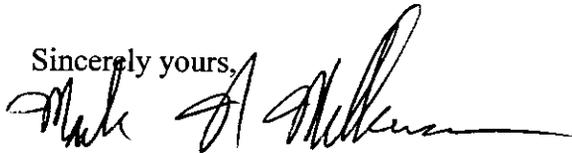
<http://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/HowtoMarketYourDevice/PremarketSubmissions/ucm134508.htm>; clinical and statistical data:

<http://www.fda.gov/MedicalDevices/DeviceRegulationandGuidance/HowtoMarketYourDevice/PremarketSubmissions/ucm136377.htm>)

U.S. Food and Drug Administration  
Center for Devices and Radiological Health  
PMA Document Mail Center – WO66-G609  
10903 New Hampshire Avenue  
Silver Spring, MD 20993-0002

If you have any questions concerning this approval order, please contact Katherine Kavlock, Ph.D. at 301-796-7444.

Sincerely yours,



Mark N. Melkerson  
Director  
Division of Surgical, Orthopedic  
and Restorative Devices  
Office of Device Evaluation  
Center for Devices and  
Radiological Health