



DIVISION OF
CORPORATION FINANCE

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
WASHINGTON, D.C. 20549

February 13, 2014

Via E-mail

Christopher G. Chavez
Chief Executive Officer
TriVascular Technologies, Inc.
3910 Brickway Blvd.
Santa Rosa, CA 95403

**Re: TriVascular Technologies, Inc.
Amendment No. 1 to Draft Registration Statement on Form S-1
Submitted January 28, 2014
CIK No. 0001432732**

Dear Mr. Chavez:

We have reviewed your amended draft registration statement and have the following comments. In some of our comments, we may ask you to provide us with information so we may better understand your disclosure.

Please respond to this letter by providing the requested information and either submitting an amended draft registration statement or publicly filing your registration statement on EDGAR. If you do not believe our comments apply to your facts and circumstances or do not believe an amendment is appropriate, please tell us why in your response.

After reviewing the information you provide in response to these comments and your amended draft registration statement or filed registration statement, we may have additional comments.

Gatefold of Prospectus

1. We note the fourth page of the artwork provided. Please note that it is inappropriate to present only the most favorable aspect or aspects of your product without balancing the presentation to highlight its key limitations. Further, it is inappropriate to include comparisons to your competitors' products solely on the basis of one feature on which you appear to compete favorably without balancing the presentation to highlight your product's competitive disadvantages. Please revise your graphics accordingly.
2. Please note that you may include text in your artwork only to the extent necessary to explain briefly the visuals in your presentation. The paragraph included on the third page of the artwork provided does not appear necessary to explain the visual on that page. Please revise accordingly.

Overview, page 1

3. We note your response to prior comment 3 that you have removed references to your product as “next-generation” except with respect to its future iterations; however, we note certain references have been retained, such as in the first paragraph under “Our Solution” on page 60. Please revise here and throughout your document as appropriate. Also, the revisions made in response to prior comment 3 do not appear to support the statement that your product can be used to treat patients “potentially more cost-effectively.” Please revise to clarify the specific basis for this belief.
4. With respect to the information provided in response to prior comment 6, please specify the information in the highlighted portion of the materials under Tab 8 that supports the claim that AAA is the third-leading cause of sudden death in men over age 60, and tell us where the materials provided under Tab 22 support the statement that the PEVAR approach allows for use of local or regional anesthetic instead of general anesthetic. Please also provide us with the entire report from which the charts under Tab 10 were excerpted. Finally, please revise your disclosure where appropriate to indicate the specific size that was observed as a threshold for access site complications in the study you provided to support the statement that the use of smaller profile devices results in fewer such complications.

The Market—AAA Disease, page 2

5. We note your response to prior comment 7. Please revise to clarify the relationship between AAA stent grafts, which are cited in the first sentence, and the EVAR approach. For instance, if true, disclose that the EVAR approach is used to address only a subset of the AAA stent graft market. Also revise this paragraph and elsewhere as appropriate to disclose the information contained in your response that that no currently available commercial EVAR device can address all patients comprising the referenced market.
6. If you choose to retain the statistic that abdominal aortic aneurisms affect as many as 8% of people over the age of 65, please include disclosure in your document similar to that provided in your response to prior comment 8, that only a small percentage of potential patients ever receive treatment for AAA.

Our Solution—The Ovation System, page 3

7. Please disclose information similar to that provided in response to prior comment 9, that some of your competitors’ devices contain some of the advantages listed in this section.

Use of Proceeds, page 32

8. We note your response to prior comment 13. Please revise to state that you have no current specific plan for the portion of your offering proceeds that will not be used to

repay debt, and discuss the principal reasons why you are conducting the offering at this time.

Comparison of Nine Months ended September 30, 2013 and 2012, page 43

9. We note that in the revised disclosure in response to prior comment 16 you provided examples of the markets into which you expanded sales and those in which you commenced sales. However, your disclosure should include a discussion of all material drivers of material changes in your results of operations, not only the “most material,” as you indicate in your response. Accordingly, rather than provide “examples” of the markets in which you expanded or commenced sales during the period that contributed to the change in your results, please revise to disclose the actual drivers during the periods presented. Finally, as indicated in the last sentence of prior comment 16, please quantify the portion of the increase in sales that was attributable to each factor cited.

If you intend to respond to these comments with an amended draft registration statement, please submit it and any associated correspondence in accordance with the guidance we provide in the Division’s October 11, 2012 announcement on the SEC website at <http://www.sec.gov/divisions/corpfin/cfannouncements/drsfilingprocedures101512.htm>.

You may contact Dennis Hult, Staff Accountant, at (202) 551-3618 or Lynn Dicker, Reviewing Accountant, at (202) 551-3616 if you have questions regarding comments on the financial statements and related matters. Please contact Ted Moskovitz at (202) 551-3689 or Mary Beth Breslin, Senior Attorney, at (202) 551-3625 with any other questions.

Sincerely,

/s/ Mary Beth Breslin for

Amanda Ravitz
Assistant Director

cc (via e-mail): Michael Rosenthal, Arnold & Porter