

BOVIE MEDICAL Corp
Form 424B5
November 10, 2016
Table of Contents

Filed pursuant to Rule 424(b)(5)
Registration Statement No. 333-200986

Prospectus Supplement

(To Prospectus dated December 16, 2014)

1,500,000 Shares

BOVIE MEDICAL CORPORATION

Common Stock

\$4.00 per share

Bovie Medical Corporation is offering 1,500,000 shares. Trading symbol: NYSE MKT BVX.

The last reported sale price for our common stock on November 9, 2016, was \$4.67 per share.

This investment involves risk. See Risk Factors beginning on page S-9.

	Per Share	Total
Public offering price	\$ 4.00	\$ 6,000,000.00

Edgar Filing: BOVIE MEDICAL Corp - Form 424B5

Underwriting discount(1)	\$ 0.24	\$ 360,000.00
Proceeds, before expenses, to Bovie Medical Corporation	\$ 3.76	\$ 5,640,000.00

(1) See Underwriting beginning on page S-20 for additional information regarding total underwriter compensation. Concurrently with the sale of shares of our common stock under this prospectus supplement, certain stockholders of the Company are selling 1,500,000 shares of our common stock held by them under another prospectus supplement, as more fully described herein.

We have granted the underwriter an option for a period of 30 days to purchase an additional 225,000 shares of our common stock to cover any over-allotments.

Neither the U.S. Securities and Exchange Commission nor any state securities commission has approved or disapproved of these securities or determined if this prospectus supplement is truthful or complete. Any representation to the contrary is a criminal offense.

Piper Jaffray

The date of this prospectus supplement is November 10, 2016

Table of Contents

Table of contents

Prospectus Supplement

	Page
<u>About this prospectus supplement</u>	S-ii
<u>Prospectus supplement summary</u>	S-1
<u>The offering</u>	S-7
<u>Cautionary note regarding forward-looking statements</u>	S-8
<u>Risk factors</u>	S-9
<u>Use of proceeds</u>	S-18
<u>Dilution</u>	S-19
<u>Underwriting</u>	S-20
<u>Incorporation of certain information by reference</u>	S-23
<u>Where you can find additional information</u>	S-24
<u>Legal matters</u>	S-25
<u>Experts</u>	S-25

Prospectus

	Page
<u>About this prospectus</u>	1
<u>Summary</u>	2
<u>Cautionary note regarding forward-looking statements</u>	10
<u>Risk factors</u>	11
<u>Use of proceeds</u>	12
<u>Description of capital stock</u>	13
<u>Description of debt securities</u>	17
<u>Description of warrants</u>	24
<u>Description of units</u>	26
<u>Plan of distribution</u>	27
<u>Legal matters</u>	29
<u>Experts</u>	29
<u>Where you can find additional information</u>	29
<u>Incorporation of certain information by reference</u>	29

Table of Contents

ABOUT THIS PROSPECTUS SUPPLEMENT

This prospectus supplement and the accompanying prospectus are part of a registration statement on Form S-3 (Registration File No. 333-200986) that we filed with the Securities and Exchange Commission (SEC) utilizing a shelf registration process. Under this shelf registration process, we may, from time to time, sell shares of our common stock and preferred stock, various series of debt securities and/or warrants to purchase any of such securities, either individually or in units, in one or more offerings, up to a total dollar amount of \$25,000,000. We had previously sold \$13,046,872 of our common stock under this registration statement.

This document is in two parts. The first part is the prospectus supplement, including the documents incorporated by reference, which describe the specific terms of this offering. The second part, the accompanying prospectus, including the documents incorporated by reference, provides more general information. Generally, when we refer to this prospectus supplement, we are referring to both parts of this document combined. We urge you to carefully read this prospectus supplement and the accompanying prospectus, and the documents incorporated herein and therein, before buying any of the securities being offered under this prospectus supplement. This prospectus supplement may add, update or change information contained in the accompanying prospectus. To the extent that any statement that we make in this prospectus supplement is inconsistent with statements made in the accompanying prospectus or any documents incorporated by reference therein, the statements made in this prospectus supplement will be deemed to modify or supersede those made in the accompanying prospectus and such documents incorporated by reference therein.

You should rely only on the information contained in or incorporated by reference in this prospectus supplement, the accompanying prospectus and in any free writing prospectus that we have authorized for use in connection with this offering. We have not, and the underwriter has not, authorized anyone to provide you with different information. If anyone provides you with different or inconsistent information, you should not rely on it. We are not, and the underwriter is not, making an offer to sell these securities in any jurisdiction where the offer or sale is not permitted. You should assume that the information appearing in this prospectus supplement, the accompanying prospectus, the documents incorporated by reference in this prospectus supplement and the accompanying prospectus, and in any free writing prospectus that we have authorized for use in connection with this offering, is accurate only as of the date of those respective documents. Our business, financial condition, results of operations and prospects may have changed since those dates. You should read this prospectus supplement, the accompanying prospectus, the documents incorporated by reference in this prospectus supplement and the accompanying prospectus, and any free writing prospectus that we have authorized for use in connection with this offering, in their entirety before making an investment decision. You should also read and consider the information in the documents to which we have referred you in the sections of this prospectus supplement entitled *Where You Can Find Additional Information* and *Incorporation of Certain Information by Reference*.

No action is being taken in any jurisdiction outside the United States to permit a public offering of the common stock or possession or distribution of this prospectus supplement or the accompanying prospectus in that jurisdiction. Persons who come into possession of this prospectus supplement or the accompanying prospectus in jurisdictions outside the United States are required to inform themselves about and to observe any restrictions as to this offering and the distribution of this prospectus supplement or the accompanying prospectus applicable to that jurisdiction.

Concurrently with the sale of shares of our common stock under this prospectus supplement, certain stockholders of the Company are selling 1,500,000 shares of our common stock under another prospectus supplement, offered pursuant to Registration Statement No. 333-203422, or the 2015 Registration Statement, and the prospectus dated April 24, 2015 included therein, or the 2015 Base Prospectus (such offering, the *Concurrent Offering*). As part of the *Concurrent Offering*, the selling stockholders granted the underwriter an option for a period of thirty (30) days to

purchase up to an additional 225,000 shares of our common stock.

As used in this prospectus, Bovie, we, our, the Company and us refer to Bovie Medical Corporation, unless stated otherwise or the context requires otherwise.

S-ii

Table of Contents

PROSPECTUS SUPPLEMENT SUMMARY

This summary highlights selected information contained elsewhere or incorporated by reference in this prospectus supplement and the accompanying prospectus. This summary may not contain all the information that you should consider before investing in our common stock. You should read the entire prospectus supplement and the accompanying prospectus carefully, including Risk Factors contained in this prospectus supplement, the accompanying prospectus and the documents incorporated by reference herein and therein and the financial statements incorporated by reference in this prospectus supplement and the accompanying prospectus, before making an investment decision. This prospectus supplement may add to, update or change information in the accompanying prospectus.

Our Company

Bovie Medical Corporation (Company , Bovie Medical , we , us , or our) was incorporated in 1982, under the laws of the State of Delaware and has its principal executive office at 4 Manhattanville Road, Suite #106, Purchase, New York 10577.

We are an energy-based medical device company specializing in developing, manufacturing, and marketing a range of electro-surgical products and technologies, as well as related medical products used in doctor's offices, surgery centers and hospitals worldwide. Our medical devices are marketed through Bovie's own well-respected brands (Bovie®, IDS and ICON) and on a private label basis to distributors throughout the world. The Company also leverages its expertise in the design, development and manufacturing of electro-surgical equipment by producing equipment for large, well-known medical device manufacturers through original equipment manufacturing (OEM) agreements, as well as start-up companies with the need for our energy based designs.

We are also the developer of J-Plasma®; a patented helium-based plasma surgical product which we believe has the potential to be a transformational product for surgeons. J-Plasma® has FDA clearance for the cutting, coagulation, and ablation of soft tissue. The J-Plasma® system consists of an electro-surgical generator unit (ESU), a hand piece and a supply of helium gas. Radiofrequency (RF) energy is delivered to the hand piece by the ESU and used to energize an electrode. When helium gas is passed over the energized electrode, a helium plasma is generated which allows for conduction of the RF energy from the electrode to the patient in the form of a precise helium plasma beam. The energy delivered to the patient via the helium plasma beam is very precise and cooler in temperature in comparison to other surgical energy modalities such as standard RF monopolar energy. While currently in the early stages of commercialization, J-Plasma has been the subject of ten white papers and has been cited therein for its clinical utility in gynecological and plastic surgery procedures.

Significant Subsidiaries

Aaron Medical Industries, Inc. is a wholly-owned Florida corporation based in Clearwater, Florida. It is principally engaged in the business of marketing our medical products.

Bovie Bulgaria, EOOD is a wholly-owned limited liability company incorporated under Bulgarian law, located in Sofia, Bulgaria. It is engaged in the business of engineering and manufacturing our electro-surgical and OEM products.

Industry

Healthcare reform has caused consolidation among providers, with hospitals merging, physician practices joining hospitals, and institutions combining to form Accountable Care Organizations, to manage patients on an

interdisciplinary basis. Although the medical device industry can be challenging and very competitive, we

S-1

Table of Contents

believe it will continue to have a positive, long-term growth trajectory with the number of surgical procedures performed increasing annually as a result of the aging baby boomer population and other healthcare trends. Additionally, we also anticipate a continued increase in minimally invasive surgical procedures due to ongoing advancements in technology coupled with continued overall pressure to reduce healthcare costs via a reduction in patient trauma and recovery time. Expanding global markets will also continue to provide growth opportunities for the medical device industry.

We believe that Bovie Medical has sustainable, competitive advantages in the medical device market for several reasons. We have a long history in electrosurgery. In fact, our inspiration dates back to the first use of an electrosurgical generator in an operating room in the U.S. in 1926 where Dr. William T. Bovie was present. Thus, the Bovie name is recognized by surgeons the world over for having pioneered the electrosurgery field and is recognized for its outstanding product quality supported by strong engineering and research and development capabilities. This history equates to very strong recognition of the Bovie brand. In fact, the word Bovie has become synonymous with all instruments used to deliver electrosurgical energy in the operating room. We believe that our equipment and devices have and will continue to provide better experiences for patients at a lower cost to the healthcare system.

Business Strategy

Our objective is to achieve profitable, sustainable growth by increasing our market share in the advanced energy category, including the commercialization of products that have the potential to be transformational with respect to the results they produce for surgeons and patients. In order to achieve this objective, we plan to leverage our long history in the industry, along with the reputation for quality and reliability that the Bovie brand enjoys within the medical community. At the same time, we will expand our products beyond radio frequency, move forward with research and developments projects aimed at creating value within our existing product portfolio and build our pipeline of new complementary products and utilize multiple channels to bring new and existing products to market.

We are working to build our position in advanced electrosurgical generators and disposables, which can be used in diversified niche markets with minimally invasive surgical instruments, while furthering our status as a pioneer in plasma technology and its various medical applications.

Our J-Plasma product initially received FDA clearance in 2012, and a CE mark in December, 2014, which enables us to sell the product in Europe. In 2014, we brought together a new management team and created and trained a direct sales force dedicated to J-Plasma®. In 2015, we continued the commercialization process for J-Plasma with a multi-faceted strategy designed to accelerate adoption of the product. This strategy primarily involved deployment of a dedicated sales force, extending and customizing the J-Plasma® product line and expanding the surgical specialties in which J-Plasma® can become the standard of care for certain procedures.

As of September 30, 2016, we had a direct sales force consisting of 14 field-based selling positions, and that, coupled with our independent manufacturer's representatives, gives us a total sales force of 42. This is a hospital focused selling organization with its focus on the use of J-Plasma® for operating room procedures.

Additionally, we launched seven new J-Plasma hand piece configurations and the Bovie Ultimate generator, which combines J-Plasma functionality with standard electrosurgery modes in one generator. The J-Plasma® product line has been recognized by the Society of Laparoendoscopic Surgeons (SLS) as an Innovative Product of the Year for three years in a row. The Precise 360 was recognized in 2016, The Bovie Ultimate generator was recognized in 2015, and the J-Plasma® Pistol Grip was recognized in 2014. As a result of our sales, marketing and product development initiatives in 2016 and 2015, we have significantly increased the number of surgeons using the product, gained approvals for the sale of J-Plasma® from Hospital Value Analysis Committees and signed agreements for the use of

J-Plasma[®] by the members of Group Purchasing Organizations that serve the medical community.

S-2

Table of Contents

In order to assist us in leveraging J-Plasma's precision and effectiveness in multiple surgical specialties, we launched a Medical Advisory Board in 2015 currently comprised of surgeons who are recognized leaders in urology, cardiovascular and cardiothoracic surgery.

We are continuing to make substantial investments in the development and marketing of our J-Plasma technology for the long term benefit of the Company and its stakeholders and this may adversely affect our short term profitability and cash flow, particularly over the next 12 to 24 months. While we believe that these investments have the potential to generate additional revenues and profits in the future, there can be no assurance that J-Plasma will be successful or that such future revenues and profitability will be realized. From June of 2010 through December 31, 2014, we invested approximately \$5.5 million in the development and marketing of our J-Plasma technology and an additional approximately \$5.5 million in 2015, bringing the total investment to approximately \$11.0 million since inception.

Company Products

We group our products into three main categories: electrosurgery, cauteries, and other products. Information regarding sales by product categories and related percentages can be found in our annual and quarterly reports filed with the SEC. We manufacture and market various medical products, both under private label and the Bovie brands (Bovie, IDS, ICON and DERM), to distributors worldwide. Additionally, Bovie has original equipment manufacturing (OEM) agreements with other medical device manufacturers. These OEM and private label arrangements and our use of the Bovie brands enable us to gain greater market share for the distribution of our products.

Advanced Energy Products

J-Plasma Products

BOVIE ULTIMATE

In March 2015, we launched The Bovie® Ultimate generator. The Bovie Ultimate is a high frequency electrosurgical generator that can be used for delivery of RF energy and/or helium gas plasma to cut, coagulate and ablate soft tissue during open and laparoscopic surgical procedures. The generator offers users monopolar, bipolar and J-Plasma features in a single generator. It has both FDA clearance and CE Mark.

J-Plasma Disposable Portfolio

We offer different hand pieces for open and laparoscopic procedures. The helium-based plasma generated from these devices have been shown to cause less thermal damage to tissue than CO₂ laser, argon plasma and RF energy products currently available on the market. The technology has a general indication and can be used for cutting, coagulating and ablating soft tissue. The two primary specialties that are targeted in phase one of the product launch are gynecology and plastic surgery. However, given the wide range of tissue applications for J-Plasma, we are now engaged in ongoing development to create products for oncology, urology, cardiovascular, and cardiothoracic procedures. The advantages of helium plasma continue to be studied throughout the medical and scientific communities. We believe that surgical applications are just one area of opportunity for this technology.

In September of 2015, we expanded our offering of laparoscopic hand pieces by introducing the J-Plasma Precise configurations to the market. In March 2016, we launched the Precise 360 as our seventh new hand piece configuration. These new configurations expand the procedure base for J-Plasma by providing surgeons with the tools they need to access additional anatomic locations.

S-3

Table of Contents

Other Advanced Energy Products

Bovie has added its second product to the growth portfolio, PlazXact. This product is a Bipolar RF Ablator for orthopedic joint surgery. The ablaters are sterile, single-use devices for the cutting, coagulating and ablation (vaporizing) of soft tissue. The patented, wedge-shaped electrode gives unmatched access and visibility. The design also enables the surgeon to use the product at lower power level to achieve ablation. This reduces the risk of inadvertent burns due to the lower temperatures of fluid in the joints. The ablaters have patented design features that make them highly efficient and therefore do not require use with specialized high-powered generators. Bovie's Ablators can be used with most standard electrosurgical generator already present in all operating rooms. PlazXact is the only orthopedic ablator in the market with no dedicated capital equipment required.

Electrosurgery Products

Electrosurgery is our largest product line and includes desiccators, generators, electrodes, electrosurgical pencils and various ancillary disposable products. These electrosurgical products are used during surgical procedures in gynecology, urology, plastic surgery, dermatology, veterinary, and other surgical markets for the cutting and coagulation of tissue. It is estimated that 80% of all surgical procedures performed worldwide are conducted by electrosurgery. Our electrosurgery products fall under two categories, monopolar and bipolar. Monopolar products require the use of a grounding pad attached to the patient for the return of the electrical current, while bipolar products consist of two electrodes; one for the inbound current and one for the return current and therefore do not require the use of a grounding pad.

DERM101 and DERM 102

These effective and economical 10 watt high frequency desiccators provide a low wattage platform for minor in-office skin procedures. We designed these products specifically for family practice physicians, pediatricians and other general practitioners, enabling them to perform simple skin procedures in their offices instead of referring the patient to a specialist saving the patient time and providing additional revenue generating procedures for the physician.

Aaron 940/ Aaron 950 / Aaron 1250U

The Aaron 940 is a Bovie developed, low powered 40-watt high frequency desiccator designed primarily for dermatology and family practice physicians. The units are used mainly for removing small skin lesions and growths as well as for coagulation for office based procedures.

The Aaron 950 is a 60-watt high frequency desiccator with the added feature of a cut capacity for outpatient surgical procedures. In effect, the 950 is two independent surgical devices in one small package. It is designed mainly for use in doctors' offices and is utilized in a broad range of specialties including dermatology, gynecology, family practice, urology, plastic surgery and ophthalmology.

The Aaron 1250U is a 120-watt multipurpose electrosurgery generator. The unit features monopolar and bipolar functions with pad sensing. This product is considered to be ideally suited for office-based procedures in the specialties of gynecology, plastic surgery and urology.

Aaron 2250 /2350/ 3250/3350 and IDS 200 /210/ 300 /310 400

To address market demand for more powerful electrosurgical generators, Bovie developed 200, 300 and 400-watt multipurpose digital electrosurgery generators designed for the rapidly expanding surgi-center market and the hospital

outpatient and inpatient markets. This equipment includes digital hardware that enables very high

S-4

Table of Contents

parallel data processing throughout the operation or procedure. All data is sampled and processed digitally. For the first time in electrosurgery, surgeons are able to measure tissue impedance in real time (5,000 times a second) thanks to the utilization of digital technology. The design of these units is based on a digital feedback system. By using dedicated digital hardware in place of a general purpose controller for processing data, our equipment enables the power to be adjusted as the impedance varies, to deliver a consistent clinical effect.

The IDS 200/Aaron 2250 are 200-watt generators that have the capability to be used in the majority of procedures performed today in surgi-center or outpatient settings. Although 200 watts is adequate to do most procedures in the operating room, 300 watts is considered the standard and believed to be what most hospitals and surgi-centers will require. To meet this requirement, we developed the IDS 300/ Aaron 3250.

IDS 310/210 and Bovie ORiPro A3350 and Surgicenter Pro A2350 are the next generation of surgi-center and operating room generators. These units incorporate the best features of the IDS 300 and upgrade its capabilities by providing additional bipolar options, including the 225-watt Bovie bipolar and an auto bipolar feature. The 300 watt units also offer the capability to utilize two pencils with simultaneous activation in fulguration mode.

The Bovie IDS 400 is a 400-watt generator designed primarily for sale in markets outside of the United States. These units feature both monopolar and bipolar functions, have pad and tissue sensing, and include nine blended cutting settings.

Electrosurgical Disposables

Resistick II

Resistick II is a trademarked and proprietary coating that is applied to stainless steel that resist eschar (scab or scar tissue caused by burning) during surgery. We have experienced strong demand for this product since its introduction in 2011, and it represents our continued expansion of the Bovie line of electrosurgical disposables.

Disposable Laparoscopic Electrodes

We have introduced a line of disposable laparoscopic electrodes in Resistick coated and stainless steel for use by physicians from a broad group of specialties including gynecology, general surgery and urology. These electrodes are offered in J-hook, L-hook, needle, ball and spatula design and have an adapter included which makes these laparoscopic electrodes usable with a 3/32 or 4mm plug.

Cauteries

Battery Operated Cauteries

Battery operated cauterics constitute our second largest product line. Cauteries were originally designed for precise hemostasis (to stop bleeding) in ophthalmology. The current use of cauterics has been substantially expanded to include a broad range of applications. Battery operated cauterics are primarily sterile one-time use products. We have continued to improve our offering and now have a snap design cautery which has a patent pending. It features a switch mechanism that dramatically reduces the potential for accidental activation. We manufacture one of the broadest lines of cauterics in the world, including but not limited to, a line of replaceable battery and replaceable tip cauterics, which are popular in veterinary and overseas markets.

Other Products

Battery Operated Medical Lights

We manufacture and market a variety of specialty lighting instruments for use in ophthalmology as well as distribute specialty lighting instruments for general surgery, hip replacement surgery and for the placement of endotracheal tubes in emergency and surgical procedures. We also manufacture and market physicians office use penlights used in physician offices.

S-5

Table of Contents

Nerve Locator Stimulator

We manufacture a nerve locator stimulator primarily used for identifying motor nerves in hand and facial reconstructive surgery. This instrument is a sterile, self-contained, battery-operated unit, for one time use.

S-6

Table of Contents

THE OFFERING

Common stock offered by us in this offering	1,500,000 shares
Common stock offered by certain stockholders in the Concurrent Offering	1,500,000 shares
Common stock to be outstanding after completion of this offering and the Concurrent Offering	28,642,218 shares (or 28,867,218 shares if the underwriter exercises in full its option to purchase additional shares from us)
Use of proceeds	We intend to use the net proceeds from this offering to expand our sales force and marketing activities, to expand our research and development, to conduct clinical trials, and for general corporate purposes and working capital. See Use of proceeds on page S-18 of this prospectus supplement.
NYSE MKT symbol	BVX
Risk factors	Investing in our common stock involves a high degree of risk. See Risk factors beginning on page S-9 of this prospectus supplement and page 11 of the accompanying prospectus and under Risk Factors in our Annual Report on Form 10-K for the year ended December 31, 2015 that is incorporated by reference into this prospectus supplement.

The number of shares of common stock to be outstanding immediately after this offering and the Concurrent Offering as shown above is based on 27,142,218 shares of common stock outstanding as of September 30, 2016. The number of outstanding shares excludes, as of September 30, 2016:

3,818,447 shares of our common stock reserved for issuance upon the exercise of outstanding stock options;

254,375 shares of our common stock reserved for issuance pursuant to outstanding common stock purchase warrants; and

3,951,278 shares of our common stock reserved for issuance upon conversion of our shares of Series B Convertible Preferred Stock. Each share of Series B Preferred Stock is convertible into two shares of common stock.

Concurrent Offering

Concurrently with the sale of shares of our common stock under this prospectus supplement, certain stockholders of the Company are selling 1,500,000 shares of our common stock held by them under another prospectus supplement in the Concurrent Offering. As part of the Concurrent Offering, the selling stockholders granted the underwriter an option for a period of 30 days to purchase up to an additional 225,000 shares of our common stock.

Unless otherwise indicated, all information in this prospectus supplement assumes that the underwriter does not exercise their over-allotment option in this offering or the Concurrent Offering.

S-7

Table of Contents

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus supplement, the accompanying prospectus, the documents incorporated by reference herein and therein, and any free writing prospectus that we have authorized for use in connection with this offering contain forward-looking statements within the meaning of Section 27A of the Securities Act regarding our business, financial condition, results of operations and prospects. Words such as expects, anticipates, intends, plans, believes, seeks, estimates and similar expressions or variations of such words are intended to identify forward-looking statements. However, these are not the exclusive means of identifying forward-looking statements. Although forward-looking statements contained in this prospectus supplement, the accompanying prospectus, the documents incorporated by reference herein and therein, and any free writing prospectus that we have authorized for use in connection with this offering, reflect our good faith judgment, such statements can only be based on facts and factors currently known to us. Consequently, forward-looking statements are inherently subject to risks and uncertainties, and actual outcomes may differ materially from the results and outcomes discussed in the forward-looking statements. Further information about the risks and uncertainties that may impact us are described or incorporated by reference in **Risk Factors** below and in the documents incorporated by reference herein. You should read carefully the risk factors incorporated by reference and set forth herein. You should not place undue reliance on forward-looking statements, which speak only as of the date of this prospectus supplement. We undertake no obligation to update publicly any forward-looking statements in order to reflect any event or circumstance occurring after the date of this prospectus supplement or currently unknown facts or conditions or the occurrence of unanticipated events.

Table of Contents

RISK FACTORS

Investing in our common stock involves a high degree of risk. You should carefully consider the risks and all other information contained in this prospectus supplement and the accompanying prospectus, including the risk factors in the section entitled Risk Factors in the accompanying prospectus and in the documents incorporated by reference herein and therein. You should also refer to the other information in this prospectus supplement and the accompanying prospectus, including our financial statements and the related notes incorporated by reference in this prospectus supplement and the accompanying prospectus.

Risks Related to Our Industry

The medical device industry is highly competitive and we may be unable to compete effectively.

The medical device industry is highly competitive. Many competitors in this industry are well-established, do a substantially greater amount of business, and have greater financial resources and facilities than we do.

Domestically, we believe we rank third in the number of units sold in the field of electrosurgical generator manufacturing and we sell our products and compete with other manufacturers in various ways. In addition to advertising, attending trade shows and supporting our distribution channels, we strive to enhance product quality and functionality, improve user friendliness, and expand product exposure.

We have also invested, and continue to invest, substantial resources to develop and monetize our J-Plasma technology. If we are unable to gain acceptance in the marketplace of J-Plasma, our business and results of operations may be materially and adversely affected. From June of 2010 through December 31, 2015, we have invested approximately \$11.0 million in the development and marketing of our J-Plasma technology.

We also compete by private labeling our products for major distributors under their label. This allows us to increase our position in the marketplace and thereby compete from two different approaches, our Aaron or Bovie label, and our customers private label. Our private label customers distribute our products under their name through their internal sales force. We believe our main competitors do not private label their products.

Lastly, at this time we sell the majority of our products through distributors. Many of the companies we compete with sell direct, thus competing directly with distributors they sometimes use.

Our industry is highly regulated by the U.S. Food and Drug Administration and international regulatory authorities, as well as other governmental, state and federal agencies which have substantial authority to establish criteria which must be complied with in order for us to continue in operation.

United States

Our products and research and development activities are subject to regulation by the FDA and other regulatory bodies. FDA regulations govern, among other things, the following activities:

Product development

Product testing

Product labeling

Product storage

Pre-market clearance or approval

Advertising and promotion

Product traceability, and

Product indications.

S-9

Table of Contents

In the United States, medical devices are classified on the basis of control deemed necessary to reasonably ensure the safety and effectiveness of the device. Class I devices are subject to general controls. These controls include registration and listing, labeling, pre-market notification and adherence to the FDA Quality System Regulation. Class II devices are subject to general and special controls. Special controls include performance standards, post market surveillance, patient registries and FDA guidelines. Class III devices are those which must receive pre-market approval by the FDA to ensure their safety and effectiveness. Currently, we only manufacture Class I and Class II devices. Pre-market notification clearance must be obtained for some Class I and most Class II devices when the FDA does not require pre-market approval. All of our products have been cleared by, or are exempt from, the pre-market notification process.

A pre-market approval application is required for most Class III devices. A pre-market approval application must be supported by valid scientific evidence to demonstrate the safety and effectiveness of the device. The pre-market approval application typically includes:

Results of bench and laboratory tests, animal studies, and clinical studies

A complete description of the device and its components; and

A detailed description of the methods, facilities and controls used to manufacture the device, and proposed labeling.

The pre-market approval process can be expensive, uncertain and lengthy. A number of devices for which pre-market approval has been sought by other companies have never been approved for marketing.

International Regulation

To market products in the European Union, our products must bear the CE mark. Manufacturers of medical devices bearing the CE mark have gone through a conformity assessment process that assures that products are manufactured in compliance with a recognized quality system and to comply with the European Medical Devices Directive.

Each device that bears a CE mark has an associated technical documentation that includes a description of the following:

Description of the device and its components,

A Summary of how the device complies with the essential requirements of the medical devices directive,

Safety (risk assessment) and performance of the device,

Clinical evaluations with respect to the device,

Methods, facilities and quality controls used to manufacture the device, and

Proposed labeling for the device.

Manufacturing and distribution of a device is subject to ongoing surveillance by the appropriate regulatory body to ensure continued compliance with quality system and reporting requirements.

We began CE marking of devices for sale in the European Union in 1999. In addition to the requirement to CE mark, each member country of the European Union maintains the right to impose additional regulatory requirements.

Outside of the European Union, regulations vary significantly from country to country. The time required to obtain approval to market products may be longer or shorter than that required in the United States or the European Union. Certain European countries outside of the European Union do recognize and give effect to the CE mark certification. We are permitted to market and sell our products in those countries.

S-10

Table of Contents

If we are unable to successfully introduce new products or fail to keep pace with competitive advances in technology, our business, financial condition and results of operations could be adversely affected. In addition, our research and development efforts rely upon investments and alliances, and we cannot guarantee that any previous or future investments or alliances will be successful.

Our research and development activities are an essential component of our efforts to develop new and innovative products for introduction in the marketplace. New and improved products play a critical role in our sales growth. We continue to place emphasis on the development of proprietary products, such as our J-Plasma technology, and product improvements to complement and expand our existing product lines. We maintain close working relationships with physicians and medical personnel in hospitals and universities who assist in product research and areas of development. Our research and development activities are primarily conducted internally and are expensed as incurred. These expenses include direct expenses for wages, materials and services associated with the development of our products net of any reimbursements from customers. Research and development expenses do not include any portion of general and administrative expenses. Our Clearwater, Florida facility has been our flagship research and design location. We expect to continue making future investments to enable us to develop and market new technologies and products to further our strategic objectives and strengthen our existing business. However, we cannot guarantee that any of our previous or future investments will be successful or that our new products such as J-Plasma, will gain market acceptance, the failure of which would have a material adverse effect on our business and results of operations.

The amount expended by us on research and development of our products during the years 2015, 2014, and 2013, totaled approximately \$2.1, \$1.4, and \$1.3 million, respectively. During the past three years, we invested substantial resources in the development and marketing of our J-Plasma technology. We have not incurred any direct costs relating to environmental regulations or requirements. For 2016, we expect the amount of our expenditures for research and development activities to increase modestly when compared to 2015.

Even if we are successful in developing and obtaining approval for our new product candidates, there are various circumstances that could prevent the successful commercialization of the products.

Our ability to successfully commercialize our products will depend on a number of factors, any of which could delay or prevent commercialization, including:

the regulatory approvals of our new products are delayed or we are required to conduct further research and development of our products prior to receiving regulatory approval;

we are unable to build a sales and marketing group to successfully launch and sell our new products;

we are unable to raise the additional funds needed to successfully develop and commercialize our products or acquire additional products for growth;

we are required to allocate available funds to litigation matters;

Edgar Filing: BOVIE MEDICAL Corp - Form 424B5

we are unable to manufacture the quantity of product needed in accordance with current good manufacturing practices to meet market demand, or at all;

our product is determined to be ineffective or unsafe following approval and is removed from the market or we are required to perform additional research and development to further prove the safety and effectiveness of the product before re-entry into the market;

competition from other products or technologies prevents or reduces market acceptance of our products;

we do not have and cannot obtain the intellectual property rights needed to manufacture or market our products without infringing on another company's patents; or

we are unsuccessful in defending against patent infringement or other intellectual property rights, claims that could be brought against us, our products or technologies;

S-11

Table of Contents

The failure to successfully acquire or develop and commercialize new products will have a material and adverse effect on the future growth of our business, financial condition and results of operations.

Our international operations subject us to foreign currency fluctuations and other risks associated with operating in foreign countries.

We operate internationally and enter into transactions denominated in foreign currencies. To date, we have not hedged our exposure to changes in foreign currency exchange rates, and as a result, we are subject to foreign currency transaction and translation gains and losses. We purchase goods and services in U.S. dollars and Euros. Foreign exchange risk is managed primarily by satisfying foreign denominated expenditures with cash flows or assets denominated in the same currency therefore we are subject to some foreign currency fluctuation risk. Our currency value fluctuations were not material for 2015.

Our operations and cash flows may be adversely impacted by healthcare reform legislation.

The Patient Protection and Affordable Care Act and Health Care and Education Affordability Reconciliation Act were enacted into law in the U.S. in March 2010. Among other initiatives, this legislation imposes a 2.3% excise tax on domestic sales of class I, II, and III medical devices beginning in 2013. The Consolidated Appropriations Act, 2016, signed into law on Dec. 18, 2015, includes a two year moratorium on the medical device excise tax imposed by Internal Revenue Code section 4191. Thus, the medical device excise tax does not apply to the sale of a taxable medical device by the manufacturer, producer, or importer of the device during the period beginning on Jan. 1, 2016, and ending on Dec. 31, 2017. Substantially all of our products are class I or class II medical devices and in 2015 and 2014 we paid medical device excise tax of approximately \$450,378 and \$435,926, respectively. As approximately 83% of our 2015 sales were derived in the U.S. we cannot predict if any additional regulations will be implemented at the federal or state level, or the effect of any future legislation or regulation in the U.S. or internationally.

Our operations may experience higher costs to produce our products as a result of changes in prices for oil, gasoline, and other commodities.

We use some plastics and other petroleum-based materials along with precious metals contained in electronic components as raw materials in many of our products. Prices of oil and gasoline also significantly affect our costs for freight and utilities. Oil, gasoline and precious metal prices are volatile and may increase, resulting in higher costs to produce and distribute our products. Due to the highly competitive nature of the healthcare industry and the cost-containment efforts of our customers we may be unable to pass along cost increases through higher prices. If we are unable to fully recover these costs through price increases or offset through other cost reductions, our results of operations could be materially and adversely affected.

Our manufacturing facilities are located in Clearwater, Florida and could be affected due to multiple risks from fire, hurricanes, physical changes in the planet due to climate change, and similar phenomena.

Our manufacturing facilities are located in Clearwater, Florida and could be affected by multiple weather risks, most notably hurricanes. Although we carry property and casualty insurance and business interruption insurance, future possible disruptions of operations or damage to property, plant and equipment due to hurricanes or other weather risks could result in impaired production and affect our ability to meet our commitments to our customers and impair important business relationships, the loss of which could adversely affect our operations and profitability. We do however maintain a backup generator at our Clearwater facility and a disaster recovery plan is in place to help mitigate this risk.

We do not produce hazardous materials or emissions that would adversely impact the environment. We do however, have air conditioning units and consume electricity which could be impacted by climate change in the form of increased rates. However, we do not believe the increase in expense from any rate increases, as a percentage of sales, would be material in the near term.

S-12

Table of Contents

Risks Relating to Our Business

We have historically done a substantial amount of business with seven of our top ten customers, who are also major distributors of our product, which as a group have produced substantial revenues for our Company. Loss of business from a major customer will likely materially and adversely affect our business.

We manufacture the majority of our products on our premises in Clearwater, Florida and in Sofia, Bulgaria. Labor-intensive sub-assemblies and labor-intensive products may be out-sourced to our specification. Although we sell through distributors, we market our products through national trade journal advertising, direct mail, distributor sales representatives and trade shows, under the Bovie name, the Bovie/Aaron name and private label. Major distributors include Cardinal Health, Independent Medical Co-Op Inc. (IMCO), McKesson Medical Surgical, Inc., Medline, National Distribution and Contracting Inc. (NDC), and Owens & Minor. If any of these distributor relationships are terminated or not replaced, our revenue from the territories served by these distributors could be adversely affected.

We are also dependent on OEM customers who have no legal obligation to purchase products from us. Should such customers fail to give us purchase orders for the product after development, our future business and value of related assets could be negatively affected. Furthermore, no assurance can be given that such customers will give sufficient high priority to our products. Finally, disagreements or disputes may arise between us and our customers, which could adversely affect production and sales of our products.

We rely on certain suppliers and manufacturers for raw materials and other products and are vulnerable to fluctuations in the availability and price of such products and services.

Fluctuations in the price, availability, and quality of the raw materials we use in our manufacturing could have a negative effect on our cost of sales and our ability to meet the demands of our customers. Inability to meet the demands of our customers could result in the loss of future sales.

In addition, the costs to manufacture our products depend in part on the market prices of the raw materials used to produce them. We may not be able to pass along to our customers all or a portion of our higher costs of raw materials due to competitive and marketing pressures, which could decrease our earnings and profitability.

We also have collaborative arrangements with three key foreign suppliers under which we request the development of certain items and components and we purchase them pursuant to purchase orders. Our purchase order commitments are never more than one year in duration and are supported by our sales forecasts. The majority of our raw materials are purchased from sole-source suppliers. While we believe we could ultimately procure other sources for these components, should we experience any significant disruptions in this key supply chain, there are no assurances that we could do so in a timely manner which could render us unable to meet the demands of our customers, resulting in a material and adverse effect on our business and operating results.

If we are unable to protect our patents or other proprietary rights, or if we infringe on the patents or other proprietary rights of others, our competitiveness and business prospects may be materially damaged.

We have been issued 32 patents in the United States and 22 foreign patents. We have 16 pending patent applications in the United States and 9 pending foreign applications. Our intellectual property portfolio for the technology and products related to J-Plasma product is included in these totals and continues to grow. Specific to J-Plasma, we have been issued 14 U.S. and 5 foreign patents, and we have 13 U.S. and 6 foreign applications pending. We intend to continue to seek legal protection, primarily through patents, for our proprietary technology. Seeking patent protection

is a lengthy and costly process, and there can be no assurance that patents will be issued from any pending applications, or that any claims allowed from existing or pending patents will be sufficiently broad or strong to protect our proprietary technology. There is also no guarantee that any patents we hold will not be challenged, invalidated or circumvented, or that the patent rights granted will provide competitive advantages to us. Our competitors have developed and may continue to develop and obtain patents

S-13

Table of Contents

for technologies that are similar or superior to our technologies. In addition, the laws of foreign jurisdictions in which we develop, manufacture or sell our products may not protect our intellectual property rights to the same extent as do the laws of the United States.

Adverse outcomes in current or future legal disputes regarding patent and other intellectual property rights could result in the loss of our intellectual property rights, subject us to significant liabilities to third parties, require us to seek licenses from third parties on terms that may not be reasonable or favorable to us, prevent us from manufacturing, importing or selling our products, or compel us to redesign our products to avoid infringing third parties' intellectual property. As a result, our product offerings may be delayed, and we may be unable to meet customers' requirements in a timely manner. Regardless of the merit of any related legal proceeding, we have incurred in the past and may be required to incur in the future substantial costs to prosecute, enforce or defend our intellectual property rights. Even in the absence of infringement by our products of third parties' intellectual property rights, or litigation related to trade secrets, we have elected in the past and may in the future elect to enter into settlements to avoid the costs and risks of protracted litigation and the diversion of resources and management's attention. However, if the terms of settlements entered into with certain of our competitors are not observed or enforced, we may suffer further costs and risks. Any of these circumstances could have a material adverse effect on our business, financial condition and resources or results of operations.

Our ability to develop intellectual property depends in large part on hiring, retaining and motivating highly qualified design and engineering staff with the knowledge and technical competence to advance our technology and productivity goals. To protect our trade secrets and proprietary information, generally we have entered into confidentiality agreements with our employees, as well as with consultants and other parties. If these agreements prove inadequate or are breached, our remedies may not be sufficient to cover our losses.

We have been and may in the future become subject to litigation proceedings that could materially and adversely affect our business.

Other Litigation

In addition to the litigation risks and proceedings mentioned below, we have recently been involved and may in the future become subject to legal claims or proceedings related to securities, employment, customer or third party contracts, environmental regulations, or other matters. The costs involved in defending these claims have been substantial, which have had an adverse effect on our profitability. In addition, if other claims are asserted against us, we may be required to defend against such claims, or deem it necessary or advisable to initiate a legal proceeding to protect our rights, the expense and distraction of such a claim or proceeding, whether or not resolved in our favor, could materially and adversely affect our business, financial condition and operating results. Further, if a claim or proceeding were resolved against us or if we were to settle any such dispute, we may be required to pay damages and costs or refrain from certain activities, any of which could have a material adverse impact on our business, financial condition and operating results.

Intellectual Property Litigation or Trade Secrets

We have in the past, experienced certain allegations of infringement of intellectual property rights and use of trade secrets and may receive other such claims, with or without merit, in the future. Previously, claims of infringement of intellectual property rights have sometimes evolved into litigation against us, and they may continue to do so in the future. It is inherently difficult to assess the outcome of litigation. Although we believe we have had adequate defenses to these claims and that the outcome of the litigation will not have a material adverse impact on our business, financial condition, or results of operations, there can be no assurances that we will prevail. Any such litigation could

result in substantial cost to us, significantly reduce our cash resources, and create a diversion of the efforts of our technical and management personnel, which could have a material and adverse effect on our business, financial condition and operating results. If we are unable to successfully defend against such claims, we could be prohibited from future sales of the allegedly infringing product or products, which could materially and adversely affect our future growth.

S-14

Table of Contents

Product Liability Litigation

Although we carry liability insurance, due to the nature of our products and their use by professionals, we may, from time to time, be subject to litigation from persons who sustain injury during medical procedures in hospitals, physician's offices or in clinics and defending such litigation is expensive, disruptive, time consuming and could adversely affect our business. We currently maintain product liability insurance with combined coverage limits of \$10 million on a claims-made basis. There is no assurance that this coverage will be adequate to protect us from any possible liabilities (individually or in the aggregate) we might incur in connection with the sale or testing of our products. In addition, we may need increased product liability coverage as additional products are commercialized. This insurance is expensive and in the future may not be available on acceptable terms, if at all.

Our business is subject to the potential for defects or failures associated with our products which could lead to recalls or safety alerts and negative publicity.

Manufacturing flaws, component failures, design defects, off-label uses or inadequate disclosure of product-related information could result in an unsafe condition or the injury or death of a patient. These problems could lead to a recall of, or issuance of a safety alert relating to our products, and result in significant costs and negative publicity. Due to the strong name recognition of our brands, an adverse event involving one of our products could result in reduced market acceptance and demand for all products within that brand, and could harm our reputation and our ability to market our products in the future. In some circumstances, adverse events arising from or associated with the design, manufacture or marketing of our products could result in the suspension or delay of our current regulatory reviews of our applications for new product approvals. We also may undertake voluntarily to recall products or temporarily shut down certain production lines based on internal safety and quality monitoring and testing data. Any of the foregoing problems could disrupt our business and have a material adverse effect on our business, results of operations, financial condition and cash flows.

We have incurred and may in the future incur impairments to our long-lived assets.

We review our long-lived assets, including intangible assets, for impairment annually or more frequently if events or changes in circumstances indicate that the carrying amount of these assets may not be recoverable. Additionally, if in any period our stock price decreases to the point where our fair value, as determined by our market capitalization, is less than the book value of our assets, this could also indicate a potential impairment and we may be required to record an impairment charge in that period which could adversely affect our results of operations.

Our valuation methodology for assessing impairment requires management to make judgments and assumptions based on historical experience and to rely heavily on projections of future operating performance. We operate in highly competitive environments and projections of future operating results and cash flows may vary significantly from actual results. Additionally, if our analysis indicates potential impairment to a long-lived intangible asset, we may be required to record additional charges to earnings in our financial statements, which could negatively impact our results of operations.

Risks Related to Our Stock and this Offering

The market price of our stock has been and may continue to be highly volatile.

Our common stock is listed on the NYSE MKT Market under the ticker symbol BVX. The market price of our stock has been and may continue to be highly volatile, and announcements by us or by third parties may have a significant impact on our stock price. These announcements may include:

our listing status on the NYSE MKT Market;

our operating results falling below the expectations of public market analysts and investors;

S-15

Table of Contents

developments in our relationships with or developments affecting our major customers;

negative regulatory action or regulatory non-approval with respect to our new products;

government regulation, governmental investigations, or audits related to us or to our products;

developments related to our patents or other proprietary rights or those of our competitors; and

changes in the position of securities analysts with respect to our stock.

The stock market has from time to time experienced extreme price and volume fluctuations, which have particularly affected the market prices for the medical technology sector companies, and which have often been unrelated to their operating performance. These broad market fluctuations may adversely affect the market price of our common stock.

Historically, when the market price of a stock has been volatile, holders of that stock have often instituted securities class action litigation against the company that issued the stock. If any of our stockholders brought a lawsuit against us, we could incur substantial costs defending the lawsuit. The lawsuit could also divert the time and attention of our management.

In addition, future sales by existing stockholders, warrant holders receiving shares upon the exercise of warrants, or any new stockholders receiving our shares in any financing transaction may lower the price of our common stock, which could result in losses to our stockholders. As described above, in the Concurrent Offering, certain stockholders of the Company are selling up to 1,500,000 shares of our common stock under another prospectus supplement offered pursuant to the 2015 Registration Statement and 2015 Base Prospectus. Future sales of substantial amounts of common stock in the public market, or the possibility of such sales occurring, could adversely affect prevailing market prices for our common stock or our future ability to raise capital through an offering of equity securities. Substantially all of our common stock is freely tradable in the public market without restriction under the Securities Act, unless these shares are held by our affiliates, as that term is defined in Rule 144 under the Securities Act.

We have no present intention to pay dividends on our common stock and, even if we change that policy, we may be unable to pay dividends on our common stock.

We currently do not anticipate paying any dividends on our common stock in the foreseeable future. We currently intend to retain future earnings, if any, to finance operations and invest in our business. Any declaration and payment of future dividends to holders of our common stock will be at the discretion of our board of directors and will depend on many factors, including our financial condition, earnings, capital requirements, level of indebtedness, statutory and contractual restrictions applying to the payment of dividends and other considerations that our board of directors deems relevant.

If we change that policy and commence paying dividends, we will not be obligated to continue paying those dividends and our stockholders will not be guaranteed, or have contractual or other rights, to receive dividends. If we commence paying dividends in the future, our board of directors may decide, in its discretion, at any time, to decrease the amount of dividends, otherwise modify or repeal the dividend policy or discontinue entirely the payment of dividends. Under the Delaware law, our board of directors may not authorize the payment of a dividend unless it is either paid out of our statutory surplus.

Our management will have broad discretion as to the use of proceeds from this offering, and might not apply the proceeds in ways that increase the value of your investment.

Our management will have broad discretion to use the net proceeds from this offering, and you will be relying on the judgment of our management regarding the application of these proceeds. We might not apply the net proceeds of this offering in ways that you agree with. We expect to use the proceeds of this offering for to

S-16

Table of Contents

expand our sales and marketing activities, to expand our research and development efforts, to conduct clinical trials, and for general corporate purposes and working capital. See *Use of proceeds* . We have not allocated these net proceeds for any specific purposes.

Investors in this offering will experience immediate and substantial dilution.

The public offering price of the securities offered pursuant to this prospectus supplement is substantially higher than the net tangible book value per share of our common stock. Therefore, if you purchase shares of common stock in this offering, you will incur immediate and substantial dilution in the pro forma net tangible book value per share of common stock from the price per share that you pay for the common stock.

The low trading volume of our common stock may adversely affect the price of our shares and their liquidity.

Although our common stock is listed on the NYSE MKT exchange, our common stock has experienced low trading volume. Limited trading volume may subject our common stock to greater price volatility and may make it difficult for investors to sell shares at a price that is attractive to them.

We may in the future seek to raise funds through equity offerings, which could have a dilutive effect on our common stock.

In the future we may determine to raise capital through offerings of our common stock, securities convertible into our common stock or rights to acquire these securities or our common stock. For instance, we are authorized to issue up to 40,000,000 shares of common stock and up to 10,000,000 shares of preferred stock, of which 1,975,639 shares have been designated as Series B Convertible Preferred Stock. The result of sales of such securities (including the sale of our common stock in the Concurrent Offering, as described above), or the conversion of the Series B Convertible Preferred Stock into shares of common stock, or the triggering of anti-dilution provisions in such securities would ultimately be dilutive to our common stock by increasing the number of shares outstanding. We cannot predict the effect this dilution may have on the price of our common stock. In addition, the shares of preferred stock may have rights which are senior or superior to those of the common stock, such as rights relating to voting, the payment of dividends, redemption or liquidation.

Exercise of warrants and options issued by us will dilute the ownership interest of existing stockholders.

As of September 30, 2016, the warrants issued by us in December 2013 were exercisable for up to approximately 254,375 shares of our common stock, representing approximately 0.9% of our outstanding common stock.

As of September 30, 2016, our outstanding stock options to our employees, officers, directors and consultants amounted to approximately 3,818,447 shares of our common stock, representing approximately 13.9% of our outstanding common stock.

The exercise of some or all of our warrants and stock options will dilute the ownership interests of existing stockholders. Any sales in the public market of the common stock issuable upon such conversion or exercise could adversely affect prevailing market prices of our common stock.

Table of Contents

USE OF PROCEEDS

We expect to receive approximately \$5,473,000 in net proceeds from this offering, after deducting the underwriting discounts and commissions, and estimated offering expenses payable by us, or approximately \$6,319,000 if the underwriter exercises its over-allotment option in full. We will not receive any proceeds from the Concurrent Offering.

We intend to use the net proceeds from this offering to expand our sales and marketing activities, to expand our research and development efforts, to conduct clinical trials, and for general corporate purposes and working capital.

As of the date of this prospectus supplement, we cannot specify with certainty all of the particular uses of the proceeds from this offering. Accordingly, we will retain broad discretion over the use of such proceeds.

S-18

Table of Contents**DILUTION**

Our net tangible book value of our common stock as of September 30, 2016 was approximately \$18,692,067, or approximately \$0.69 per share of common stock, based upon 27,142,218 shares outstanding. Net tangible book value per share is equal to our total tangible assets, less our total liabilities, divided by the total number of shares of our common stock outstanding as of September 30, 2016. After giving effect to the sale by us of the 1,500,000 shares of our common stock we are offering in this offering and the sale of 1,500,000 shares of our common stock by the selling stockholders in the Concurrent Offering, our as-adjusted net tangible book value would have been approximately \$24,164,668, or approximately \$0.84 per share of common stock. This represents an immediate increase in net tangible book value of \$0.16 per share to our existing stockholders and an immediate dilution in net tangible book value of \$3.16 per share to new investors. The following table illustrates this calculation on a per share basis:

Public offering price per share	\$ 4.00
Net tangible book value per share as of September 30, 2016	\$ 0.69
Increase in net tangible book value per share attributable to this offering and the Concurrent Offering	\$ 0.16
As-adjusted net tangible book value per share after giving effect to this offering and the Concurrent Offering	\$ 0.84
Dilution in net tangible book value per share to new investors	\$ 3.16

If the underwriter exercises in full the option to purchase 225,000 additional shares of common stock from us at the public offering price of \$4.00 per share, and an additional 225,000 shares of common stock from the selling stockholders in the Concurrent Offering, the as-adjusted net tangible book value after this offering and the Concurrent Offering would be \$25,010,668 per share, representing an increase in net tangible book value of \$0.18 per share to existing stockholders and immediate dilution in net tangible book value of \$3.13 per share to investors purchasing our common stock at the public offering price in this offering and in the Concurrent Offering.

The foregoing table excludes the following, each as of September 30, 2016:

3,818,447 shares of our common stock reserved for issuance upon the exercise of outstanding stock options;

254,375 shares of our common stock reserved for issuance pursuant to outstanding common stock purchase warrants; and

3,951,278 shares of our common stock reserved for issuance upon conversion of our outstanding shares of Series B Convertible Preferred Stock. Each share of Series B Convertible Preferred Stock is convertible into two shares of common stock.

Table of Contents**UNDERWRITING**

Piper Jaffray & Co. is the underwriter of this offering and the Concurrent Offering. Subject to the terms and conditions stated in the underwriting agreement dated the date of this prospectus supplement, the underwriter has agreed to purchase in this offering, and we have agreed to sell to the underwriter, the number of shares set forth opposite the underwriter's name.

Underwriter	Number of Shares
Piper Jaffray & Co.	1,500,000
Total	1,500,000

The underwriter has advised us that it proposes to offer the shares of common stock to the public at \$4.00 per share and to certain dealers at that price less a concession not in excess of \$0.12 per share. After the offering, this figure may be changed by the underwriter. The underwriter reserves the right to withdraw, cancel or modify offers to the public and to reject orders in whole or in part.

We have granted to the underwriter an option to purchase up to an additional 225,000 shares of common stock from us at the same price to the public, and with the same underwriting discount, as set forth in the table above. The underwriter may exercise this option any time during the 30-day period after the date of this prospectus supplement, but only to cover over-allotments, if any.

The following table shows the underwriting discounts and commissions that we are to pay to the underwriter in connection with this offering. These amounts are shown assuming both no exercise and full exercise of the underwriter's option to purchase additional shares.

	Total	
	No Exercise	Full Exercise
Per share	\$ 0.24	\$ 0.24
Total	\$ 360,000	\$ 414,000

We will receive no proceeds from any sales in the Concurrent Offering. We and the selling stockholders in the Concurrent Offering have each agreed to indemnify the underwriter against certain liabilities, including civil liabilities under the Securities Act of 1933, as amended, or to contribute to payments that the underwriter may be required to make in respect of those liabilities. We and the selling stockholders have also agreed to reimburse the underwriter in an amount up to an aggregate of \$125,000 for the fees incurred by them in connection with this offering and the Concurrent Offering. Our and the selling stockholders' reimbursement obligations will be pro rata to the number of shares being offered by us and each of the selling stockholders, respectively.

We and each of our directors, executive officers and the selling stockholders have agreed, subject to certain exceptions, to not to sell additional shares of our common stock for a period of 90 days after the date of this prospectus supplement. We have agreed not to directly or indirectly offer for sale, sell, contract to sell, grant any option for the sale of, or otherwise issue or dispose of, any shares of common stock, options or warrants to acquire shares of common stock, or any related security or instrument, without the prior written consent of Piper Jaffray & Co.

The shares of our common stock are listed on the NYSE MKT Market under the symbol BVX .

To facilitate this offering and the Concurrent Offering, the underwriter may engage in transactions that stabilize, maintain or otherwise affect the price of the common stock during and after the offering. Specifically, the underwriter may over-allot or otherwise create a short position in the common stock for its own account by selling more shares of common stock than have been sold to it by us and the selling shareholders in the Concurrent Offering. The underwriter may elect to cover any such short position by purchasing shares of common stock in the open market or by exercising the over-allotment option granted to the underwriter. In addition, the underwriter may stabilize or maintain the price of the common stock by bidding for or purchasing shares of common stock in the open market and may impose penalty bids. If penalty bids are imposed, selling

S-20

Table of Contents

concessions allowed to syndicate members or other broker-dealers participating in the offering are reclaimed if shares of common stock previously distributed in the offering are repurchased, whether in connection with stabilization transactions or otherwise. The effect of these transactions may be to stabilize or maintain the market price of the common stock at a level above that which might otherwise prevail in the open market. The imposition of a penalty bid may also effect the price of the common stock to the extent that it discourages resales of the common stock. The magnitude or effect of any stabilization or other transactions is uncertain. These transactions may be effected on the NYSE MKT or otherwise and, if commenced, may be discontinued at any time

In addition, in connection with this offering, the underwriter (and selling group members) may engage in passive market making transactions in the shares on the NYSE MKT Market, prior to the pricing and completion of the offering. Passive market making consists of displaying bids on the NYSE MKT Market no higher than the bid prices of independent market makers and making purchases at prices no higher than those independent bids and effected in response to order flow. Net purchases by a passive market maker on each day are limited to a specified percentage of the passive market maker's average daily trading volume in the shares during a specified period and must be discontinued when that limit is reached. Passive market making may cause the price of the shares to be higher than the price that otherwise would exist in the open market in the absence of those transactions. If the underwriter commences passive market making transactions, they may discontinue them at any time.

The underwriter may, from time to time, engage in transactions with and perform services for us in the ordinary course of their business for which they may receive customary fees and reimbursement of expenses.

Selling Restrictions

Notice to Prospective Investors in the European Economic Area

In relation to each Member State of the European Economic Area which has implemented the Prospectus Directive (each, a Relevant Member State), the underwriter represents and agrees that with effect from and including the date on which the Prospectus Directive is implemented in that Relevant Member State, it has not made and will not make an offer of securities which are the subject of the offering contemplated by this prospectus supplement to the public in that Relevant Member State other than:

- (a) to any legal entity which is a qualified investor as defined in the Prospectus Directive;
- (b) to fewer than 100 or, if the Relevant Member State has implemented the relevant provision of the 2010 PD Amending Directive, 150, natural or legal persons (other than qualified investors as defined in the Prospectus Directive), as permitted under the Prospectus Directive, subject to obtaining the prior consent of the representatives for any such offer; or
- (c) in any other circumstances falling within Article 3(2) of the Prospectus Directive, provided that no such offer of securities shall require us or any underwriter to publish a prospectus pursuant to Article 3 of the Prospectus Directive.

For the purposes of this provision, the expression an offer to the public in relation to any securities in any Relevant Member State means the communication in any form and by any means of sufficient information on the terms of the offer and the securities to be offered so as to enable an investor to decide to purchase or subscribe the securities, as the

same may be varied in that Member State by any measure implementing the Prospectus Directive in that Member State, the expression Prospectus Directive means Directive 2003/71/EC (and amendments thereto, including the 2010 PD Amending Directive, to the extent implemented in the Relevant Member State), and includes any relevant implementing measure in the Relevant Member State and the expression 2010 PD Amending Directive means Directive 2010/73/EU.

S-21

Table of Contents

Notice to Prospective Investors in the United Kingdom

The underwriter represents, warrants and agrees as follows:

- (a) it has only communicated or caused to be communicated and will only communicate or cause to be communicated an invitation or inducement to engage in investment activity (within the meaning of Section 21 of the Financial Services and Markets Act 2000 (FSMA)) received by it in connection with the issue or sale of the securities in circumstances in which Section 21 of the FSMA does not apply to us; and
- (b) it has complied with, and will comply with all applicable provisions of the FSMA with respect to anything done by it in relation to the securities in, from or otherwise involving the United Kingdom.

Notice to Prospective Investors in Canada

The securities may be sold only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 *Prospectus Exemptions* or subsection 73.3(1) of the *Securities Act* (Ontario), and are permitted clients, as defined in National Instrument 31-103 *Registration Requirements, Exemptions and Ongoing Registrant Obligations*. Any resale of the securities must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus supplement (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 of National Instrument 33-105 *Underwriting Conflicts* (NI 33-105), the underwriter is not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

Table of Contents

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to incorporate by reference the information we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be a part of this prospectus supplement and the accompanying prospectus, and information in documents that we file later with the SEC will automatically update and supersede the information in this prospectus supplement and the accompanying prospectus. We incorporate by reference into this prospectus supplement the documents listed below and any future filings we make with the SEC under Section 13(a), 13(c) 14 or 15(d) of the Securities Exchange Act of 1934, as amended, until this offering is completed and all securities are sold or until the sale of securities pursuant to this prospectus supplement is terminated by us:

Our Annual Report on Form 10-K for the year ended December 31, 2015 filed with the SEC on February 27, 2015;

Amendments No. 1 on Form 10-K/A to our Annual Reports on Form 10-K for the years ended December 31, 2015, 2014, and 2013, each filed with the SEC on October 31, 2016;

Quarterly Reports on Form 10-Q for the quarter ended September 30, 2016 filed with the SEC on October 27, 2016 and for the quarter ended March 31, 2016 filed with the SEC on May 11, 2016;

Our Current Reports on Form 8-K filed with the SEC on August 2, 2016, August 1, 2016, July 5, 2016, May 11, 2016, and April 21, 2016;

Our Quarterly Report on Form 10-Q for the quarter ended June 30, 2016 filed with the SEC on October August 2, 2016;

Our definitive proxy statement on Schedule 14A filed with the SEC on May 24, 2016;

Our Specialized Disclosure Report on Form SD filed with the SEC on August 2, 2016; and

The description of our common stock contained in our Registration Statement on Form 8-A pursuant to Section 12(b) of the Exchange Act, as originally filed on November 3, 2003 and as thereafter amended. Upon request, we will provide, free of charge, to each person to whom a prospectus supplement and accompanying prospectus is delivered, including a beneficial owner, a copy of any or all information that has been incorporated by reference in the prospectus supplement and accompanying prospectus but not delivered with the prospectus supplement and accompanying prospectus. Any such request may be made orally or in writing to Bovie Medical Corporation, 4 Manhattanville Road, Suite 106, Purchase, New York 10577, Attention: Jay D. Ewers, Chief Financial Officer, Tel. No.: (727) 803-8636.

Table of Contents

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at www.sec.gov. You may also read and copy any document we file at the SEC's public reference room at 100 F Street, N.E., Washington, D.C. 205409. Please call the SEC at 1-800-SEC-0330 for further information on the public reference room.

The registration statement to which this prospectus supplement forms a part and the documents referred to above under "Incorporation of certain information by reference" are also available on our website at <http://www.boviemedical.com>. We have not incorporated by reference into this prospectus supplement and accompanying prospectus the information on our website, and you should not consider it to be a part of this prospectus supplement and accompanying prospectus.

S-24

Table of Contents

LEGAL MATTERS

The validity of the issuance of securities offered hereby will be passed upon for us by Ruskin Moscou Faltischek, P.C., Uniondale, New York. Certain legal matters will be passed upon for the underwriter by Goodwin Procter LLP, New York, New York.

EXPERTS

The consolidated financial statements incorporated in this prospectus supplement by reference from Bovie Medical Corporation's Annual Report on Form 10-K for the year ended December 31, 2015 have been audited by Frazier Deeter, LLC, independent registered public accountants, as stated in their report, which is incorporated herein by reference, and have been so incorporated in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

S-25

Table of Contents

PROSPECTUS

BOVIE MEDICAL CORPORATION

\$25,000,000

Common Stock

Preferred Stock

Debt Securities

Warrants

Units

We may offer and sell from time to time in one or more offerings up to \$25,000,000 in the aggregate of:

shares of our common stock;

shares of our preferred stock, in one or more series;

our debt securities, in one or more series, which may be either senior or subordinated debt securities;

warrants to purchase shares of our common stock or preferred stock;

units consisting of shares of common stock, debt securities and/or warrants to purchase shares of common stock and/or debt securities in any combination; or

any combination of the foregoing.

Each time we offer securities, we will provide the specific terms of the securities offered in one or more supplements to this prospectus. We may also authorize one or more free writing prospectuses to be provided to you in connection with these offerings. The prospectus supplement and any related free writing prospectus may also add, update or change information contained in this prospectus. You should carefully read this prospectus, the applicable prospectus

supplement and any related free writing prospectus, as well as any documents incorporated by reference, before buying any of the securities being offered.

The securities offered by this prospectus may be sold directly by us to investors, through agents designated from time to time or to or through underwriters or dealers. We will set forth the names of any underwriters or agents and any applicable fees, commissions, discounts and over-allotments in an accompanying prospectus supplement. For additional information on the methods of sale, you should refer to the section entitled "Plan of Distribution" in this prospectus and in the applicable prospectus supplement. The price to the public of such securities and the net proceeds we expect to receive from such sale will also be set forth in a prospectus supplement.

Our common stock is listed on the NYSE MKT Market under the symbol "BVX". On October [] the last reported sale price of our common stock on the NYSE MKT Market was \$[] per share. As of October [], the aggregate market value of our outstanding common stock held by non-affiliates was approximately \$62,091,270. For purposes of this disclosure, shares of common stock held by persons who are known by us to beneficially own more than 5% of the outstanding shares of common stock and shares held by officers and directors of the Registrant have been excluded in that such persons may be deemed to be affiliates. We have not offered any securities pursuant to General Instruction I.B.6 of Form S-3 during the prior 12-calendar month period that ends on, and includes, the date of this prospectus.

INVESTING IN OUR SECURITIES INVOLVES A HIGH DEGREE OF RISK. YOU SHOULD REVIEW CAREFULLY THE RISKS AND UNCERTAINTIES REFERENCED UNDER THE HEADING RISK FACTORS ON PAGE 11 OF THIS PROSPECTUS AS WELL AS THOSE CONTAINED IN THE APPLICABLE PROSPECTUS SUPPLEMENT AND ANY RELATED FREE WRITING PROSPECTUS, AND IN THE OTHER DOCUMENTS THAT ARE INCORPORATED BY REFERENCE INTO THIS PROSPECTUS.

NEITHER THE SECURITIES AND EXCHANGE COMMISSION NOR ANY STATE SECURITIES COMMISSION HAS APPROVED OR DISAPPROVED OF THESE SECURITIES OR PASSED UPON THE ACCURACY OR ADEQUACY OF THIS PROSPECTUS. ANY REPRESENTATION TO THE CONTRARY IS A CRIMINAL OFFENSE.

THE DATE OF THIS PROSPECTUS IS DECEMBER 16, 2014.

Table of Contents

TABLE OF CONTENTS

	Page
<u>ABOUT THIS PROSPECTUS</u>	1
<u>SUMMARY</u>	2
<u>CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS</u>	10
<u>RISK FACTORS</u>	11
<u>USE OF PROCEEDS</u>	12
<u>DESCRIPTION OF CAPITAL STOCK</u>	13
<u>DESCRIPTION OF DEBT SECURITIES</u>	17
<u>DESCRIPTION OF WARRANTS</u>	24
<u>DESCRIPTION OF UNITS</u>	26
<u>PLAN OF DISTRIBUTION</u>	27
<u>LEGAL MATTERS</u>	29
<u>EXPERTS</u>	29
<u>WHERE YOU CAN FIND ADDITIONAL INFORMATION</u>	29
<u>INCORPORATION OF CERTAIN INFORMATION BY REFERENCE</u>	29

Table of Contents

ABOUT THIS PROSPECTUS

This prospectus is part of a registration statement on Form S-3 that we filed with the Securities and Exchange Commission (the SEC), utilizing a shelf registration process. Under this shelf registration process, we may offer shares of our common stock and preferred stock, various series of debt securities and/or warrants to purchase any of such securities, either individually or in units, in one or more offerings, up to a total dollar amount of \$25,000,000. However, in no event will we sell more than one-third (1/3) of our public float (the market value of our common stock held by non-affiliates) in any twelve (12) month period. This prospectus provides you with a general description of the securities we may offer. Each time we offer a type or series of securities under this prospectus, we will provide a prospectus supplement that will contain more specific information about the specific terms of the offering. We may also authorize one or more free writing prospectuses to be provided to you that may contain material information relating to these offerings. Each such prospectus supplement (and any related free writing prospectus that we may authorize to be provided to you) may also add, update or change information contained in this prospectus or in documents incorporated by reference into this prospectus. We urge you to carefully read this prospectus, any applicable prospectus supplement and any related free writing prospectus, together with the information incorporated herein by reference as described under the headings *Where You Can Find Additional Information* and *Incorporation of Certain Information by Reference* before buying any of the securities being offered. **THIS PROSPECTUS MAY NOT BE USED TO OFFER OR SELL SECURITIES UNLESS IT IS ACCOMPANIED BY A PROSPECTUS SUPPLEMENT.**

You should rely only on the information contained or incorporated by reference in this prospectus, any applicable prospectus supplement and any related free writing prospectus. We have not authorized anyone to provide you with different information in addition to or different from that contained in this prospectus, any applicable prospectus supplement and any related free writing prospectus. No dealer, salesperson or other person is authorized to give any information or to represent anything not contained in this prospectus, any applicable prospectus supplement or any related free writing prospectus that we may authorize to be provided to you. You must not rely on any unauthorized information or representation. This prospectus is an offer to sell only the securities offered hereby, but only under circumstances and in jurisdictions where it is lawful to do so. You should assume that the information in this prospectus, any applicable prospectus supplement or any related free writing prospectus is accurate only as of the date on the front of the document and that any information incorporated by reference is accurate only as of the date of the document incorporated by reference, regardless of the time of delivery of this prospectus, any applicable prospectus supplement or any related free writing prospectus, or any sale of a security.

This prospectus contains summaries of certain provisions contained in some of the documents described herein, but reference is made to the actual documents for complete information. All of the summaries are qualified in their entirety by the actual documents. Copies of some of the documents referred to herein have been filed, will be filed or will be incorporated by reference as exhibits to the registration statement of which this prospectus is a part, and you may obtain copies of those documents as described below under the heading *Where You Can Find Additional Information*.

Table of Contents

SUMMARY

The following summary highlights selected information from this prospectus or incorporated by reference in this prospectus. This summary does not contain all the information you should consider before investing in our securities. You should carefully read the entire prospectus, the applicable prospectus supplement and any related free writing prospectus, including the risks of investing in our securities referred to under the heading "Risk Factors" in this prospectus and contained in the applicable prospectus supplement and any related free writing prospectus, and in the other documents that are incorporated by reference into this prospectus. You should also carefully read the information incorporated by reference into this prospectus, including our financial statements, and the exhibits to the registration statement of which this prospectus is a part.

General

Bovie Medical Corporation ("Company" , "Bovie Medical" , "we" , "us" , or "our") was incorporated in 1982, under the laws of the State of Delaware and has its principal executive office at 4 Manhattanville Road, Suite #106, Purchase, New York 10577.

We are an energy-based medical device company specializing in developing, manufacturing, and marketing a range of electro-surgical products and technologies as well as related medical products used in doctor's offices, surgery centers and hospitals worldwide. Our medical devices are marketed through Bovie's own well-respected brands (Bovie®, Aaron®, IDS and ICON) and on a private label basis to distributors throughout the world. The Company also leverages its expertise in the design, development and manufacturing of electro-surgical equipment by producing equipment for large, well known medical device manufacturers through original equipment manufacturing (OEM) agreements.

We are also the developer of J-Plasma®, a patented new plasma-based surgical product; which we believe has the potential to be a transformational product for surgeons. J-Plasma® utilizes a helium ionization process that produces a stable, focused beam of ionized gas that provides surgeons with greater precision, minimal invasiveness and an absence of conductive currents during surgery. While currently in the early stages of commercialization, J-Plasma® has been the subject of four independent white papers and has been cited therein for its ability to achieve improved outcomes in gynecological surgeries and dermatologic/facial plastic surgery procedures.

Industry

Healthcare reform has caused consolidation among providers, with hospitals merging, physician practices joining hospitals and institutions combining to form Accountable Care Organizations to manage patients on an interdisciplinary basis. Although the medical device industry can be challenging and very competitive, we believe it will continue to have a positive long term growth trajectory with the number of surgical procedures performed increasing annually as a result of the aging "baby boomer" population and other healthcare trends. Additionally, we also anticipate a continued increase in minimally invasive surgical procedures due to ongoing advancements in technology coupled with continued overall pressure to reduce healthcare costs via a reduction in patient trauma and recovery time. Expanding global markets will also continue to provide growth opportunities for the medical device industry.

We believe that Bovie Medical has sustainable, competitive advantages in the medical device market for several reasons. We have a long history in electro-surgery. In fact, our inspiration dates back to the first use of an electro-surgical generator in an operating room in the U.S. in 1926 where Dr. William T. Bovie was present. Thus, the Bovie name is recognized by surgeons the world over for having pioneered the electro-surgery field and is recognized for its outstanding product quality supported by strong engineering and research and development capabilities. We

believe that our equipment and devices have and will continue to provide better outcomes for patients at a lower cost to the healthcare system.

Table of Contents

Business Strategy

In December 2013, Robert L. Gershon was appointed as Chief Executive Officer and a member of our Board of Directors and was charged with developing a growth strategy for Bovie and bringing together a management team comprised of existing and new executives. Over the course of 2014, the leadership team at Bovie has taken shape, and we have devoted significant time to evaluating the Company's competitive positioning, product pricing, sales and marketing programs and research and development portfolio. Through these efforts, we have been able to fine-tune our business strategy and work toward building a platform for long term success.

Our objective is to achieve profitable, sustainable growth by increasing our market share in the advanced energy category, including the commercialization of products that have the potential to be transformational with respect to the results they produce for surgeons and patients. In order to achieve this objective, we plan to leverage our long history in the industry, along with the reputation for quality and reliability that the Bovie brand enjoys within the medical community. At the same time, we will expand our energy products beyond radio frequency, move forward with research and developments projects aimed at creating value within our existing product portfolio and building our pipeline of new complementary products, and utilize multiple channels to bring new and existing products to market.

We are working to build our position in advanced electrosurgical generators and disposables, which can be used in diversified niche markets with minimally invasive surgical instruments, while furthering our status as a pioneer in plasma technology and its various medical applications.

For the first nine months of 2014, our core/OEM product sales, which include electrosurgery generators and electrodes continued to trend upward compared to the prior year, posting an increase of over 15% over the similar period in 2013. Additionally, we completed the development of our new DERM 101, DERM 102, and IDS 310 products, which represented the first new product launch in our core portfolio in several years and demonstrated Bovie's commitment to leadership in this space. Also in October 2014, we submitted a 510(K) application for the Bovie Ultimate, a generator that combines J-Plasma® technology with the advanced standard features of the highest wattage operating room electrosurgical generator. On December 12, 2014 the 510(K) was approved.

Our J-Plasma® product received FDA approval in 2012, and we are applying for a CE mark, which would enable us to sell the product in Europe as well. While J-Plasma® is currently in the commercialization process, several important milestones have been achieved to date in 2014, and sales of J-Plasma® have gained momentum throughout 2014. Third quarter 2014 sales of \$91,000 were twice those of the first half of the year, and for the first nine months of 2014, J-Plasma® sales reached \$136,174 up substantially from the similar period in 2013. At the end of Q3 2014, we had 14 ordering accounts and our systems were being evaluated by over 20 Hospital Value Analysis Committees (VACs). We also had a direct sales force of 15 dedicated to driving adoption of J-Plasma® compared to one person at the beginning of 2014, and our direct sales force was supplemented by a cadre of 20 independent manufacturers' representatives.

J-Plasma® was recognized by the Society of Laparoendoscopic Surgeons (SLS) as an Innovative Product of the Year at their annual meeting in September 2014. SLS is an educational, non-profit organization established to ensure the highest standards for the practice of laparoscopic, endoscopic and minimally invasive surgery. Each year, SLS recognizes the most innovative products of the last 12 months that have a broad application in minimally invasive surgery.

We are continuing to make substantial investments in the development and marketing of our J-Plasma® technology for the long term benefit of the Company and its stakeholders, and this may adversely affect our short term profitability and cash flow, particularly over the next 12 to 24 months. While we believe that these

Table of Contents

investments have the potential to generate additional revenues and profits in the future, there can be no assurance that J-Plasma® will be successful or that such future revenues and profitability will be realized. From June of 2010 through December 31, 2013, we invested approximately \$2.9 million in the development and marketing of our J-Plasma® technology and a total of approximately \$1.8 million through the first nine months of 2014, bringing the total investment to approximately \$4.7 million since inception.

Significant Subsidiaries

Aaron Medical Industries, Inc. is a wholly-owned Florida corporation based in Clearwater, Florida. It is principally engaged in the business of marketing our medical products.

Company Products

We group our products into three main categories: electrosurgery, cauteries, and other products. Information regarding sales by product categories and related percentages can be found in our annual and quarterly reports filed with the SEC. We manufacture and market various medical products, both under private label and the Bovie

brands (Bovie®, Aaron®, IDS , ICON and DERM), to distributors worldwide. Additionally, Bovie has original equipment manufacturing (OEM) agreements with other medical device manufacturers. These OEM and private label arrangements and our use of the Bovie brands enable us to gain greater market share for the distribution of our products.

Electrosurgery Products

Electrosurgery is our largest product line and includes desiccators, generators, electrodes, electrosurgical pencils and various ancillary disposable products. These electrosurgical products are used during surgical procedures in gynecology, urology, plastic surgery, dermatology, veterinary, and other surgical markets for the cutting and coagulation of tissue. It is estimated that 80% of all surgical procedures performed worldwide are conducted by electrosurgery. Our electrosurgery products fall under two categories, monopolar and bipolar. Monopolar products require the use of a grounding pad attached to the patient for the return of the electrical current, while bipolar products consist of two electrodes; one for the inbound current and one for the return current and therefore do not require the use of a grounding pad.

DERM 101 and DERM 102

This effective and economical 10 watt high frequency desiccator provides a low wattage platform for minor in-office skin procedures. We designed this product specifically for family practice physicians, pediatricians and other general practitioners, enabling them to perform simple skin procedures in their offices instead of referring the patient to a specialist saving the patient time and increasing the cash flow for the physician.

Aaron® 940/ Aaron® 950 / Aaron® 1250U

The Aaron® 940 is a Bovie® developed, low powered 40 watt high frequency desiccator, designed primarily for dermatology and family practice physicians. The units are used mainly for removing small skin lesions and growths as well as for coagulation for office based procedures.

The Aaron® 950 is a 60 watt high frequency desiccator with the added feature of a cut capacity for outpatient surgical procedures. In effect, the 950 is two independent surgical devices in one small package. It is designed mainly for use

in doctors' offices and is utilized in a broad range of specialties including dermatology, gynecology, family practice, urology, plastic surgery and ophthalmology.

Table of Contents

The Aaron® 1250U is a 120-watt multipurpose electrosurgery generator. The unit features monopolar and bipolar functions with pad sensing. This product is considered to be ideally suited for office-based procedures in the specialties of gynecology, plastic surgery and urology.

Aaron®2250 / 3250 and IDS 200 / 300 / 400

To address market demand for more powerful electrosurgical generators, Bovie® has developed 200, 300 and 400-watt multipurpose digital electrosurgery generators designed for the rapidly expanding surgi-center market and the hospital outpatient and inpatient markets. This equipment includes digital hardware that enables very high parallel data processing throughout the operation or procedure. All data is sampled and processed digitally. For the first time in electrosurgery, surgeons are able to measure tissue impedance in real time (5,000 times a second) thanks to the utilization of digital technology. The design of these units has been based on a digital feedback system. By using dedicated digital hardware in place of a general purpose controller for processing data, our equipment enables the power to be adjusted as the impedance varies, to deliver a consistent clinical effect.

The IDS 200 / Aaron® 2250 are 200-watt generators that have the capability to be used in the majority of procedures performed today in surgi-center or outpatient settings. Although 200 watts is more than enough power to do most procedures in the operating room, 300 watts is considered the standard and believed to be what most hospitals and surgi-centers will require. To meet this requirement, we developed the IDS 300/ Aaron® 3250.

IDS 310 / 210 and Aaron® 3350 / 2350 are the next generation of surgi-center and operating room generators. These units incorporate the best features of the IDS 300 and upgrade its capabilities by providing additional bipolar options, including the 225 watt Bovie bipolar feature and an auto bipolar feature. The 300 watt units also offer two pencils with simultaneous activation in fulguration mode.

The Bovie® IDS 400 is a 400 watt generator designed primarily for sale in markets outside of the United States. These units feature both monopolar and bipolar functions, have pad and tissue sensing, and include nine blended cutting settings.

The ICON Platform

The ICON product lines are innovative, custom designed specialty electrosurgical generators that incorporate an easy to use touch-screen interface that provides the user with added flexibility through various digitally built-in modes. In addition, the ICON product line was designed to enhance safety and convenience by protecting against pad burns by using split pads. It features specialized error messaging to prevent misinterpretation, allows for rapid troubleshooting, and has specialized audible alerts to indicate improper cable connections. The ICON line represents a new platform for Bovie, which we can leverage in the future to expand our portfolio of specialized generators as well as to offer upgrades to our existing units, with shorter times-to-market and lower development costs.

The ICON GI, ICON GP

The ICON GI is designed for the gastrointestinal (GI) niche market, while the ICON GP is designed for a more general purpose operations and procedures performed in hospital operating rooms, surgery centers, etc.

Electrosurgical Disposables

Resistick II

Resistick II is a trademarked and proprietary coating that is applied to stainless steel that resist eschar (scab or scar tissue caused by burning) during surgery. We have experienced strong demand for this product since its introduction in 2011, and it represents our continued expansion of the Bovie® line of electro-surgical disposables.

Table of Contents

Disposable Laparoscopic Electrodes

We are introducing a line of disposable laparoscopic electrodes in the first quarter of 2015 in Resitick[®] coated and stainless steel for use by physicians from a broad group of specialties including gynecology, general surgery and urology[A1]. These electrodes will be offered in J-hook, L-hook, needle, ball and spatula design and have an adapter included which makes these laparoscopic electrodes usable with a 3/32" or 4mm plug.

Cauteries

Battery Operated Cauteries

Battery operated cauteries constitute our second largest product line. Cauteries were originally designed for precise hemostasis (to stop bleeding) in ophthalmology. The current use of cauteries has been substantially expanded to include a broad range of applications, including: sculpting woven grafts in bypass surgery, vasectomies, and for arresting bleeding in many types of surgery. Battery operated cauteries are primarily sterile one-time use products. We have continued to improve our offering and now have a snap design cautery which has a patent pending. It features a switch mechanism that dramatically reduces the potential of accidental activation from improper disposal. We manufacture one of the broadest lines of cauteries in the world, including but not limited to, a line of replaceable battery and tip cauteries, which are popular in overseas markets.

Other Products

Battery Operated Medical Lights

We manufacture and market a variety of specialty lighting instruments for use in ophthalmology as well as specialty lighting instruments for general surgery, hip replacement surgery and for the placement of endotracheal tubes in emergency and surgical procedures. We also manufacture and market physicians' office use penlights.

Nerve Locator Stimulator

We manufacture a nerve locator stimulator primarily used for identifying motor nerves in hand and facial reconstructive surgery. This instrument is a sterile, self-contained, battery-operated unit, for one time use.

J-Plasma Products

Capital-ICON GS

Bovie's J-Plasma[®] technology is the foundation for the ICON GS plasma system, which utilizes a helium ionization process producing a stable thin focused beam of ionized gas that can be controlled in a wide range of temperatures and intensities, providing the surgeon greater control and predictability with minimal thermal damage to surrounding tissue. The development of this new helium system generator also includes the design of a new proprietary handpiece.

The newly 510(K) approved Bovie Ultimate[®] generator will replace the ICON GS plasma system. In addition to the J-Plasma[®] technology, the Bovie Ultimate[®] will have the IDS 310 capability, offering users monopolar, bipolar and plasma features, all in one generator.

J-Plasma Disposable Portfolio

We offer different hand pieces for open and laparoscopic procedures. The helium based plasma generated from these devices have been proven to cause less thermal damage to tissue than C02 laser, argon plasma and RF energy products currently available on the market.

Table of Contents

The most recent product launched in the J-plasma[®] portfolio is the Pistol Grip handle. This product offers improved ergonomics over the predecessor and is providing an increased rate adoption of the technology. We continue to solicit customer feedback. Bovie will continue to launch products from a rich pipeline that will allow surgeons to treat patients from a variety of surgical specialties.

The technology has a broad approval/indication and can be used on all soft tissue. The three primary specialties that are targeted in phase one of the product launch are gynecology, dermatology and plastic surgery. However, given the wide range of tissue applications for J-Plasma[®] we are engaged in ongoing development to create products for the gastrointestinal, general, urology, ear, nose & throat, and cardiovascular surgery specialties as well as wound management.

The advantages of cold plasma continue to be studied throughout the medical and scientific communities. We believe that surgical applications are just one area of opportunity for this technology.

Research and Development and New Products

Our research and development activities are an essential component of our efforts to develop new innovative products for introduction in the marketplace to drive sales growth. We continue to emphasize the development of proprietary products and product improvements to complement and expand our existing product lines. During the first nine months of 2014, we spent over \$1 million dollars in R&D versus \$938,000 during the same period of 2013, an increase of approximately 9%. In 2014, we hired a Director of Research and Development (R&D), and we maintain close working relationships with physicians and medical personnel in hospitals and universities who assist in product research and areas of development. Bovie products produced in 2014 thanks to our internal research and development activities include: the J-Plasma Pistol Grip, the DERM 101 and DERM 102, the IDS 310 and 210 and the Aaron[®] 3350 and 2350. Approximately one-third of our R&D spending is related to further developing our J-Plasma[®] product line.

Sales & Marketing

The majority of our core products are marketed through medical distributors, which distribute to more than 6,000 hospitals and to doctors and other healthcare facilities. New distributors are contacted through responses to our advertising in international and domestic medical journals and our presence at domestic and international trade shows. International sales represented approximately 14% of total revenues for the first nine months of 2014, compared to approximately 17% for full year 2013. Our products are sold in more than 150 countries through local dealers that are coordinated by sales and marketing personnel at our Clearwater, Florida facility.

During 2014, we commenced full scale commercialization efforts for J-Plasma[®]. As such; as of this date we have increased our direct sales force to 15 field-based selling professionals, and coupled with our independent manufacturing representatives give us a total sales force of 35. This is a hospital based selling organization with its focus on the use of J-Plasma[®] for operating room procedures. In addition, we have invested in training programs and marketing-related activities to support accelerated adoption of J-Plasma[®].

The Securities We May Offer

We may offer shares of our common stock, various series of debt securities and/or warrants to purchase any of such securities, either individually or in units, with a total value of up to \$25,000,000 from time to time under this prospectus at prices and on terms to be determined at the time of any offering. This prospectus provides you with a general description of the securities we may offer. Each time we offer a type or series of securities under

Table of Contents

this prospectus, we will provide a prospectus supplement that will describe the specific amounts, prices and other important terms of the securities, including, to the extent applicable:

designation or classification;

aggregate principal amount or aggregate offering price;

maturity, if applicable;

original issue discount, if any;

rates and times of payment of interest or dividends, if any;

redemption, conversion, exercise, exchange or sinking fund terms, if any;

preferences over other classes of our securities, if any;

restrictive covenants, if any;

voting or other rights, if any;

conversion or exchange prices or rates, if any, and, if applicable, any provisions for changes to or adjustments in the conversion or exchange prices or rates and in the securities or other property receivable upon conversion or exchange; and

important United States federal income tax considerations.

The prospectus supplement and any related free writing prospectus that we may authorize to be provided to you may also add, update or change information contained in this prospectus or in documents we have incorporated by reference. However, no prospectus supplement or free writing prospectus will offer a security that is not registered and described in this prospectus at the time of the effectiveness of the registration statement of which this prospectus is a part.

Common Stock. We may issue shares of our common stock from time to time. Holders of shares of common stock are entitled to one vote for each share on all matters to be voted on by the shareholders, and do not have cumulative voting rights. Subject to the preferences that may be applicable to any then outstanding shares of preferred stock, holders of shares of common stock are entitled to share ratably in dividends, if any, as may be declared from time to

time by the Board of Directors in its discretion, from funds legally available therefore. In the event of our liquidation, dissolution or winding up, holders of our common stock will be entitled to share ratably in the net assets legally available for distribution to shareholders after the payment of all of our debts and other liabilities. Subject to the satisfaction of any liquidation preference granted to the holders of any outstanding shares of preferred stock, holders of common stock have no preemptive or other subscription rights, and there are no conversion rights or redemption with respect to such shares.

Preferred Stock. We may issue shares of our preferred stock from time to time, in one or more series. The rights, preferences and privileges of the shares of each wholly unissued series, and any qualifications, limitations or restrictions thereon, including dividend rights, conversion rights, preemptive rights, terms of redemption or repurchase, liquidation preferences, sinking fund terms and the number of shares constituting any series or the designation of any series would be set forth in a Certificate of Designations which would be filed with the Delaware Secretary of State. Convertible preferred stock will be convertible into our common stock or exchangeable for other securities. Conversion may be mandatory or at your option and would be at prescribed conversion rates.

Debt Securities. We may issue debt securities from time to time, in one or more series, as either senior or subordinated debt or as senior or subordinated convertible debt. The senior debt securities will rank equally with

Table of Contents

any other unsecured and unsubordinated debt. The subordinated debt securities will be subordinate and junior in right of payment, to the extent and in the manner described in the instrument governing the debt, to all of our senior indebtedness. Convertible debt securities will be convertible into or exchangeable for our common stock or other securities. Conversion may be mandatory or at your option and would be at prescribed conversion rates.

The debt securities will be issued under one or more documents called indentures, which are contracts between us and a national banking association or other eligible party, as trustee. In this prospectus, we have summarized certain general features of the debt securities. We urge you, however, to read the applicable prospectus supplement (and any free writing prospectus that we may authorize to be provided to you) related to the series of debt securities being offered, as well as the complete indentures that contain the terms of the debt securities. A form of indenture has been filed as an exhibit to the registration statement of which this prospectus is a part, and supplemental indentures and forms of debt securities containing the terms of the debt securities being offered will be filed as exhibits to the registration statement of which this prospectus is a part or will be incorporated by reference from reports we file with the SEC.

Warrants. We may issue warrants for the purchase of common stock, preferred stock and/or debt securities in one or more series. We may issue warrants independently or together with common stock, preferred stock and/or debt securities, and the warrants may be attached to or separate from these securities. In this prospectus, we have summarized certain general features of the warrants. We urge you, however, to read the applicable prospectus supplement (and any free writing prospectus that we may authorize to be provided to you) related to the particular series of warrants being offered, as well as the complete warrant agreements and/or warrant certificates that contain the terms of the warrants.

Units. We may issue, in one or more series, units consisting of common stock, preferred stock debt securities and/or warrants for the purchase of common stock, preferred stock and/or debt securities in any combination. In this prospectus, we have summarized certain general features of the units. We urge you, however, to read the applicable prospectus supplement (and any free writing prospectus that we may authorize to be provided to you) related to the series of units being offered, as well as the complete unit agreement that contains the terms of the units.

We may evidence each series of units by unit certificates that we will issue. Units may be issued under a unit agreement that we enter into with a unit agent. We will indicate the name and address of the unit agent, if applicable, in the prospectus supplement relating to the particular series of units being offered.

Table of Contents

CAUTIONARY NOTE REGARDING FORWARD-LOOKING STATEMENTS

This prospectus contains forward-looking statements within the meaning of Section 27A of the Securities Act regarding our business, financial condition, results of operations and prospects. Words such as expects, anticipates, intends, plans, believes, seeks, estimates and similar expressions or variations of such words are intended to identify forward-looking statements. However, these are not the exclusive means of identifying forward-looking statements. Although forward-looking statements contained in this prospectus reflect our good faith judgment, such statements can only be based on facts and factors currently known to us. Consequently, forward-looking statements are inherently subject to risks and uncertainties, and actual outcomes may differ materially from the results and outcomes discussed in the forward-looking statements. Further information about the risks and uncertainties that may impact us are described or incorporated by reference in **Risk Factors** below. You should read that section carefully. You should not place undue reliance on forward-looking statements, which speak only as of the date of this prospectus. We undertake no obligation to update publicly any forward-looking statements in order to reflect any event or circumstance occurring after the date of this prospectus or currently unknown facts or conditions or the occurrence of unanticipated events. In addition, our past results are not necessarily indicative of future results, thus, we cannot guarantee future results, levels of activity, performance or achievements.

Table of Contents

RISK FACTORS

Investing in our securities involves significant risks. You should review carefully the risks and uncertainties described under the heading "Risk Factors" contained in, or incorporated into, the applicable prospectus supplement and any related free writing prospectus, and under similar headings in the other documents that are incorporated by reference herein or therein. Each of the referenced risks and uncertainties could adversely affect our business, operating results and financial condition, as well as adversely affect the value of an investment in our securities. Additional risks and uncertainties not known to us or that we believe are immaterial may also adversely affect our business, operating results and financial condition and the value of an investment in our securities.

Table of Contents

USE OF PROCEEDS

Unless otherwise indicated in the applicable prospectus supplement, we currently intend to use the net proceeds from the sale of securities offered by this prospectus for the continued development and marketing of our J-Plasma[®] technology and for working capital and other general corporate purposes, including capital expenditures, facilities expansion, acquisitions of complementary products, technologies or businesses and repaying indebtedness we may incur from time to time. The timing and amount of our actual expenditures will be based on many factors, including cash flows from operations and the anticipated growth of our business. As a result, unless otherwise indicated in the prospectus supplement, our management will have broad discretion to allocate the net proceeds of the offerings.

Table of Contents

DESCRIPTION OF CAPITAL STOCK

The following is only a summary of the material terms of our common stock and preferred stock. Because it is only a summary, it does not contain all the information that may be important to you. Accordingly, you should carefully read the more detailed provisions of our certificate of incorporation, as amended, and our by-laws, each of which has been filed with the SEC, as well as applicable provisions of Delaware law.

Authorized Capitalization

Our authorized capital stock consists of 40,000,000 shares of Common Stock, par value \$0.001 per share, and 10,000,000 shares of blank check Preferred Stock, par value \$.001 per share. As of December 10, 2014, there were 17,981,516 shares of common stock issued and 17,838,437 shares outstanding held by approximately 612 stockholders of record and over 2,034 beneficial owners; and 3,500,000 shares of Series A 6% Convertible Preferred Stock (Series A Preferred Stock) held by 6 holders.

Common Stock

Holders of shares of common stock are entitled to one vote for each share on all matters to be voted on by the stockholders, and do not have cumulative voting rights, subject to the preferences that may be applicable to any then outstanding shares of preferred stock. Holders of shares of common stock are entitled to share ratably in dividends, if any, as may be declared from time to time by the Board of Directors in its discretion, from funds legally available therefore. In the event of our liquidation, dissolution or winding up, holders of our common stock will be entitled to share ratably in the net assets legally available for distribution to shareholders after the payment of all of our debts and other liabilities. Holders of common stock have no preemptive or other subscription rights, and there are no conversion rights or redemption with respect to such shares.

Preferred Stock

Our certificate of incorporation, as amended, provides that our Board of Directors has the authority, without further action by the stockholders, to issue up to a specified number of shares of preferred stock in one or more series and to fix the rights, preferences, privileges and restrictions of this preferred stock, including dividend rights, conversion rights, voting rights, terms of redemption, liquidation preferences, sinking fund terms and the number of shares constituting any series or the designation of a series, without further vote or action by the stockholders.

If we issue preferred stock, our Board of Directors would fix the rights, preferences, privileges and restrictions of the preferred stock of each series in a Certificate of Designations relating to that series. We will incorporate by reference as an exhibit to the registration statement that includes this prospectus or as an exhibit to a current report on Form 8-K, the form of any Certificate of Designations that describes the terms of the series of preferred stock we are offering before the issuance of the related series of preferred stock. This description will include:

the title and stated value;

the number of shares we are offering;

the liquidation preference per share;

the purchase price;

the dividend rate, period and payment date and method of calculation for dividends;

whether dividends will be cumulative or non-cumulative and, if cumulative, the date from which dividends will accumulate;

the procedures for any auction and remarketing, if any;

Table of Contents

the provisions for a sinking fund, if any;

the provisions for redemption or repurchase, if applicable, and any restrictions on our ability to exercise those redemption and repurchase rights;

any listing of the preferred stock on any securities exchange or market;

whether the preferred stock will be convertible into our common stock, and, if applicable, the conversion price, or how it will be calculated, and the conversion period;

voting rights, if any, of the preferred stock;

preemption rights, if any;

restrictions on transfer, sale or other assignment, if any;

a discussion of any material or special United States federal income tax considerations applicable to the preferred stock;

the relative ranking and preferences of the preferred stock as to dividend rights and rights if we liquidate, dissolve or wind up our affairs;

any limitations on issuance of any class or series of preferred stock ranking senior to or on a parity with the series of preferred stock as to dividend rights and rights if we liquidate, dissolve or wind up our affairs; and

any other specific terms, preferences, rights or limitations of, or restrictions on, the preferred stock.

The issuance of preferred stock, whether pursuant to this offering or otherwise, could adversely affect the voting power, conversion or other rights of holders of our common stock. Preferred stock could be issued quickly with terms designed to delay or prevent a change in control of our company or make removal of management more difficult. Additionally, the issuance of preferred stock may have the effect of decreasing the market price of our common stock.

On December 13, 2013, the Company filed a Certificate to Set Forth Designations, Voting Powers, Preferences, Limitations, Restrictions, and Relative Rights (the Certificate of Designations) of its Series A Preferred Stock with the Secretary of State of the State of Delaware to amend our articles of incorporation. As of December 10, 2014, there were 3,500,000 shares of Series A Preferred Stock issued and outstanding. The following is a summary of the rights, privileges and preferences of the Series A Preferred Stock:

Edgar Filing: BOVIE MEDICAL Corp - Form 424B5

Number of Shares. The number of shares of Preferred Stock designated as Series A Preferred Stock is 3,500,000,000 (which shall not be subject to increase without the written consent of all of the holders of the Series A Preferred Stock).

Stated Value: The initial Stated Value of each share of Series A Preferred Stock is \$2.00 (as adjusted pursuant to the Certificate of Designation).

Conversion: The Series A Preferred Stock shall be convertible at the option of the holder, into common stock on a one-for-one basis, subject to adjustments for stock dividends, splits, combinations and similar events as described in the form of Certificate of Designations. In addition, the Company has the right to require the holders to convert to common stock under certain enumerated circumstances.

Redemption: At any time after the 48 month anniversary of the date of issuance of the Series A Preferred Stock, each share of Series A Preferred Stock shall be redeemable at the option of the holder thereof, for an amount equal to the Stated Value (the Redemption Amount). The Company shall pay the Redemption Amount as follows: (i) one third of such amount not later than five business days following the applicable Redemption Date (as defined in the Certificate of Designations); (ii) one third of such amount one year following the applicable Redemption Date; and (iii) one third of such amount two years following the applicable Redemption Date; provided, however, that if the applicable Redemption Date is a date following the eighty fourth (84th) anniversary of the issuance of the Series A Preferred Stock, the entire redemption amount shall be payable in one single payment.

Table of Contents

Dividends: Dividends shall accrue on each share of Series A Preferred Stock at the rate of 6% of the stated value per year, compounded annually, whether or not declared. The holders of the Series A Preferred Stock, following notice, have the right to be paid an amount equal to one third of all accrued and unpaid dividends on the following dates: (i) the 48th month following the issuance of the Series A Preferred Stock; (ii) the 60th month following the issuance of the Series A Preferred Stock and (iii) the 72nd month following the issuance of the Series A Preferred Stock.

Voting Rights: Except as described in the Certificate of Designations, holders of the Series A Preferred Stock will vote together with holders of the Company common stock on all matters, on an as-converted to common stock basis, and not as a separate class or series (subject to limited exceptions).

Liquidation Preferences. In the event of any liquidation or winding up of the Company prior to and in preference to any Junior Securities (including common stock), the holders of the Series A Preferred Stock will be entitled to receive in preference to the holders of the Company common stock a per share amount equal to the Stated Value (as adjusted pursuant to the Certificate of Designations).

Transfer Agent and Registrar

The transfer agent and registrar for our common stock is Manhattan Transfer Registrar Co. Its telephone number is 800-786-0362.

Listing

Our common stock trades on the NYSE MKT Market under the symbol BVX.

Delaware General Corporation Law Section 203

As a corporation organized under the laws of the State of Delaware, we are subject to Section 203 of the Delaware General Corporation Law (the "DGCL") which restricts certain business combinations between us and an "interested stockholder" (in general, a stockholder owning 15% or more of our outstanding voting stock) or its affiliates or associates for a period of three years following the date on which the stockholder becomes an "interested stockholder." The restrictions do not apply if (i) prior to an interested stockholder becoming such, the board of directors approves either the business combination or the transaction in which the stockholder becomes an interested stockholder, (ii) upon consummation of the transaction in which any person becomes an interested stockholder, such interested stockholder owns at least 85% of our voting stock outstanding at the time the transaction commences (excluding shares owned by certain employee stock ownership plans and persons who are both directors and officers of us) or (iii) on or subsequent to the date an interested stockholder becomes such, the business combination is both approved by the board of directors and authorized at an annual or special meeting of our stockholders, not by written consent, by the affirmative vote of at least 66-2/3% of the outstanding voting stock not owned by the interested stockholder.

Limitations of Liability and Disclosure of Commission Position On Indemnification for Securities Act Liabilities

As permitted under Delaware law, we have adopted provisions in our certificate of incorporation that limit or eliminate the personal liability of our directors for a breach of their fiduciary duty of care as a director. The duty of care generally requires that, when acting on behalf of the corporation, directors exercise an informed business judgment based on all material information reasonably available to them. Consequently, a director will not be personally liable to us or our stockholders for monetary damages or breach of fiduciary duty as a director, except for liability for:

Any breach of the director's duty of loyalty to us or our stockholders;

Any act or omission not in good faith or that involves intentional misconduct or a knowing violation of law;

Table of Contents

Any act related to unlawful stock repurchases, redemptions or other distributions or payment of dividends under DGCL Section 174; or

Any transaction from which the director derived an improper personal benefit.

These limitations of liability do not affect the availability of equitable remedies such as injunctive relief or rescission. Our certificate of incorporation also authorizes us to indemnify our officers, directors and other agents to the fullest extent permitted under Delaware law.

Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers and controlling persons of the company pursuant to the foregoing provisions, or otherwise, we have been informed that in the opinion of the SEC such indemnification is against public policy as expressed in the Securities Act of 1933 and is, therefore, unenforceable.

Table of Contents

DESCRIPTION OF DEBT SECURITIES

We may issue debt securities, secured or unsecured, in one or more series, as either senior or subordinated debt or as senior or subordinated convertible debt. While the terms we have summarized below will apply generally to any debt securities that we may offer under this prospectus, we will describe the particular terms of any debt securities that we may offer in more detail in the applicable prospectus supplement. The terms of any debt securities offered under a prospectus supplement may differ from the terms described below. As you read this section, please remember that the specific terms of a debt security as described in the applicable prospectus supplement will supplement and may modify or replace the general terms described in this section. If there are any differences between the applicable prospectus supplement and this prospectus, the applicable prospectus supplement will control. Unless the context requires otherwise, whenever we refer to the indentures, we also are referring to any supplemental indentures that specify the terms of a particular series of debt securities.

We may issue the debt securities under an indenture that we would enter into with a trustee to be named in the indenture. If we enter into an indenture, the indenture would be qualified under the Trust Indenture Act of 1939, as in effect on the date of the indenture. We use the term trustee to refer to the trustee under the indenture.

General

If we issue debt securities, we will describe in the applicable prospectus supplement the terms of the series of debt securities being offered, including:

the title or designation of the debt securities;

whether the debt securities will be secured or unsecured, and the terms of any secured debt;

the terms of the subordination of any series of subordinated debt securities;

any limit upon the aggregate principal amount of the debt securities;

the date or dates on which the debt securities may be issued and on which we will pay the principal on the debt securities;

the interest rate, which may be fixed or variable, or the method for determining the rate and the date interest will begin to accrue, the date or dates interest will be payable and the record dates for interest payment dates or the method for determining such dates;

the manner in which the amounts of payment of principal of, premium or interest on the debt securities will be determined, if these amounts may be determined by reference to an index based on a currency or currencies other than that in which the debt securities are denominated or designated to be payable or by

reference to a commodity, commodity index, stock exchange index or financial index;

the currency of denomination of the debt securities;

if payments of principal of, premium or interest on the debt securities will be made in one or more currencies or currency units other than that or those in which the debt securities are denominated, the manner in which the exchange rate with respect to these payments will be determined;

the place or places where the principal of, premium, and interest on the debt securities will be payable, where debt securities of any series may be presented for registration of transfer, exchange or conversion, and where notices and demands to or upon us in respect of the debt securities may be made;

the form of consideration in which principal of, premium or interest on the debt securities will be paid;

the terms and conditions upon which we may redeem the debt securities;

any obligation we have to redeem or purchase the debt securities pursuant to any sinking fund, amortization or analogous provisions or at the option of a holder of debt securities;

Table of Contents

the dates on which and the price or prices at which we will repurchase the debt securities at the option of the holders of debt securities and other detailed terms and provisions of these repurchase obligations;

the denominations in which the debt securities will be issued, if other than denominations of \$1,000 and any integral multiple thereof;

the portion of principal amount of the debt securities payable upon declaration of acceleration of the maturity date, if other than the principal amount;

whether the debt securities are to be issued at any original issuance discount and the amount of discount with which such debt securities may be issued;

whether the debt securities will be issued in the form of certificated debt securities or global debt securities and, in such case, the depository for such global security or securities and the terms and conditions, if any, upon which interests in such global security or securities may be exchanged in whole or in part for the individual securities represented thereby;

provisions, if any, for the defeasance of the debt securities of a series in whole or in part and any addition or change in the provisions related to satisfaction and discharge;

the form of the debt securities;

the terms and conditions upon which the debt securities will be so convertible or exchangeable into securities or property of another person, if at all, and any additions or changes, if any, to permit or facilitate such conversion or exchange;

whether the debt securities will be subject to subordination and the terms of such subordination;

provisions, if any, granting special rights to holders of the debt securities upon the occurrence of specified events;

any restriction or condition on the transferability of the debt securities;

any addition or change in the provisions related to compensation and reimbursement of the trustee which applies to securities of such series;

any addition to or change in the events of default described in this prospectus or in the indenture with respect to the debt securities and any change in the acceleration provisions described in this prospectus or in the indenture with respect to the debt securities;

any addition to or change in the covenants described in this prospectus or in the indenture with respect to the debt securities; and

any other terms of the debt securities, which may modify or delete any provision of the indenture.

Conversion or Exchange Rights

If we issue debt securities, we will set forth in the prospectus supplement the terms, if any, on which a series of debt securities may be convertible into or exchangeable for our common stock or our other securities. We will include provisions as to whether conversion or exchange is mandatory, at the option of the holder or at our option. We may include provisions pursuant to which the number of shares of our common stock or our other securities that the holders of the series of debt securities receive would be subject to adjustment.

Consolidation, Merger or Sale

Unless we provide otherwise in the prospectus supplement applicable to a particular series of debt securities, the indentures will not contain any covenant that restricts our ability to merge or consolidate, or sell, convey, transfer or otherwise dispose of all or substantially all of our assets. However, any successor to or acquirer of such assets must assume all of our obligations under the indentures or the debt securities, as appropriate.

Table of Contents

Unless we state otherwise in the applicable prospectus supplement, the debt securities will not contain any provisions that may afford holders of the debt securities additional protection in the event we have a change of control or in the event of a highly leveraged transaction (whether or not such transaction results in a change of control), which could adversely affect holders of debt securities.

Events of Default Under the Indenture

Unless we provide otherwise in the prospectus supplement applicable to a particular series of debt securities, the following are events of default under the indenture with respect to any series of debt securities that we may issue:

if we fail to pay interest when due and payable and our failure continues for more than 30 days and the time for payment has not been extended or deferred;

if we fail to pay the principal, premium, or sinking fund payment, if any, when due and payable and our failure continues for more than 30 days and the time for payment has not been extended or delayed;

if we fail to observe or perform any other covenant relating to such series contained in the debt securities of such series or the indenture, other than a covenant specifically relating to and for the benefit of holders of another series of debt securities, and our failure continues for 60 days after we receive written notice from the trustee or holders of not less than a majority in aggregate principal amount of the outstanding debt securities of the applicable series;

if specified events of bankruptcy, insolvency or reorganization occur as to us; and

any other event of default provided in or pursuant to the applicable agreement or indenture, if any, or prospectus supplement with respect to the debt securities of that series.

Unless we provide otherwise in the prospectus supplement applicable to a particular series of debt securities, no event of default with respect to a particular series of debt securities (except as to certain events of bankruptcy, insolvency or reorganization) necessarily constitutes an event of default with respect to any other series of debt securities. The occurrence of an event of default may constitute an event of default under any bank credit agreements we may have in existence from time to time. In addition, the occurrence of certain events of default or an acceleration under the indenture may constitute an event of default under certain of our other indebtedness outstanding from time to time.

If an event of default with respect to debt securities of any series at the time outstanding occurs and is continuing, then the trustee or the holders of not less than a majority in principal amount of the outstanding debt securities of that series may, by a notice in writing to us (and to the trustee if given by the holders), declare to be due and payable immediately the principal (or, if the debt securities of that series are discount securities, that portion of the principal amount as may be specified in the terms of that series) of and premium and accrued and unpaid interest, if any, on all debt securities of that series. The holders of a majority in principal amount of the outstanding debt securities of an affected series may waive any default or event of default with respect to the series and its consequences, except defaults or events of default regarding payment of principal, premium, if any, or interest, unless we have cured the default or event of default in accordance with the indenture. Any waiver shall cure the default or event of default.

We refer you to the prospectus supplement relating to any series of debt securities that are discount securities for the particular provisions relating to acceleration of a portion of the principal amount of such discount securities upon the occurrence of an event of default.

Subject to the terms of the indenture, if an event of default under the indenture shall occur and be continuing, the trustee will be under no obligation to exercise any of its rights or powers under such indenture at the request or direction of any of the holders of the applicable series of debt securities, unless such holders have offered the trustee reasonable indemnity. The holders of a majority in principal amount of the outstanding debt securities of

Table of Contents

any series will have the right to direct the time, method and place of conducting any proceeding for any remedy available to the trustee, or exercising any trust or power conferred on the trustee, with respect to the debt securities of that series, provided that, subject to the terms of the indenture, the trustee need not take any action that it believes, upon the advice of counsel, might involve it in personal liability or might be unduly prejudicial to the holders not involved in the proceeding.

A holder of the debt securities of any series will only have the right to institute a proceeding under the indenture or to appoint a receiver or trustee, or to seek other remedies if:

the holder previously has given written notice to the trustee of a continuing event of default with respect to that series;

the holders of at least a majority in aggregate principal amount of the outstanding debt securities of that series have made written request, and such holders have offered reasonable indemnity to the trustee to institute the proceeding as trustee; and

the trustee does not institute the proceeding, and does not receive from the holders of a majority in aggregate principal amount of the outstanding debt securities of that series (or at a meeting of holders of such series at which a quorum is present, the holders of a majority in principal amount of the debt securities of such series represented at such meeting) other conflicting directions within 60 days after the notice, request and offer.

These limitations do not apply to a suit instituted by a holder of debt securities if we default in the payment of the principal, premium, if any, or interest on, the debt securities.

We will periodically file statements with the applicable trustee regarding our compliance with specified covenants in the applicable indenture.

Modification of Indenture; Waiver

The trustee and we may, without the consent of any holders, execute a supplemental indenture to change the applicable indenture with respect to specific matters, including, among other things:

to surrender any right or power conferred upon us;

to provide, change or eliminate any restrictions on the payment of principal of or premium, if any, on the debt securities; provided that any such action shall not adversely affect the interests of the holders of debt securities of any series in any material respect;

to change or eliminate any of the provisions of the indenture; provided that any such change or elimination shall become effective only when there is no outstanding debt security of any series created

prior to the execution of such supplemental indenture that is entitled to the benefit of such provision and as to which such supplemental indenture would apply;

to evidence the succession of another corporation to us;

to evidence and provide for the acceptance of appointment by a successor trustee with respect to one or more series of debt securities and to add or change provisions of the indenture to facilitate the administration of the trusts thereunder by more than one trustee;

to cure any ambiguity, mistake, manifest error, omission, defect or inconsistency in the indenture or to conform the text of any provision in the indenture or in any supplemental indenture to any description thereof in the applicable section of a prospectus, prospectus supplement or other offering document that was intended to be a verbatim recitation of a provision of the indenture or of any supplemental indenture;

Table of Contents

to add to or change or eliminate any provision of the indenture as shall be necessary or desirable in accordance with any amendments to the Trust Indenture Act of 1939;

to make any change in any series of debt securities that does not adversely affect in any material respect the interests of the holders of such debt securities; and

to supplement any of the provisions of the indenture to such extent as shall be necessary to permit or facilitate the defeasance and discharge of any series of debt securities; provided that any such action shall not adversely affect the interests of the holders of debt securities of such series or any other series of debt securities.

In addition, under the indenture, the rights of holders of a series of debt securities may be changed by us and the trustee with the written consent of the holders of at least a majority in aggregate principal amount of the outstanding debt securities of each series that is affected. However, unless we provide otherwise in the prospectus supplement applicable to a particular series of debt securities, we and the trustee may make the following changes only with the consent of each holder of any outstanding debt securities affected:

extending the fixed maturity of the series of debt securities;

reducing the principal amount, reducing the rate of or extending the time of payment of interest, or reducing any premium payable upon the redemption of any debt securities;

reducing the principal amount of discount securities payable upon acceleration of maturity;

making the principal of or premium or interest on any debt security payable in currency other than that stated in the debt security;

impairing the right to institute suit for the enforcement of any payment on or after the fixed maturity date of any series of debt securities;

materially adversely affecting the economic terms of any right to convert or exchange any debt securities; and

reducing the percentage of debt securities, the holders of which are required to consent to any amendment, supplement, modification or waiver.

Except for certain specified provisions, the holders of at least a majority in principal amount of the outstanding debt securities of any series (or, at a meeting of holders of such series at which a quorum is present, the holders of a majority in principal amount of the debt securities of such series represented at such meeting) may, on behalf of the holders of all debt securities of that series, waive our compliance with provisions of the indenture. The holders of a

majority in principal amount of the outstanding debt securities of any series may, on behalf of the holders of all the debt securities of such series, waive any past default under the indenture with respect to that series and its consequences, other than a default in the payment of the principal of, premium or any interest on any debt security of that series; provided, however, that the holders of a majority in principal amount of the outstanding debt securities of any series may rescind an acceleration and its consequences, including any related payment default that resulted from the acceleration.

Discharge

The indenture provides that we can elect to be discharged from our obligations with respect to one or more series of debt securities. In order to exercise our rights to be discharged with respect to a series, we must deposit with the trustee money or government obligations sufficient to pay all the principal of, the premium, if any, and interest on, the debt securities of the series on the dates payments are due.

Form, Exchange and Transfer

We will issue the debt securities of each series only in fully registered form without coupons and, unless we otherwise specify in the applicable prospectus supplement, in denominations of \$1,000 and any integral multiple

Table of Contents

thereof. We may issue debt securities of a series in temporary or permanent global form and as book-entry securities that will be deposited with a depository named by us and identified in a prospectus supplement with respect to that series.

At the option of the holder, subject to the terms of the indenture and the limitations applicable to global securities described in the applicable prospectus supplement, the holder of the debt securities of any series can exchange the debt securities for other debt securities of the same series, in any authorized denomination and of like tenor and aggregate principal amount.

Subject to the terms of the indenture and the limitations applicable to global securities set forth in the applicable prospectus supplement, holders of the debt securities may present the debt securities for exchange or for registration of transfer, duly endorsed or with the form of transfer endorsed thereon duly executed if so required by us or the security registrar, at the office of the security registrar or at the office of any transfer agent designated by us for this purpose. Unless otherwise provided in the debt securities that the holder presents for transfer or exchange or in the indenture, we will make no service charge for any registration of transfer or exchange, but we may require payment of any taxes or other governmental charges.

We will name in the applicable prospectus supplement the security registrar, and any transfer agent in addition to the security registrar, that we initially designate for any debt securities. We may at any time designate additional transfer agents or rescind the designation of any transfer agent or approve a change in the office through which any transfer agent acts, except that we will be required to maintain a transfer agent in each place of payment for the debt securities of each series.

If we elect to redeem the debt securities of any series, we will not be required to:

issue, register the transfer of, or exchange any debt securities of that series during a period beginning at the opening of business 15 days before the day of mailing of a notice of redemption of any debt securities that may be selected for redemption and ending at the close of business on the day of the mailing; or

register the transfer of or exchange any debt securities so selected for redemption, in whole or in part, except the unredeemed portion of any debt securities we are redeeming in part.

Information Concerning the Trustee

The trustee, other than during the occurrence and continuance of an event of default under the indenture, undertakes to perform only those duties as are specifically set forth in the indenture. Upon an event of default under the indenture, the trustee must use the same degree of care as a prudent person would exercise or use in the conduct of his or her own affairs. Subject to this provision, the trustee is under no obligation to exercise any of the powers given it by the indenture at the request of any holder of debt securities unless it is offered reasonable security and indemnity against the costs, expenses and liabilities that it might incur.

Payment and Paying Agents

Unless we otherwise indicate in the applicable prospectus supplement, we will make payment of the interest on any debt securities on any interest payment date to the person in whose name the debt securities, or one or more predecessor securities, are registered at the close of business on the regular record date for the interest.

Unless we otherwise indicate in the applicable prospectus supplement, we will pay principal of and any premium and interest on the debt securities of a particular series at the office of the indenture trustee or, at our option, by wire or check payable to the holder. Unless we otherwise indicate in a prospectus supplement, we will designate the corporate trust office of the trustee our sole paying agent for payments with respect to debt securities of a

Table of Contents

particular series. We will name in the applicable prospectus supplement any other paying agents that we initially designate for the debt securities of a particular series. We will maintain a paying agent in each place of payment for the debt securities of a particular series. All money we pay to a paying agent or the trustee for the payment of the principal of or any premium or interest on any debt securities which remains unclaimed at the end of two years after such principal, premium or interest has become due and payable will be repaid to us, and the holder of the security thereafter may look only to us for payment thereof.

Governing Law

Unless we otherwise indicate in the applicable prospectus supplement, each indenture and the debt securities will be governed and construed in accordance with the laws of the State of Delaware.

Table of Contents

DESCRIPTION OF WARRANTS

We may issue warrants to purchase debt securities, preferred stock or common stock. We may issue warrants independently or together with any other securities we offer under a prospectus supplement. The warrants may be attached to or separate from the securities. We may issue each series of warrants under a separate warrant agreement that we will enter into with a bank or trust company, as warrant agent. The statements made in this section relating to the warrant agreement are summaries only. These summaries are not complete. When we issue warrants, we will provide the specific terms of the warrants and the applicable warrant agreement in a prospectus supplement. To the extent the information contained in the prospectus supplement differs from this summary description, you should rely on the information in the prospectus supplement. For more detail, we refer you to the applicable warrant agreement itself, which we will file as an exhibit to, or incorporate by reference in, the registration statement.

General

We will describe in the applicable prospectus supplement the terms relating to warrants being offered including:

the offering price and aggregate number of warrants offered;

if applicable, the designation and terms of the securities with which the warrants are issued and the number of warrants issued with each such security or each principal amount of such security;

if applicable, the date on and after which the warrants and the related securities will be separately transferable;

in the case of warrants to purchase common stock or preferred stock, the number of shares of common stock or preferred stock purchasable upon the exercise of one warrant and the price at which these shares may be purchased upon such exercise;

the terms of any rights to redeem or call the warrants;

any provisions for changes to or adjustments in the exercise price or number of securities issuable upon exercise of the warrants;

the dates on which the right to exercise the warrants will commence and expire;

the manner in which the warrant agreements and warrants may be modified;

federal income tax consequences of holding or exercising the warrants, if material;

the terms of the securities issuable upon exercise of the warrants; and

any other specific terms, preferences, rights or limitations of or restrictions on the warrants.

Before exercising their warrants, holders of warrants will not have any of the rights of holders of the securities purchasable upon such exercise, including, in the case of warrants to purchase common stock, the right to receive

dividends, if any, or payments upon our liquidation, dissolution or winding up of our affairs or to exercise voting rights, if any.

Exercise of Warrants

Each warrant will entitle the holder to purchase the securities that we specify in the applicable prospectus supplement at the exercise price that we describe in the applicable prospectus supplement. Unless we otherwise specify in the applicable prospectus supplement, holders of the warrants may exercise the warrants at any time up to the specified time on the expiration date that we set forth in the applicable prospectus supplement. After the close of business on the expiration date, unexercised warrants will become void.

Table of Contents

Holders of the warrants may exercise the warrants by delivering the warrant certificate representing the warrants to be exercised together with specified information, and paying the required amount to the warrant agent in immediately available funds, as provided in the applicable prospectus supplement. We intend to set forth in any warrant agreement and in the applicable prospectus supplement the information that the holder of the warrant will be required to deliver to the warrant agent.

Upon receipt of the required payment and any warrant certificate or other form required for exercise properly completed and duly executed at the corporate trust office of the warrant agent or any other office indicated in the applicable prospectus supplement, we will issue and deliver the securities purchasable upon such exercise. If fewer than all of the warrants represented by the warrant or warrant certificate are exercised, then we will issue a new warrant or warrant certificate for the remaining amount of warrants. If we so indicate in the applicable prospectus supplement, holders of the warrants may surrender securities as all or part of the exercise price for warrants.

Governing Law

Unless we provide otherwise in the applicable prospectus supplement, the warrants and warrant agreements will be governed by and construed in accordance with the laws of the State of Delaware.

Table of Contents

DESCRIPTION OF UNITS

We may issue units comprised of one or more debt securities, shares of common stock, preferred stock and/or warrants in any combination. Each unit will be issued so that the holder of the unit is also the holder of each security included in the unit. Thus, the holder of a unit will have the rights and obligations of a holder of each included security. The unit agreement under which a unit is issued may provide that the securities included in the unit may not be held or transferred separately, at any time or at any time before a specified date. The statements made in this section relating to the unit agreement are summaries only. These summaries are not complete. When we issue units, we will provide the specific terms of the units and the applicable unit agreement in a prospectus supplement. To the extent the information contained in the prospectus supplement differs from this summary description, you should rely on the information in the prospectus supplement. For more detail, we refer you to the applicable unit agreement itself, which we will file as an exhibit to, or incorporate by reference in, the registration statement.

We will describe in the applicable prospectus supplement the terms of the series of units being offered, including:

the designation and terms of the units and of the securities comprising the units, including whether and under what circumstances those securities may be held or transferred separately;

any provisions of the governing unit agreement that differ from those described below; and

any provisions for the issuance, payment, settlement, transfer or exchange of the units or of the securities comprising the units.

The provisions described in this section, as well as those described under [Description of Capital Stock](#), [Description of Debt Securities](#) and [Description of Warrants](#) will apply to each unit and to any common stock, debt security or warrant included in each unit, respectively.

We may issue units in such amounts and in such numerous distinct series as we determine.

Table of Contents

PLAN OF DISTRIBUTION

We may sell the securities through underwriters or dealers, through agents, or directly to one or more purchasers. We may sell the securities from time to time in one or more transactions at a fixed price or prices, which may be changed from time to time, at market prices prevailing at the times of sale, at prices related to such prevailing market prices, or at negotiated prices. The accompanying prospectus supplement will describe the terms of the offering of the securities, including:

the name or names of any underwriters;

the purchase price of the securities being offered and the proceeds we will receive from the sale;

any over-allotment options pursuant to which underwriters may purchase additional securities from us;

any agency fees or underwriting discounts and other items constituting agents' or underwriters' compensation;

any public offering price;

any discounts or concessions allowed or re-allowed or paid to dealers; and

any securities exchange or market on which the securities may be listed.

If underwriters are used in the sale, they will acquire the securities for their own account and may resell the securities from time to time in one or more transactions at a fixed public offering price or at varying prices determined at the time of the sale. The obligations of the underwriters to purchase the securities will be subject to the conditions set forth in the applicable underwriting agreement. We may offer the securities to the public through underwriting syndicates represented by managing underwriters or by underwriters without a syndicate. Subject to certain conditions, the underwriters will be obligated to purchase all the securities offered by the prospectus supplement. Any public offering price and any discounts or concessions allowed or re-allowed or paid to dealers may change from time to time. We may use underwriters with whom we have a material relationship. We will describe such relationships in the prospectus supplement naming the underwriter and the nature of any such relationship.

We may engage in at the market offerings of our common stock, which are offerings into an existing trading market, at other than a fixed price, on or through the facilities of a national securities exchange or to or through a market maker otherwise than on an exchange.

We may sell securities directly or through agents we designate from time to time. We will name any agent involved in the offering and sale of the securities, and we will describe any commissions we will pay the agent in the prospectus supplement. Unless the prospectus supplement states otherwise, our agent will act on a best efforts basis for the period of its appointment.

We may enter into derivative transactions with third parties, or sell securities not covered by this prospectus to third parties in privately negotiated transactions. If the applicable prospectus supplement indicates, in connection with those derivatives, the third parties may sell securities covered by this prospectus and the applicable prospectus supplement, including short sale transactions. If so, the third party may use securities pledged by us or borrowed from us or others to settle those sales or to close out any related open borrowings of common shares, and may use securities received from us in settlement of those derivatives to close out any related open borrowings of common shares. The third party in such sale transactions will be an underwriter and, if not identified in this prospectus, will be identified in the applicable prospectus supplement or a post-effective amendment to this registration statement.

Some or all of the securities that we offer through this prospectus, other than common stock, may be new issues of securities with no established trading market. Any underwriters to whom we sell our securities for public

Table of Contents

offerings and sale may make a market for those securities, but they will not be obligated to do so and they may discontinue any market making at any time without notice. Accordingly, we cannot assure you of the liquidity of, or continued trading markets for, any securities that we offer.

All securities we offer, other than common stock, will be new issues of securities for which there is no established trading market. Any underwriters may make a market in these securities, but will not be obligated to do so and may discontinue any market making activities at any time without notice. We cannot guaranty the liquidity of the trading markets for any securities.

We may provide agents and underwriters with indemnification against civil liabilities related to this offering, including liabilities under the Securities Act, or contribution with respect to payments that the agents or underwriters may make with respect to these liabilities. Agents and underwriters may engage in transactions with, or perform services for, us in the ordinary course of business.

Any underwriter may also engage in stabilizing transactions, syndicate covering transactions and penalty bids in accordance with Rule 104 under the Securities Exchange Act of 1934, as amended. Stabilizing transactions involve bids to purchase the underlying security in the open market for the purpose of pegging, fixing or maintaining the price of the securities. Syndicate covering transactions involve purchases of the securities in the open market after the distribution has been completed in order to cover syndicate short positions.

Penalty bids permit the underwriters to reclaim a selling concession from a syndicate member when the securities originally sold by the syndicate member are purchased in a syndicate covering transaction to cover syndicate short positions. Stabilizing transactions, syndicate covering transactions and penalty bids may cause the price of the securities to be higher than it would be in the absence of the transactions. The underwriters may, if they commence these transactions, discontinue them at any time.

Similar to other purchase transactions, an underwriter's purchases to cover the syndicate short sales or to stabilize the market price of our securities may have the effect of raising or maintaining the market price of our securities or preventing or mitigating a decline in the market price of our securities. As a result, the price of the securities may be higher than the price that might otherwise exist in the open market. The imposition of a penalty bid might also have an effect on the price of shares if it discourages resales of the securities.

Any underwriters who are qualified market makers on the NYSE MKT Market may engage in passive market making transactions in our common stock on the NYSE MKT Market in accordance with Rule 103 of Regulation M, during the business day prior to the pricing of the offering, before the commencement of offers or sales of common stock. Passive market makers must comply with applicable volume and price limitations and must be identified as passive market makers. In general, a passive market maker must display its bid at a price not in excess of the highest independent bid for such security; if all independent bids are lowered below the passive market maker's bid, however, the passive market maker's bid must then be lowered when certain purchase limits are exceeded.

Underwriters, broker-dealers or agents who may become involved in the sale of our securities may engage in transactions with and perform other services for us in the ordinary course of their business for which they receive compensation.

Table of Contents

LEGAL MATTERS

The validity of the issuance of securities offered hereby will be passed upon for us by Ruskin Moscou Faltischek, P.C., of Uniondale, New York.

EXPERTS

The consolidated financial statements incorporated in this prospectus by reference from Bovie Medical Corporation's Annual Report on Form 10-K/A for the year ended December 31, 2013 have been audited by Kingery & Crouse, P.A., independent registered public auditors, as stated in their report, which is incorporated herein by reference, and have been so incorporated in reliance upon the report of such firm given upon their authority as experts in accounting and auditing.

WHERE YOU CAN FIND ADDITIONAL INFORMATION

We file annual, quarterly and current reports, proxy statements and other information with the SEC. Our SEC filings are available to the public over the Internet at the SEC's website at www.sec.gov. You may also read and copy any document we file at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 205409. Please call the SEC at 1-800-SEC-0330 for further information on the public reference room.

The registration statement and the documents referred to below under "Incorporation of Certain Information by Reference" are also available on our website at <http://www.boviemedical.com>. We have not incorporated by reference into this prospectus the information on our website, and you should not consider it to be a part of this prospectus.

INCORPORATION OF CERTAIN INFORMATION BY REFERENCE

The SEC allows us to incorporate by reference the information we file with it, which means that we can disclose important information to you by referring you to those documents. The information incorporated by reference is considered to be a part of this prospectus, and information in documents that we file later with the SEC will automatically update and supersede the information in this prospectus. We incorporate by reference into this prospectus the documents listed below and any future filings we make with the SEC under Section 13(a), 13(c) 14 or 15(d) of the Securities Exchange Act of 1934, as amended, until this offering is completed and all securities are sold or until the sale of securities pursuant to this prospectus is terminated by us:

Our Annual Report on Form 10-K and Form 10-K/A for the year ended December 31, 2013 filed with the SEC on March 31, 2014 and May 8, 2014, respectively; and

Our Quarterly Report on Form 10-Q for the quarter ended March 31, 2014, filed with the SEC on May 15, 2014;

Our Quarterly Report on Form 10-Q for the quarter ended June 30, 2014, filed with the SEC on August 8, 2014;

Edgar Filing: BOVIE MEDICAL Corp - Form 424B5

Our Quarterly Report on Form 10-Q for the quarter ended September 30, 2014, filed with the SEC on November 10, 2014;

Our Current Reports on Form 8-K filed with the SEC March 24, 2014, April 2, 2014, May 8, 2014, May 19, 2014, July 2, 2014, July 17, 2014, July 21, 2014, August 7, 2014, October 3, 2014, and November 7, 2014;

Our Registration Statement on Form S-3 and S-3/A filed with the SEC on January 10, 2014 and January 24, 2014, respectively;

Table of Contents

Our Prospectus filed pursuant to Rule 424(b)(3) filed with the SEC on February 4, 2014;

Our Registration Statement on Form S-8 filed with the SEC on May 1, 2014;

Our definitive proxy statement on Schedule 14A filed with the SEC on June 9, 2014.

Our Specialized Disclosure Report on Form SD filed with the SEC on June 2, 2014.

This prospectus is part of a registration statement on Form S-3 we have filed with the SEC. This prospectus does not contain all of the information in the registration statement. We have omitted certain parts of the registration statement as permitted under the rules and regulations of the SEC. You may view and inspect the registration statement and exhibits at the SEC's Public Reference Room at 100 F Street, N.E., Washington, D.C. 205409 by calling 1-800-SEC-0330 or on the SEC's website (see above "Where You Can Find Additional Information").

Upon request, we will provide, free of charge, to each person to whom a prospectus is delivered, including a beneficial owner, a copy of any or all information that has been incorporated by reference in the prospectus but not delivered with the prospectus. Any such request may be made orally or in writing to Bovie Medical Corporation, 4 Manhattanville Road, Suite 106, Purchase, New York 10577, Attention: Peter L. Donato, Chief Financial Officer.

Table of Contents

1,500,000 Shares

BOVIE MEDICAL CORPORATION

Common Stock

PROSPECTUS SUPPLEMENT

Piper Jaffray

The date of this prospectus supplement is November 10, 2016