

K131482

NOV 22 2013

<b>510(k) Summary</b>	
<b>Trade Name:</b>	SOFIA™ Distal Access Catheter
<b>Generic Name:</b>	Percutaneous Catheter
<b>Classification:</b>	Class II, 21 CFR 870.1250 (DQY), 21 CFR 870.1200 (DQO)
<b>Submitted By:</b>	MicroVention, Inc 1311 Valencia Avenue Tustin, California U.S.A.
<b>Contact:</b>	Naomi Gong
<b>Date:</b>	2013 November 13
<b>Predicate Device:</b>	Chaperon Guiding Catheter (K082385) Headway Duo Microcatheter (K120917)

**Device Description:**

The SOFIA Distal Access Catheter is a single-lumen, flexible catheter designed with coil and braid reinforcement. The distal segment is steam-shapeable and it has a hydrophilic coating for navigation through the vasculature. The radiopaque marker is located at the distal end of the catheter for visualization under fluoroscopy. An introducer sheath and shaping mandrel are also provided.

**Indications For Use:**

The SOFIA Distal Access Catheter is indicated for general intravascular use, including the neuro and peripheral vasculature. It can be used to facilitate introduction of diagnostic or therapeutic devices. It is not intended for use in coronary arteries.

**Technological Comparison:**

	<b>Chaperon Guiding Catheter</b>	<b>SOFIA Distal Access Catheter</b>	<b>Headway Duo Microcatheter</b>
Intended Use	Intended for general intravascular use, including the neuro and peripheral vasculature. It can be used to facilitate the introduction of diagnostic and therapeutic agents. It is not intended for use in coronary arteries.	Intended for general intravascular use, including the neuro and peripheral vasculature. It can be used to facilitate the introduction of diagnostic and therapeutic agents. It is not intended for use in coronary arteries.	Intended for general intravascular use, including the peripheral and coronary vasculature for the infusion of diagnostic agents, such as contrast media, and therapeutic agents, such as embolization materials. Intended for neurovascular use for the infusion of diagnostic agents, such as contrast media, and therapeutic agents that have been cleared or approved for use in the neurovasculature and are compatible with the inner diameter of the microcatheter.
Material			
Catheter Body	Outer layer of polyester elastomer; stainless steel braid; inner layer of PTFE (polytetrafluoroethylene).	Outer layer of polyurethane elastomer (Polyblend and Pellethane), polyether block amide (Pebax) and polyamide (Grilamid); inner layer of stainless steel braid/coil, PTFE and polyolefin elastomer	Outer layer of polyether block amide (Pebax) and polyamide (Grilamid); inner layer of stainless steel braid/coil and PTFE
Marker	Tungsten	Platinum/Iridium	Platinum/Iridium
Hub	Nylon	Nylon	Nylon
Strain Relief	Polyester elastomer	Polyurethane	Pebax
Introducer	Not applicable	Pebax	Pebax
Shaping Mandrel	Not applicable	Stainless steel	Stainless steel

	<b>Chaperon Guiding Catheter</b>	<b>SOFIA Distal Access Catheter</b>	<b>Headway Duo Microcatheter</b>
Catheter size	5 F (outer catheter)	5 F	1.6 - 2.1 F
ID	0.059 inch (1.5 mm)	0.055 inch (1.4 mm)	0.0165 inch (0.42 mm)
OD	0.068 inch (1.7 mm)	0.068 inch (1.7 mm)	0.023 – 0.0275 inch (0.58 – 0.70 mm)
Effective Length	95 cm (outer) 117 cm (inner)	125 cm	157 and 168 cm
Coating	Hydrophilic coating (Terumo proprietary coating)	Hydrophilic coating (Hydak <sup>®</sup> – same)	Hydrophilic coating (Hydak <sup>®</sup> – same)
Tip Configuration	Preshaped	Steam shapeable by user	Steam shapeable by user
Guidewire Compatibility	0.035 inch or 0.038 inch	0.035 inch or 0.038 inch	0.014 inch or smaller
Accessories	N/A	Introducer sheath and shaping mandrel	Introducer sheath and shaping mandrel .
Method of Supply	Sterile and single use	Sterile and single use	Sterile and single use
Sterilization Method	Ethylene Oxide	Ethylene Oxide	Ethylene Oxide
Packaging Configuration	Catheter placed on packaging card that is inserted into Tyvek <sup>®</sup> pouch. Pouch and IFU placed in bleached sulfate carton box.	Catheter placed into a HDPE dispenser tube. Dispenser tube, introducer and shaping mandrel placed on a polyethylene packaging card that is inserted into a Tyvek <sup>®</sup> pouch. Pouch and IFU placed in bleached sulfate carton box.	Catheter placed into a polyethylene dispenser hoop. Introducer and shaping mandrel placed on polyethylene packaging card. Dispenser hoop and packaging card inserted into Tyvek <sup>®</sup> pouch. Pouch and IFU placed in bleached sulfate carton box.

**Verification and Test Summary:**

<b>Bench Testing</b>		
<b>Test</b>	<b>Results</b>	<b>Conclusions</b>
Simulated Use	Test articles achieved a rating $\geq 3$ for preparation/ease of assembly, introducer sheath interaction, introducer peel away, tracking with guidewire/microcatheter, microcatheter/guidewire lockup, lubricity and durability of hydrophilic coating, microcatheter/guidewire removal, removal/aspiration of clot, mechanical clot retriever and stent delivery with no particles	Device performs as intended under simulated use conditions
Equipment Interface	Test articles compatible with 0.035-inch and 0.038-inch guidewires, 6F or larger guide catheter/guiding sheath, common RHVs using insertion tool, stopcocks and $\leq 0.027$ -inch microcatheters	Device compatible with recommended accessories commonly used in intravascular procedures
Dimensional and Physical Attributes	Test articles met the specified dimensional requirements for catheter OD, catheter ID, overall working length, length of distal section, length of distal tip to marker band and total length of hub/strain relief	Device met established dimensional and physical specifications
Kink Resistance	No kinks at 1 cm, 4 cm, 12 cm and 25 cm from distal tip when wrapped around 0.025-inch and 0.030-inch pin gauges  No kinks noted during simulated use testing	Device resistant to kinking around small radii turns
Tip Shapeability	Tip angle of test article equivalent to competitive devices after steam shaping using mandrel with an angle of approximately $90^\circ$	Shapeability of distal tip after steam shaping equivalent to competitive devices
Radio Detectability	Distal marker band visible under fluoroscopy	Device radiopacity equivalent to or better than predicate and competitive devices

<b>Bench Testing</b>		
<b>Test</b>	<b>Results</b>	<b>Conclusions</b>
Gauging (ISO 594-2)	Gauging pin and hub align in limit planes	Device hub meets the requirements of ISO 594-2
Separation Force (ISO 594-2)	Mating parts separation force greater than 25 N	Device hub meets the requirements of ISO 594-2
Unscrewing Torque (ISO 594-2)	Test article luer remains attached after applying an unscrewing torque not less than 0.02 Nm for a minimum of 10 seconds	Device hub meets the requirements of ISO 594-2
Stress Cracking (ISO 594-2)	No stress cracks on test article hub	Device hub meets the requirements of ISO 594-2
Ease of Assembly (ISO 594-2)	Components fit together securely with no resistance observed between test article luer and reference fitting	Device hub meets the requirements of ISO 594-2
Resistance to Overriding (ISO 594-2)	Test article luer does not override reference fitting threads	Device hub meets the requirements of ISO 594-2
Durability/Lubricity of Hydrophilic Coating	Test article achieved a rating of $\geq 3$ during simulated use testing for coating durability and lubricity.	Device tracks easily with no coating cracking or separation
Catheter Stiffness	Device stiffness equivalent to predicate and competitive devices	Device tracks in tortuous anatomy while advancing to target site
Torque Strength	No catheter breakage after 50 rotations	Device torque strength same as predicate device
Catheter Flexural Fatigue	No flexural fatigue following repeated bending during simulated use testing and repeated hoop stress following pressure and air aspiration testing	Device integrity suitable for intended clinical use
Surface Contamination	Test article free from surface contaminants from uncured coating surface particulates $> 0.02 \text{ mm}^2$ , embedded particulates  Distal tip smooth and tapered  PTFE inner layer not delaminated	Device integrity suitable for intended clinical use
Force at Break (Distal and Hub)	Catheter force at break $\geq 2.25 \text{ lbf}$ for distal section and hub/catheter junction	Tensile strength test results equivalent to predicate and competitive devices

<b>Bench Testing</b>		
<b>Test</b>	<b>Results</b>	<b>Conclusions</b>
Flow Rate	Flow rate at 100 psi and 300 psi with diagnostic agents (e.g., saline, contrast media) equivalent to or better than competitive devices	Device meets specified requirements for delivery of diagnostic agents
Static Burst Pressure	No damage of pressurized catheter at 46 psi	Device integrity suitable for intended clinical use and met requirements of ISO 10555-1
Fluid Leakage at > 46 psi	No liquid leakage from hub and catheter shaft at 46 psi for 30 seconds	Device integrity suitable for intended clinical use and met requirements of ISO 10555-1
Air Leakage	No air leakage at hub into syringe for 15 seconds	Device integrity suitable for intended clinical use and met requirements of ISO 10555-1
Dynamic Burst	Test articles did not burst at or below 300 psi	Device met labeled maximum infusion pressure of 300 psi
Particulate Test	Less than 25 particles greater than 10 microns per ml volume and less than 3 particles less than 25 microns per ml volume  No particles greater than 70 microns	Device met specifications for maximum allowable particles

<b>Biocompatibility</b>		
<b>Test</b>	<b>Results</b>	<b>Conclusions</b>
Cytotoxicity – MEM Elution Assay (ISO 10993-5)	Cell culture treated with test article exhibited slight reactivity (Grade 1)	Non-cytotoxic
Sensitization/Irritation – Kligman Maximization Test (ISO 10993-10)	Extracts of the test article elicited no reaction at the challenge (0% sensitization) following the induction phase (Grade 1).	Weak allergic potential or sensitizing capacity
Sensitization/Irritation – Intracutaneous Injection Test (ISO 10993-10)	Extracts of the test article did not show a significantly greater biological reaction than the sites injected with the control article	Non-irritant
Hemocompatibility – Rabbit Blood Direct and Indirect Contact (ISO 10993-4)	The hemolysis index was 0.13% (direct contact) and 0.0% (indirect contact)	Non-hemolytic

<b>Biocompatibility</b>		
<b>Test</b>	<b>Results</b>	<b>Conclusions</b>
Hemocompatibility – Unactivated Partial Thromboplastin Time Assay Direct Contact (ISO 10993-4)	No statistically significant difference found between the Unactivated Partial Thromboplastin Time (UPTT) of the plasma exposed to the test article and that of the plasma exposed to either the negative control or the untreated control	No effect on coagulation
Hemocompatibility – Complement Activation Assay (ISO 10993-4)	C3a and SC5b-9 levels $\leq$ negative and untreated controls	No effect on complement activation
Hemocompatibility – Thrombogenicity Study in Dogs (ISO 10993-4)	Minimal thrombosis observed with a Grade 0 in two out of two test sites and two out of two control sites	No significant thrombosis
Systemic Toxicity – Systemic Injection Test (ISO 10993-11)	Extracts of test article did not induce a significantly greater biological reaction than the control extracts when injected in Swiss Albino mice	No toxic effects
Systemic Toxicity - Rabbit Pyrogen Test (ISO 10993-11)	The temperature increases (maximum) was 0.03°C from baseline	Non-pyrogenic

### **Summary of Substantial Equivalence:**

The data presented in this submission demonstrates the technological similarity and equivalency of the SOFIA Distal Access Catheter when compared with the predicate Chaperon Guiding Catheter (K082385) and the HEADWAY DUO Microcatheter (K120917) devices. The devices:

- Have an equivalent intended use,
- Use the same operating principle,
- Incorporate the same basic design,
- Are packaged and sterilized using the same methods.

In summary, the SOFIA Distal Access Catheter described in this submission is substantially equivalent to the predicate devices.



Food and Drug Administration  
10903 New Hampshire Avenue  
Document Control Center – WO66-G609  
Silver Spring, MD 20993-0002

November 22, 2013

Micro Vention, Inc.  
c/o Ms. Naomi Gong  
Sr. Regulatory Affairs Project Manager  
1311 Valencia Avenue  
Tustin, CA 92780

Re: K131482

Trade/Device Name: SOFIA Distal Access Catheter  
Regulation Number: 21 CFR 870.1250  
Regulation Name: Percutaneous Catheter  
Regulatory Class: Class II  
Product Code: DQY, DQO  
Dated: October 22, 2013  
Received: October 23, 2013

Dear Ms. Gong:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA).

You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration. Please note: CDRH does not evaluate information related to contract liability warranties. We remind you however, that device labeling must be truthful and not misleading.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801); medical device reporting (reporting of medical device-related adverse events) (21 CFR 803); good manufacturing practice requirements as set

forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please contact the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address <http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm>. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to <http://www.fda.gov/MedicalDevices/Safety/ReportaProblem/default.htm> for the CDRH's Office of Surveillance and Biometrics/Division of Postmarket Surveillance.

You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (301) 796-7100 or at its Internet address <http://www.fda.gov/MedicalDevices/ResourcesforYou/Industry/default.htm>.

Sincerely yours,

**Joyce M. Whang -S**

for Victor Krauthamer, Ph.D.  
Acting Director  
Division of Neurological  
and Physical Medicine Devices  
Office of Device Evaluation  
Center for Devices and Radiological Health

Enclosure

## Indications for Use

510(k) Number (if known): K131482

Device Name: SOFIA Distal Access Catheter

Indications For Use:

*The SOFIA Distal Access Catheter is intended for general intravascular use, including the neuro and peripheral vasculature. It can be used to facilitate the introduction of diagnostic and therapeutic agents. It is not intended for use in coronary arteries.*

Prescription Use   X    
(Part 21 CFR 801 Subpart D)

AND/OR

Over-The-Counter Use \_\_\_\_\_  
(21 CFR 807 Subpart C)

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NEEDED)

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Concurrence of Center for Devices and Radiological Health (CDRH)

**Joyce M. Whang -S**