

Bead Block™ Embolic Agent

INSTRUCTIONS FOR USE

STERILE • SINGLE USE ONLY • NON-PYROGENIC

Sterilized by steam. Do not use if the package is opened or damaged

English

DESCRIPTION:

Bead Block comprises a range of hydrogel microspheres that are biocompatible, hydrophilic, non-resorbable and precisely calibrated. Bead Block microspheres are produced from polyvinyl alcohol and are available in the following size ranges:

Bead Size Range		Indication	
Nominal Bead Size	Label Color	Hypervascular Tumors/ Arteriovenous Malformations	Uterine Fibroid
100-300 µm	Yellow	Yes	No
300-500 µm	Blue	Yes	No
500-700 µm	Red	Yes	No
700-900 µm	Green	Yes	Yes
900-1200 µm	Purple	Yes	Yes

PRESENTATION:

Syringe

1. Syringe of 20 ml presented in a sterile, sealed pre-formed polycarbonate tray with a peel-off Tyvek® lid.
2. Each syringe contains approximately 1 ml or 2 ml of Bead Block microspheres in non-pyrogenic, sterile, phosphate buffered saline.
3. Each syringe is intended for single patient use only. Do not resterilize. Discard any unused material.

INDICATIONS:

Bead Block microspheres are intended to be used for the embolization of hypervascular tumors, including uterine fibroids and arteriovenous malformations (AVMs).

CLINICAL APPLICATIONS:

The scientific literature provides extensive documentation of embolization procedures using a wide variety of artificial agents in both neurological and peripheral vascular systems, including the head, neck, spine, liver, genitourinary tract, uterus, gastrointestinal system, limbs and lungs. A representative bibliography is provided following these instructions for use.

WARNING: Studies have shown that Bead Block microspheres do not form aggregates and, as a result, penetrate deeper into the vasculature as compared to similarly sized PVA particles. Care must be taken to choose a larger sized Bead Block Embolic Agent when embolizing arteriovenous malformations with large shunts to avoid passage of the microspheres into the pulmonary or coronary circulation.

The color of the Bead Block microspheres could be visible through the skin if injected into arteries feeding superficial tissues.

CAUTIONS:

- Do not use if the syringe or packaging appear damaged
- Select the size and quantity of Bead Block microspheres appropriate for the pathology to be treated
- Embolization with Bead Block microspheres should only be performed by physicians who have received appropriate interventional occlusion training in the region intended to be embolized

CAUTION:

Federal (USA) law restricts this device to sale by or on order of a physician.

CONTRAINDICATIONS:

1. Patients intolerant to occlusion procedures
2. Vascular anatomy or blood flow that precludes catheter placement or injection of embolics
3. Presence or likely onset of vasospasm
4. Presence or likely onset of hemorrhage
5. Presence of severe atheromatous disease
6. Presence of lesion/tumor-feeding vessel with diameter smaller than any distal vessel(s) branching from it
7. Presence of patent extra-to-intracranial anastomoses or shunts
8. Presence of collateral vessel pathways potentially endangering normal territories during embolization
9. Presence of end arteries leading directly to cranial nerves
10. Presence of arteries supplying the lesion/tumor not large enough to accept Bead Block microspheres
11. Vascular resistance peripheral to the feeding arteries precluding passage of Bead Block microspheres into the lesion/tumor
12. Do not use Bead Block microspheres in the following applications:
 - i. Embolization of large diameter arteriovenous shunts (i.e. where the blood does not pass through the arterial/capillary/venous transition but directly from artery to vein)
 - ii. The pulmonary arterial vasculature
 - iii. Any vasculature where the use of Bead Block could pass directly into the internal carotid artery, the central circulatory system or other non-target territories

POTENTIAL COMPLICATIONS:

1. Undesirable reflux or passage of Bead Block microspheres into normal arteries adjacent to the targeted lesion/tumor or through the lesion/tumor into other arteries or arterial beds
2. Non-target embolization
 - Pulmonary embolism
 - Pancreatitis
3. Ischemia at an undesirable location
4. Post embolization syndrome
5. Capillary bed saturation and tissue damage
6. Ischemic stroke or ischemic infarction
7. Vessel or lesion/tumor rupture and hemorrhage
8. Neurological deficits including cranial nerve palsies
9. Liver abscess
10. Vasospasm
11. Death
12. Recanalization
13. Foreign body reactions necessitating medical intervention
14. Infection necessitating medical intervention
15. Clot formation at the tip of the catheter and its subsequent dislodgement

Uterine Fibroid Embolisation (UFE) SPECIFIC CONTRAINDICATIONS:

- Pregnant women
- Active or suspected pelvic inflammatory disease
- Malignancy of the pelvic region
- Endometrial neoplasia or hyperplasia
- Presence of submucosal fibroids with greater than 50% growth into the uterine cavity
- Presence of pedunculated serosal fibroid as the dominant fibroid(s)
- Fibroids with significant collateral feeding by vessels other than the uterine arteries

UFE SPECIFIC WARNINGS:

Warnings about UFE and Pregnancy:

- There are no long term data on the effects of UFE on the ability to become pregnant and carry a fetus to term, and on the development of the fetus
- This procedure should only be performed on women who do not intend future pregnancy
- Women who become pregnant following UFE may be at increased risk for the following:
 - o Postpartum hemorrhage
 - o Abnormal placentation
 - o Preterm delivery
 - o Caesarean delivery
 - o Abnormal presentation at birth
 - o Devascularization of the uterine myometrium resulting from UFE may increase the risk of uterine rupture of women who subsequently become pregnant following UFE

OTHER UFE WARNINGS:

- When using Bead Block for uterine fibroid embolization, do not use beads smaller than 700 microns
- An appropriate gynecologic work-up should be performed on all patients presenting for embolization of uterine fibroids (e.g. gynecologic history, fibroid imaging, endometrial sampling to rule out carcinoma in patients with abnormal menstrual bleeding)
- The diagnosis of uterine sarcoma could be delayed by taking a non-surgical approach (such as UFE) to treating fibroids. It is important to pay close attention to warning signs for sarcoma (e.g., rapid tumor growth, postmenopausal with new uterine enlargement, MRI findings) and to conduct a more thorough work-up of such patients prior to recommending UFE. Recurrent or continued tumor growth following UFE should be considered a potential warning sign for sarcoma and surgery should be considered

UFE SPECIFIC PRECAUTIONS:

- There is an increased chance of reflux of Bead Block into unintended blood vessels as uterine artery flow diminishes. Comparison of angiographic endpoint & infarction rate in individual patients indicates that best results were obtained with an endpoint close to stasis.
- The long-term outcome of UFE is at present unknown

UFE SPECIFIC POTENTIAL COMPLICATIONS:

Potential post procedure complications include:

1. Abdominal pain
2. Discomfort
3. Fever
4. Nausea

5. Constipation
6. Premature ovarian failure (i.e. menopause)
7. Amenorrhoea
8. Infection of the pelvic region
9. Uterine/ovarian necrosis
10. Local vascular inflammation
11. Deep vein thrombosis with or without pulmonary embolism
12. Vaginal discharge
13. Tissue passage, fibroid sloughing, or fibroid expulsion post UFE
14. Post-UFE intervention to remove necrotic fibroid tissue
15. Vasovagal reaction
16. Transient hypertensive episode
17. Hysterectomy

■ INSTRUCTIONS FOR USE:

- Carefully evaluate the vascular network associated with the lesion/tumor using high resolution imaging prior to beginning the embolization procedure
- Bead Block microspheres are available in a range of sizes. Care should be taken to choose the appropriate size Bead Block microspheres that best matches the pathology (i.e. vascular target/vessel size) and provides the desired clinical outcome.
- When embolizing arteriovenous malformations, choose a particle size that will occlude the nidus without passing through the AVM
- Choose a delivery catheter based on the size of the target vessel. Bead Block microspheres can tolerate temporary compression of 20% to 30% in order to facilitate passage through the delivery catheter.
- Introduce the delivery catheter into the target vessel according to standard techniques. Position the catheter tip as close as possible to the treatment site to avoid inadvertent occlusion of normal vessels.
- Bead Block microspheres are not radio-opaque. It is recommended to monitor the embolization under fluoroscopic visualization by adding the desired amount of contrast medium to the physiologic suspension fluid.

■ ADDITIONAL UFE SPECIFIC INSTRUCTIONS:

- Use of 700-900µm Bead Block is recommended to treat UFE, with upsizing to 900-1200µm if required. An endpoint of stasis or near stasis is recommended with the main uterine artery remaining patent, but with negligible residual flow toward the uterus
- This endpoint corresponds to an angiographic image of a patent horizontal segment with absent flow in the ascending segment of the uterine artery
- At the discretion of the physician, pneumatic compression devices may be used for patients currently taking hormone therapy, uterine volume >1000cc, and patients that are overweight to lower the risk of deep vein thrombosis

■ UFE PATIENT COUNSELLING INFORMATION:

- Patients should have a clear understanding prior to embolization of who will provide their post procedure care and whom to contact in case of an emergency after embolization
- UFE candidates should have an understanding of the potential benefits, risks, and adverse events associated with the embolization procedure. In particular patients should understand that there is a chance their fibroid symptoms will not improve following embolization.

Recommended catheters and contrast agents:

Bead Block™ has been tested and shown to be successfully delivered using the following combinations of microsphere size, contrast medium and microcatheters shown below.

Product size range of Bead Block™	Recommended catheter (internal diameter)	Recommended contrast agents
100 – 300 µm	≥ 2.4 Fr (0.016 in/0.42 mm)	Omnipaque 300 (Iohexol 300)
300 – 500 µm		Omnipaque 350 (Iohexol 350)
500 – 700 µm		Visipaque 320 (Iodixanol 320) Iomeron 350 (Iomeprol 350)
700 – 900 µm	≥ 4.0 Fr (0.041 in/1.03 mm)	Niopam 300/Isovue 300 (iopamidol 300)
900 – 1200 µm		Optiray 300 (ioversol 300) Niopam 370 (iopamidol 370)

Notes: Other contrast agents have not been tested in conjunction with Bead Block™.

■ DELIVERY INSTRUCTIONS:

1. To obtain a homogeneous suspension, directly aspirate the contrast medium into the syringe containing the beads in phosphate buffered saline and remove all air from the syringe. The volume of contrast medium to be added varies depending on the contrast medium viscosity and the bead size. As an indication, the typical volume of contrast medium required for addition to the syringe content will range from 3 to 6 mL to achieve a contrast medium to product volume ratio ranging from approximately 40:60 (e.g. with Omnipaque 350) to 60:40 (e.g. with Niopam 300).
2. To evenly suspend the Bead Block microspheres/contrast medium, gently invert the 20 ml syringe several times. Attach the 20 ml syringe to one port of the luer-lock 3-way stopcock; and, if desired, a delivery catheter may be attached to the remaining port on the stopcock. Wait several minutes to allow the Bead Block microspheres to suspend properly.
3. Draw the Bead Block microspheres/contrast medium into the injection syringe slowly and gently to minimize the potential of introducing air into the system. Purge all air from the system prior to injection.









Delivery

1. Inject the Bead Block microspheres/contrast medium from the injection syringe under fluoroscopic visualization using a slow pulsatile action, while observing the contrast medium flow rate. If there is no effect on the flow rate, repeat the delivery process with additional injections of Bead Block microspheres/contrast medium or larger sized Bead Block microspheres may be considered. If the Bead Block microspheres/contrast medium requires re-suspension, gently invert the 20 ml syringe several times.
2. Exercise conservative judgment in determining the embolization endpoint.

Post Procedure

1. Upon completion of the treatment, remove the catheter while maintaining gentle suction so as not to dislodge Bead Block microspheres still within the catheter lumen.
2. Discard any open, unused Bead Block microspheres as well as any other ancillary equipment used in the procedure such as syringes, needles and catheters etc.

■ PACKAGE LABEL:

REF = Catalogue number	 = Attention see instructions for use	 = Protect from light	 = Manufacturer
LOT = Batch number/Lot number	 = Steam Sterilised	 = Protect from moisture	
 = Do not reuse	 = Use before/Expiry	 = Do not freeze	

■ CONSERVATION AND STORAGE:

- Bead Block microspheres must be stored in a cool, dry and dark place in its original packaging
- Use by the date indicated on the syringe label
- Do not freeze

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Patents

US 6,652,883
US 6,676,971
US 7,070,809
Other patents pending



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