A 32-year-old woman presented with an incidentally diagnosed fibronodular hyperplasia (FNH) in her liver discovered 7 years prior, at which point it measured 2 X 2.3 cm. Given her lack of symptoms and the lesion's benign imaging appearance, she was followed with serial imaging since the lesion's initial discovery. The FNH was noted to be enlarging over time, most recently measuring 5 X 4.7 cm (Figure 1). Approximately 1.5 years previously, she began noticing right back/flank pain, which had worsened as the mass grew and was not relieved with NSAIDs. This prompted an ultrasound-guided biopsy of the lesion, which confirmed the diagnosis of FNH. The patient’s pain was reproduced on penetration of the liver capsule during biopsy.

The patient was seen in the interventional radiology clinic, and a thorough history and physical exam were performed. Her physical exam was notable only for some mild right upper quadrant and flank tenderness. Her liver function tests, tumor markers, and coagulation profile were all within normal limits. Percutaneous treatments, including endovascular embolization and thermal ablation, were discussed in detail with the patient, and the decision was made to proceed with embolization.

PROCEDURE DESCRIPTION

The procedure was performed under moderate monitored sedation. A 5-F (1.67-mm) shaped catheter was used for visceral selection. Selective catheterization of the right hepatic artery supplying the tumor was performed using a Renegade® HI-FLO microcatheter (Boston Scientific Corporation) over a Fathom®-16 Guidewire (Boston Scientific Corporation), and the lesion demonstrated robust tumor blush on contrast injection (Figure 2). Under fluoroscopic visualization, the bland embolic mixture was delivered (approximately 1.5 mL of lipiodol [Guerbet] emulsified with an equivalent volume of heparinized saline, followed by one half vial of 100-µm Embozene™ Microspheres [Boston Scientific Corporation]). Postembolization digital subtraction angiography was performed with the catheter unchanged in position, demonstrating stasis in the treated vessel (Figure 3). The tumor was stained with embolic material, and the procedure was completed.

FOLLOW-UP

The patient was seen in clinic 1 month postprocedure and reported a marked improvement in her symptoms (pain severity reduced to 3/10 from 8/10 preprocedure with frequent pain-free intervals). She has been able to resume regular exercise. Follow-up MRI showed stable size (5.1 X 4.4 cm) of the FNH with no arterial enhancement (Figure 4).

Results from case studies are not necessarily predictive of results in other cases. Results in other cases may vary.
A combination of emulsified lipiodol and 100-µm Embozene Microspheres was selected to ensure deep penetration into the vascular bed of the tumor for complete bland embolization.

DISCUSSION
Given its benign and typically asymptomatic nature, FNH is not frequently encountered in interventional radiology practices. Surgical treatment is generally considered first-line treatment for symptomatic FNH. However, in cases such as this where tumor growth or capsular distension causes symptoms and/or in those who are not surgical candidates, patients may benefit from embolotherapy or ablation.\(^1\) Given the lesser sedation requirements, growth retardation, and lesser bleeding risk of embolization, it is likely a better initial treatment option. A variety of embolic agents and particle types have been described in the literature.\(^1,2\) In this patient, a combination of emulsified lipiodol and 100-µm Embozene™ Microspheres was selected to ensure deep penetration into the vascular bed of the tumor for complete bland embolization.


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Embozene™ Microspheres

CAUTION: Federal law (USA) restricts this device to sale by or on the order of a physician. Rx only. Prior to use, please see the complete “Directions for Use” for more information on Indications, Contraindications, Warnings, Precautions, Adverse Events, and Operator’s Instructions.

INTENDED USE/INDICATIONS FOR USE

Embozene Microspheres are indicated for embolization of arteriovenous malformations (A.V.M.) and hypervascular tumors (H.V.T.) including uterine fibroids and hepatoma.

CONTRAINDICATIONS

The contraindications of Embozene Microspheres include the presence of vasculature where Embozene Microspheres could pass directly into the central nervous system, central circulatory system, internal carotid artery, or other non-target territories. Procedures should not be performed if vascular anatomy precludes correct catheter placement or embolic injection.

WARNINGS and PRECAUTIONS

Vascular embolization is a high-risk procedure. The procedure should be performed by specialized physicians trained in vascular embolization procedures. Complications can occur at any time during or after the procedure.

Renegade STC 18 Microcatheter, Renegade Fiber Braided Microcatheter, and Renegade HI-FLO Microcatheter

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INTENDED USE/INDICATIONS FOR USE

The Renegade STC 18 Microcatheter, Renegade Fiber Braided Microcatheter, and the Renegade HI-FLO Microcatheter are intended for peripheral vascular use. The microcatheter can be coaxially tracked over a steerable guidewire in order to access distal, tortuous vasculature. Once the subselective region has been accessed, the microcatheter can be used for the controlled and selective infusion of diagnostic, embolic, or therapeutic materials into vessels. Diagnostic, embolic, therapeutic agents to be used in accordance with specifications outlined by the manufacturer.

CONTRAINDICATIONS

None Known.

The Renegade STC 18 Microcatheter, Renegade Fiber Braided Microcatheter, and the Renegade HI-FLO Microcatheter are not intended for use in the coronary vasculature or the neurovasculature.
PRECAUTIONS

This device should be used only by physicians thoroughly trained in percutaneous, intravascular techniques and procedures. Never advance or withdraw an intravascular device against resistance until the cause of the resistance is determined by fluoroscopy. Movement of the microcatheter or guidewire against resistance may result in separation of the microcatheter or guidewire tip, damage to the microcatheter or guidewire tip, or vessel perforation. Because the microcatheter may be advanced into narrow subselective vasculature, repeatedly assure that the microcatheter has not been advanced so far as to interfere with its removal.

ADVERSE EVENTS

The Adverse Events include, but are not limited to: vessel trauma, embolism, hemorrhage/hematoma, vasospasm, infection, air embolism, allergic reaction.

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