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

**Post-Effective Amendment No. 2**  
to  
**FORM S-3**  
on  
**FORM S-1**

REGISTRATION STATEMENT  
UNDER  
THE SECURITIES ACT OF 1933

**MRI INTERVENTIONS, INC.**

*(Exact name of registrant as specified in its charter)*

**Delaware**  
*(State or other jurisdiction of  
incorporation or organization)*

**3841**  
*(Primary Standard Industrial  
Classification Code Number)*

**58-2394628**  
*(I.R.S. Employer  
Identification No.)*

**One Commerce Square, Suite 2550**  
**Memphis, TN 38103**  
**(901) 522-9300**

*(Address, including zip code, and telephone number, including area code, of registrant's principal executive office)*

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**Oscar L. Thomas**  
**Vice President, Business Affairs**  
**MRI Interventions, Inc.**  
**One Commerce Square, Suite 2550**  
**Memphis, TN 38103**  
**(901) 522-9300**

*(Name, address, including zip code, and telephone number, including area code, of agent for service)*

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Copies to:  
**Richard F. Mattern, Esq.**  
**Baker, Donelson, Bearman, Caldwell & Berkowitz, PC**  
**165 Madison Avenue, Suite 2000**  
**Memphis, TN 38103**  
**(901) 577-2343**

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**Approximate date of commencement of proposed sale to the public:** This post-effective amendment withdraws from registration all shares of common stock that remain unsold under Registration Statement No. 333-183279.

If any of the securities being registered on this Form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act of 1933, check the following box.

If this Form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, please check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

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If this Form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

If this Form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering.

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, or a smaller reporting company. See the definitions of "large accelerated filer," "accelerated filer" and "smaller reporting company" in Rule 12b-2 of the Exchange Act. (check one)

Large Accelerated filer

Non-accelerated filer  (Do not check if a smaller reporting company)

Accelerated filer

Smaller reporting company

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## DEREGISTRATION OF SECURITIES

On August 13, 2012, MRI Interventions, Inc., or the Company, filed with the Securities and Exchange Commission, or the SEC, a registration statement on Form S-1 (Registration No. 333-183279), or the Registration Statement, which was initially declared effective by the SEC on September 21, 2012. The Registration Statement was amended by Post-Effective Amendment No. 1 on Form S-3, which was filed on March 29, 2013 and declared effective by the SEC on April 12, 2013. The Registration Statement, as amended by Post-Effective Amendment No. 1, registered resales from time to time, by the selling securityholders identified in the prospectus included in the Registration Statement, of 17,493,721 shares of common stock of the Company, consisting of 12,218,111 outstanding shares of common stock and 5,275,610 shares of common stock issuable upon the exercise of outstanding warrants.

The Company has no further obligation to maintain effectiveness of the Registration Statement. In accordance with an undertaking made by the Company in the Registration Statement to remove by means of a post-effective amendment any securities that remain unsold at the termination of the offering, this Post-Effective Amendment No. 2 is being filed to terminate the effectiveness of the Registration Statement and to remove from registration all securities registered but not sold under the Registration Statement.

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