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820 Jorie Blvd
Oak Brook, IL 60523
TEL 1-630-571-2670
FAX 1-630-571-7837
RSNA.org

NEWS

RSNA Press Release

Largest Study to Date Finds Radiofrequency Ablation Is Best Treatment for Benign Bone Tumor

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Media Contacts:

Maureen Morley
(630) 590-7754
mmorley@rsna.org

Heather Babiar
(630) 590-7738
hbabiar@rsna.org

At A Glance

- Radiofrequency ablation (RFA) is a safe and effective treatment for osteoid osteoma.
- Osteoid osteoma is a benign but painful bone tumor most often found in children and young adults.
- The study reports that RFA has a clinical success rate of 89% in treating osteoid osteoma.
- RFA is minimally invasive, and most patients may resume their daily activities almost immediately.

OAK BROOK, Ill. - Radiofrequency ablation (RFA) should be the treatment of choice for the majority of patients suffering with a benign but painful bone tumor known as osteoid osteoma, according to research published in the October issue of *Radiology*.

The study, from Massachusetts General Hospital in Boston, is the first large-scale research that shows RFA to be preferable to open surgery as the primary treatment for this type of bone tumor. "This study is significant because it proves that surgery is not necessary for the treatment of osteoid osteoma in most patients," said the study's lead author, Daniel Rosenthal, M.D., professor of radiology at Harvard Medical School in Boston.

Osteoid osteomas represent about 10 percent of benign bone tumors. They are most commonly found in children and young adults and are often difficult to diagnose. Although such tumors rarely exceed 1.5 cm in diameter (a little over half an inch) and have little or no growth potential, they can cause severe pain.

"Our average patient is 17 years old, and three out of four patients are male," Dr. Rosenthal said. "These individuals tradionally are unable to participate in any sport or recreational activity and many require round-the-clock medication."

Minimally invasive therapies such as RFA have been explored as an alternative to the two traditional treatments for osteoid osteoma: surgery and management through anti-inflammatory medication.

When treated operatively, the tumor can be difficult to identify, and incomplete removal may lead to recurrence. Cutting out a tumor from a weight-bearing bone may also involve a prolonged recuperation. Long-term use of anti-inflammatory medications is unappealing to

many patients because of negative side effects.

Interventional radiologists perform RFA by inserting a CT-guided wire to the tumor site and transmitting an electrical current to destroy the lesion. Following the two-hour procedure, most patients are able to resume daily activities immediately.

Dr. Rosenthal's study followed 263 patients undergoing RFA for osteoid osteoma over an 11-year period. Patients in the study included 184 males and 79 females, ages 2 to 56. Most of the tumors were located in the patients' lower extremities, and the majority of procedures were initial tumor treatments.

Researchers were able to perform long-term follow-up of at least 24 months on 126 patients. Of the procedures performed on those patients, 112 were a complete clinical success (a success rate of 89 percent), meaning patients were free of pain, taking no medications and requiring no additional procedures.

The success rate of re-treatments-in which the procedure was performed after a prior unsuccessful RFA or surgical treatment-was 60 percent. Patient age, sex, and lesion size and location did not appear to affect the probability of a clinically successful outcome. "This study shows that radiofrequency ablation can be performed as an outpatient procedure on the great majority of patients with osteoid osteoma," Dr. Rosenthal said. "The success rate is high, the complication rate low, and the recovery brief."

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"Osteoid Osteoma: Percutaneous Treatment with Radiofrequency Energy." Collaborating with Dr. Rosenthal on this paper were Francis J. Hornicek, M.D., Ph.D., Martin Torriani, M.D., Mark C. Gebhardt, M.D., and Henry J. Mankin, M.D.