

# Radiofrequency Ablation: A Nursing Perspective

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Recent interest in minimally invasive, percutaneous therapies has resulted in less invasive and potentially safer methods of treating patients with cancer who otherwise have few conventional therapy options. Radiofrequency ablation (RFA) has emerged as a safe and predictable technology for thermal ablation in soft tissue and nerve ganglia, as well as in the liver, bone, kidneys, lungs, breasts, lymph nodes, and heart. Certain devices are approved for soft tissue ablation, unresectable liver tumor ablation, and painful bone metastases by the U.S. Food and Drug Administration. This local, minimally invasive, image-guided therapy has been shown to be a safe, effective, and relatively inexpensive treatment for patients who are not surgical candidates (Christians et al., 2001; Goldberg et al., 1998; Livraghi et al., 1997; Solbiati et al., 1997). As RFA becomes available for more widespread use, oncology and radiology nurses should be familiar with how to properly care for patients receiving this treatment. Nurses function as an integral part of a multidisciplinary team in caring for patients undergoing RFA. A brief description of the RFA procedure is presented with an overview of the nurse's role in managing and caring for patients undergoing RFA.

## Indications and Contraindications

Although RFA is cleared by the U.S. Food and Drug Administration for ablation of soft tissue, most experience has been in treatment of primary and metastatic tumors of the liver (Curley et al., 1999; Dromain et al., 2002).

Radiofrequency ablation (RFA) has emerged as a safe and predictable technology for treating certain patients with cancer who otherwise have few treatment options. Nurses need to be familiar with all phases of the RFA procedure to create an optimal environment for patients. This article offers a brief review of the RFA procedure and nurses' responsibilities in caring for these patients. Before RFA, nurses should focus on patient education and aggressive hydration. During the procedure, nurses can prevent injury by placing grounding pads appropriately, monitoring vital signs, and medicating patients as needed. After RFA, nurses should assess the skin puncture site, provide adequate pain relief, and, again, hydrate patients. Nurses who care appropriately for RFA recipients may help to improve patient outcomes and make an otherwise frightening procedure more comfortable.

Use of RFA also has been documented in the successful treatment of osteoid osteoma (Rosenthal, Hornicek, Torriani, Gebhardt, & Mankin, 2003; Woertler et al., 2001), painful bone metastases (Dupuy, Hong, Oliver, & Goldberg, 2000; Goetz et al., 2004), small renal cell tumors (< 3 cm) (Hwang et al., 2004), lung cancer (Gadaleta et al., 2004; Steinke, King, Glenn, & Morris, 2004a, 2004b), adrenals (Mayo-Smith & Dupuy, 2004; Melliza & Woodall, 2000; Wood, Abraham, Hvizda, Alexander, & Fojo, 2003) and painful soft tissue neoplasms (Locklin, Mannes, Berger, & Wood, 2004). RFA also has been used in nerve ganglia for treatment of pain syndromes such as trigeminal neuralgia (Onofrio, 1975; Oturai, Jensen, Eriksen, & Madsen, 1996), cluster headaches (Sanders & Zuurmond, 1997), chronic segmental thoracic pain (Stolker, Vervest, & Groen, 1994), cervicobrachialgia (Slappendel et al., 1997), and plantar fasciitis (Sollitto, Plotkin, Klein, & Mullin, 1997). Limited use of RFA

in breast cancer (Jeffrey et al., 1999) has been documented.

RFA of soft tissue may be indicated if patients are not surgical candidates or refuse surgery or if a tumor is not surgically resectable because of location. Goals for RFA for soft tissue neoplasms include cure, debulking, and palliation. With a goal of palliation or decreasing tumor burden, ablating the entire tumor may not be necessary. Contraindications of RFA include uncorrectable coagulopathies and uncontrolled infection. Otherwise, each patient is evaluated individually, carefully weighing the risks and benefits of using RFA to potentially reach a realistic treatment goal.

## Radiofrequency Ablation Procedure

RFA usually is performed on an outpatient basis under conscious sedation, although general anesthesia is preferred by many clinicians to minimize procedural pain. Occasionally, conscious sedation allows for frequent neurologic checks if the ablation zone is near a major nerve. RFA can be performed percutaneously, laparoscopically, or with open surgery. It involves the placement of a thin needle (14–17.5 gauge) into the

*Submitted August 2004. Accepted for publication November 24, 2004. (Mention of specific products and opinions related to those products do not indicate or imply endorsement by the Clinical Journal of Oncology Nursing or the Oncology Nursing Society.)*

Digital Object Identifier: 10.1188/05.CJON.346-349