A 57-year-old male patient had myeloma. He had severe pain in the left clavicle that did not respond to radiotherapy; therefore, it was treated with radiofrequency thermal ablation (RFTA). Under fluoroscopic guidance, two RF needles at a distance of 1.5 cm from each other were inserted into the mass and conventional radiofrequency (90°C and 60 seconds) at two different depths (1 cm apart) was applied. Then, 2 ml of 0.5% ropivacaine along with triamcinolone 40 mg was injected in each needle. The visual analogue pain score (VAS from 0 to 10) was decreased from 8 to 0. In the next 3 months of follow-up, the patient was very satisfied with the procedure and the mass gradually became smaller. There were no complications. This study shows that RFTA could be a useful method for pain management in painful osteolytic myeloma lesions in the clavicle (Korean J Pain 2014; 27: 72-76)

Key Words: clavicle, myeloma, radiofrequency thermal ablation.
Drugs (NSAIDs). It can be treated by radiotherapy, but it is not effective in pain management in 20–30% of cases. On one hand, a patient that has gone under radiotherapy and still complains of pain cannot go under radiotherapy again because of a limitation in normal tissue tolerance \cite{3,4}. In addition, it takes 12–20 weeks to see the maximum result of radiotherapy, while the radiofrequency effect is much faster \cite{5,6}.

The patient that has not responded to these usual treatments has limited choices in pain management. Patients who cannot receive surgery or chemotherapy or radiotherapy need alternative treatment options. Radiofrequency is a palliative treatment that can improve life quality with less morbidity \cite{7}. Ablation due to high and alternating frequency current is applied with a needle electrode, which causes frictional heat and necrosis, and has been used in primary tumors and metastasis \cite{8}. We present a case that shows the analgesic efficacy of RFTA in a painful osteolytic myeloma lesion in the clavicle.

**CASE REPORT**

The patient was a 57-year-old man with a history of coming into contact with chemical gases during the war of 1981. He was referred to the emergency room (ER) with an acute abdomen and hemorrhage about 6 years ago. At that time, the diagnosis was acute renal failure and myeloma. The patient’s blood abnormality was treated very well in the hematology department and he went under dialysis. He did not come back to the hematology department for myeloma maintenance therapy until four months ago when he came to the ER with hoarseness, tenderness in a hind limb, bone pains, movement limitation in the forelimbs with severe pain (VAS 6) in the left clavicle. He underwent 10 sessions of clavicle radiotherapy before admission to the pain clinic. His clavicular pain did not respond to radiotherapy and opioids.

In the physical examination, the patient complained of generalized bone pain especially in left clavicle. There was a 5 × 7 cm mass in 1/3 of the internal part of the clavicle (Fig. 1). There was no redness or edema and the mass was fixed to the bone and in pain on palpation. It was a new localized, deep, uncomfortable pain in the left clavicle.

Both shoulders and arms were tender with movement limitation. Bilateral limited elbow extension and flexion deformity were seen. Hind limbs force was decreased (2 from 5). There was no sensory deficit. In the shoulder examination, there was no hypertrophy, heat, erythema and tenderness. Clavicle conventional radiofrequency was chosen as a treatment. The patient’s blood test and coagulation test were normal (platelet counts = 7,400 per microliter). In the plain radiography other than widespread lytic myeloma lesions especially in the shoulders and arms, there was a big lesion in the left clavicle which was also detected in the chest X-ray and chest CT scan (Fig. 2).

After IV sedation (midazolam 1 mg and fentanyl 50

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**Fig. 1.** Left clavicular mass.

**Fig. 2.** CT-scans of the chest and osteolytic clavicular mass on the left.