

## CASE REPORT

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### Retained Surgical Sponge in the Thigh: Report of the Third Known Case in the Limb

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We report a retained surgical sponge (gossypiboma) in the thigh, which mimicked a neoplasm. A 25-year-old man, who had a past history of external fixation for femoral shaft fracture, complained of swelling in the left thigh with pain. A radiograph of the thigh showed periosteal reaction. T1-weighted magnetic resonance (MR) images showed a well-defined mass with heterogenous signal intensity, and T2-weighted images showed tortuous lines of low signal intensity within the mass. Surgical excision revealed a retained gauze sponge within the mass. Histopathological examination revealed foreign body reaction related to the retained gauze sponge. Our case, the third to our knowledge of gossypiboma in a limb, demonstrated characteristic MR imaging findings.

**Key words:** retained surgical sponge, gossypiboma, thigh, MRI

#### INTRODUCTION

**G**OSSYPIBOMA IS AN IATROGENIC MASS LESION caused by a retained surgical sponge. Most have been found in the abdominal space, with few in the limbs. We report a case of gossypiboma in the thigh, which mimicked a neoplasm.

#### CASE REPORT

A 25-year-old man, who had a past history of external fixation for femoral shaft fracture, noticed swelling of his left thigh with pain. A radiograph of the left thigh showed a soft-tissue density mass adjacent to the shaft of the femur that had focal periosteal thickening. Sporadic calcification was noted within the lesion (Fig. 1). Subsequent MR imaging revealed a well-defined mass measuring 10×4 cm. On T1-weighted images, the mass had heterogenous signal intensity, and on T2-weighted images, tortuous low-signal-intensity lines were noted in the mass. On contrast-enhanced T1-

weighted images with fat suppression, the mass was heterogeneously enhanced (Fig. 2a-c). MR angiography showed neovascularity surrounding the mass (Fig. 2d). Differential diagnosis included post-traumatic osteosarcoma, periosteal osteosarcoma, and malignant fibrous histiocytoma. Surgical resection revealed an encapsulated mass that contained a folded gauze sponge (Fig. 3). Histopathological examination revealed that the mass consisted of necrosis with calcification. The capsule contained thick collagenous fibers with neutrophils, plasma cells, and lymphocytes. These findings suggested foreign body reaction due to a retained surgical sponge. No evidence of malignancy was found.

#### DISCUSSION

Many reports have described the imaging findings in gossypiboma. On radiography, periosteal reaction may be noted. On angiography, a gossypiboma may appear as a hypervascular tumor. Thus, a periosteal reaction and neovascularity development are not necessary indicative of a neoplastic process. Kalbermatten *et al.* reported a case of gossypiboma with periosteal change,<sup>1</sup> and mentioned that the possible spectrum of skeletal changes secondary to a gossypiboma ranged from osteolytic reactions to periosteal and osteoblastic

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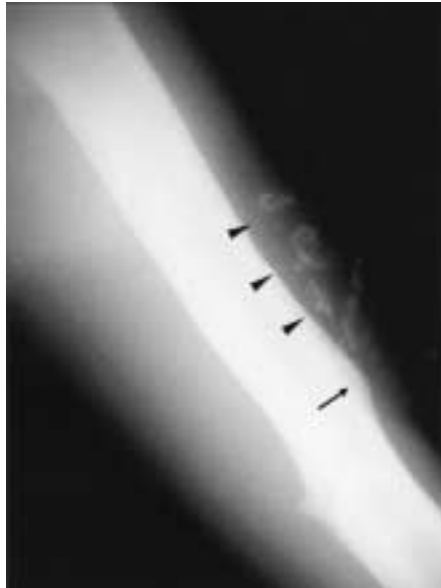
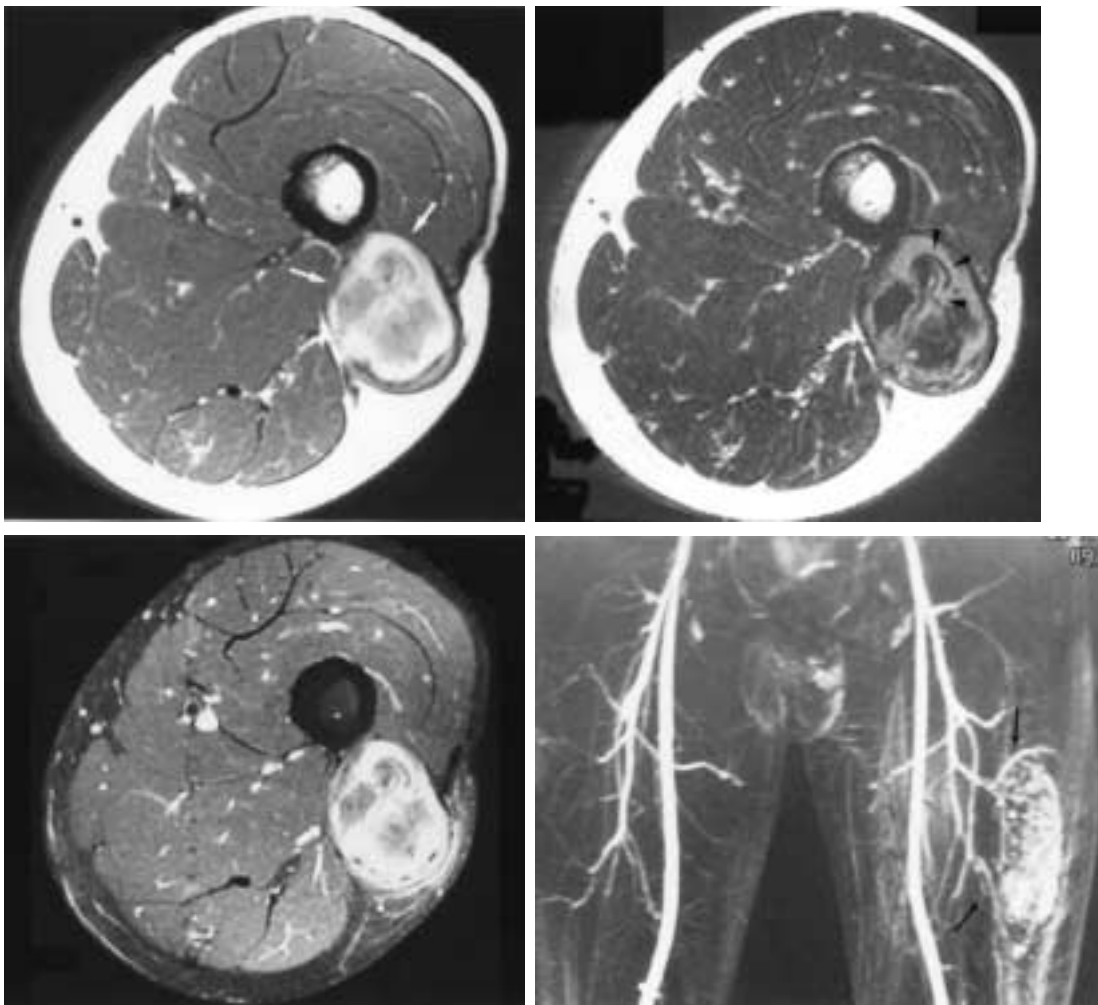


Fig. 1. Plain X-ray film of the thigh. Periosteal thickening in the femur is noted (arrow). Sporadic calcification is also seen (arrowheads).



a	b
c	d

Fig. 2. Axial T1-weighted MR image (TR/TE=460/16) (a) and T2-weighted MR image (TR/TE=3,870/96) (b) show a heterogeneous mass adjacent to the femur (arrows). (c) On fat-suppressed T1-weighted MR image (TR/TE=800/14) with Gd-DTPA enhancement, the mass is heterogeneously enhanced. Note the tortuous low-signal-intensity lines in the mass on T2-weighted MR image (arrowheads), which suggested a folded structure. (d) MR angiography shows neovascularization from the left superficial femoral artery encapsulating the mass (arrows).

reactions. Kawahara *et al.* reported two cases of gauzeomas that showed hypervascularity on angiography.<sup>2</sup>

The absence of a marker on radiographs does not necessarily exclude gossypiboma. Although surgical gauze sponges usually have radiopaque markers, older sponges may not have such markers, and, even if a radiopaque marker exists, it might be difficult to identify on radiological images.<sup>3</sup>

Gossypiboma is most commonly found in the abdominal or pelvic cavity. The rarity of a gossypiboma involving the musculoskeletal system led us to an incorrect diagnosis. To our knowledge, our case was the third gossypiboma of the limb in the literature.<sup>1,4</sup> Some investigators have reported the MR imaging findings of gossypiboma in the abdominal cavity, describing wavy low-signal-intensity lines on T2-weighted MR images thought to suggest folded fabric structure in the lesion, and they concluded that MR imaging findings were characteristic of a gauzeoma.<sup>5-7</sup> The past two reports of gossypibomas in limbs did not mention MR findings of wavy low-signal-intensity lines, but we observed the MR imaging finding on T2WI of tortuous low-signal-intensity lines within the mass of the thigh. This finding suggested the mass was gossypiboma, although we diagnosed it incorrectly.

## REFERENCES

- 1) Kalbermatten DF, Kalbermatten NT, Hertel R. Cotton-induced pseudotumor of the femur. *Skeletal Radiol*, 30: 415-417, 2001.
- 2) Kawahara S, Honda M, Kosuda S, *et al.* CT and US findings of gauzeoma. *Nippon Igaku Hoshasen Gakkai Zasshi*, 50: 375-381, 1990. (in Jpse.)
- 3) Revesz G, Siddiqi TS, Buchheit WA, *et al.* Detection of retained surgical sponges. *Radiology*, 149: 411-413, 1983.
- 4) Varma DG, Ro JY, Guo SG, *et al.* Magnetic resonance imaging appearance of foreign body granulomas of the upper arms. *Clin Imaging*, 18: 39-42, 1994.
- 5) Mochizuki T, Takehara Y, Ichijo K, *et al.* Case report: MR appearance of a retained surgical sponge. *Clin Radiol*, 46: 66-67, 1992.
- 6) Matsuki M, Matsuo M, Okada N. Case report: MR findings of a retained surgical sponge. *Radiat Med*, 16: 65-67, 1998.
- 7) Sugimura H, Tamura S, Kakitsubata Y, *et al.* Magnetic resonance imaging of retained surgical sponges. Case report. *Clin Imaging*, 16: 259-262, 1992.



**Fig. 3.** Macroscopic section of the surgical specimen shows a gauze sponge located centrally (*arrowheads*) and soft tissue surrounding it. Note the folded structure of the gauze, which corresponds to the finding of T2-weighted MR images (*arrows*).