

**Fig. 3.**

The wound at 6 weeks' follow-up. The flap healed completely.

precautions be strictly adhered to when implanting and injecting femoral catheter ports. If possible, the port should be located in a more superficial layer so that it is visible externally. Blood withdrawal before injection and saline injection preceding the agent to check for adequate needle placement is mandatory. If in doubt, insertion of the injection needle under ultrasonographic guidance is an option. Patient education and monitoring of the medical team are needed, given the fact that thigh soft tissue is thick and therefore signs of extravasation may be more muted in this area.

Oncology patients in general, not to mention hepatic tumor patients, are in a catabolic state, and consequently have a delayed wound healing prognosis. Extravasation is a devastating medical accident that is detrimental to the patient's quality of life and physical health. The patient in our case spent two months of his remaining six months of life recovering from this injury. The risk of extravasation should always be kept in mind when manipulating femoral catheter ports.

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Gemella morbillorum Infection after Acupuncture Therapy

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Gemella morbillorum (*G. morbillorum*) is a part of the normal human flora and is an extremely rare cause of infection [1]. However, *Gemellae* are also classified as opportunistic pathogens that are able to cause severe localized and generalized infections [2]. In this case report, we describe an infection of *G. morbillorum* on the chest wall after acupuncture therapy. Our patient was a 74-year-old male who had a thoracic wall contusion because of a bicycle accident. Initially, there were no open wounds or specific symptoms besides bruising and mild pain. The patient underwent acupuncture therapy before the trauma event due to

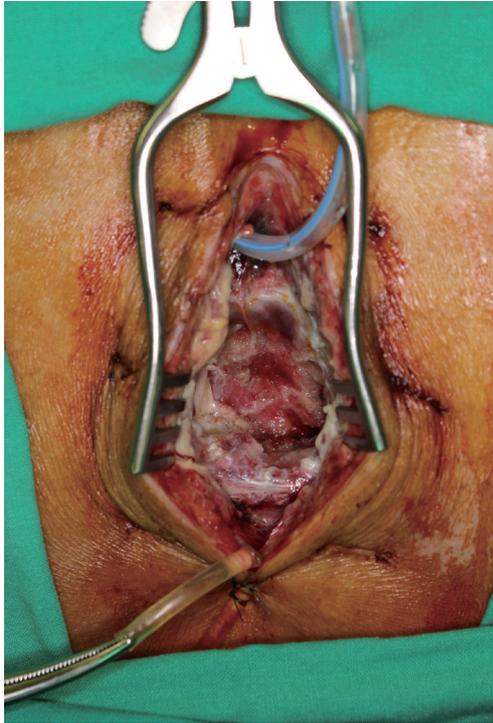


Fig. 1.
Intraoperative sternal wound.

back pain, at a private Korean traditional oriental medicine clinic on a regular basis; he had undergone a total of four acupuncture treatments, every three days starting from the third post-traumatic day. On the 18th day after injury, he visited the orthopedic surgery department for lumbar spinal stenosis and was transferred to the thoracic surgery department due to swelling and erythema of the anterior chest wall. In the physical examination, an abscess was observed in the anterior thoracic wall. A simple X-ray study revealed a sternal fracture. After bacterial culture and debridement of the wound (Fig. 1), we observed mediastinitis involving the sternal bone defect and confirmed surrounding soft tissue infection that disseminated to the pericardium (Fig. 2). Although a blood culture study showed no growth of bacteria, in the wound culture study, *G. morbillorum* was confirmed, and appropriate antibiotics (ampicillin/sulbactam) according to the susceptibility test were injected into the patient. IV antibiotics were administered for 5 weeks and oral antibiotics (amoxicillin/clavulanate) for 3 weeks. After abscess removal, daily debridement and irrigation were performed for 1 month. A wound culture study was conducted every four days, and after confirmation of four consecutive results of negative growth, we planned to reconstruct the thoracic wall with an internal mammary artery perforator flap (IMAP flap). The patient's preoperative computed tomography



Fig. 2.
After debridement, a thoracic wall defect including sternum and mediastinitis is observed in the computed tomography.

(CT) angiography confirmed a left first internal mammary artery perforator. We designed a fasciocutaneous flap on the left side of the sternum based on this perforator (Fig. 3). We incised the upper border of the design and confirmed the pulse of the left first internal mammary artery, and then completely elevated the fasciocutaneous flap and covered the defect successfully. The flap showed a nice contour. There were no complications of the surgical site at the one-month follow-up (Fig. 4). Follow-ups were done at 3 months and 6 months after operation in the outpatient clinic and showed good results (Fig. 5). In Eastern countries, many patients receive acupuncture therapy on blunt trauma areas. Acupuncture therapy is also increasingly used in the West. The most common complication of acupuncture therapy is infection, and the most common pathogen isolated from the wound is *Mycobacterium* [3]. Our case report shows that *G. morbillorum*, which rarely causes soft tissue infection, can cause severe mediastinal infection or endocarditis under conditions of non-sterile acupuncture therapy in a patient with a missed sternal fracture. In the present case in particular, osteomyelitis was also present. After the patient received blunt trauma on the sternum area, no external wound was observed, and he underwent acupuncture therapy due to continuous pain. Intravenous drug abuse, alcoholism, cardiovascular disease, renal disease, and poor oral hygiene are known as the predisposing factors of a *Gemella* infection [2]. This patient did not have the aforementioned factors, and since the patient had no



Fig. 3.
Flap design.



Fig. 4.
Postoperative 1-month view. The reconstructed thorax shows a nice contour, and the donor site scar is acceptable.

open wound upon trauma, erythema and swelling after acupuncture therapy, it is plausible that the infection was caused by acupuncture therapy rather than a hematogenous infection. The treatment of primary sternal osteomyelitis is appropriate antibiotics and debridement of the infected tissue including bone [4]. The defect after debridement can be covered with a myocutaneous flap [4]. In our case, the organism was successfully eradicated with appropriate antibiotic medication, and the defect of the anterior chest wall was reconstructed with an IMAP flap. The IMAP flap has not been widely used for the reconstruction of the chest wall, particularly in the case of an infected wound. However, we used an IMAP flap by confirming infection control in culture studies and considering donor morbidity. The IMAP flap is a good modality due to its quick, ease of flap elevation, and lack of muscle insult. Due to the limited number of published reports regarding a severe *G. morbillorum* infection after acupuncture therapy, early recognition and treatment is difficult. In such patients who received acupuncture therapy after traumatic injury, severe infection including osteomyelitis should be considered. In our patient, with appropriate antibiotic therapy and timely surgical management, the result was good without complication.

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Fig. 5.
Postoperative 3-month view.

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