INTRODUCTION

Posterior trunk defects result from diverse etiologies, such as pressure sores, tumor resection, infection, or trauma, and represent a challenging procedure. Myocutaneous flaps, such as the latissimus dorsi flap or trapezius flap, have been widely used to cover these defects [1-3]. Although these flaps are preferred by some authors because of simple and reliable techniques [4], they are associated with greater donor-site morbidity than perforator flaps. The introduction of perforator flaps [5] has revolutionized reconstructive surgery over the past two decades. The application of perforator flap technique enables long and reliable vascular pedicles, thinner flaps with minimal donor-site...
morbidity and without including muscle tissue [6]. Intercostal artery perforator flaps have been used widely to cover the diverse trunk defects, based on an understanding of the anatomy of intercostal vessels [7-12]. Among them, dorsal intercostal artery perforator (DICAP) flaps have recently been described in posterior trunk reconstruction [13-17].

This paper describes a case of a large DICAP propeller flap for the reconstruction of extensive posterior trunk oncological defects.

**CASE REPORT**

The patient was a 70-year-old woman with neurofibromatosis I (von Recklinghausen’s disease) with the chief complaints of a giant mass on her left upper back that had been increasing in size gradually for 10 years (Fig. 1). Preoperative computed tomography showed a lesion, measuring 20×15×10 cm³, overlying the trapezius muscle and the infraspinous region of the scapula. Under general anesthesia, a wide local excision of the lesion was performed with a 2-cm margin. Frozen sections of the excision margins were free of tumor. The tumor was excised at a submuscular plane, including the trapezius, rhomboid major and minor, directly below the tumor. The soft tissue defect was approximately 25×20 cm² in size and a 30×18-cm² DICAP propeller flap was designed to close the defect based on the 6th posterior intercostal artery (Fig. 2). An exploratory incision was made, and a large perforator was identified (Fig. 3). The perforator flap was elevated at the subfascial level and transposed 90° into the defect. The donor site was closed directly and the remaining wound was covered with a split-thickness skin graft (Fig. 4). The flap healed uneventfully. Histopathology demonstrated a completely excised malignant peripheral nerve sheath tumor (MPNST). At 6 months postoperative-

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Fig. 1. A 70-year-old female with a malignant peripheral nerve sheath tumor measuring 20×15×10 cm³ was present on the left upper back.

Fig. 2. Wound defect after wide local excision of malignant peripheral nerve sheath tumor that measured 25×20 cm². A 30×18-cm² propeller dorsal intercostal artery perforator flap was designed to close the defect based on the 6th posterior intercostal artery.

Fig. 3. The 6th posterior intercostal artery was identified using an exploratory incision adjacent to the defect. Red circles, preoperative localization of the posterior intercostal artery perforators using a hand-held Doppler; red dotted line, the course of the vessel loop around the 6th posterior intercostal artery under the flap; yellow line, the midline; orange shaded area, the elevated flap area.


ly, the patient did not have any limitation in the range of motion or pain (Fig. 5). Written informed consent was obtained for publication of this case report and accompanying images.

**DISCUSSION**

Posterior trunk reconstruction may be a challenging procedure. Many different operative options have been used to cover the posterior trunk defect; each has distinct advantages and disadvantages. Myocutaneous flaps, such as the latissimus dorsi flap and the trapezius muscle flap, have long been the main treatment for posterior trunk reconstruction [1,2,18,19]. These flaps provide well-vascularized tissue and simple and reliable techniques, but they imply major donor-site morbidity (sacri-

Fig. 4. Immediate postoperative appearance.

The size of the flap in the present case was slightly smaller (30 × 18 cm²), but it extended from the posterior midline to approximately the midaxillary line based on a single perforator. The flap was elevated safely and healed uneventfully without tip necrosis or congestion. There were some technical points and originalities with satisfactory results. First, MPNST is biologically an aggressive tumor, and its excision is difficult because of the intractable hemorrhage. Maintaining a bloodless field is paramount to ensuring clear visualization of the perforating vessels and safe excision. To accomplish that, a wide local excision of the lesion was performed with a 2-cm margin three-dimensionally, not only for the tumor clearance but also for the inclusion of normal tissue for less bleeding. In addition, an MPNST excision is performed with the generous use of bi-

Fig. 5. Postoperative appearance at 6 months. (A) At rest. (B) Bilateral arms abduction.
gain sufficient pedicle length without tension. According to the anatomical study and clinical applications of DICAP flap [16], it could safely be extended as far as the midaxillary line or the anterior border of the latissimus dorsi with stable blood circulation and complete survival.

As described above, successful reconstruction of the back was possible using a DICAP propeller flap. Although there is a limitation that requires long-term follow-up, a DICAP propeller flap offered a satisfactory result in the present patient. Overall, this technique offers early recovery with minimal donor-site morbidity.

CONFLICTS OF INTEREST

The authors have nothing to disclose.

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REFERENCES

악성말초신경피복종 절제 후 발생한 광범위 등 결손의 등늑간동맥 천공지 프로펠러 피판술을 이용한 재건: 증례보고

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등의 광범위한 결손은 재건수술 영역에 있어서 항상 큰 도전이다. 주변의 근육피판을 이용한 재건방법이 문헌에 많이 보고되었지만, 이들은 근육 기능의 손실과 같은 공여부 손실을 피할 수 없다. 반면 천공지 피판은 공여부 손실을 최소화하며 주변 조직을 이용해 재건할 수 있어 최근 각광받고 있는데, 그중 등늑간동맥 천공지 프로펠러 피판술을 이용한 보고는 많지 않다. 본 증례보고에서는 악성말초신경피복종 절제 후 발생한 광범위 등 결손에서 등늑간동맥 천공지 프로펠러 피판술을 이용한 성공적인 재건을 보고하고자 한다.

섹션단어: 천공지 피판, 종양, 재건 수술

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