

# Surgical extraction of a cannula tip embedded in the neck after liposuction at an external facility: a case report

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Liposuction is a widely performed aesthetic plastic surgery procedure used for various purposes. The use of advanced liposuction techniques has reduced the risk of complications. Nevertheless, they can still occur unexpectedly. Herein, we report a rare case of a 44-year-old patient who experienced a broken cannula tip lodged in her neck during cervicofacial liposuction. This case highlights the need for vigilance in preventing such complications through rigorous preoperative equipment inspections and proper instrument maintenance. Additionally, when attempting to remove a broken instrument tip, it is crucial to perform imaging examinations both before and during the procedure to precisely locate and extract the fragments, ensuring patient safety and a successful outcome.

**Keywords:** Cannula / Case reports / Lipectomy / Plastic surgery

## INTRODUCTION

Aesthetic plastic surgery is becoming increasingly popular and accessible in South Korea due to growing public awareness. As people are becoming more concerned about their face or body contour, liposuction is gaining popularity. Since its introduction by Illouz in the early 1980s, liposuction has become one of the most commonly performed cosmetic surgery procedures [1]. Advancements in liposuction technology have reduced the associated risks and improved the procedure's stability. However, complications such as hematoma, pulmonary problems, and infection remain concerns; hence, most surgeons receive train-

ing to prevent these complications [2,3]. Although complications due to instrument breakage during surgery are exceedingly rare, they can be easily overlooked despite their significance. The neck, in particular, contains a complex network of blood vessels and nerves, as well as the airway; thus, a foreign body that is inappropriately managed can cause major problems. Even if the foreign body does not directly damage the blood vessels, nerves, or airway, it can cause a deep infection, which can be life-threatening [4]. Herein, we report the case of a 44-year-old patient who experienced a broken liposuction cannula in the neck during a procedure at another hospital. As the issue could not be resolved there, the patient was transferred to our hospital, where the fragment was surgically removed.

## CASE REPORT

A 44-year-old woman underwent liposuction at a local medical center for aesthetic purposes. Cervicofacial liposuction was performed under sedation. During the procedure, the liposuction cannula broke. Despite an immediate exploration, the bro-

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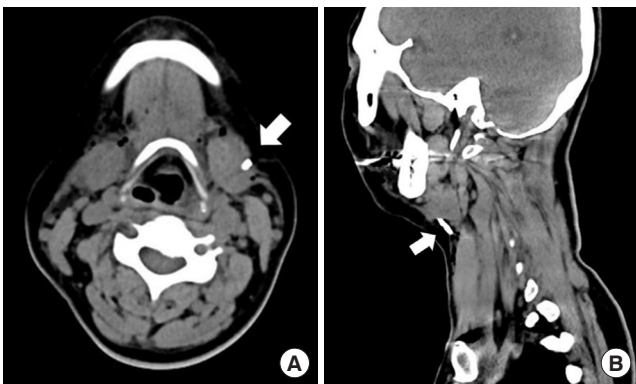
ken cannula could not be located. The patient was subsequently referred to the emergency room of our hospital for an imaging examination to accurately determine the location of the cannula. To determine whether the condition was life-threatening, we evaluated the patient's vital signs and respiratory status. The vital signs were stable, and no dyspnea was reported. No hematoma was observed during the assessment. Preoperative X-rays were obtained to confirm the location of the foreign body. To accurately determine the location, we marked the skin using a lead marker (Fig. 1). The patient had two stab incisions—one on each side of the neck—from the liposuction. We marked the area near the left incision, where the foreign body was presumed to be located. A computed tomography scan was performed to determine the exact location of the foreign body before surgery. The computed tomography scan confirmed the

presence of a broken cannula tip, approximately 2 cm in size, lodged in the left submandibular gland (Fig. 2).

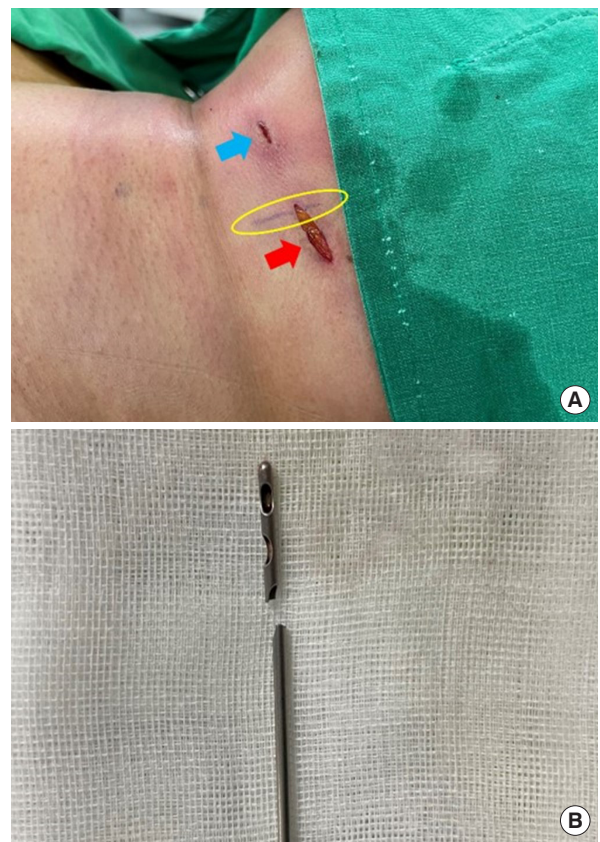
As the cannula tip was embedded in the submandibular gland, we decided to perform removal surgery under general anesthesia. First, we confirmed the location of the foreign body using a portable ultrasound device suitable for use in the surgical field and then marked its location with a pen. We explored the location of the foreign body through the existing stab incisions that were created during liposuction on the left side of the neck. However, we failed to locate the foreign body. Therefore, a new incision was made approximately 3 cm laterally along the neck's skin fold, as this area was thought to be closer to the cannula (Fig. 3A). Finally, the broken cannula tip was found, embedded in the submandibular gland. No other fragments were left behind. The broken piece was aligned with the remaining cannula (Fig. 3B). The surgery was completed afterward. The liposuction cannula was made of stainless steel, 2.5 mm in di-



**Fig. 1.** Preoperative X-ray of a 44-year-old woman with a broken liposuction cannula tip embedded in her neck. To determine the location of the foreign body, the skin is marked with two pieces of lead. The broken tip is visible on the left side of the neck. The broken cannula is approximately 2 cm long. (A) Antero-posterior view. (B) Lateral view.



**Fig. 2.** Preoperative computed tomography images of the same patient. The cannula tip, located vertically within the submandibular gland, can be identified (white arrow). Fortunately, it is positioned away from the trachea and esophagus, without involvement of other structures. (A) Axial view. (B) Sagittal view.



**Fig. 3.** Intraoperative images of the patient. (A) The location of the foreign body is identified in the surgical field using a portable ultrasound device (yellow oval) during surgery. One incision (blue arrow) was made during the initial liposuction procedure, and an additional incision (red arrow) was made by the authors for foreign body removal. The broken tip was successfully removed through this new incision. (B) The removed tip and the rest of the cannula perfectly matched.

imeter, and 15 cm long, with a blunt tip and three spiral suction holes. Postoperative X-rays confirmed the absence of any remaining foreign body. During postoperative follow-up, the patient recovered well with no signs of infection or further complications.

## DISCUSSION

Liposuction is an effective procedure for body sculpting that involves the removal of localized fat deposits in soft tissues. A poor neck contour is a common complaint among patients. The signs of an aging neck include jowling and platysmal banding. Liposuction is widely used to improve neck and jawline contours without resorting to extensive face-lifting procedures [5]. The primary aim of cervicofacial liposuction is to resculpt the neck to improve its contour.

Advances in liposuction techniques have reduced the risks and improved the safety of the procedure. Possible complications of liposuction include bleeding, hematoma, necrosis, infection, nerve injury, subcutaneous emphysema, pulmonary complications, and venous thromboembolism [2,3]. Complications of liposuction can lead to suboptimal cosmetic outcomes and impose substantial financial burdens on patients. Numerous methods have been introduced to prevent postoperative complications. The use of a wetting solution has significantly minimized blood loss. The estimated blood loss associated with the tumescent and super-wet techniques is approximately 1% of the liposuction aspirate volume, while the dry technique results in 25%–40% blood loss of the removed volume [6]. To prevent contour deformities, the zone of adherence—that is, where the superficial subcutaneous tissues adhere to the fascia of the muscle layer—must not be directly suctioned [7]. Identifying and addressing risk factors associated with liposuction can help reduce the likelihood of complications and improve overall patient outcomes.

In our patient, an exceedingly rare complication of liposuction involving a broken surgical instrument occurred. The neck requires meticulous attention because it contains numerous vital structures. Liposuction involves positioning the cannula in the fat layer and performing the procedure without direct visualization. Therefore, if the procedure continues with a broken cannula, the sharp broken edge can damage important structures. Fortunately, in this case, the foreign body was confined to the submandibular gland, preventing major complications. When a cannula tip breaks during neck liposuction, it is critical to perform a prompt assessment. Determining whether the situation constitutes an emergency is of primary importance, especially in the cervical area. Vital signs and the possibility of airway

compression due to hematoma should be evaluated. Residual foreign bodies, such as broken cannula fragments, should be surgically removed, as they can become sources of infection [4]. Clarifying the location with imaging tests, such as X-ray or computed tomography, before surgery is essential. Due to the extensive coverage and small incisions associated with liposuction, locating the foreign body in these types of situations can be challenging. X-ray imaging can confirm the presence of foreign material and estimate its approximate location, while computed tomography imaging can pinpoint the exact anatomical location and identify nearby at-risk structures, such as blood vessels, nerves, and the airway. Ultrasonography or a C-arm device, which can guide the surgeon, is useful in cases where locating the foreign body during surgery is difficult. Hence, it is of paramount importance to use a liposuction cannula that contains radiopaque materials. This allows broken fragments to be easily detected using imaging modalities, aiding in the planning and performing of removal surgery.

The liposuction cannula used in this patient had a blunt tip with a diameter of 2.5 mm. It had been used for approximately 5 years and was sterilized by autoclave before each use. Although breakage of the liposuction cannula tip has been documented in other literature, these cases typically involved the cannula breaking in areas such as the trunk or legs, not the neck [8,9]. Given the rarity of such complications, estimating the risk based on the type, diameter, or length of the cannula and the location of the liposuction remains challenging.

A few studies have described the management of surgical instruments. Costa et al. [10] reported that reusable surgical instruments, which had undergone multiple use and processing cycles, were contaminated with significant amounts of protein residues and structural damage, including holes and pits, which were observed on the surfaces of these instruments. The liposuction cannula is a long, thin instrument. As it performs an in-and-out motion, the tip area is subjected to considerable mechanical stress. Therefore, the equipment must be inspected before surgery to prevent the occurrence of complications.

This case is significant for several reasons. First, it highlights the possibility that a cannula tip can break, emphasizing the need for surgeons to be cautious during procedures. Second, it underscores the importance of using a radiopaque material while performing liposuction and utilizing imaging to check for damage to critical structures when a liposuction cannula breaks, and to plan safe removal surgery. Third, it emphasizes the necessity of informing patients before surgery of the potential risk of cannula breakage.

## NOTES

### Conflict of interest

No potential conflict of interest relevant to this article was reported.

### Funding

None.

### Ethical approval

This report was approved by the Institutional Review Board of Gachon Gil Medical Center (IRB No. GDIRB2024-157).

### Patient consent

The patient provided written informed consent for the publication and use of her images.

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