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Liposuction in Infants for Chemotherapy Drug Extravasation: Two Case Reports

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Abstract **Case Report**

Extravasation is a serious iatrogenic complication caused by the accidental leakage of cytotoxic drugs into surrounding tissue, potentially leading to skin necrosis. This article presents two case reports of chemotherapy drug extravasation in infants, effectively managed using a liposuction and saline washout technique. The first case involved a 12-month-old with nephroblastoma; the second, an 18-month-old with acute lymphoblastic leukemia. Both developed localized swelling within hours of infusion and were promptly referred to a plastic surgery department. Surgical intervention was performed within six hours: a small incision was made, saline was infiltrated, and the extravasated area was aspirated using a liposuction cannula. Postoperative recovery was uneventful, and chemotherapy resumed one week later. The authors emphasize that early surgical aspiration and lavage is an effective, tissue-sparing method that should be widely adopted, especially in pediatric patients receiving vesicant or hyperosmolar agents.

Keywords: Extravasation, Chemotherapy, Infant, Liposuction, Aspiration-washout technique, Iatrogenic complications, Skin necrosis, Surgical emergency.

INTRODUCTION

Extravasation refers to the perivascular diffusion of a hyperosmolar or cytotoxic solution initially administered intravenously or intra-arterially.

It can cause cutaneous necrosis at the affected site. Tissue damage depends on the product's toxicity, ranging from mild discomfort to skin necrosis [2, 3].

The most common clinical signs—pain and local erythema—should prompt early diagnosis and management to prevent or limit necrosis and potential functional sequelae [4].

Through two cases of chemotherapy drug extravasation, the authors highlight the usefulness of the aspiration-lavage technique at the affected site.

CASE REPORTS

Case 1:

A 12-month-old infant followed in oncology for adjuvant treatment of a nephroblastoma. After five uneventful chemotherapy sessions, the sixth was marked by subcutaneous extravasation of the product.

The patient presented to the plastic surgery department at CHU Mohamed VI in Marrakech two hours after the incident, with swelling of the left forearm.

Clinical exam revealed a soft, red, warm swelling with no signs of skin distress or tension.

Case 2:

An 18-month-old infant followed for acute lymphoblastic leukemia with an implanted port. After two uneventful chemotherapy sessions, the third involved subcutaneous extravasation near the port.

The patient presented to the same plastic surgery department four hours after the incident, with swelling and erythema on the right upper trunk.

Management:

Both infants were taken to the emergency operating room within six hours. Under general anesthesia, a small incision was made using a No.11 blade at the dependent portion of the affected area. Saline was infiltrated using a standard liposuction cannula, followed by aspiration with to-and-fro motions similar to conventional aesthetic liposuction. This process was repeated until the aspirated product became clear.


Postoperatively, petroleum gauze dressings were applied and changed daily for the first few days, allowing skin monitoring. Later, the area was exposed to air with application of topical creams and moisturizers.

Both patients recovered well, and chemotherapy resumed one week later, but on a different site.


DISCUSSION

Extravasation is most often due to technical errors in infusion practices, with poorly secured catheters being a frequent cause [6]. Peripheral veins are at greater risk than central lines [7], and mobile areas like the upper limb increase the chance of catheter displacement [8]. In children, placing intravenous lines is particularly challenging due to small vessel size.

Infants and especially preterm babies have fragile veins, increasing extravasation risk. This risk is worsened by inappropriate infusion rates and their inability to communicate pain, leading to diagnostic and therapeutic delays and promoting necrosis [10-18].

Once diagnosed, extravasation is a surgical emergency, and the outcome depends heavily on timely management.

The aspiration-lavage technique is both radical and tissue-conserving. It involves aspirating infiltrated subcutaneous fatty tissues using liposuction cannulas, combined with extensive saline lavage.

Other treatment options include:

- **Radical treatment:** Early, wide excision of all infiltrated tissues. While oncologically sound, this is often mutilating and no longer recommended in the early stages.
- **Watchful waiting:** Clinical monitoring with surgical excision only if necrosis or persistent pain occurs after 72 hours. This approach risks worsening necrosis [13, 14].
- **Local care only:** May be sufficient with close clinical monitoring.

All authors agree on the importance of elevating the limb and initiating early mobilization [15]. Gentle lymphatic drainage can aid spontaneous resolution. The extravasated area should be left uncovered or covered with non-constrictive greasy gauze [16, 17].

Despite their seemingly benign appearance, extravasation injuries must be primarily prevented.

CONCLUSION

Extravasation is a potentially serious iatrogenic complication of intravenous therapy in children. The resulting functional, aesthetic, and psychological morbidity from tissue necrosis can be significant in these fragile patients. Prevention and early intervention are crucial. The aspiration-lavage technique, when performed early, improves prognosis and should be broadly indicated when risk factors are present, especially in cases involving vesicant or hyperosmolar products.

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