

A Review on Lidocain Toxicity in Liposuction

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ABSTRACT

One of the most widely used treatment methods in cosmetic surgery is liposuction, which has certain special anesthetic considerations. A common technique in offices is liposuction. Based on the volume of injected implantation or wetting solution, there are four primary types of liposuction techniques, super wet, tumescent, wet and dry. Using huge amounts of diluted local anesthetic (wetting solution) injected into the fat to enhance anesthesia and reduce blood loss, the tumescent technique is one of the most popular liposuction methods. Lidocaine is most widely used anesthesia in liposuction injected may be very large, approximately 35-55mg/kg. Depending on how much of the fluid is aspirated, liposuction can be classified as either low volume (<4,000 ml) or high volume (>4,000 ml). Lidocaine is having risk of toxicity. Hence the use of lidocaine in high dose in tumescent liposuction can be fatal.

Keywords: lidocaine, liposuction, tumescent, wetting solution

I. INTRODUCTION

Liposuction is becoming a most common plastic surgery procedure due to increased awareness about the cosmetic surgery. The process of removing the fat from deposits under the skin with the cannula and strong suction is known as liposuction. In 2008, there were over 341,000 liposuction procedures carried out in the US^[1]. The anesthesiologist should be aware of the potential difficulties and have a thorough understanding of the physiology of the obesity and fluid control during liposuction, as there have been instance of unfavorable results^[2-4]. Although exact numbers are unavailable, this treatment is becoming more and more common in India. One of the most

popular liposuction methods is the tumescent procedure, which involves injecting the large volume of diluted local anesthetic (wetting solution) in to the fat to promote the anesthesia and lessen the blood loss. There may be a significant injection of lidocaine (35-55mg/kg). Depending on the amount of solution aspirated, liposuction can be classified either high volume (>4000 ml) and low volume (<4000 ml). All the small volume liposuction can be performed using local anesthesia (lidocaine).

LIPOSUCTION PROCEDURE

Liposuction is a surgical procedure that uses a hallow stainless steel tube, called a cannula, which is inserted through the small insertion in the skin. The cannula is then used to suction out unwanted fat from the specific areas of the body, such as abdomen, hips, thighs and buttocks.

Step:1 Anesthesia

Medications are administered for your comfort during the surgical procedure. The chances include intravenous sedation and general anesthesia.

Step:2 The incision

Liposuction is performed through small, inconspicuous incision. First, diluted local anesthesia is infused to reduce bleeding and trauma. Then a thin hallow tube is inserted through incision to loosen excess fat using a controlled back and forth motion. The excess fat is then suctioned out through syringe attached to cannula.

Step:3 The result

Your improved body counter will be apparent once the swelling and fluid retention is experience following liposuction subside with continued practice of healthy diet and fitness and loss of excess fatty tissue should be permanently maintained. However, substantial weight gain.



RISKS OF LIPOSUCTION

As with any surgery, liposuction has risk. These risks include.

- **Contour Irregularities:** Your skin may appear bumpy, wavy or withered due to uneven fat removal, poor skin elasticity and scarring. These changes may be permanent.
- **Fluid buildup:** The temporary pockets of the fluid, called seromas, can form under the skin they may need to be drained using a needle.
- **Numbness:** You may feel temporary or permanent numbness in the treated areas. Nerves in the areas also feel numbness.
- **Infection:** Skin infections are rare but possible. A severe skin infection may be life threatening.
- **Internal puncture:** Rarely, if the thin tube used during surgery penetrates too deeply. It may puncture on internal organ. This may require emergency surgery to repair the organ.
- **Fat embolism:** Pieces of fat may break away and become trapped in a blood vessel. They then may gather in the lungs or travel to the brain. A fat embolism is a medical emergency.
- **Kidney and heart problems:** When the large volume of liposuction is performed, fluid shift. This can cause possibly life-threatening kidney, heart and lung problems.
- **Lidocaine toxicity**

LIDOCAINE: A LOCAL ANESTHESIA

Lidocaine is a synthetic amino ethyl amide, which is widely used local anesthetic agent, usually well tolerated and considered much less toxic than other local anesthetics^[18]. The maximum safe dosage of tumescent lidocaine is 28mg/kg without liposuction and 45mg/kg with liposuction. As a result of delayed systemic absorption, this dosage yields serum lidocaine concentrations below levels

associated with mild toxicity and are non-significant risk of harm to the patient^[19].

LIDOCAINE TOXICITY

Lidocaine toxicity is due to excessively high concentrations of lidocaine in the blood this in turn is due to a combination of the following three situations.

- An excessive total dose of local anesthetic drug is given to the patient.
- There is an excessively rapid absorption of an otherwise safe dose of tumescent lidocaine from the fat where it was injected, into the blood stream.
- An unanticipated drug- interaction occurs between lidocaine and another drug that taken by the patient.

SIGNS OF LIDOCAINE TOXICITY

MILD SIGNS

Mild symptoms of toxicity due to lidocaine that may be associated with tumescent liposuction include mild confusion, light headedness, impaired memory, ataxia.

SEVERE SIGNS

The major severe signs of lidocaine toxicity, that may result in the dangerous effect leads to the death related complications. the dangerous signs include the following

- Hypotension
- Bradycardia
- Seizure and unconsciousness
- Pulmonary embolism

CARDIC ARREST IN LIPOSUCTION

A case was reported with a patient presenting to the emergency department in cardiac arrest following a liposuction procedure, which was performed in a physician office using lidocaine anesthesia. During liposuction of the thighs using the power assisted technique, the patient was given a subcutaneous dose of lidocaine equal to 71 mg/kg

without any noticeable intra operative complications. Two hours later, the patient experienced dizziness, a rapid decline in mental status, tonic -clonic seizure, and cardiac arrest.

MECHANISM OF THE LIDOCAINE TOXICITY

All reported adverse events associated with tumescent lidocaine anesthesia has been the result of clinician error, such as inadvertent iv delivery of tumescent solution.^[21]

Miscommunication leading to excessive lidocaine in the tumescent lidocaine solution, unawareness of drug interaction that reduce the lidocaine metabolism by impairing cytochrome p450 1A₂ and 3A₄.^[22]

II. CONCLUSION

Hence, the use of lidocaine in liposuction is harmful and it may lead to hypotension, bradycardia, and also suppress the myocardial automaticity which may leads to the cardiac arrest and other complications, and it may also sometimes fatal as a result of lidocaine toxicity..

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