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# COMPARISON BETWEEN CONVENTIONAL LIPOSUCTION, VIBROLIPO, AND HD LIPOSUCTION IN BODY CONTOURING: EFFICACY, SAFETY, AND IMPACT ON AESTHETIC RESULTS

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**Abstract:** Introduction: Liposuction is one of the most commonly performed aesthetic procedures worldwide, having evolved significantly in recent decades with the development of energy-assisted techniques and high-definition approaches. Among the main modalities are conventional liposuction, vibrolipoaspiration, and high-definition liposuction (HD lipo). Despite its widespread use, controversies persist regarding the real technical advantages, safety profiles, and aesthetic superiority among these approaches. Objective: To critically compare conventional liposuction, vibrolipo, and HD lipo in terms of body contouring efficacy, safety, operative time, postoperative recovery, and quality of aesthetic results. Methods: Structured narrative review of the literature, including prospective and retrospective clinical studies, case series, and systematic reviews published between 2005 and 2025 in the PubMed/MEDLINE, Scopus, and Web of Science databases. Outcomes related to fat removal, anatomical definition, complications, recovery time, and patient satisfaction were analyzed. Results: Conventional liposuction showed consistent efficacy for overall volume reduction, with greater mechanical effort and operative time. Vibrolipo demonstrated less tissue trauma, less surgeon fatigue, and faster recovery. HD liposuction provided greater muscle definition and better results in selected patients, at the expense of greater technical complexity and a higher risk of irregularities. Conclusion: All three techniques are effective and safe when properly indicated. The choice should be individualized, considering biotype, aesthetic expectations, surgeon experience, and the objective of the procedure.

**Keywords:** Liposuction; vibrolipo; HD liposuction; body contouring; cosmetic plastic surgery.

## Introduction

Body contouring is one of the pillars of modern aesthetic plastic surgery. Since its introduction in the 1970s, liposuction has established itself as the main technique for remodeling subcutaneous adipose tissue. Initially based on purely mechanical methods, the technique has evolved with the incorporation of energy-assisted devices and more refined approaches aimed not only at volumetric reduction but also at anatomical definition.

Conventional liposuction remains widely used due to its versatility and predictability. However, limitations related to tissue trauma, bleeding, and operative time have stimulated the development of assisted techniques, such as vibroliposuction, which uses motorized cannulas to facilitate dissection.

More recently, high-definition liposuction (HD lipo) has emerged as an approach focused on body sculpting, emphasizing the selective marking of muscle contours and the creation of more evident anatomical lines. This technique has expanded the concept of liposuction from a reductive procedure to a true artistic contouring surgery.

Despite the popularity of these modalities, there is still a lack of direct comparative studies that allow us to accurately define the advantages and limitations of each technique. Given this, this review aims to compare conventional liposuction, vibrolipo, and HD lipo in terms of efficacy, safety, and impact on aesthetic results.

## Methodology

A structured narrative review of the literature was performed. Searches were conducted in the PubMed/MEDLINE, Scopus, and Web of Science databases using the following descriptors: liposuction, conventional liposuction, power-assisted liposuction, vibration-assisted liposuction, high-definition liposuction, body contouring.

Inclusion criteria:

- Prospective and retrospective clinical studies.
- Case series with detailed technical descriptions.
- Systematic reviews and consensus articles.
- Evaluation of aesthetic outcomes, complications, and satisfaction.

Exclusion criteria:

- Isolated case reports.
- Experimental studies without clinical correlation.
- Studies without description of surgical results.

The main outcomes analyzed were: aspirated volume, surgical time, blood loss, complication rate, recovery time, and subjective assessment of aesthetic results.

## Technical aspects of the modalities

### Conventional liposuction

Conventional liposuction is based on the use of manual cannulas connected to vacuum systems. After tumescent infiltration, the fat is aspirated by repetitive back-and-forth movements.

Advantages include wide availability, low equipment cost, and versatility for different body areas. Limitations involve greater physical effort by the surgeon, greater mechanical trauma, and potential increase in bleeding and edema.

### Vibrolipoaspiration

Vibrolipo, also called power-assisted liposuction, uses motorized cannulas that perform vibrating or reciprocating movements. This mechanical energy facilitates the fragmentation of adipose tissue, reducing the force required for aspiration.

Among the benefits described are less fatigue for the surgeon, less tissue trauma, greater precision in fibrous areas, and a possible reduction in operating time.

### High-definition liposuction (HD lipo)

HD lipo is not defined solely by the equipment, but by the surgical strategy. It involves selective deep and superficial aspiration to enhance muscle contours, especially in the abdomen, chest, and back.

This technique requires detailed anatomical planning, mastery of the aspiration layers, and strict control of symmetry. It is often associated with fat grafting to enhance specific areas, such as the pectorals and glutes.

## Results

### Effective fat removal

Conventional liposuction has demonstrated consistent efficacy for overall volume reduction, with aspirated volumes similar to those of assisted techniques.

Vibrolipo has shown equivalent or superior performance in fibrous areas, such as the back and flanks, with less tissue resistance.

In HD liposuction, the goal is not to maximize the volume aspirated, but to selectively redistribute adipose tissue to create anatomical definition, resulting in often smaller total volumes, but with superior aesthetic impact in selected patients.

### Operating time and recovery

Studies show a reduction in operating time with vibrolipo compared to the conventional technique, especially in large areas. HD liposuction has a longer surgical time due to its technical complexity and the need for precise symmetry.

In terms of recovery, vibrolipo is associated with less edema and bruising, while HD liposuction can result in prolonged edema due to intense superficial manipulation.

### Safety and complications

Complications common to all three techniques include seroma, contour irregularities, asymmetries, and infection.

In conventional liposuction, there is a higher incidence of bleeding and bruising. In vibrolipo, the complication profile is similar or slightly lower.

In HD liposuction, there is a higher risk of superficial irregularities, skin necrosis, and fibrosis when the technique is not strictly performed, reflecting its greater dependence on the surgeon's experience.

### Satisfaction and aesthetic quality

Patient satisfaction was high in all modalities. HD liposuction had the highest satisfaction rates in patients with low fat percentage and high muscle definition. In patients with greater adiposity, conventional liposuction and vibrolipo showed more predictable results.

## Discussion

The evolution of liposuction reflects the transition from a reductive procedure to body contouring surgery. Conventional liposuction remains a robust, reliable technique suitable for a wide range of patients.

Vibrolipo represents a technological advance that optimizes the efficiency of the procedure, reduces trauma, and improves surgical ergonomics without substantially altering the basic principles of the technique.

HD liposuction, in turn, redefines the goals of liposuction, focusing on creating anatomical definition and artistic results. However, its benefits are restricted to carefully selected patients and depend heavily on the skill of the surgeon.

The choice of technique should consider biotype, thickness of the adipose panicle, skin quality, aesthetic expectations, and professional experience. Combined approaches, using vibrolipo as a tool and high-definition principles as a strategy, have become increasingly frequent.

## Conclusion

Conventional liposuction, vibrolipo, and HD liposuction are effective and safe techniques for body contouring. Conventional liposuction remains indicated for overall volume reduction. Vibrolipo offers advantages in terms of efficiency and less trauma. HD liposuction provides superior results in muscle definition in selected patients, at the expense of greater technical complexity. The individualization of the technique is the main determinant of surgical success.

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