

# A Simple Device for Syringe-to-Syringe Transfer During Lipofilling

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## BACKGROUND

Since the end of the 19th century, autologous fat grafting has been performed often by plastic surgeons. The procedure evolved from work by Coleman, who developed the liposuction technique.<sup>1</sup> With the “Coleman technique,” fat tissue is extracted by nontraumatic liposuction, purified after centrifugation, and injected to fill tissues or to contribute cells to damaged tissues. Autologous fat grafting has many applications, including breast reconstruction, breast augmentation, facial rejuvenation, primary and secondary facial lipoatrophy, liposuction sequelae, buttock augmentation, scar revision, and radiodermatitis.

Grafted fat is an ideal filler because it is biocompatible, versatile, stable, long lasting, and provides a natural appearance; however, the results are dependent on technique.<sup>2</sup> Many surgeons have refined their techniques to obtain long-term survival of adipocytes and to improve cosmetic results. When large amounts of adipose tissue are needed, such as in breast reconstruction, performing syringe aspiration or connecting syringes of different volumes can be tedious and time-consuming.

The estimated mean volume of harvested fat in our procedures is 400 cc (range, 200-1000 cc), and the mean volume of injected fat is 150 cc (range, 40-470 cc). Due to the detailed and delicate nature of fat grafting, some authors recommend multiple injections of small amounts of fat (in syringes of 3-10 cc), which may reduce trauma and permit better control of injection.<sup>3</sup>

To maximize the likelihood of graft survival, adipose tissue must be as refined (“clean”) as possible and manipulated with the lowest exposure to air before injection.<sup>4</sup> Frequent stops are often required for emptying and charging of syringes, which slows the passage of fat from the larger syringes (usually 10-50 cc) to the smaller ones (usually 3-10 cc).

In this article, we describe the utility of a plastic, medical-grade, single-use, 3-way stopcock<sup>5</sup> to connect syringes,

which we prefer to the traditional metal transfer system (Figure 1A-C).

## MY EXPERIENCE

If 2 small-volume plastic syringes are needed for injection, the 3-way stopcock allows us to fill both syringes simultaneously, which has cut our fill time in half. (A brief video demonstrating the transfer technique is available at [www.aestheticsurgeryjournal.com](http://www.aestheticsurgeryjournal.com)). With the 3-way stopcock, we can also fill just one syringe at a time, similar to the metal transfer system.

## Advantages of this Technique

Syringe-to-syringe transfer with the stopcock is equally sterile to the traditional technique but is more convenient. Equal amounts of fat can easily be obtained in multiple syringes, with less exposure to air and thus greater assurance of fat viability.

There are many advantages to this technique. It permits faster fat accommodation in a sterile deposit device, and allows continuous quantification of the fat, leading to better control during injection.

With its fully transparent body and uniform smooth bore, the stopcock allows continuous and maximum infusion flow—without turbulence or air-bubble formation. This permits rapid flow of fat, and minimizes hand action for the surgeon.

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**Figure 1.** (A) The traditional metal transfer system, which connects 2 syringes. (B) The plastic 3-way stopcock. (C) The stopcock in relation to a partially filled 10-cc syringe (length 4 cm, height 1 cm, width 1.7 cm). (D) Transfer obtained via the classic metal device. (E) Transfer of adipose cells between syringes of different caliber with the stopcock.

### 3-Way Stopcock vs Metal Transfer System

The stopcock is more convenient than the metal transfer system because it reduces fat exposure to air, and increases the likelihood of obtaining the same volume in each syringe (Fig 1D,E).

In some situations, the metal transfer system may not be available, particularly in office-based settings. Moreover, it may be broken, not sterile, or misplaced. In contrast, it is easy and economical to keep a supply of plastic stopcocks on hand.

### OUTCOMES

We have used this device for more than 60 patients. Results have been excellent with respect to efficiency and patient comfort. The device has functioned reliably in all cases, and there have been no instances of breakage.

### COST AND CONVENIENCE

The plastic, medical-grade stopcock is convenient and cost-effective. It is particularly valuable for plastic surgery clinics

that have limited economic resources, and it is readily available in medical institutions. The device is disposable, easily replaceable, and very inexpensive (~0.35 €; ~.50 USD). Moreover, the device is ready for use as it is packed sterile during manufacturing.

## CONCLUSIONS

Syringe-to-syringe transfer of fat with the plastic 3-way stopcock has been effective, reliable, and efficient in our hands. The device is especially useful when more than 1 small-volume syringe is required for injection. Fat can be distributed easily, evenly, and simultaneously. Fill time and exposure to air are minimized, and fat viability is maximized. This inexpensive and readily available tool is as sterile as the traditional metal system.

## Disclosures

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