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Original Article

## Preoperative estimation of cosmetic outcomes after immediate breast reconstruction with extended latissimus dorsi flap: A simple prediction model

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### ARTICLE INFO

#### Article history:

Received 20 May 2017

Accepted 23 September 2017

Available online

#### Keywords:

Mastectomy

Reconstruction

Cosmetic outcomes

Prediction

### ABSTRACT

**Background:** The extended latissimus dorsi (ELD) flap can provide adequate volume for breast reconstruction without an implant. The aim of this study was to identify a simple method to estimate preoperatively if the ELD flap would provide enough volume for breast reconstruction and good cosmetic outcome. The proposed model was based on correlating the preoperative body mass index (BMI) and breast cup size.

**Methods:** This retrospective cohort study included 64 patients who underwent immediate breast reconstruction with ELD at the National Cancer Institute, Cairo University, between January 2014 and January 2016. Preoperative breast cup size and patients' BMI were recorded. The primary end point was cosmetic outcome score assessed by three independent breast surgeons and the patients. Correlation analysis was performed between the preoperative factors and final cosmetic outcome.

**Results:** Sixty-four patients underwent immediate reconstruction following skin-sparing mastectomy. BMI range was 23–38 kg/m<sup>2</sup> with a median of 28. All patients with cup size A had aesthetically

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<https://doi.org/10.1016/j.jpra.2017.09.005>

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pleasing results. As the breast cup size increased, the favorable cosmetic outcomes were noted with lower BMI. All patients with BMI higher than 33 had unfavorable results.

**Conclusion:** Favorable cosmetic outcomes are expected after ELD reconstruction in patients with cup size A regardless of the BMI. As the breast cup size increases, favorable cosmetic outcomes are expected in patients with lower BMI than in those with higher BMI. At a BMI of 34, no favorable cosmetic outcomes are expected. The prediction model will be validated in a prospective study.

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## Introduction

Immediate breast reconstruction following mastectomy improves the patient's quality of life and psychological well-being.<sup>1</sup> Skin- and nipple-sparing mastectomies are associated with superior aesthetic results and increased patient satisfaction.<sup>2,3</sup> Breast reconstruction with autologous tissue leads to a higher degree of patient satisfaction than implant-based reconstruction.<sup>4,5</sup>

A common method of autologous reconstruction is the pedicled latissimus dorsi flap. It is a versatile flap with reliable blood supply and small rate of complications.<sup>6,7</sup> When the latissimus muscle alone is insufficient to provide adequate volume, it is combined with an implant. The many risks associated with breast implants include capsular contracture, infection, migration, and implant loss.<sup>8,9,10</sup>

To avoid implants and associated complications, the extended latissimus dorsi (ELD) flap is used. This was first described by Hokin in 1983 and included addition of fat from the lumbar region to the flap.<sup>11</sup> Several modifications have been described for the ELD to help increase its volume.<sup>12,13,14,15</sup>

In low- and middle-income countries, such as Egypt, the ELD remains the main workhorse for breast reconstruction as a cheaper but viable alternative to costly implants and acellular dermal matrices (ADMs).

It is important for the surgeon planning for breast reconstruction to be able to predict the cosmetic outcomes with different methods.

To the best of our knowledge, few studies have addressed the question of preoperative prediction of cosmetic outcomes associated with the ELD.

The aim of this study was to determine if preoperative BMI and preoperative bra cup size were predictors of cosmetic outcomes following immediate ELD breast reconstruction.

## Methods

This was a retrospective cohort study that included 64 female breast cancer patients who underwent skin- or nipple-sparing mastectomy with immediate reconstruction using ELD flap at the National Cancer Institute, Cairo University (Egypt), between January 2014 and January 2016.

The BMI was calculated preoperatively by dividing the body weight in kilograms by the square of the height in meters. The breast cup size information was obtained from the patients.

All patients had given a written informed consent after explaining the procedure to be done.

All patients had skin- or nipple-sparing mastectomy and immediate reconstruction with ELD.

Medical photography was obtained preoperatively, immediately postoperatively, and again after 2 months.

At 2 months post-operatively, the cosmetic outcome was assessed using the photographs by three different breast surgeons independently, and a score was given according to the Harris scale.<sup>16</sup> Similarly, the patients were asked to give a similar score independently. A mean score was calculated for each case. The scores were obtained before the patient underwent adjuvant radiotherapy.

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