Journal of Plastic, Reconstructive & Aesthetic Surgery (2017) 70, 1229—1241

JPRAS
An International Journal of Surgical Reconstruction
www.JPRASurg.com

Review

Sensory recovery of the breast after innervated and non-innervated autologous breast reconstructions: A systematic review

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Received 5 January 2017; accepted 9 May 2017

KEYWORDS
Breast reconstruction;
Sensory recovery;
Breast sensation;
Nerve coaptation

Summary *Background:* The sensory recovery of the reconstructed breast is an undervalued topic in the field of autologous breast reconstruction. This systematic review aimed to evaluate the available literature on the sensory recovery of the breast after innervated and non-innervated autologous breast reconstructions and to assess the possible benefits of sensory nerve coaptation compared to spontaneous reinnervation of the flap.
Methods: A comprehensive literature search was conducted in PubMed, Embase and the Cochrane Library to identify all eligible studies regarding the sensory recovery of all types of innervated and non-innervated autologous breast reconstructions.
Results: The search yielded 334 hits, of which 32 studies concerning 1177 breast reconstructions were included. The amount of heterogeneity between the studies was high, which made the pooling of data difficult. The studies indicated that spontaneous reinnervation of autologous breast reconstructions occurred to a variable extent, depending on how and when it was measured. Despite these variable results, the sensory recovery of innervated flaps, however, was superior, started earlier and gradually improved over time with a higher chance of approaching normal values than non-innervated flaps. There is a lack of studies that assess the return of erogenous sensation and quality of life.

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http://dx.doi.org/10.1016/j.bjps.2017.05.001

Conclusion: The current evidence shows that nerve coaptation results in superior sensory recovery of the reconstructed breast compared to spontaneous reinnervation of the flap. This review illustrates that more standardised, high-quality studies with adequate sample sizes are needed to objectively evaluate the sensory recovery of the breast after autologous breast reconstructions.

Contents

Introduction

Breast reconstruction has become an integral part of breast cancer care. The patients' choice for the type of reconstruction—immediate or delayed after mastectomy and either by using implants or autologous tissue—is influenced by many factors (e.g. patient-related and sociodemographic factors, information provided by the reconstructive surgeons and their preferences).[1–3] Autologous breast reconstructions provide a permanent and more natural result than implant-based reconstructions, thereby increasing patient satisfaction.[4] Out of all options for the autologous breast reconstruction, the deep inferior epigastric artery perforator (DIEP) flap remains the first choice in most centers.[5]

Over the last two decades, breast reconstruction techniques have been greatly improved and refined, while the expectations of patients have increased at the same time. Currently, it is possible to achieve a reconstructed breast that closely resembles a non-operated breast, yet the reconstructed breast often remains insensate. It has been reported that sensation in a reconstructed breast has a positive effect on patient-rated quality of life and protects the skin against thermal and mechanical injuries.[6–8]

However, reinnervation of autologous breast reconstructions is not considered a high priority by most reconstructive surgeons.[9] This could be explained by the ongoing debate on whether nerve coaptation is of additional value for the sensory recovery of the reconstructed breast.[10] Several studies showed a significant increase in sensory recovery after nerve coaptation in autologous breast reconstructions,[9,11] while other studies reported satisfactory spontaneous reinnervation from the surrounding breast skin flaps and to a lesser extent from the deep surface.[12–15] In previous studies, the outcomes following both nerve coaptation and spontaneous reinnervation varied, the sensory recovery was tested heterogeneously (e.g.