

Can You Take Some of This Fat and Put it Over Here?

A report on groundbreaking medical research by Dr. Sarah Hagarty.



You bet! Back when I started out as a young plastic surgeon, I heard this jokingly from patients repeatedly. These days, this concept is a well studied technique called ‘fat grafting,’ and it’s used in all parts of the body.

I first used this in my breast cancer patients. Many had implant reconstructions, which could match the volume of their natural breast for the most part, but often there was a little bit missing in one place; a subtle shape difference, or a divet that implants couldn’t fix. Few of my busy active patients had time to go through even more lengthy and high-risk procedures called free flaps, especially after already going through the many trials of chemotherapy.



Dr. Sarah Hagarty

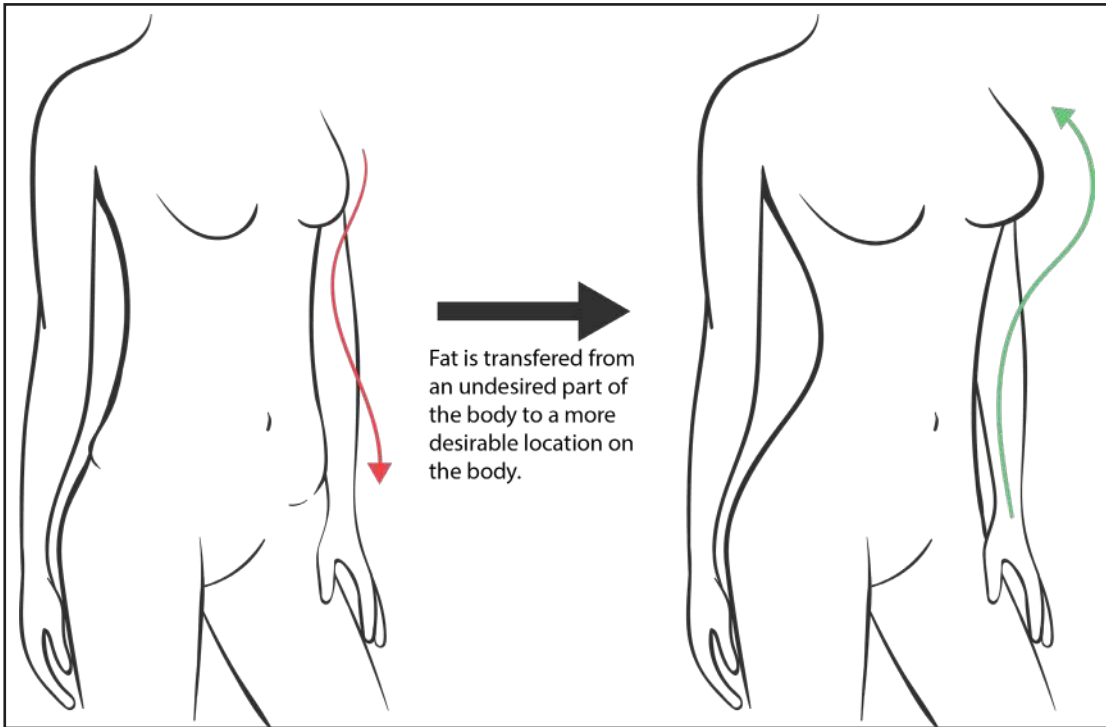
Fat grafting involves essentially harvesting fat through standard liposuction techniques, rinsing and treating the fat in various ways, then introducing it back into another area of the body. Once there, it attaches to the surrounding blood supply and happily becomes part of the new

body zone. The amount of fat that stays around permanently can vary depending on a lot of factors. On average, about 60% of the fat remains and the rest gets broken down and gets absorbed back into the body. Different factors include the quality of the fat, harvesting techniques, time between transfer, potentially certain additives that augments growth, the amount of tissue pressure in the grafted zone, and ambient temperature.

I find this area of research fascinating. That is why we’ve been studying different ways to handle, treat and optimize the transferred fat in this process. In Dr Divya Bijukumar’s Nanomedicine lab at The University of Illinois at Rockford, we studied the impact of stem cells and growth factors derived from freeze dried amniotic membrane (Grafix®) on human adipocytes in a growth medium. Interestingly, we found up to 30% improvement in cell replication and gene expression. This innovative work was carried out over a year’s master thesis in the lab by UICCOM (Rockford) Masters Dr. Sarah Hagarty student Alejandro Magana.

It’s being submitted for publication, and presentation at regional, national and international meetings. Over the past five years, we also completed and published several research studies involving a more efficient technique of fat transfer that saves more than an hour per procedure and allows us to shorten the





Fat is transferred from an undesired part of the body to a more desirable location on the body.

Comparison of Two Techniques of Fat Grafting in Breast Reconstruction Outcomes over 5 Years. Plast Recons Surgery – Global Open: August 2018 - Volume 6 - Issue 8S - p 23–24 . PSTM 2018 Abs Supp. doi: 10.1097/01.GOX.0000546742.82720.fa
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time to transfer back into the grafting site. This, in turn, makes the surgery safer for the patient by shortening anesthesia time. We also studied the follow up to show that grafting in this way still got good clinical results, and kept long term side effects to a minimum, like infection, or small inflammatory nodules called granulomas.

Finally, this research and studies regarding this technique were submitted to the U.S. patent and trade organization. We have recently been given notice that a patent will be granted to Dr. Sarah Hagarty for this method: **“A Closed Loop System For Direct Harvest and Transfer for High Volume Fat Grafting”**.

References:

Alejandro Magana, B.Sc1, Divya Rani Bijukumar, PhD1, Mathew T. Mathew, PhD, Sarah E. Hagarty, MD
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Hagarty, Sarah E. MD,†; Santos, Edward F. MD†; Luo, Jessica BS*. Large Viable Fat Nodules, Months Post-Transfer, inside Radiated Breast Implant Pocket. A Case Report. Plastic and Reconstructive Surgery - Global Open: March 24, 2020 - Volume Latest Articles - Issue - doi:10.1097/*
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Patent Applications

A Closed Loop System For Direct Harvest and Transfer for High Volume Fat Grafting. Publication number: 20190105433. Filed: April 27, 2017. Publication date: April 11, 2019. Inventor: Sarah Elizabeth Hagarty. Approval granted December 2020 (in print).

Simple Closed Loop System for Direct Harvest and Transfer for High Volume Fat Grafting. Publication number: 20170312403. Filed: April 27, 2016. Publication date: November 2, 2017. Inventor: Sarah Elizabeth Hagarty



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