

New method of improving breast reconstruction with autologous fat

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Credit: Medical University of Vienna

Five thousand women develop breast cancer every year in Austria. Surgical removal of tumours continues to be a crucial part of successful treatment but frequently results in loss of breast tissue, making partial

mastectomy necessary in 80 percent of cases. Scientists at MedUni Vienna's Department of Obstetrics and Gynecology have now developed a new method for significantly improving breast reconstruction with autologous fat – involving up to two fewer surgical interventions.

Autologous fat transplantation for breast reconstruction involves taking fat from a suitable donor site on the patient's own body using especially fine cannulas such as those used for liposuction. Many factors are necessary to ensure that as much of the transplanted fat as possible grows into the breast; the ingrowth rate can be significantly improved by giving the patient platelet-rich plasma (PRP), since platelets produce growth factors. "PRP acts like fertiliser," explains plastic surgeon Edvin Turkof, who, for the last 12 years, has worked exclusively on breast reconstruction using autologous tissue at the Department of Obstetrics and Gynecology. "However, the downside is that 20 percent by volume PRP is required (so, for example, 20 ml PRP to enrich 100 ml of fat), and unfortunately, around 10 ml of blood is required to produce one to two millilitres of platelet concentrate. Previously, the patient's own blood that has been taken to produce the PRP was thrown away; it was therefore not possible to obtain enough platelets to enrich 150 – 200 ml of fat for optimal [breast reconstruction](#), because the blood loss of 200 – 250 ml required for PRP production was excessive."

MedUni Vienna experts led by Edvin Turkof have now discovered a new method: The platelet rich plasma is produced using a plasmapheresis machine that separates out the platelets and collects them to form a concentrate. All the other blood components (red and white [blood](#) cells, plasma) are then returned to the patient's body, without loss. This allows up to 300 ml of platelet concentrate to be collected in one painless process and then used to enrich the autologous fat. Says Turkof: "It is quite simply a platelet donation to yourself."

Another advantage: I has recently become possible to store the extracted

concentrate and re-use it at any time. On average, [breast reconstruction](#) with autologous fat requires three to four minimally invasive procedures lasting around 45 minutes each – and even that is an improvement made possible by the new method, which requires fewer operations than were previously necessary.

Provided by Medical University of Vienna

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