

## Efficacy of STRATAFIX in Inframammary Fold Recreation in Autologous Breast Reconstruction

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The inframammary fold (IMF) is not merely the border of a woman's breast, but it structurally supports the breast and defines its overall shape. When its definition is compromised during mastectomy, the breast loses its natural appearance unless the IMF is recreated.<sup>1</sup> In implant-based breast reconstruction, caudal malposition of the IMF rarely occurs once capsule formation is complete. However, in autologous breast reconstruction, caudal malposition of the IMF often occurs postoperatively due to loosened sutures or the weight of the skin flap. Therefore, a suture with little slack and able to withstand the flap weight is ideal for IMF recreation. STRATAFIX Symmetric PDS Plus (STRATAFIX, Ethicon Inc., New Jersey, USA) is a knotless suture device developed for tissue closure in high-tension areas. Suture anchors capture the tissue 3-dimensionally, allowing running sutures to secure tissues under strong tension for long periods, with 50% of the tensile strength preserved 6 weeks postoperatively.<sup>2</sup> In this study, we examined the efficacy of STRATAFIX in IMF recreation in autologous breast reconstruction.

Participants included 18 patients who underwent both breast reconstruction using the deep inferior epigastric artery perforator flap and IMF recreation, from September 2015 to May 2017 in our department. The STRATAFIX group, consisting of 8 patients who underwent IMF recreation using running sutures with STRATAFIX (CTB-1, taper point, suture size 1), and the PDS group, consisting of 10 patients who underwent IMF recreation using multiple interrupted sutures with PDS (suture size 0, Ethicon Inc.) were compared. There was no significant difference in mean age, mean body mass index, and mean flap weight between the 2 groups ( $P > 0.05$ , Student's  $t$  test, Table 1). IMF recreation was performed using the methods reported by Nava et al.<sup>3</sup> In immediate reconstruction, the superficial fascia and chest wall were sutured together, and in 2-stage reconstruction, the superficial fascia

and capsule on chest wall were sutured together. Six months postoperatively, the difference in IMF position compared with the contralateral side was measured in the standing position. Please refer to the video for the actual operative technique (see video, Supplemental Digital Content 1, which displays intraoperative techniques for inframammary recreation using STRATAFIX. This video is available in the "Related Videos" section of PRSGlobalOpen.com or at <http://links.lww.com/PRSGO/A749>).

In the STRATAFIX group, postoperative caudal malposition of the IMF was seen in 2 of 8 cases, whereas in the PDS group, it was seen in 6 of 10 cases (Table 1). In terms of perioperative complications, aside from 1 case of abdominal flap donor-site infection in the PDS group, no significant complication was seen in either group. The sutures could be palpated in both groups at 3 months postoperatively, but not at 6 months. Please refer to Supplemental Digital Content for representative cases (see video, Supplemental Digital Content 2, which describes representative cases of inframammary fold recreation using STRATAFIX. This video is available in the "Related Videos" section of PRSGlobalOpen.com or at <http://links.lww.com/PRSGO/A750>).

With STRATAFIX, suture anchors capture the tissue 3-dimensionally, allowing running sutures to secure tissues under strong tension for long periods. Thus, in IMF recreation using STRATAFIX, the sutures are thought to loosen less from flap weight before scar formation is complete. Some precautions on the use of STRATAFIX include the need of a surgeon with some experience, as closure must be accomplished with a single running suture. In addition, when a long piece of the suture is left after flap placement for the lateral IMF recreation or other adjustments, the suture may become entangled with blood vessels.

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### DISCLOSURE

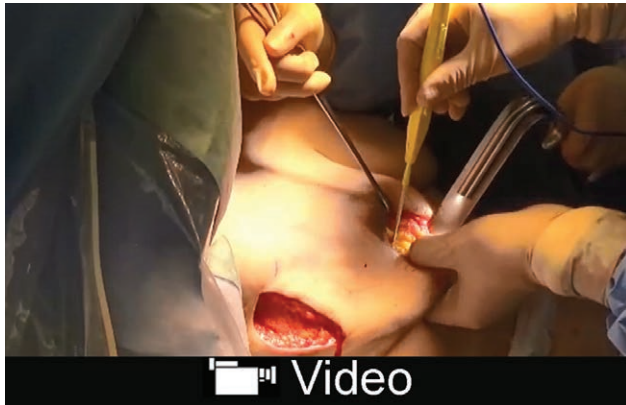
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**Table 1. Patient Characteristics and Operative Results**

	Patient	Age (y)	BMI (kg/m <sup>2</sup> )	Flap Weight (g)	Type of Reconstruction	Postoperative IMF Malposition	Difference in IMF Position from Contralateral Side (mm)
STRATAFIX	1	46	25.9	628	Immediate	No	
	2	44	22.2	295	Immediate 2-stage	No	
	3	58	21.7	317	Immediate 2-stage	No	
	4	46	29.8	607	Delayed 2-stage	No	
	5	46	23.1	283	Immediate 2-stage	No	
	6	44	21.2	331	Immediate 2-stage	Yes	12
	7	42	23.6	487	Immediate	Yes	15
	8	45	20.1	345	Immediate 2-stage	No	
PDS	1	44	26.5	650	Delayed 2-stage	Yes	10
	2	63	24.8	583	Delayed 2-stage	No	
	3	45	23.5	415	Delayed 2-stage	Yes	13
	4	58	30.2	602	Delayed 2-stage	Yes	20
	5	60	23.4	370	Delayed 2-stage	No	
	6	39	23.2	447	Delayed 2-stage	Yes	25
	7	63	20.3	178	Delayed 2-stage	No	
	8	45	20.9	275	Immediate 2-stage	Yes	10
	9	49	22.6	308	Immediate 2-stage	Yes	12
	10	55	20.0	325	Immediate 2-stage	No	

BMI, body mass index; IMF, inframammary fold.



Video

**Video Graphic 1.** See video, Supplemental Digital Content 1, which displays intraoperative techniques for inframammary recreation using STRATAFIX. This video is available in the “Related Videos” section of PRSGlobalOpen.com or at <http://links.lww.com/PRSGO/A749>.



Inframammary fold creation with STRATAFIX

Video

**Video Graphic 2.** See video, Supplemental Digital Content 2, which describes representative cases of inframammary fold recreation using STRATAFIX. This video is available in the “Related Videos” section of PRSGlobalOpen.com or at <http://links.lww.com/PRSGO/A750>.

**STATEMENT OF CONFORMITY**

We state that all procedures conformed to the Declaration of Helsinki. This study was approved by the Ethics Committee of Osaka University, and informed written consent to publish personal and medical information was obtained from all patients.

**REFERENCES**

- Tomita K, Yano K, Nishibayashi A, et al. Aesthetic outcomes of inframammary fold recreation in two-stage, implant-based, breast reconstruction. *Springerplus*. 2016;5:1656.
- Yasuda S, Tomita K, Kiya K, et al. STRATAFIX for abdominal wall repair following abdominal flap harvest. *Plast Reconstr Surg Glob Open*. 2017;5:e1572.
- Nava M, Quattrone P, Riggio E. Focus on the breast fascial system: a new approach for inframammary fold reconstruction. *Plast Reconstr Surg*. 1998;102:1034–1045.