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STRATAFIX for Abdominal Wall Repair following Abdominal Flap Harvest

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STRATAFIX Symmetric PDS Plus (STRATAFIX) is a knotless tissue control device that was developed for soft-tissue approximation (Ethicon Inc.). Anchors are cut into the core of the suture at 2-mm intervals, pointing away from the suture direction. Because each anchor functions to grip the sutured tissue, the tissue can be handled sterilely and stable maintenance of continuous sutures is possible. The suture thread is absorbable but maintains its tensile strength for 6 weeks. Thus, it is convenient for use in the repair of parts that require longer healing times, such as the fascia and joint capsules.[1,2]

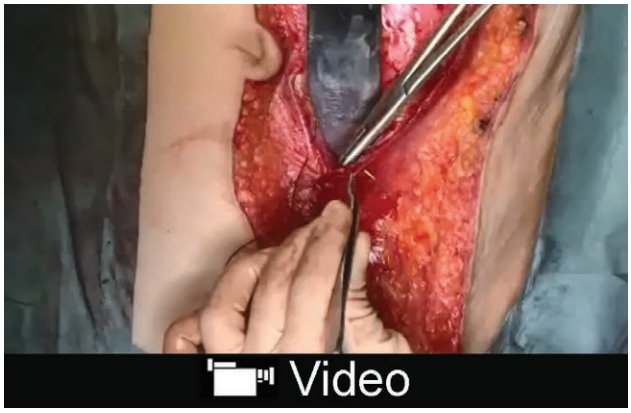
From January through May 2017, we performed abdominal wall repair with STRATAFIX (CTB-1, taper point, suture size 1) at our institution on 18 patients. Eight patients (7 male, 1 female) underwent a vertical rectus abdominis myocutaneous (VRAM) flap, and 10 female patients underwent deep inferior epigastric artery perforator (DIEP) flap (Table 1). For patients with VRAM flap, the anterior sheath of the rectus abdominis was partially resected, which meant that the sutures required high tension. However, as the anchors of the STRATAFIX securely gripped the fascia, even areas with high tension were gripped well and easily sutured together. For patients with DIEP flap, high tension was not required for suturing as the anterior sheath of the rectus abdominis is not resected. However, we were able to close the wound using continuous sutures in a shorter time than conventional simple sutures. In addition, although this was not suggested by the product manufacturers, we were able to repair the fascia in multiple sites by cutting a suture thread and using the remaining thread (**see video, Supplemental Digital Content 1**, which displays a VRAM flap being repaired in the usual way, and a DIEP flap being repaired by cutting a suture thread and using the remaining thread, http://links.lww.com/PRSGO/A603).

With regard to postoperative complications, with the exception of 1 elderly patient with VRAM flap who developed an abdominal wall hernia, no complications were observed. The abdominal wall hernia may have been due to the fact that, in addition to his advanced age, a large portion of the anterior sheath had been harvested, so the suture bite may have been too short.

From our experiences with using this device, we would offer the following precautions. First, when pulling the suture through the tissue, it is important to pull it in a perpendicular direction from the wound, so that the anchors do not tear the fascia. The suture bite does not necessarily need to be long, assuming that the suture is inserted through a secure portion of fascial tissue. With regard to the suture pitch, high tension was not required for suturing after the DIEP flap harvest, but after the VRAM flap harvest, high tension was evident, particularly in the direction of the short axis. We found it necessary to suture using a shorter pitch, which allowed the tissue to withstand the higher tension.[3] Compared with the conventional running sutures or interrupted sutures, both of

Table 1. Summary of Cases

Type of Flap	VRAM Flap Harvest	DIEP Flap Harvest
No. patients	8	10
Sex of patients (no.)	Male (7); female (1)	Female (10)
Disease (no.)	Head and neck tumor (4); groin tumor (2); sternal osteomyelitis (1); esophageal cancer (1)	Breast cancer (10)
Mean age (y)	71	47
Median follow-up (d) (range)	185 (106–211)	189 (132–223)
No. complications	1	0



Video Graphic 1. See video, Supplemental Digital Content 1, which displays a VRAM flap being repaired by cutting a suture thread and using the remaining thread. This video is available in the "Related Videos' section of PRSGlobalOpen.com or at ***http://links.lww.com/PRSGO/A603***.

Supplemental digital content is available for this article. Clickable URL citations appear in the text.

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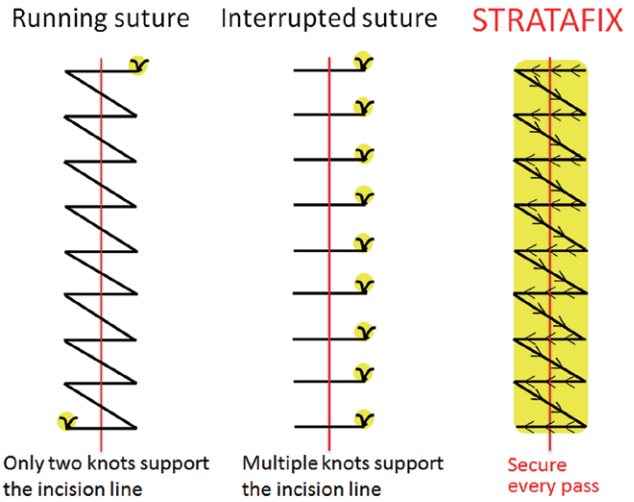

Fig. 1. Conventional running sutures and interrupted sutures as compared with STRATAFIX. Yellow highlights indicate support areas for the sutures.

which create high tension at the point of insertion, suturing with STRATAFIX is highly advantageous in that the tissue is much less likely to tear (Fig. 1). In addition, as there is hardly any backsliding of the suture thread, there is no need to pull, so no assistance is needed to close up wounds with high tension.

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DISCLOSURE

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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.

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