

Simultaneous Total Laparoscopic Hysterectomy during Deep Inferior Epigastric Artery Perforator Flap Breast Reconstruction and Contralateral Superficial Inferior Epigastric Artery Flap Breast Augmentation

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J Reconstr Microsurg Open 2016;1:67–70.

Uterine fibroids are common benign tumors that develop from smooth muscle in the uterus; approximately 20 to 80% of women develop fibroids till the age of 50 years.¹ We describe a patient who needed breast reconstruction and also had a large intra-abdominal uterine fibroid. Abdominal-based breast reconstruction, contralateral balancing breast augmentation, and total laparoscopic hysterectomy (TLH) were successfully performed during one operation. Prior to this operation, we assessed the complication risk and identified the process required to accomplish these complex procedures. Therefore, using a multidisciplinary team approach, we created the well-vascularized abdominal flaps for the breast procedures, performed the total hysterectomy through the laparoscope, and attained tension-free closure of the donor site without complications.

Case Description

A 52-year-old woman underwent a delayed tissue expansion procedure after a left mastectomy at another hospital. She was then referred to us for an autologous breast reconstruction. Because her breasts were small, she requested both a left breast reconstruction and an augmentation of the unaffected right breast using lower abdominal tissue (–Fig. 1A).

At the first examination of our patient, she complained of heavy menstrual bleeding, prolonged menstrual periods, and frequent urination; the physical examination identified an irregular, hard, large intra-abdominal mass. After consultation with the gynecological department and a computed tomography (CT) scan, she was diagnosed with large uterine fibroids, which spanned from the pelvic cavity to the upper abdomen (–Fig. 2). She had no previous abdominal surgeries, and we estimated that there was enough abdominal fat volume to perform breast procedures using lower abdominal flaps.

Because of her symptoms and examination findings, a gynecological procedure (myomectomy or hysterectomy) was indicated. Additionally, under these circumstances, we thought that it would be difficult to achieve a tension-free wound closure of the donor site after the flap harvest. It seemed more effective to reduce or remove the uterine fibroids prior to reconstruction. The patient also desired a simultaneous hysterectomy following the breast reconstruction. Because the preoperative assessment in patients with large uterine fibroids is important to avoid significant life-threatening complications such as deep venous thrombosis (DVT) and pulmonary thromboembolism (PE), we assessed her D-dimer levels (normal) and found no thromboembolism in her lower extremities by ultrasonography.

received
February 17, 2016
accepted after revision
April 3, 2016
published online
May 20, 2016

DOI <http://dx.doi.org/10.1055/s-0036-1584220>.
ISSN 2377-0813.

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Fig. 1 (A) A 52-year-old multiparous woman (body mass index, 20.5 kg/m²; bra cup size, A) presented with a delayed tissue expansion after a left mastectomy. She had an irregular, hard, large intra-abdominal mass due to uterine fibroids and complained of several symptoms. She had not undergone any prior abdominal surgeries. (B) The early postoperative result showed a reconstructed left breast with a small skin paddle, an augmented right breast, and significant improvement in her barrel abdomen.

Surgical Procedures

After removal of the left tissue expander and preparation of both recipient sites, we elevated a right deep inferior epigastric artery perforator (DIEP) flap based on three medial perforators for the left breast reconstruction and a left superficial inferior epigastric artery (SIEA) flap for the right breast augmentation with the patient in a supine position. A microsurgical anastomosis was first performed between the DIEP flap pedicle and the left internal mammary vessel. The SIEA flap pedicle was then anastomosed to the distal stump of

the right deep inferior epigastric vessel. The de-epithelized SIEA flap was subcutaneously placed beneath the right mammary glands through the midline, and the DIEP flap was temporarily fixed to the left chest.

After a two-layer closure of the right incised rectus anterior fascia, the gynecologic surgical team began to perform a total hysterectomy with laparoscopic approach in the low lithotomy position with an intent to decrease postoperative pain and adhesion of bowels. The main trocar was inserted at the linea alba, 3 cm above the umbilicus to preserve the umbilical shape and circulation; three small trocars were placed just lateral to both outlines of the rectus muscles and the suprapubic linea alba (►Fig. 3A). Through these trocars, the uterus was dissected with a Harmonic scalpel (Ethicon, Cincinnati, OH) and then divided into several small pieces for removal through the vaginal cavity (►Fig. 3B).

After a Penrose drain was placed into the Douglas cavum, the patient was again placed in the supine position. The lower abdominal skin was easily closed with two suture layers without any tension (►Fig. 4). At the same time, the left breast was reconstructed using the de-epithelized DIEP flap with a small skin paddle. The amount of blood loss was 400 mL and hysterectomy weight was 1,143 g. Her postoperative course was uneventful (►Fig. 1B).

Discussion

Uterine fibroids are typically asymptomatic.¹ However, as they enlarge in size, they may cause other symptoms and can also compress the surrounding anatomic structures.² DVTs caused by pelvic vein compression are more complex with larger tumors, particularly in cases with uterine weights > 1,000 g.³ Shah et al reported on a patient whose legs

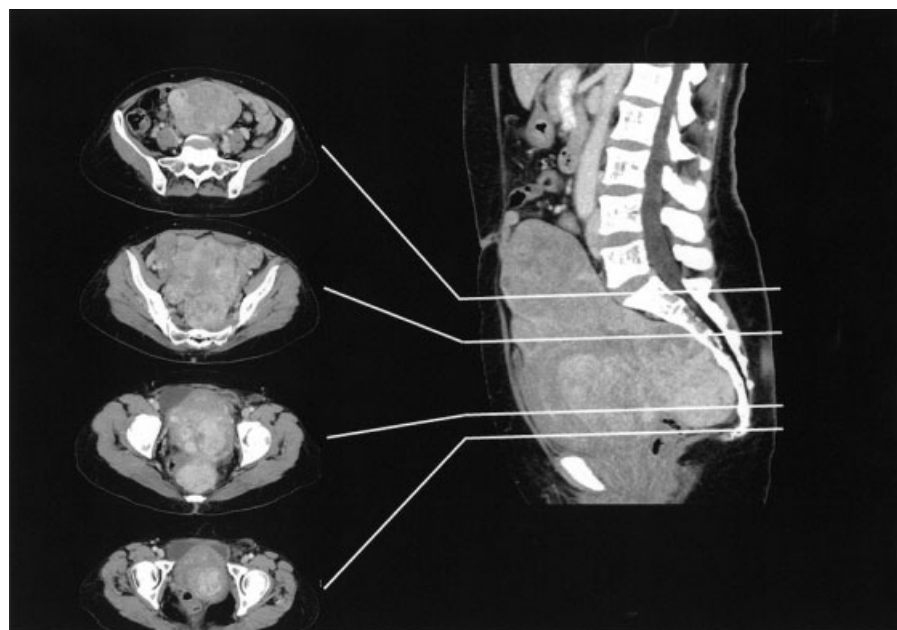


Fig. 2 Preoperative computed tomography showed an irregular large mass in continuity with the uterus, which is a typical finding with uterine fibroids; this extended from the pelvic cavity to the upper abdomen. She had enough abdominal fat volume to produce both lower abdominal flaps.

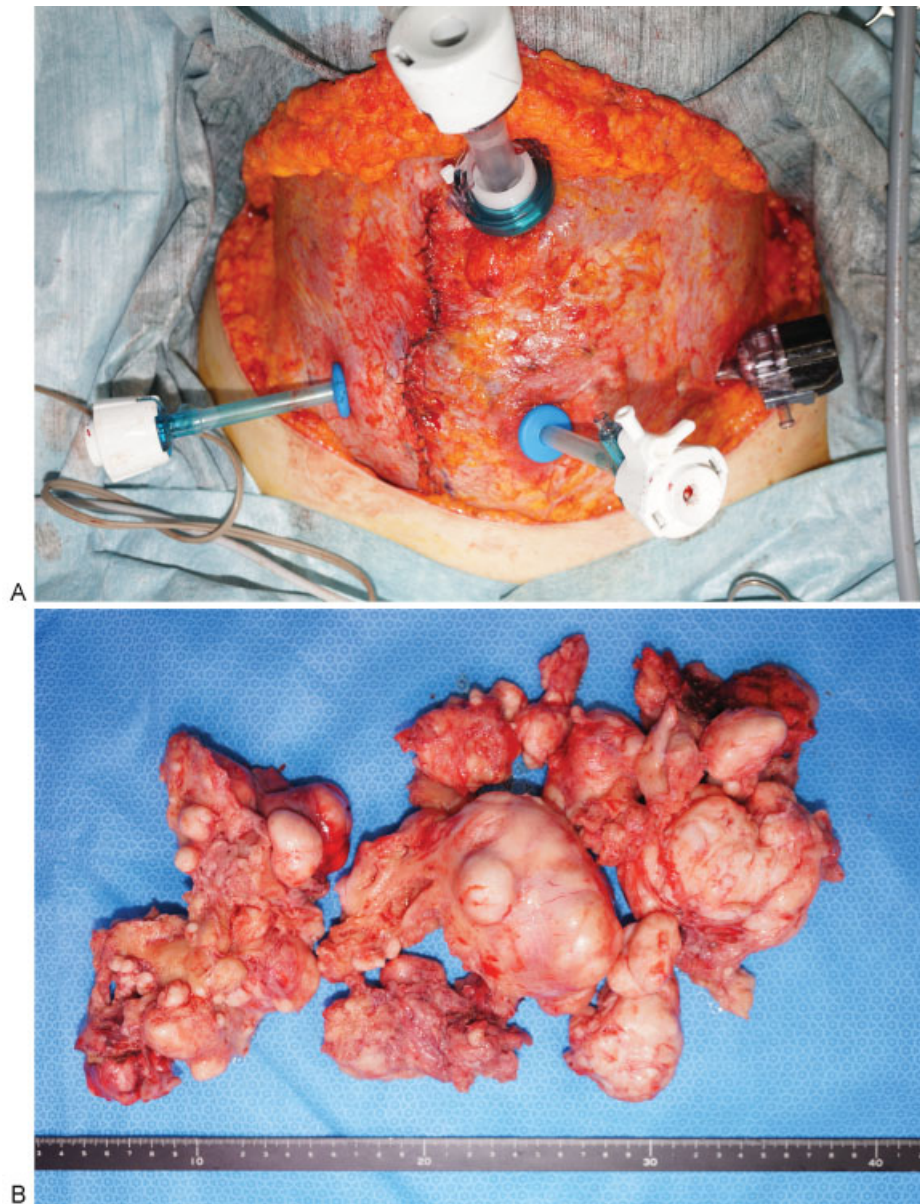


Fig. 3 (A) The main large trocar (shown superiorly in this picture) was inserted at the linea alba 3 cm above the umbilicus to preserve the umbilical shape and circulation; three smaller trocars were placed just lateral to both outlines of the rectus muscles and suprapubic linea alba. (B) Under the laparoscope, the uterus was dissected and divided into several small pieces in the pelvic cavity, and then removed in pieces through the vagina. The hysterectomy weight was 1,143 g.

were swollen because of compression by an enlarged uterus immediately after a DIEP flap breast reconstruction.⁴ Tension in a donor-site closure after lower abdominal flap breast reconstruction also increased intra-abdominal pressure.⁵ We should pay attention to severe complications such as DVT and PE, particularly with large uterine fibroids.

Determining whether to perform a gynecological surgery for large uterine fibroids before, simultaneously, or after a lower abdominal flap breast reconstruction is controversial. With laparoscopic surgery after breast reconstruction, care should be taken to recognize any anatomic translocations, including the umbilicus.^{6,7} Previous studies showed increased donor-site complications in abdominal-based breast reconstruction patients who had prior abdominal surgeries.^{8,9} Laparoscopic

surgery before reconstruction has the potential risk of deep inferior epigastric vessel injury,¹⁰ and can leave umbilical scars. This scarring may cause decreased umbilical blood circulation when the neighboring skin is incised during abdominal-based breast reconstruction.

There have been no reports detailing a simultaneous gynecological procedure during a lower abdominal flap breast reconstruction. One of the disadvantages of a laparoscopic approach was the challenge of maintaining insufflation with the thin abdominal wall after the flap harvest. Besides, intraoperative position change was necessary twice for this procedure. However, simultaneous procedures are feasible and can have many advantages. The patient can undergo simultaneous breast reconstruction and TLH. There

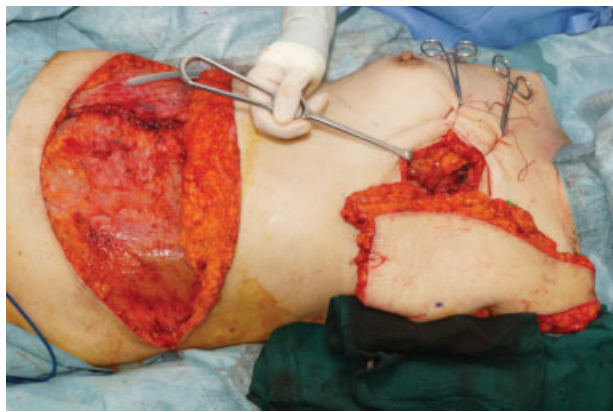


Fig. 4 After a Penrose drain was placed into the Douglas cavum, the lower abdominal skin was easily closed with two suture layers without any tension. The left breast was reconstructed using the DIEP flap. The head of the muscle retractor indicated the SIEA flap, which was placed under the right mammary glands.

are no additional scars except with the flap harvesting; moreover, there is no risk of injury to the nutrient vessels and subcutaneous vascular network of the abdominal flap because the flap harvest is performed first. Finally, these procedures allow the surgeons to perform tension-free donor-site closures, which lead to less postoperative pain and complications.

Conflict of Interest
None.

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