# *Successful salvage of exposed breast implants in previously irradiated patients using local fasciocutaneous flaps*

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CASE REPORT

# Successful salvage of exposed breast implants in previously irradiated patients using local fasciocutaneous flaps

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**Abstract** Radiotherapy is used commonly in the treatment of breast cancer but can damage the surrounding tissues. For patients who have had implant-based breast reconstruction, this may result in tissue breakdown with exposure of the prosthesis. We present two cases in which an implant has become exposed following radiation therapy and been successfully salvaged with local fasciocutaneous flaps. The patients were aged 50 and 59 and had excellent results after at least 24-months follow-up. We aim to show that in selected patients local flaps remain a useful option in implant salvage in the irradiated breast.
Level of Evidence: Level V, therapeutic study.

**Keywords** Radiotherapy · Breast augmentation · Breast reconstruction · Breast implant exposure · Breast cancer

## Introduction

Radiotherapy is an important adjunct in the prevention of breast cancer recurrence [1], however, it adversely affects the quality of or damages healthy tissue surrounding the target site. Radiation therapy before or after implant-based breast reconstruction is associated with a high risk of complications, those most commonly reported being capsular contracture, infection, and implant exposure [2–5].

Implant exposure is a catastrophic outcome of breast implant surgery as it often results in implant loss and failure of the reconstruction or augmentation. There are few reports concerning successful salvage of exposed breast implants with none focusing on previously irradiated breasts [2, 6–9]. We present two cases of radiotherapy-related implant exposure that were successfully treated with local fasciocutaneous flaps.

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## Case reports

### Case 1

A 59-year-old woman underwent delayed right breast reconstruction 2 years following a mastectomy, axillary node clearance and chest wall radiotherapy for an ER-positive grade III ductal carcinoma. Initially, she had insertion of a right Becker expander (Mentor Corporation, Santa Barbara, California, USA). Stage two revision and port removal was carried out 5 months later with simultaneous left-sided breast reduction.

Fifteen months later, she underwent excision of excess tissue from the right axilla. Fourteen months following this, she presented to the department with a right breast radionecrotic ulcer with surrounding erythema overlying the implant (Fig. 1). This had failed to heal after conservative treatment with antibiotics and dressings. The ulcer was excised and the resultant defect with its exposed prosthesis reconstructed with a superolateral chest wall fasciocutaneous flap. The patient had an uneventful postoperative recovery and follow-up with no complications in the 5 years since her original implant salvage (Fig. 2).

### Case 2

A 50-year-old patient was referred for correction of acquired breast asymmetry following a wide local excision and postoperative radiotherapy 2 years previously for a node-negative ER-positive grade II right breast carcinoma. She

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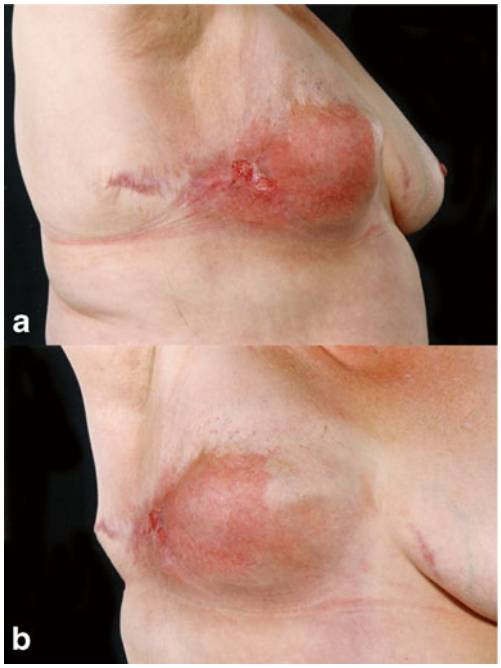


**Fig. 1** Case 1: radionecrotic ulcer right breast pre-operative views. **a** Right lateral view. **b** Antero-posterior view

underwent bilateral subpectoral breast augmentation with Mentor Cohesive Gel (Mentor Corporation) anatomical implants. Thirteen months later she developed left sided node-negative ER-positive HER2-negative grade I carcinoma which was also treated by lumpectomy and adjuvant postoperative radiotherapy.

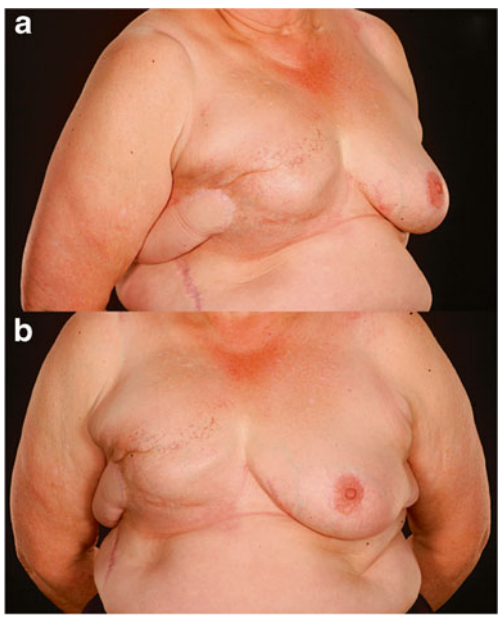


**Fig. 2** Case 1: post-operative appearance 5 years after implant salvage with chest wall fasciocutaneous flap showing good functional and aesthetic outcome. **a** Right oblique view. **b** Antero-posterior view

Following this, she developed wound infections for which she received two courses of antibiotics. Three months later she was re-referred to the plastic surgery service with Modified Baker grade IV contracture of the left and grade III contracture of the right breast both associated with glandular ptosis. This gave the latter a double-bubble appearance. The patient underwent bilateral total capsulectomies, implant exchange, and concomitant LeJour-pattern mastopexies.

The vertical incision of the right breast was slow to heal and eventually needed debridement and skin grafting 2 months after the implant exchange. The graft, however, failed and threatened exposure of the implant. This was treated with VAC therapy to encourage granulation tissue in the wound overlying the implant in the base of the wound. At 2 months, further debridement of the wound was performed with implant exchange and coverage with an islanded fasciocutaneous flap (Fig. 3). There were no postoperative problems and the implant was salvaged successfully with satisfactory results 12 months postoperatively (Fig. 3).

## Discussion

Radiotherapy is a well-established adjunct in the treatment of breast cancer [1]. However, it increases the risk of postoperative infection, capsular contraction, and implant exposure in prosthesis-based breast reconstruction [10, 11]. This has led to difficult decisions for the plastic surgeon in deciding the best method and timing of breast reconstruction for optimal results in patients in whom radiotherapy is indicated or who have previously received radiotherapy [12]. It is, however, still possible to undertake immediate implant-based reconstruction in selected patients in whom radiotherapy is indicated but who are not suitable for totally autologous breast reduction. This has been supported by recent studies which have documented low rates of major complications with good patient satisfaction [2, 4]. Such results have been made possible by improvements in surgical technique and implant design [4].

Of these complications, implant exposure is the most serious as it leads to a failure of the reconstruction. This is because traditional teaching dictates that exposed prostheses should be removed immediately and replaced when the overlying tissue is suitable at least 6 months later. However, few reports [5, 6, 8, 9] comment on the successful salvage of exposed or infected implants in the context of either post-mastectomy reconstruction or augmentation surgery, and none have focused on the salvage of implants as related to previous radiotherapy.

Spear et al. reported their experience of salvaging exposed or infected implants in a series of 69 patients [7]. The patients had undergone either breast reconstruction or augmentation mammoplasty. A salvage rate of over 60 % was reported using a staged treatment algorithm. This consisted of initial

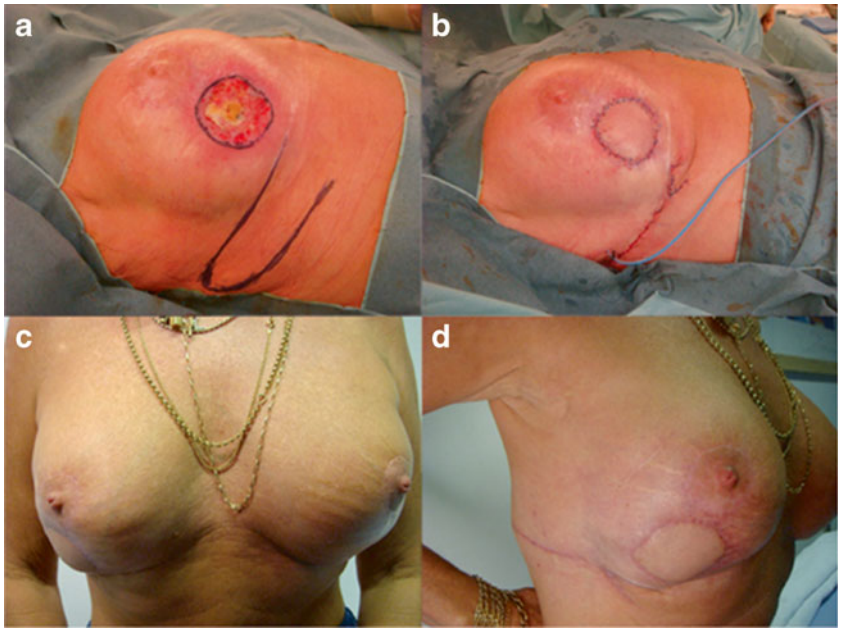


**Fig. 3** Case 2: intraoperative views and appearance 12 months after implant salvage with islanded fasciocutaneous flap. **a** On-table right lateral view showing non-healing ulcer with threatened implant and markings for islanded fasciocutaneous flap. **b** On-table right lateral view with flap in situ. **c** Twelve months appearance antero-posterior view. **d** Twelve months appearance right oblique view

aggressive treatment with antibiotics, moving to debridement, irrigation, and prosthesis exchange followed by the provision of adequate soft tissue coverage with a local or regional flap if necessary. Previous radiotherapy was not found to significantly affect the salvage rate of implants, with the presence of severe infections or atypical bacteria being highlighted as being relative contraindications to attempted salvage.

A recent review of the management of the complications of implants by Bennett et al. analysed the outcomes of 71 total infected or exposed implant-based breast reconstructions [5]. Of these, 60 % had received radiotherapy prior to presenting with complications. Overall, eight successes (50 %) of salvage of exposed implants were reported from 16 attempts using debridement, capsulotomy and resuture, resuture with exchange for smaller prosthesis, infra-mammary chest wall tissue advancement or latissimus dorsi flap and implant exchange. Interestingly all three attempts of salvage with infra-mammary tissue advancement over exposed implants were successful, although only one of these had been previously irradiated. The authors' criteria for attempting salvage mirrored those of Spear et al., whereby the severity of infection dictated their efforts. The presence or absence of prior radiotherapy, again, did not seem to influence the outcome.

The two cases presented here are examples of the successful use of local fasciocutaneous flaps in single-staged operations. Both resulted in successful salvage of implants in previously irradiated breast reconstruction and breast augmentation patients with esthetic appearances which were agreeable to the recipients. The patients were of good general health and were fully involved in the decision making process. Neither grew atypical bacteria from their wound cultures nor had severe signs of infection such as systemic symptoms or purulent discharge on presentation. They failed to heal after initial conservative treatment with antibiotics and dressings, with one also having a failed skin graft. Both were followed up at least 24 months post-procedure and have developed no further wound healing complications.

The issue of augmentation patients who have undergone previous irradiation who then present with requests for revisional surgery is a complex subject. Firstly it is important to avoid techniques which significantly impair tissue perfusion as this has already been adversely affected by the radiotherapy. The use of local fasciocutaneous flaps is convenient but one should avoid using a flap from irradiated skin as this would increase the risk of wound dehiscence and flap necrosis. Secondly, it is important that any such techniques to not cause tension on the tissues as they would otherwise result in fat or tissue necrosis and healing problems. Thirdly, extreme caution must be exercised in the selection of the implant size that is used as an overly large implant can predispose to wound healing problems. The patient in case 2 already had 495-ml anatomical implants and was happy with this size, hence 450-ml round implants were inserted at capsulectomy and implant exchange.

It is also important to be cautious in the performance of the capsulectomy for fear of thinning the overlying tissues and predisposing to implant exposure if there were wound healing problems. In this regard, the LeJour augmentation mastopexy skin pattern used was ideal as in our technique the vertical incision does not communicate with the implant pocket directly as we use a gland splitting approach. The patient in case 2, however, presented with the development of glandular ptosis after previous radiation and requested to remain similar in breast size after revision. A previous infra-mammary augmentation incision scar creates an area of weakness or potential breach between the vertical incision

of the LeJour mammaplasty pattern and the implant pocket created via glandular split at the periareolar area.

We therefore believe these cases show that properly designed and executed local fasciocutaneous flaps remain a useful option for implant salvage in selected patients who develop breast implant exposure in the setting of previous chest wall radiotherapy. It is important not to include the irradiated skin or skin with obvious radiotherapy injury in the flap design. We would recommend attempting salvage only in patients presenting with early implant exposure and without severe signs of infection. Where implants have to be replaced then a smaller implant would be prudent and the patient must be warned that the mastopexy will need to be conservative to avoid possible necrosis of the soft tissues and consequent wound breakdown which might endanger the implant. We suggest further trials to fully assess the best options for implant salvage in previously irradiated breast whether it has been the object or recipient of breast conservation therapy or formal reconstruction. Local flaps might be of use in this setting and have to be considered an option.

**Conflict of interest** None.

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