ORIGINAL ARTICLE

SALVAGE OF INFECTED TISSUE EXPANDERS
Myth or Truth

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Abstract

The use of tissue expender has become a popular and well established technique for soft tissue reconstruction. Infection is the most common and devastating complication, traditionally treated by removal of the infected implant. The study demonstrates the results of attempted salvage of infected expanders.

This case series was done at department of Plastic surgery, KEMU, Lahore from Sep, 2006 to Aug, 2010. Medical record of all the patients undergoing reconstruction with tissue expanders was reviewed and cases complicated by infection of surgical site were selected for the study. Minor wound infections (presence of pain or tenderness, localised swelling, redness or heat and serous drainage from the incision singly or in any combination and involving the skin, subcutaneous tissue and fascia around the expander or filling port) were treated by temporarily stopping the expansion and starting antibiotics according to culture and sensitivity. Cases of major wound infection (purulent discharge with partial or total dehiscence of the wound and exposure of expander) were treated differently in each case.

Twelve cases of tissue expansion out of 35 (34.28%) got infection. Eleven were salvaged successfully (91%). Seven cases had minor soft tissue infection and five cases had major form of infection. Cases of minor wound infection were all successfully salvaged at the expense of brief delay in expansion (average 3.5 weeks) till the settlement of infection. Two cases of purulent discharge from the port site were salvaged by exteriorizing the port and halting the expansion for two week. Three cases of major infection involving the expander had partial dehiscence of the wound with exposure of implant. Two of these cases were successfully salvaged.

In conclusion successful salvage of infected tissue expander should be attempted with a reasonably good outcome.

Key Words: *Tissue expanders infected.*

Introduction

Replacing like with like is the essence of reconstruction. Expansion of adjacent skin allows surgeons to cover defects with local skin that matches the area of reconstruction in texture, colour, thickness, hair bearing capability and sensation. Becoming increasingly popular, tissue expansion has established itself as the reconstructive method of choice for many congenital and acquired defects in children and adults because donor site morbidity is minimal and aesthetic results are superior.

Complication rates of 5 to 60 percent have been reported when performing tissue expansion. Complications can be minor- allowing the expansion to be completed and not affecting the final outcome. Major complications interfere with the inflation of expander and include infection ranging from minor to severe forms. Minor infection (presence of pain or tenderness, localised swelling, redness or heat and serous drainage from the incision singly or in any combination and involving the skin, subcutaneous tissue and fascia around the expander or filling port) leads to delay in planned expansion. Major infection (purulent discharge with partial or total dehiscence of the wound and exposure of expander) threatens the loss of expander. Once the course of expansion fails because of infection, customarily removal of the implant has been the basis of treatment. Since the removal of an infected tissue expander is very disappointing to both the surgeon and the patient, every effort is directed to its salvage.

Historically, universal practice was the instantaneous taking away of the infected or exposed expander16,17. Nevertheless, the modern plastic surgery text has investigated

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opportunities for device rescue.3,18–32 With the fast advancement in the field of microbiology and advent of newer antibiotics, surgeons took courage and started attempts to salvage the infected tissue expanders. The strategies to deal with the infection included wound wash with normal saline and/or wash with antibiotics solutions, systemically given intravenous antibiotics according to culture and sensitivity, capsulotomy and device exchange, and exteriorization of the ports. Thus by different ways surgeons try to gain maximum expansion while dealing with infection

In spite of a number of reports centering on management of the infected or exposed tissue expanders, there is existing disagreement as regards the understanding of and suggestions for device salvage and the best modus operandi. It is probably important for plastic surgeons to describe a superior set of guiding principles concentrating on the subject keeping in mind the clinical, psychological and financial problems associated with possible expander loss. Victorious expander rescue offered to correctly chosen patients would be a highly desirable alternative to loss of an implant.

The rationale of our study was to observe the impact of tactics used to combat infection of tissue expanders so that surgeons can make more enlightened judgment regarding the possibility of saving a threatened implant. The objective of this study was to describe the outcome of strategies used to salvage the infected tissue expanders.

Patients and Methods:

This case series was done at department of Plastic surgery, KEMU, Mayo hospital Lahore from Sep, 2006 to Aug, 2010. Medical record of all the patients undergoing reconstruction with tissue expanders was reviewed and cases complicated by surgical site infection were selected for the study. All the patients had received first generation cephalosporin for seven days post operatively. Minor infection was defined as presence of pain or tenderness, localised swelling, redness or heat and serous drainage from the incision singly or in any combination and involving the skin, subcutaneous tissue and fascia around the expander or filling port. Major infection was defined as purulent discharge with partial or total dehiscence of the wound and exposure of expander. SaIvage was defined as successful completion of expansion. Failure to salvage was defined as premature removal of expander with suboptimal expansion. In cases of minor infection, wound discharge was sent for culture and sensitivity and empirical antibiotics were started against gram positive cocci. Antibiotics were changed acoording to culture and sensitivity report. The antibiotics were continued for two weeks. The process of expansion continued during the antibiotics course.

The patient were analysed on the basis of management of infection and outcome. These outcomes were of three type's e.g completion of successful expansion, early removal of expander secondary to infection with successful expansion.

Results:

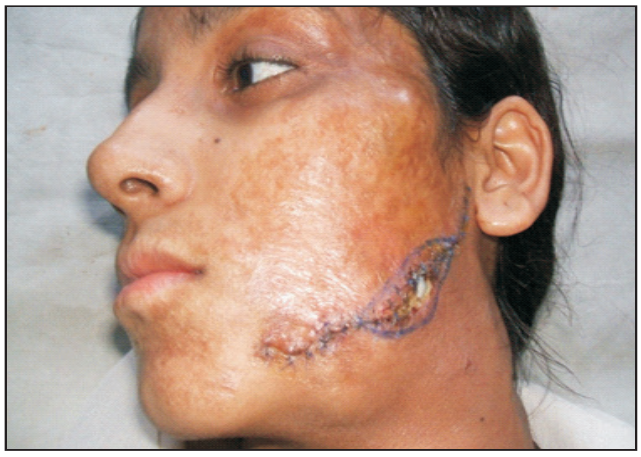
Ten cases out of fifteen had tissue expander infection. One expander was used in each case. Data collected on the expansion process, complications and outcome are summarized in table-1

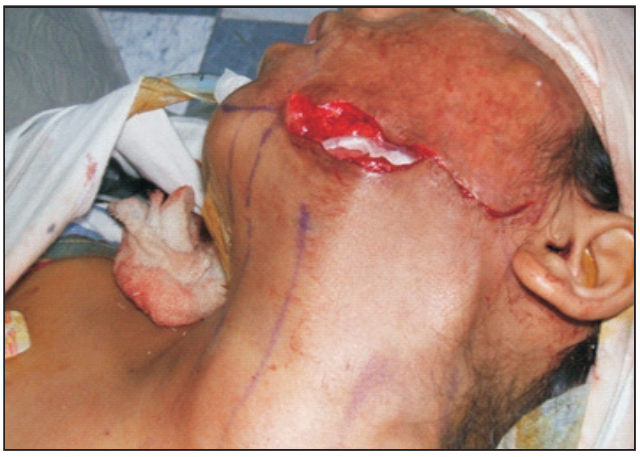
Table: 1

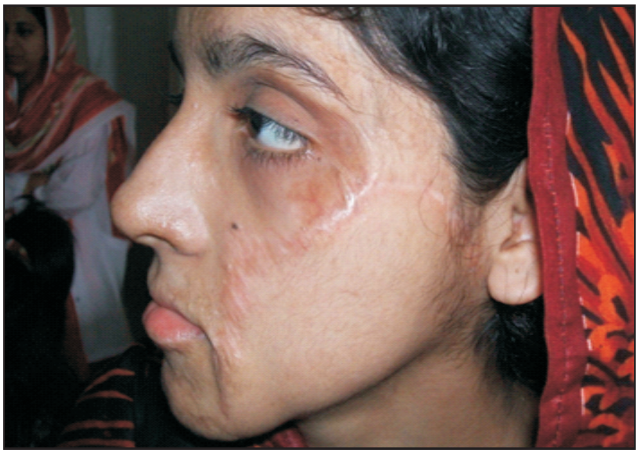
Expansion Data, Complications and Outcome in the Infected Expender Patients

Patient	Age Year	Sex Male/ Female	Region	Expander Volume (cc)	Total No. of expansions	Time of starting antibiotic treatment relative to No. of expansion	Complications	Outcome
1	18	F	Neck	450	18	10	Skin redness, incision margin dehiscence, extrusion (1cm gap)	Earlier removal with successful reconstruction
2	29	M	Scalp	430	16	12	Skin redness	Successful Reconstruction
3	14	F	Scalp	380	14	8	Skin redness, fluid collection, wound dehiscence	Earlier removal with successful reconstruction
4	22	M	Neck	410	16	10	Skin redness	Successful Reconstruction
5	27	F	Neck	380	14	8	Skin redness	Successful Reconstruction
6	28	F	Neck	390	16	10	Fever, skin redness	Successful Reconstruction
7	36	F	Breast	440	18	14	Fever, skin redness, wound dehiscence	Earlier removal, Successful Reconstruction
8	32	F	Breast	420	17	16	Fever, skin redness	Successful Reconstruction
9	28	F	Neck	380	16	10	Skin redness	Successful Reconstruction
10	30	M	Scalp	420	16	12	Fever, skin redness	Successful Reconstruction

B







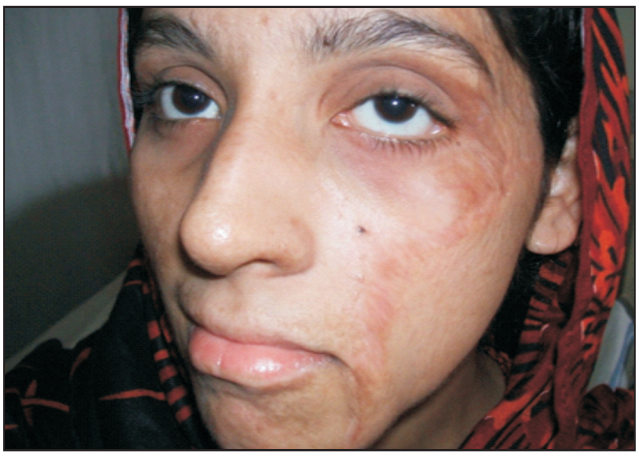


Fig. - Photograph A, of a post burn scar right cheek with expander extrusion. Photograph B, of expander extrusion & excised necrosed margin of expander insertion site. Photograph C of postoperative frontal view of left cheek. Photograph D, of postoperative lateral view of left cheek.

Discussion:

Exposure of the implant with or without flap necrosis is an indication to abort the procedure and remove the implant. This usually results from inadequate dissection of the implant pocket with later suture line breakdown. Healing is allowed to occur and the process is repeated at a later time when indicated. However, some surgeons may opt to continue the expansion process if they determine that the infectious process does not jeopardize the site. This practice is not standard and is based only on anecdotal experience and subjective interpretation. In 1965 Perras introduced the concept of "salvage" of an infected implant. His input challenged surgical belief, which dictated foreign body removal in case of infection, and sparked the progression of device salvage. Relying on systemic antibiotic therapy and passive wound drainage, Courtiss et al. reported salvage rates of 44.8 for infected implants in the setting of breast augmentation. In 2004, Spear et al codified the aforementioned techniques of device salvage into an algorithm for the management of breast device infection and/or exposure. It helped move the topic from one of "do or do not" attempt device salvage to the next level, by shedding light on "how" and "when" instead.

Failure of expansion process and loss of implant causes psychological trauma to the patient. More over its economic implications are tremendous. In our unit traditional practice has been removal of infected tissue expander.

Despite a number of reports focusing on management of the infected or exposed breast prosthesis, there is still disagreement regarding the wisdom of and indications for device salvage and the optimal timing, setting, or technique. It would be valuable for plastic surgeons to better define a set of clinical guidelines addressing these very issues, given the medical, legal, psychological, and economic issues associated with possible implant loss. Device explantation is a traumatic event and, for practical purposes, represents the loss of a breast. Successful device salvage offered to properly selected patients with the greatest possibility of success would be a highly desirable alternative to loss of an implant.

Conclusion:

The high expander rate of infection does not mean to preclude further expansion and successful reconstruction. It is our impression that having low threshold for placing patients on antibiotic treatment in the presence of early signs of expander infection results in prevention of infection and non-salvageable expander infection.

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