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ARPLEG Associazione Europea di Ringiovanimento e Chirurgia Plastica ed Estetica Genitale

International Hair Research Foundation

Società Polacca di Medicina Estetica e Anti Aging

AAPRAS Armenian Association of Plastic Reconstructive and Aesthetic Surgeons

The Syrian Association for Aesthetic Reconstructive & Burn Surgery

SSPRASC Southern Society of Plastic Reconstructive Aesthetic Surgery and Cosmetology

CPSU Club of Plastic Surgeons of Ukraine

ESPRS The Egyptian Society of Plastic and Reconstructive Surgeons

ASSECE EUROPEAN ASSOCIATION OF AESTHETIC SURGERY

SCRIPTA MANENT EDIZIONI

UDPS UpDate in Plastic Surgery

Editorial

In Italia la chirurgia estetica vede nascere una nuova società scientifica, l'AICPE, che si realizza in un panorama specialistico italiano già di per sè molto complesso. La cosa, in sé, è sicuramente positiva. Significa che c'è ancora di ha voglia di fare e di portare avanti nuove proposte e questo non può che essere utile per tutti coloro che ricercano con serietà risposte alternative su tematiche che interessano la nostra branca specialistica.

Credo però che, al di là delle posizioni critiche che caratterizzano ciascuna compagine, nell'interesse della professione comune si dovrebbero evitare inutili polemiche con altre società scientifiche italiane paritetiche che rischiano di indebolire la categoria che ha invece oggi più che mai la necessità di essere solida e unita.

Essere compatti significa avere una forte voce per affrontare attuali situazioni professionali per noi penalizzanti (vedi problemi assicurativi, problematiche medico-legali, normative sulla gestione dei day-clinic e delle sale operatorie, il servizio sanitario nazionale).

Ogni diverso atteggiamento porta a disgregazione e indebolimento e innesca una querelle che spesso mischia dissapori personali a interessi di categoria.

Da una posizione superpartes, conoscendo la serietà delle persone coivolte e avendo per loro grande stima, auspico un chiarimento e una ricomposizione in tempi brevi nell'interesse di coloro che praticano la nostra disciplina con serietà e dedizione.

A new cosmetic surgery scientific society, named AICPE, has been founded in Italy, taking place in very difficult specialised Italian overview. A new society is in itself a good thing. It means that somebody still wants to do something new and to make proposals that can only be useful to all plastic surgeons who seek serious alternative answers of interest for our speciality.

However, in the interest of common profession, I believe that, beyond all the critical point of view that characterize each scientific society, it must be dutiful to avoid unnecessary controversies with other similar associations because the matter could weaken our category that has, on the contrary, today more than ever the need to be strong and united.

Being compact means having a strong voice to address current political situations that are very important for all of us (insurance problems, medico-legal issues, regulations on managing day-clinic and operating theatres, the national health service and so on).

Otherwise the situation leads to a weakening fragmentation and triggers a quarrel that often mixes personal animosity to category interests.

From a super-partes position, knowing the seriousness of the people involved and having high esteem for them, I hope a clarification and a rapid consolidation in the interest of those who practice our discipline with seriousness and dedication.

Ruben Oddenino

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SCRIPTA MANENT EDIZIONI

Brachioplasty with excision of a strip of deep fascia for management of severe post-mastectomy lymphedema

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Summary

Brachioplasty with excision of a strip of deep fascia for management of severe post-mastectomy lymphedema

OBJECTIVE: Post-mastectomy lymphedema have been treated over years by different techniques. So the objective of this study is to evaluate brachioplasty with excision of a strip of deep fascia and maintenance physiotherapy on the limb size and cosmoses in cases of sever post mastectomy lymphedema.
METHODS: Eleven patients with unilateral sever post mastectomy lymphdema were done from April 2009 to June 2012 at Mansoura University Principal Hospital. All patients were managed using a brachioplasty incision and excision of a strip of deep fascia. 2 weeks later, combined decompression therapy was started in the form of compression stocking and pneumatic compression session [2 hours / week for 4 weeks] was done.
RESULTS: Satisfactory outcome in all patients with subjective relief of their complaints [heaviness and limited shoulder motion] was reported. Some complications were occurred such as marginal necrosis of surgical wound and cellulitis.
CONCLUSION: Our technique offers single, simple and reliable method that achieves substantial cosmetic and functional improvement in post-mastectomy lymphedema patients.

Key words: *Lymphedema, post-mastectomy lymphedema.*

INTRODUCTION

Lymphedema is the accumulation of protein rich interstitial fluid as a result of impaired lymphatic function [1]. Post mastectomy lymphedema may result from surgical trauma to the lymphatic system [2]. Further Damage to the lymphatic system may result from radiation [3], chemotherapy, infection or inflammation [4].
The incidence of post mastectomy lymphedema varies greatly, and ranges from 15 to 54% [5]. Post mastectomy lymphedema is a lifelong problem and can lead to pain, heaviness, weakness and psychological distress [6]. Recurrent soft tissue infection and rarely lymphangiosarcoma may complicate the condition [7].
Treatment of lymphedema consists of both non operative and operative management. The non operative management is multidisciplinary termed combined decompression therapy (CDT) which contains massage, bandaging and exercises [8]. Most patients with early stages of lymphedema can be treated successfully with CDT [9, 10].
Surgical approach should be considered entertained when appropriate CDT fail to adequately reduce lymphedema [11]. The operative management includes either excisional [12] or reconstructive surgery such as lymphovenous anastomosis [13] and lymph vessel transplantation [14] or liposuction [15].
U.S, low level laser [16] and aqua lymphatic therapy [17], also represent a useful modalities of good response in mild and moderate lymphedema. To date, however, none of these modalities used in our hospital.
The aim of this study is to evaluate our surgical treatment and maintenance physiotherapy on the limb size and cosmetic appearance in cases of sever post mastectomy lymphedema.

PATIENTS & METHODS

Eleven patients with unilateral sever post mastectomy lymphdema were included in this study. All patients in this study were refractory to CDT for 3 months and managed using a brachioplasty incision and excision a part of deep fascia at *Mansoura University Principal Hospital* from April 2009 to June 2012. This technique was done in order to apply the most cosmotic satisfaction of patients and decrease incidence of recurrence by enhancing lymphatic drainage through muscles. Criteria of exclusion included patients with acute infection, recurrent malignancy, acute or residual venous thrombosis, forearm and hand lymphedema or those with bilateral presentation.
All patients were assessed preoperatively by thorough history that include; age, sex, type of breast surgery, radiotherapy, chemotherapy, timing of lymphedema, lymphedema duration and the impact of lymphedema on patient's quality of life. The routine preoperative clinical assessment, lab investigations and duplex examination (Figure 1) were done to all patients. Preoperative photos and informed consent were obtained from all patients.

SURGICAL TECHNIQUE

The patient was placed in supine position with the arm abducted after the induction of general endotracheal anesthesia. The upper limb was shaved circumferentially, draped free in the field and placed on a double arm board. The brachioplasty incision was done (Figure 2).
Two skin flaps with 5 mm thickness at least were created; all the subcutaneous tissue & deep fascia were excised (Figure 3) preserv-

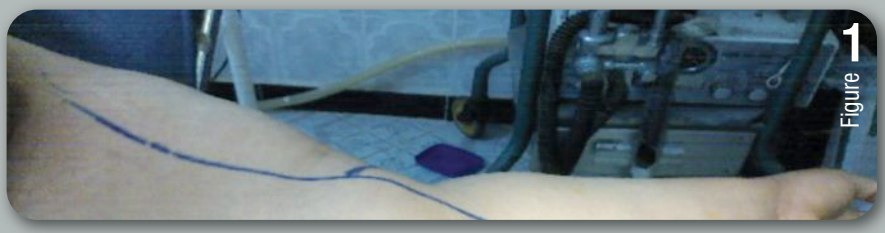
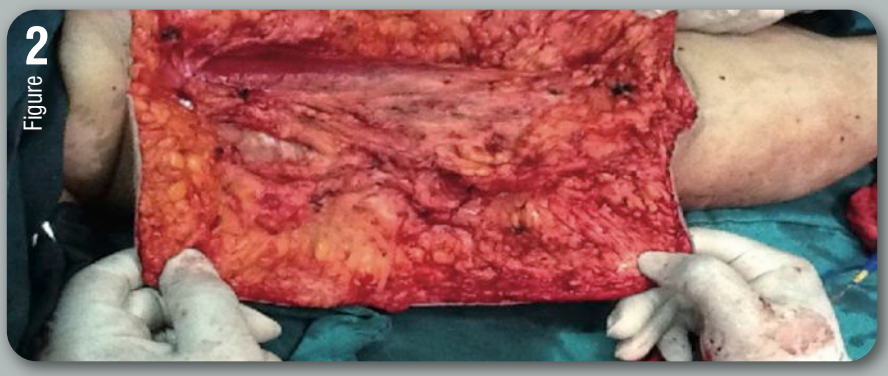


Figure 1
Left severe post mastectomy lymphedema with duplex mapping (Case 1).

Figure 2
Brachioplasty incision with excision of subcutaneous tissue and deep fascia (Case 1).



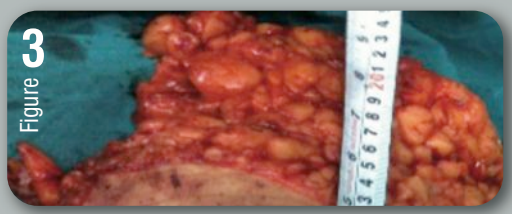


Figure 3
Excised skin, subcutaneous tissue and deep fascia (Case 1).

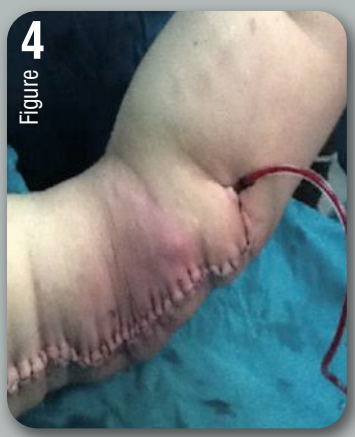


Figure 4
Suction drain application and surgical wound closure with significant limb reduction (Case 1).

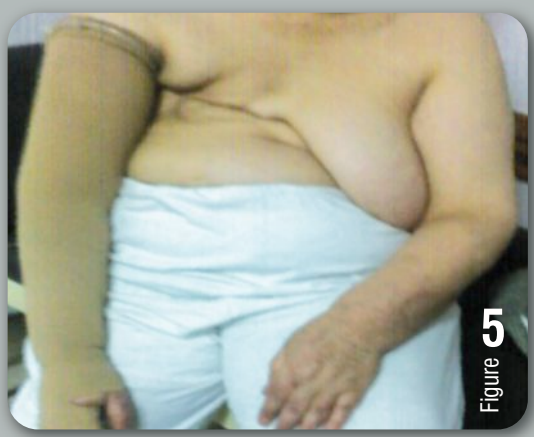


Figure 5
Post-operative fitted compression sleeves (Case 7).

Figure 6
Post-operative pneumatic compression session (Case 11).

ing the cephalic & basilic veins. Suction drains were placed and flaps were fashioned to be tight over the muscles by interrupted dermal and skin sutures (Figure 4) then the limb was compressed firmly by bandage.
Drains were removed when the effluent was less than 20 ml/24 h .The patient was allowed to ambulate immediatly with the arm in a sling. Post-operative education about hygienic measures, skin care and prophylaxis of recurrence was started within the same admission. Two weeks later the CDT was started with compression stocking (Figure 5), and an appropriately measured and fitted compression sleeves is prescribed.
After stitch removal, pneumatic compression session for 2 h/week for 4 weeks was started (Figure 6), and home massage was continued.

RESULTS

A total of 11 patients with severe unilateral post-mastectomy lymphedema underwent a brachioplasty with excision of a strip of deep fascia followed by maintenance conservative treatment. Nine of them were females and two were males.
Their age range was 40-74 years (mean 55.73±10.51) of old. Lymphedema diagnosed post mastectomy by a mean period of 5.45 years (range 3-16) and presented for a mean period of 3.18±1.17 years (range 2-5). The mean arm circumference difference was 14.45±3.24 cm (range 9-19) as measured 5cm from the olecranon. The main complaint of our patients was heaviness and limited shoulder motion (Table 1).

After the follow up period (mean 14.55±7.54 months, range 4-24), variable improvement was obtained in all of patients. The outcome was satisfactory in all patients with subjective relief of their complaints. The pressure sleeve is far better tolerated than preoperative.
One patient showed marginal skin necrosis of the surgical wound and this was treated conservatively by frequent dressing. One patient developed cellulitis six months post operative that responded to antibiotic and local treatment.

DISCUSSION

Lymphedema is one of dreaded sequelae of breast cancer treatment. It's strategy of treatment is to control not to cure [18].
Pezner, et al. [19] described arm edema depending on the difference between arm circumference at various points from the elbow when the affected arm is compared with the unaffected arm.
Cluzan [20] defined severe lymphedema as more than 8 cm difference between both arms. We choose this method of assessment because it provides the most clinically simple, inexpensive, and reliable method for evaluating lymphedema.
We evaluated the patients clinically to rule out other reasons for edema such as venous disease and to detect any contraindication for treatment such as related malignancy, infection, or thrombosis. Duplex exam was done as a routine to exclude venous thrombosis and to map the superfiscial veins to avoid superfiscial venous injury during surgery.

Each patient served as his own control, in other words, the non affected arm was the control against which we compared changes in size and the limits of the upper limb movement. None of our patients' educated prior mastectomy about lymphedema and most of them developed cellulitis which have a role in severity [4].
Treatment of lymphedema is tailored according to severity: in sever lymphedema, the pitting component can often be treated by non operative modalities successfully; however fibrosis will remain. Our study confirms this observation as all patients were refractory to non operative treatment for three months, but it facilitates flaps creation. Operative treatment is an uncommon entity and only indicated in a few cases as a last resort [21].
This relative rarity, although not measured in our study, is reflected in the presence of only 11 patients over a period of 3 years in a tertiary referral Hospital.
We choose our technique as our results with Sistrunk surgery in sever lower limb lymphedema is encouraging. Also, the results of reconstructive surgery are fair [13].
In our technique we performed excisional surgery through a brachioplasty incision and excision of a strip of deep fascia to achieve the best cosmoses. In the current study operative treatment gave the best results when combined with continued postoperative CDT this results were confirmed by *Matsubara* and *Brorson* [13, 15].
Pneumatic compression also represented a useful adjunctive tool for lymphedema that gives good results and it represents a corner stone in CDT. This agrees with *Johansson* [22].
We educated our patients about lymphedema and taught them that the operation is a step in management and not all the course.

CONCLUSION

We advocate brachioplasty with excision of a strip of deep fascia as a single-stage operative treatment for patients with severe post mastectomy arm lymphedema. We believe that this approach offers simple and reliable method and achieve substantial cosmetic and functional improvement in these patients.

Table1. Patient data

No	Age (year)	Sex	Lymphedema diagnosis (year)	Lymphedema duration (year)	Arm circumference difference (cm)	Follow-up period (month)	Complication
1	52	F	3	2	13	13	
2	66	M	7	4	14	9	
3	55	F	5	4	16	15	Marginal skin necrosis
4	40	F	3	3	14	24	
5	74	F	11	4	19	6	
6	51	F	2	3	15	19	
7	48	F	5	3	15	24	
8	62	F	16	5	18	14	
9	58	M	2	2	10	12	
10	46	F	3	2	17	20	Cellulitis
11	61	F	3	3	9	4	
Mean	55.73 ± 10.51		5.45	3.18 ± 1.17	14.45 ± 3.24	14.54 ± 7.54	

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Treatment of the Post Mastectomy Pain Syndrome using autologous fat graft

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Summary

Treatment of the Post Mastectomy Pain Syndrome using autologous fat graft

Conservative surgery is the approach more frequently used for the eradication of breast cancer. Nevertheless, today 40% of surgical procedures on the breast are characterized by the use of mastectomy with axillary dissection. Persistent pain after that surgery was firstly reported by Wood, who defined the "Post Mastectomy Pain Syndrome" as a type of chronic pain involving the lateral-anterior chest , the armpit and the top half of the arm, coming after a radical treatment of breast cancer or after quadrantectomy and persisting for more than 3 months after the operative time. The Post Mastectomy Pain Syndrome (PMPS) and disability in performing movements involving the arm or the shoulder joint are a typical manifestation. The Post Mastectomy Pain Syndrome meets three criteria: features, location and timing of pain. It should have neuropathic features characterized by unpleasant sensations described as numbness and special sensations of needles into the skin, burning, or stabbing sensation similar to a dagger, exacerbated by movement of the ipsilateral shoulder. Breast reconstruction can deal with complete asymmetry in some districts and the shape and residual scar tissue do not allow more valid surgical solutions. The autologous adipose tissue, taken from the abdomen or hips and then centrifuged and grafted using the Coleman's technique, is able to restore elasticity to the skin, to rebuild subcutaneous tissue, to reduce the adhesions between planes, to reduce pain symptoms and to improve tissue regeneration concerning neoangiogenesis and deposition of collagen in the dermis.

Key words: *Post Mastectomy Pain Syndrome, Adipocytes transplantation, Fat graft, Lipostructure.*

Post Mastectomy Pain Syndrome

Conservative surgery is the approach more frequently used for the eradication of breast cancer. Nevertheless, today 40% of surgical procedures on the breast are characterized by the use of mastectomy with axillary dissection [1].

Persistent pain after that surgery was firstly reported by *Wood* [2], who defined the "*Post Mastectomy Pain Syndrome*" as a type of chronic pain involving the lateral-anterior chest , the armpit and the top half of the arm, coming after a radical treatment of breast cancer or after quadrantectomy and persisting for more than 3 months after the operative time [2].

The retracting and often painful scars worsen the appearance and contribute to a set of symptoms characterized by alteration in the post mastectomy body image after breast mutilation, anxiety, depression and unpleasant effects of somatization [3], in addition to the difficulty in performing the normal activities in everyday life.

The *Post Mastectomy Pain Syndrome* (PMPS) and disability in performing movements involving the arm or the shoulder joint are a typical manifestation.

That is a condition well described in literature, which is triggered by actions on the breast, whose etiology has not yet been clarified, but which is generally considered the result of a nerve injury produced by surgical procedures like axillary lymph node dissection [4, 5].

The *Post Mastectomy Pain Syndrome* meets three criteria: features, location and timing of pain. It should have neuropathic features characterized by unpleasant sensations described as numbness and special sensations of needles into the skin, burning, or stabbing sensation similar to a dagger, exacerbated by movement of the ipsilateral shoulder [4]. It should persist besides the normal healing period of 3 months and, for this reason, it is classified as a chronic syndrome [5].

PMPS has an incidence between 20 and 50% in women who performed a mastectomy with a marked increased frequency in young patients, aged between 30 and 49 (about 65%) and it is much more rare (26%) in women older than 70 years old [6].

The postoperative scar is indeed a trigger, continuing goal of the attention of women. The healing process, especially in the extension of the axillary wound, is the origin of a marked architectural distortion [7].

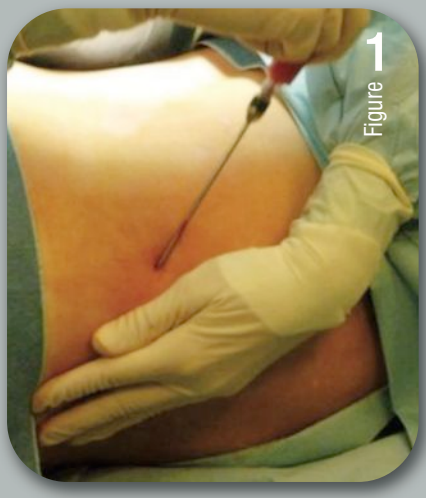
The aim of reconstructive breast surgery is to restore to the woman, who underwent mastectomy, safety, self-esteem and a good quality of life. Breast reconstruction can deal with complete asymmetry in some districts [8] and the shape and residual scar tissue do not allow more valid surgical solutions [9].

The autologous adipose tissue, taken from the abdomen or hips (Figure 1) and then centrifuged and grafted (Figure 2) using the Coleman's technique, is able to restore elasticity to the skin, to rebuild subcutaneous tissue, to reduce the adhesions between planes, to reduce pain symptoms and to improve tissue regeneration concerning neoangiogenesis and deposition of collagen in the dermis.

It may be possible to repeat procedures because the effect is cumulative.

Following treatment with lipostructure, it shows a significant decrease of pain [10], and a significant improvement in skin trophism (Figure 3).

The surgical wound and the subsequent irradiation lead to an inflammatory reaction accompanied by an increased production of pro-inflammatory cytokines, changing the peripheral and central sensitization and dam-



aging the nociceptive system with pain [11]. *Keyser and others* have reported that mesenchymal cells and the stromal fraction derived from the fatty component could reduce efficiently the activation of T lymphocytes, thus being involved with immunosuppressive properties [12].

Figure 1
The autologous adipose tissue is taken from the abdomen or hips.

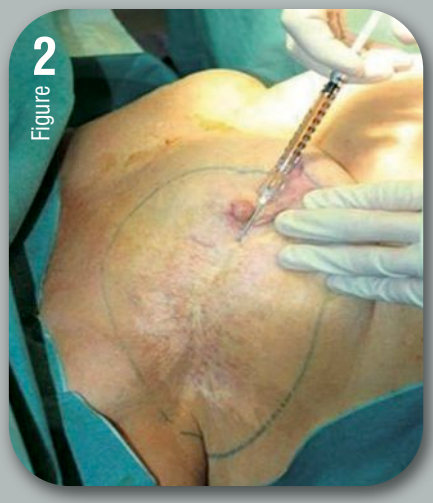


Figure 2
The autologous adipose tissue is centrifuged and grafted using the Coleman's technique.

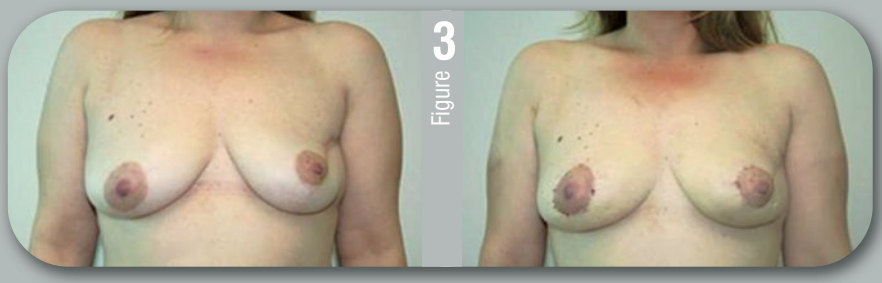


Figure 3
Preoperative view and after three months shows the improve tissue regeneration.

Conflict of interest:
All Authors disclose any commercial associations or other arrangements that may pose a conflict of interest in connection with the article.

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Salvage treatment of breast infected implants: comparativ assessments of a new experimental protocol


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Summary

Salvage treatment of breast infected implants: comparativ assessments of a new experimental protocol

BACKGROUND : Infection represents a severe postoperative complication of breast implant positioning in cancer patients: since it can lead to implant removal resulting in severe physical and psychological discomfort for the patient, prolonged hospitalization and increased costs. We considered all cancer patients (n:450) undergoing mastectomy and reconstruction with implants between 01/02/2009 and 01/05/2012 at the Department of Plastic Surgery, IRCCS San Martino-IST of Genoa. Among these patients we prospectively recruited those who developed infection (n: 36) during postoperative follow-up and we collected information about bacteria isolated and time lapse between surgery and infection (days from surgery). "Statistical Z test" was used to identify significant differences in salvage implants between patients included in the new experimental protocol and those who have been subjected to traditional therapies.
RESULTS Infections complicated 8% of reconstructions performed, in 25% of cases infection appears more than 2 months after surgery and 8% over 6 months. We identified Pseudomonas aeruginosa in 8% of cases, while in 92% Gram positive (4% Corynebacterium species, Staphylococcus 88%). St. aureus in 54% of colture, 46% MSSA (methicillin sensitive Staphylococcus) and 8% MRSA (methicillin resistant Staphylococcus). In the new protocol, implant was removed in only 2 cases (2/9: 22%), in 78% (7/9), implant was saved using systemic antibiotic therapy (43%) or with early replacement expander-permanent implant in one surgical time (57%).
CONCLUSIONS Extended post surgical surveillance is indicated at least for the first 6 months; bacilli Gram negative may be involved in breast infections and this may influence empiric antibiotic treatment. Because of the prevalence of MSSA cephalosporins (first generation) or amoxicillin-clavulanate are good for antibiotic prophylaxis. The percentage of implants saved with the new experimental protocol is higher and statistically significant compared to that obtained with traditional approaches.

***Key words**: Breast reconstruction, breast implant, infection, experimental protocol, implant saving.*

INTRODUCTION

Breast reconstruction is an important moment in the therapeutic course of the cancer patient because it helps women overcome psychological trauma of mutilation and encourages the come back to a normal life. Traditionally after mastectomy, a temporary implant is used and is replaced in a second time with a permanent prosthesis [1].
However reconstructive procedures may produce several complications such as seroma, capsular contracture, skin necrosis, haematoma and infection.
Infection can lead to implant removal, resulting in severe physical and psychological discomfort for the patient, prolonged hospitalization and increased costs.
Several factors have been linked to an increased risk of infection including chemotherapy and radiotherapy.
With regard to the infecting microorganisms, *coagulase positive Staphylococci* are isolated in more than half of the patients but other germs can be commonly found: diphtheroids, lactobacilli, beta-hemolytic streptococci, and *Propionibacterium acnes* [2, 3].
There are no international guidelines for treatment of infected prostheses; historical approach for management involves removal of the implants, treatment with antibiotics: empiric antimicrobial therapy combined with pocket washing, drainage of periprosthetic fluid and delayed reconstruction once the infection is solved [4-8]. This approach is safe and relevant for advanced infections but, in mild infections, it determines a temporary failure in reconstructive surgery and it can also affect the final result.
Therefore there is the need for researching and studying new protocols for saving implants without exposing patients to additional risks and problems.
In our experience, we defined "*salvage*" the systemic antibiotic therapy based on antibiogram plus the early replacement of infected temporary implant with prosthesis.

MATERIAL AND METHODS

We considered all breast cancer patients (n = 450) who underwent mastectomy and implants reconstruction at *Breast Cancer Surgery and Plastic Surgery Units of the IRCCS San Martino-IST in Genoa, Italy* between February 1st 2009 and May 1st 2012. Among these patients, we prospectively recruited those who developed infection (n: 36) during postoperative follow-up. They complained about pain, swelling, erythema, pus, fever, seroma, wound dehiscence or sometimes perforation of the skin. *Surgical Site Infection* (SSI) (1999 NHSN/CDC) is referred by International guidelines.
In most cases, infection appeared after immediate reconstruction using expanders, sometimes after replacement of the expanders.
Perioperative antibiotic prophylaxis was always performed with cefazolin.
After discharge, all patients were followed-up as outpatients once weekly for one month and every two months for one year thereafter.
Outpatient visits were more frequent as required in case of post surgical complications. VES, PCR and fibrinogen were requested for diagnostic confirmation.
Cultures of wound tissue samples, drainage fluid, peripheral blood, periprosthetic seroma and the prosthesis itself, if removed, were performed to identify infecting pathogenes. In one case, *acellular derma matrix* (ADM), used for breast reconstruction, was examined too.
The following data were collected: age, can-

cer stage (TNM), chemotherapy and radiotherapy before and after implant reconstruction, time-lapse between surgery and infection (*DFS: Days from surgery*), infecting microorganism and antibiotic sensitivity pattern of isolated microorganisms.
Different statistical tests were used to check the reliability of collected data: "*analysis of variance*" to define the association between different germs and DFS, "*$\chi 2$ test*" to evaluate the relation between stage disease and microrganism and, finally, "*test Z*" to identify significant differences between patients included in the new experimental protocol and those who have been subjected to traditional therapies; a new protocol has been applied, as shown in Table 1.

RESULTS

36 implant-associated infections were recorded among 450 surgical procedures with an incidence of 8% (36/450). All patients (age range 32-79, average 52) underwent immediate unilateral reconstruction.
Average DFS is 63 days but it is extremely variable: in 25% of cases it is more than 2 months and 8% over 6 months later.
We used TNM-AJCC classification for staging: when there were more primary tumors, we considered those with more advanced staging. Breast cancer was in 37.6% in stage III, 28.1% in stage II, 21.8% in stage I and 12.5% in stage 0 (carcinoma *in situ*).
In 72% infection has affected a temporary expander, 22% a permanent prosthesis, and only 5% permanent expanders. When possible, we investigated relationship between DFS and cancer therapies as shown in Table 2.
About 72% of women (26/36) were treated with chemotherapy that was compared with DFS (Table 3).
We analyzed data using "*variance test*": however there wasn't significant association between chemotherapy and DFS (F : 2.32 p : 0.127) (Figure 3).

Microbiological characteristics

In 13% of 36 infected patients bacterial culture wasn't performed: despite the attention about infections, it could be improved. In 22% in whose culture was performed it was negative, however there was clinical suspect of infection.
In remaining cases (23/36: 64%) a specific microorganisms was isolated and among these, 17% (4/23) of the cultures was positive for two different germs. Microorganisms isolated are shown in Figure 1.

Table 1. Experimental protocol IRCCS San Martino-IST, Genoa

1. Transient thermic alteration: no antibiotics
2. Thermic alteration = 37.7°C for at least 8 hours
- Report the infection
- Perform blood culture
- Perform bacterial culture of fluid drainage
- Blood tests
- Warn specialist in infectious diseases
- Begin empirical antibiotic (Ceftriaxone + clindamycin) until the outcome of culture
Culture: Therapy for Gram positive (MRSA *vs* es. MSSA) Piperacillin-Tazobactam or carbapenems when Gram negative
- Surgical decision
- Improvement no action
- Not improvement Implant's removal and stop antibiotics therapy Salvage therapy with eg. Daptomycin + rifampicin (check ABG) and Advance Replacement

Table 2
Relationship between days from surgery (DFS) and radiotherapy.

	Patients	DFS minimum	DFS maximum	DFS average
Radio before surgery	11	2	130	42.4
Radio between surgery and infection	3	150	210	180
Radio after infection	7	6	210	69.5
TOTAL	21			

Table 3
Relationship between days from surgery (DFS) and chemotherapy.

	Patients	DFS minimum	DFS maximum	DFS average
Chemo before surgery	10	5	150	54.7
Chemo between surgery and infection	7	30	240	136.7
Chemo after infection	9	13	240	69.4
TOTAL	26			

Figure 1

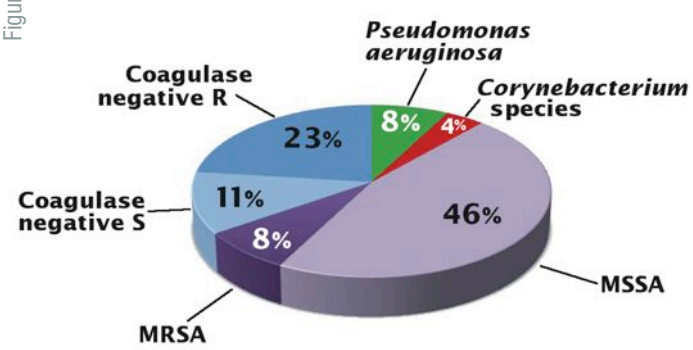


Figure 2

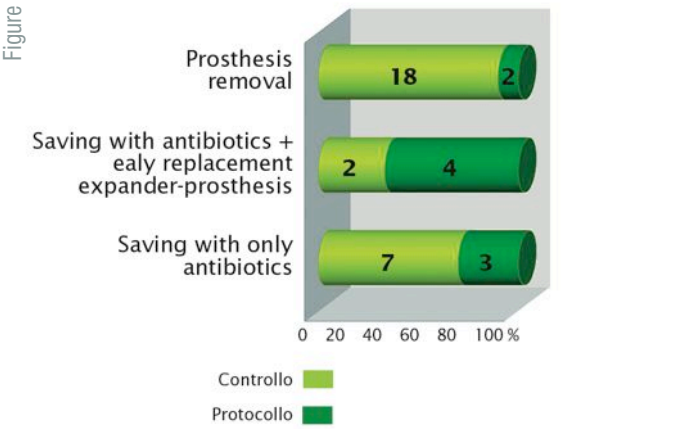
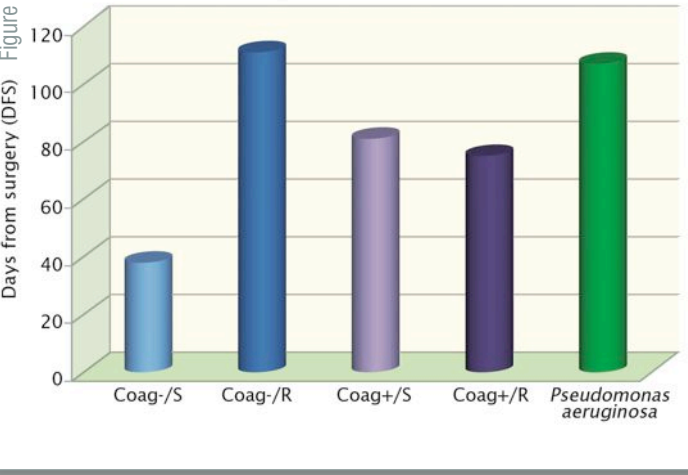


Figure 3



Medical approach

Among 36 infected patients 27 were treated with traditional approach while 9, who developed infection more recently, were included in the new experimental protocol.

Among patients not included in new protocol, implant was removed in 18/27 patients (67%) while it was saved in 33% (9/27).

About patients enrolled in the new protocol implant's removal was necessary only in 2 cases (2/9 : 22%). In the remaining 78% (7/9) saving system is successful: in 43% using antibiotic therapy and in 57% using early replacement of infected expander with a new implant (Figure 2).

Z-test confirmed that in the new protocol the number of saved breast implants is significantly larger (even though we are at the limit of significance) than in traditional one (p value = 0.053).

DISCUSSION

Infections recorded (8%) are in agreement with literature data (ranges between 1 and 35% in oncologic patients) [3, 9-11]. The percentage is higher when compared to aesthetic prosthetic surgery that ranges from 0.4 to 2.5% [12].

The use of biological materials derived from cadaveric or animal (ADM), as happened in one case, seems to increase the risk of infection [13, 14].

Some specific risk factors are known to be associated with increased evidence of infection such as certain habits or comorbidity.

Other conditions appear to support infections; they are related to surgical technique and general patient conditions such as: the presence of hematoma, local ischemia, lymph nodes dissection and immediate reconstruction. In most cases, in fact, infection follows mastectomy and immediate reconstruction, as supposed, this surgery increases risk of infection (72%) more than the replacement of expander with permanent prosthesis (22%).

Preoperative medical history should be collected with special attention to diabetes, obesity, immunological disorders, steroid therapy, and smoke. This is important for a specific and individualized post-operative follow-up.

Another important aspect is the radiation influence on tissues even after many years, because it can cause microvascular alterations that can promote complications like infections.

Our data seem to partially confirm this theory: patients who did radiotherapy before surgery developed infection earlier (DFS of about

42 days *versus* 63 days) than average DFS.
72% of infected group made chemotherapy: 38% underwent neoadjuvant therapy and, as in the case of radiotherapy, the average DFS is about 55 days (even if these data aren't statistically significant).
There isn't international agreement about DFS, germs involved and the best therapeutic approach. We found mostly Gram+, coagulase positive and negative, sensitive and methicillin-resistant.
These microorganisms colonize frequently skin and lactiferous ducts and therefore can easily contaminate implants although many precautions was taken to reduce risks; other sources of infection may be represented by prosthesis. In late infection the colonization of implant may be secondary to a bacteremia or invasive procedures, like implant expansion [3].
Some atypical bacteria, such as *Pseudomonas aeruginosa*, can result from accidental contamination of surgical field.
We analyzed the relationship between organism and DFS: sensitive coagulase-negative infections appear earlier than the other, but "*Analysis of Variance*" (F: 0190 P: 0903) has not demonstrated statistically significant differences (Figure 3).
Different bacteria are equally distributed regardless of the cancer stage (2 test: 0.115 p: 0.734), as we supposed.
When infection is moderate and patient doesn't present any particular risk factors, it is possible to save prosthesis or by a targeted systemic antibiotic therapy [1] or by the early implant replacement.
Several studies identified germs that cause the failure of the rescue but there isn't international agreement [4, 6, 15].
In our experience the most common microrganism isolated after implant removal is *Staphylococcus aureus* (49%), while *Staphylococci* coagulase negative represent only 19%.

CONCLUSIONS

There is no international agreement about optimal length of postoperative monitoring: because of a large number of late infections. It should be appropriate to extend follow up beyond 60 postoperative days, checking carefully the appearance of tiny episodes, that could later result in serious clinical events.
MSSA is the most common microrganism so it is appropriate to continue peri-operative antibiotic prophylaxis with cephalosporins (first generation) or amoxicillin-clavulanate.
Although prevalence of Gram+, it is possible to find Gram– and this is important for the choice of empirical therapy.
At time significant associations between germs and DFS have not been found but it will be subject of future targeted studies.
When infection is moderate and patient doesn't have any particular elements of risk, it is appropriate the use of standardized and uniformed treatment protocols because the results about them are encouraging, the number of implant salvage is larger and statistically significant compared to traditional approaches.
Finally these controlled surgical studies have to be continued and extended to other plastic and reconstructive surgery departments in order to define the best antibiotic-surgical management of early or late infections.

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Conflict of interest:

All Author concurred to the work and approved the manuscript. There are no conflict of interest for all Authors actual or potential. No outside funding was received.

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Histological evaluation of skin rejuvination after Platelet Rich Plasma treatment

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Summary

Histological evaluation of skin rejuvination after Platelet Rich Plasma treatment

The use of PRP (Platelet Rich Plasma) in facial skin rejuvenation is the novelty of recent years. Many studies concerning the clinical evidence of improved skin texture have been conducted, but also other studies, executed in vitro, highlights the activation of fibroblasts by PRP.
Our work is based on an histological examination of the skin of a patient before and after 4 sessions of treatment (once a month) with PRP activated by calcium gluconate. The histological result demonstrates an increased number of fibroblasts and an augmentation of collagen fibers in the dermis.

Key words: *PRP (Plasma Rich Platelet); Skin tightening; Skin rejuvination.*

INTRODUCTION

The use of PRP in plastic surgery is well long established, but only in recent years studies based on the release of GF (growth factors), deriving from platelets, and on activation of fibroblasts from them demonstrate the increasing production of collagen and the counteracting effects of skin aging as reabsorption of collagen fibers.
The Authors' interest is focused not on clinical evidence of improvement in skin texture with the evaluation of patients or physicians, but on the objectivity of an histological skin preparation of a patient treated with PRP and calcium gluconate on abdominal region for four months. The skin punch is compared with another one taken in an adjacent area as control.

MATERIALS AND METHODS

A woman, 40 year old, was treated by intradermal infiltration of PRP associated with calcium gluconate 1 time per month for 4 months in the abdomen. Whenever PC was obtained from venous blood, withdrawn from the arm of a normal healthy volunteer.
The whole blood, collected in acid citrate dextrose (ACD)-containing tubes, was centrifuged at 180 g per 15 min.
At the end of the first centrifugation, the blood was separated into its two basic components as a function of density.
The PRP represented the top layer; the red blood cells with white blood cells were contained in the lower layer. The PRP was transferred into sterile tubes and immediately centrifuged at 580 g per 10 min to separate the PC from the platelet poor plasma (PPP).
A small volume of PPP was used to resuspend the platelet pellets, giving the final PC fraction. Two millilitres of this fraction were transferred into a sterile syringe with 0,2 µl of calcium gluconate (*1000 mg/10 ml - Monico spa, Mestre*) and gently shaken.
The degranulated platelets, releasing growth factors and cytokines, were immediately injected.
After one month from the last infiltration a punch biopsy of the abdominal region was taken both the treated area with PRP and from a never treated adjacent region. The punch was stained with hematoxylin and eosin in order to evaluate the presence of collagen fibers and fibroblasts in the dermis.

RESULTS

The assessment of histological sections stained with hematoxylin and eosin shows a remarkable region of dermal fibrosis with an augmentation of collagen fibers but it also shows an increased number of fibroblasts in the region PRP treated more than the evidence in the control area (Figure 1).

DISCUSSION

In recent years there are many applications of PRP in Plastic Surgery.
The main of PRP use is the haemostatic effect and the ability to reconstruct soft tissue and bone. The cytokines released by PRP are used to treat ulcers and treatments in hemi-facial atrophy in association with adipose tissue increasing their survival [3-9] and also for filling the nasolabial fold [2] but above all the increasing PRP use is for the skin rejuvenation [4].
Nowadays the research in the field of facial

rejuvenation and the use of PRP for this purpose are widespread everywhere [1-6].
Several Authors [7, 8] have proposed research showing that fibroblasts, subjected to the GF derived from platelets, are able to increase production of collagen. As we know the skin aging is given by a decreased neo-collagenesys and therefore a reduction in the presence of collagen fibers in the skin.

At the same time other Authors [5] have shown that the presence of PRP added of calcified thrombin solution is able to stimulate the fibroblasts proliferation. So only the presence of PRP in the dermis is enough to slow down aging. Indeed, our study suggests that the presence of platelets tends to increase the number of dermal fibroblasts and to activate the production of new collagen fibers.

CONCLUSION

Histological evaluation of biopsies performed after treatment of a patient with PRP shows the evidence of increasing fibrosis by the deposit of collagen fibers and an increasing of fibroblasts in the dermis. In this way the Authors give an histological validation to the use of PRP in skin rejuvination

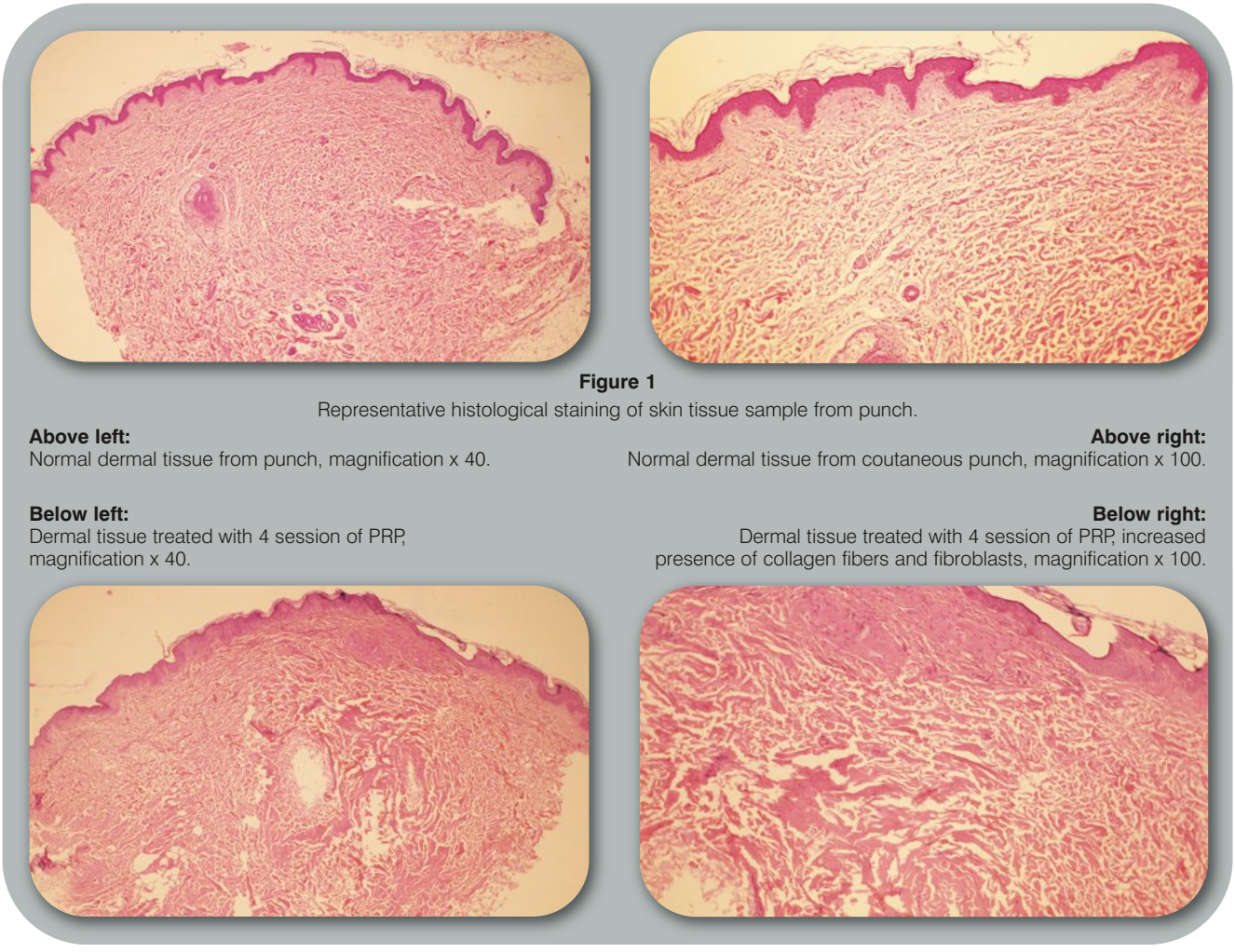

Figure 1
Representative histological staining of skin tissue sample from punch.

Above left:
Normal dermal tissue from punch, magnification x 40.

Above right:
Normal dermal tissue from coutaneous punch, magnification x 100.

Below left:
Dermal tissue treated with 4 session of PRP, magnification x 40.

Below right:
Dermal tissue treated with 4 session of PRP, increased presence of collagen fibers and fibroblasts, magnification x 100.

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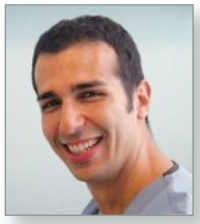
In continuity Burow's Triangle Advancement Flap



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Summary

In continuity Burow's Triangle Advancement Flap

BACKGROUND: A number of techniques and their variations have been described in the literature to achieve adequate coverage, appropriate size and safety of the flap and satisfying cosmetic results.
AIMS: We propose a variation of a single pedicle advancement flap with two Burow's triangles in continuity with the excised area, called the in continuity Burow's Triangle Advancement Flap (IBTAF)
METHODS: The IBTAF was applied from November, 2010 to November 2011 on 7 patients. The healing time, scarring and distortion were evaluated.
RESULTS: Complete healing without complications was observed in 14 days by average with minimal scarring and distortion.
CONCLUSION: This flap is able to minimize final tension, to produce a single broken-line scar, along with a reduction of skin distortion.

Key words: *Flap; Advanced; Inverse; Burow; Triangle.*

INTRODUCTION

Local, random-patterned skin flaps are currently used in dermatologic surgery to cover a number of wounds in all regions of the body. Several techniques and their variations have been described in the literature to achieve adequate coverage, appropriate size and safety of the flap and satisfying cosmetic results: rotational flaps [1], Z plasty procedures [2, 3] or advancement flaps [4]. An ideal local flap should provide a tension-free closure with minimal skin excision scarring [3], especially in some areas of the body, where the risk for dehiscence and skin slough of advancement flaps is higher [4]. We propose a variation of a single pedicle advancement flap with two Burow's triangles in continuity with the excised area, called the in continuity *Burow's Triangle Advancement Flap* (IBTAF), in order to minimize tension, distortion and scars.

CASE SERIES

From November, 2010 to November 2011, The IBTAF was applied on 7 patients 3 males and 4 females with ages ranging from 32 to 74.
The skin defects resulted from oncologic excisions in all cases.
The mean defect measures were 2.26 cm^2, ranging from 0.6 cm^2 to 4.4 cm^2.
The flap was applied on the temporal region (one case), glabella (two cases), on the lower leg in two cases and on the sole in two patients.
Histological examination of the surgical specimen was performed after oncologic excision.
All patients were followed up at 1, 2, 4 weeks.

TECHNIQUE

A semilunar wound was drawn around the skin cancer, with the major axis parallel to the Langer's tension lines of the skin, even if straight. The advancement flap was then sculptured (Figure 1, 2).
The diameter of the excision should be proportional to the flap size.

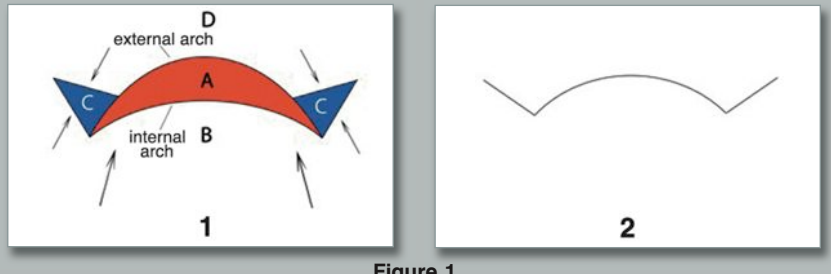

Figure 1.
1. Left. The excision is performed with a semilunar wound. An advancement flap is sculptured. After flap dissection, Burow's equilateral triangles are drawn on both ends on the external arch. The basis of each triangle should be approximatively one sixth of the width of the semilunar excision.
2. Right. The final result of the flap is a curvilinear scar with Burow's triangles at each end.

Figure 2.

74 years old man, affected by skin malignancy measuring 14 mm, on the anterior aspect of the medial third of the right leg (left). The tumor was excised with the IBTAF technique (up). Although the skin tension of the anterior aspect of the leg and the wide excision, the scar displays a good quality (right). The patient healed uneventfully in two weeks.

After dissection of subcutaneous tissue the flap was advanced to cover the defect. As well as in a double advancement flap, the concave margin of the wound was advanced at the same time. In order to avoid tissue redundancy, equilateral Burow's triangles were drawn on both ends on the external arch. The basis of each equilateral triangle should be approximatively one sixth of the width of the semilunar excision. The final result of the flap is a curvilinear scar.

RESULTS

Complete healing without complications was observed in all patients.

The mean healing time lasted for 14 days. No distortion of the skin profile was observed after raising of IBTAF. Acceptable scarring was observed at the last follow-up. The malignancy was completely included in the excised area in all cases.

DISCUSSION

The reconstruction of defects after excision of skin malignancies should take in account functional and aesthetic issues. Functional limits of the available local flaps inherit their vascularization and feasibility in high tension areas, e.g. in the lower leg [4].
In this anatomical region, the terminal vascularization and the high cutaneous tension could contraindicate the commonest advancement and rotation flaps, such as single/double advancement and island pedicle advancement flaps [4]. On the other hand, the aesthetic outcome should be considered, especially on the face. Our flap is a variation of crescentic advancement flaps, but thank to the Burow's triangle in continuity with the excision, less final tension is achieved and a single a single broken-line scar is produced [4]. Other techniques could avoid distortion and skin redundancy, nonetheless producing more extensive scars [2, 3] than a crescentic excision including Burow's triangles. The IBTAF implies an accurate planning of the surgical excision,thus optimizing closure in a safe and effective way.

Conflict of interest statement

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The work was not presented elsewhere.

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Gynecomastia: the breast male problem and its surgical approach

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Summary

Gynecomastia: the breast male problem and its surgical approach

Gynecomastia can be classified as a deformity of the breast area, characterized by an abnormal increase in breast volume in a male individual. It may be subdivided into true and false variants. The first one when determined by an overdevelopment glandular; the second one when it is determined by an excessive accumulation of adipose tissue; mixed, when both conditions coexist. The true gynecomastia may be idiopathic or correlated with a hormonal imbalance, even temporary, which induces the development of the sketch of the mammary gland in the feminine sense, in which case it should be noted at puberty.
The false gynecomastia is only idiopathic, but is found more frequently in subjects with a tendency to obesity. Furthermore, many anti-psychotic drugs may induce hyperprolactinemia and subsequently gynecomastia. However, in the majority of teenagers, no underlying etiology can be identified, and the condition usually regresses spontaneously in 1 to 2 years.
In 1973 Simon classified gynecomastia into four grades based on degrees of lipodistrophy and skin excess.
The surgeon should consider the possibility of the existent of a malignant lesion, and, if clinically suspicious, a more aggressive workup is required. The surgery combines traditional liposuction by tumescent technique and standard maneuvers to reduce skin and gland excess. Liposuction by a 2-mm blunt cannula was performed beneath the entire mammary region.
A semicircular, infra-areolar incision of the dermis was performed, leaving a superior dermal pedicle to the nipple-areola complex. A cone-shaped mass of breast tissue beneath the areola was resected. After haemostasis, an intradermal purse string peripheral suture allowed areolar repositioning. This surgical technique performs an excellent controlled volume reduction with a small skin incision with no complications.
Long-term follow-up showed that results were stable over time.

Key words: *Gynecomastia, Breast area, Surgical approach.*

INTRODUCTION

Gynecomastia can be classified as a deformity of the breast area, characterized by an abnormal increase in breast volume in a male individual. It may be subdivided into true and false variants.
The first one when determined by a overdevelopment glandular; the second one when it is determined by a excessive accumulation of adipose tissue; mixed, when both conditions coexist.
It is a benign condition that can occur unilateral or bilateral [1, 2].
It is more common during puberty and late adulthood [1, 3]; recent studies have reported an overall incidence of 35% [3].
The true gynecomastia may be idiopathic or correlated with a hormonal imbalance, even temporary, which induces the development of the sketch of the mammary gland in the feminine sense, in which case it should be noted at puberty.
It can be connected with other metabolic pathologies, such as *Klinefelter's syndrome* [4] or cirrhosis of the liver; similarly may be iatrogenic, due to therapies with estrogen and antiandrogens, insulin or cimetidine.
The false gynecomastia is only idiopathic, but is found more frequently in subjects with a tendency to obesity.
Furthermore, many anti-psychotic drugs may induce hyperprolactinemia and subsequently gynecomastia; sometimes drugs for malignancies treatment may cause this breast area problem [1, 5].
However, in the majority of teenagers, no underlying etiology can be identified, and the condition usually regresses spontaneously in 1 to 2 years [2].
Most patients with gynecomastia should only be reassured, especially when the breast diameter is less than 4 cm.
Correction of identified hormonal abnormalities, withholding an offending drug or the use of pharmacological agents (clomiphene citrate, tamoxifen, danazol) may be effective.
Surgery is suitable if the above measures fail to alleviate pain, psychological concerns, or if malignancy is suspected.
In 1973 [6] *Simon* classified gynecomastia into four grades based on degrees of lipodistrophy and skin excess:
small enlargement with no skin redundancy (grade I);
moderate enlargement with no skin redundancy (grade II);
moderate enlargement with skin redundancy (grade III);
marked enlargement with marked skin redundancy (grade IV).
Is very important to rule out malignancy in patients with this breast male problem, in this sense are fundamental non-invasive investigations such as mammography and breast ultrasound is useful in differentiating fat from glandular tissue and identify possible cancer's areas.

SURGICAL APPROACH

The surgeon should consider the possibility of the existent of a malignant lesion, and, if clinically suspicious, a more aggressive workup is required.
The surgery [2] combines traditional liposuction by tumescent technique and standard maneuvers to reduce skin and gland excess.
About 200 ml of saline solution and 10 ml of mepivacaine 2%, 5 ml of adrenaline and 10 ml of L-bupivacaine 0,75 mg/ml was injected through a 2-mm incision in the inferoexternal quadrant.

Liposuction by a 2-mm blunt cannula was performed beneath the entire mammary region.
A semicircular, infra-areolar incision of the dermis was performed, leaving a superior dermal pedicle to the nipple-areola complex.
A cone-shaped mass of breast tissue beneath the areola was resected. After haemostasis, an intradermal purse string peripheral suture allowed areolar repositioning.
Compressive-elastic dressing was placed to prevent seroma or haematoma.
Elastic garments were kept on two weeks postoperatively.

This surgical technique performs an excellent controlled volume reduction with a small skin incision and is effective in having satisfying aesthetic results with no complications, such as nipple-areola complex necrosis, seroma or infection. Long-term follow-up showed that results were stable over time.

Conflict of interest:

All Authors disclose any commercial associations or other arrangements that may pose a conflict of interest in connection with the article.

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