Siliconomas: Therapeutic considerations. Algorithm

Siliconomas: Consideraciones terapéuticas. Algoritmo

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ABSTRACT

The injection of silicone oils has been used to modify body contours around the world and especially in Japan, since 1940, most commonly to increase breast size. As surgeons, we find ourselves increasingly being called to deal with problems generated by this illegal form of breast augmentation—bilateral breast tumors, some painful, some not; hard masses that are often confused with advanced breast cancer; and axillary tumors—all caused by silicones. To this is added the extreme difficulty ruling out breast cancer through physical examinations, mammography, ultrasound, and even magnetic resonance imaging (MRI) with gadolinium. Our experience, over 20 years treating and investigating this pathology, has clearly shown us that, to treat these patients with such complex disease, a multidisciplinary therapeutic team is required. Moreover, that team must have a comprehensive vision and be committed to tailoring treatment to each patient individually. The team also must act in a coordinated manner, addressing all the different implications of disease, whether local or systemic, physical or psychological. The injection of silicones and other oils has had an unfavorable social impact, because it incapacitates a large number of people during the most productive years of their life. We will now present the appropriate therapeutic approaches for each form of mammary siliconoma presentation.

Keywords: *siliconomas therapeutic algorithm, breast cancer, combination of therapeutic procedures, prevention project, shield-like breast siliconomas, multidisciplinary therapeutic team.*

RESUMEN

La inyección de aceites de silicona ha sido utilizada para modificar el contorno corporal en todo el mundo, especialmente en Japón desde 1940 y para el aumento mamario. Como cirujanos, nos encontramos cada vez más frecuentemente llamados a enfrentar los problemas generados por esta forma ilegal de aumento mamario: tumores de mama bilaterales, algunos dolorosos; masas duras que a menudo se confunden con un cáncer de mama avanzado, tumores axilares. La extrema dificultad para descartar un cáncer de mama a través del examen físico, mamografías, ecografías e incluso resonancia magnética (MRI) con gadolinio complican aún más el tratamiento en estas pacientes.

Nuestra experiencia, de más de 20 años investigando esta patología, nos ha mostrado claramente que, para tratar a pacientes con esta enfermedad tan compleja, se requiere de un equipo terapéutico multidisciplinario. Este equipo debe tener una visión integral del paciente y comprometerse en el tratamiento de cada caso. Actuando de manera coordinada, abordando todas las diferentes sintomatologías de la enfermedad, ya sean locales o sistémicas, físicas o psicológicas. La inyección de siliconas y otros aceites tiene un impacto social muy desfavorable, ya que enferma e incapacita a un gran número de personas durante los años más productivos de su vida. Analizaremos los enfoques terapéuticos apropiados para cada forma de presentación de las enfermedades producidas por la inyección de siliconas en las mamas.

Palabras claves: *algoritmo terapéutico de los siliconomas, cáncer de mama, combinación de procedimientos terapéuticos, proyecto de prevención, siliconomas mamarios en coraza, equipo terapéutico.*

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INTRODUCTION

The injection of silicone oils has been used to modify body contours around the world and especially in Japan, since 1940, most commonly to increase breast size. Silicone injections were common over the period from 1960 to 1970. However, given the disastrous effects it produced, it has since fallen from favor and has been made illegal. In August 1991, the FDA (Food and Drug Administration) banned the use of all types of silicone injection¹. However, the procedure is still performed secretly; and, because of this, the number of women who have used paraffin or silicones for breast augmentation is uncertain².

As surgeons, we find ourselves increasingly being called to deal with problems generated by this illegal

form of breast augmentation—bilateral breast tumors, some painful, some not; hard masses that are often confused with advanced breast cancer; and axillary tumors—all caused by silicones. To this is added the extreme difficulty ruling out breast cancer through physical examinations, mammography, ultrasound, and even magnetic resonance imaging (MRI) with gadolinium.

The injection of silicones into the body produces diseases for which very difficult solutions must be considered. Moreover, these are patients with a particular psychological profile that make them terribly concerned about their physical appearance. As such, even facing serious local or systemic complications does not change their desire to have beautiful bodies. Many patients do not understand the importance of the problem they face and cannot accept the mutilation that treatment for silicone-induced disease may require. Despite detailed explanations, many expect good cosmetic results from their treatment.

The injection of silicones and other oils has had an unfavorable social impact, because it incapacitates a large number of people during the most productive years of their life. We are facing a serious situation of global public health, with more than one and a half million people affected in Latin America alone²³. This be-

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ing said, it is a reality about which many choose not to speak; perhaps because it most commonly affects and kills prostitutes and those who are transgender, as well as those who are the poorest and most vulnerable; in other words, those who already are severely marginalized.

All the diseases produced by the injection of silicones, paraffins, cooking oil, etc. to modify body contour must be framed as absolutely avoidable, preventable diseases. Simply informing the population about the consequences of injecting these substances into their body should be enough, but, tragically, it has not been. As someone who frequently encounters one of the few eradicable diseases, I find it the lack of prevention campaigns directed by world public health organizations (PAHO, WHO) difficult to understand. We are missing a unique and essential opportunity to contribute to the health of people around the world. In this case, prevention is synonymous with education!

In April 2017, I presented a prevention project to the Ministry of Public Health of the Argentine Republic (Dr. Adolfo Rubinstein), designed to inform the general public about the risks associated with allowing themselves to be injected with substances like silicone, and thereby becoming seriously ill for life, hoping to prevent more people from falling victim to this. I have held meetings with Argentina's Minister of Health, with other officials from the National Ministry of Health and with deputies of the National Congress. Yet, to date, not a single form of preventative campaign has been implemented. Some public officials have claimed that this inaction is due to the "lack of state resources". If this is the case, they should think again and consider that each person who injects him or herself is at risk of generating exorbitant expenses for the State throughout their lifetime, due to the innumerable, often prolonged hospitalizations in public hospitals, need for antibiotics and other very expensive drugs, and possibly multiple surgeries that they will need.

My research in this area, from 1999 to the present, as well as the research and experience of the numerous other authors who have contributed to my work, indicates that local and systemic complications, ranging from mild to very serious, can appear either immediately after the injection or late, sometimes decades later. The asymptomatic interval ranges between 1 month and 24 years, with an average that falls somewhere between 5 and 9 years.

The following points need to be emphasized to other doctors and to anyone who might ever consider undergoing the types of injection:

1. The process of injecting liquid silicones to modify one's body contour is harmful to that person's health.
2. The injected material generates a chronic inflammatory reaction, consisting of foreign-body granulomas in the parenchyma, muscles, and skin of the

injected area; and this reaction can progress from mere cutaneous erythema to skin ulceration, tissue necrosis, and sepsis.

3. Mammary siliconomas prevent accurate clinical breast examinations and the evaluation of mammary parenchyma by imaging, thereby hindering the crucial early diagnosis of breast cancer.
4. The inability to diagnose breast cancer early in these patients requires the removal of breast tissue.
5. Injecting silicones in the face for cosmetic purposes can cause cerebral vascular thromboemboli that trigger blindness, facial paralysis, body paralysis, and even sudden death.
6. Injecting silicones can cause a host of autoimmune diseases—like systemic sclerosis, vasculitis, Sjögren's syndrome, eosinophilic fasciitis, Still's disease, polymyalgia rheumatica, ASIA, etc.—all of which may require immunomodulatory treatment.
7. The granulomas caused by silicone can cause fevers and other signs of infection, pain, and reddening of the skin that can be improved with pharmacological treatment, consisting of immune modulators, anti-inflammatories, and antibiotics.
8. The migration of silicones to the axilla can cause damage to the nerves of the arm, and this is often very difficult and sometimes impossible to treat without causing serious nerve damage²².
9. Totally eliminating the silicone injected into tissues is impossible without mutilating the patient or causing major functional damage.
10. The surgeon who decides to operate on these patients must have extensive experience in reconstructive surgery.
11. In the most severe cases, multiple surgeries are necessary (on average, nine).
12. The complication rate for surgeries to resect siliconomas is very high.
13. Remember that surgeries to remove the injected silicone are therapeutic, not cosmetic. You should not anticipate aesthetically pleasing results; your one goal, as a surgeon, should be to try to mitigate the diseases caused by silicone.
14. Each treatment must be carefully planned and the "therapeutic strategy" adapted to each individual patient; to achieve this, you must come to an understanding about their personal history.
15. These patients must understand that they will need to be treated for life by a multidisciplinary team and not by a single medical specialty.
16. Efforts to help can sometimes yield very poor results. Complications of treatment include prolonged or permanent edema, chronic pain, and autoimmune diseases that fail to improve despite the best treatments. In addition, even after successful treatment, exacerbations of the disease may occur, including fistulas, necrosis, fever, lymphadenopathy, pain, and neuritis, among others.

Silicone-injected patients are difficult, surprising in their lack of anger toward those who injected them with silicone, yet frequently displeased with those who dare to help them³. Our experience, over 20 years treating and investigating this pathology, has clearly shown us that, to treat these patients with such complex disease, a multidisciplinary therapeutic team is required. Moreover, that team must have a comprehensive vision and be committed to tailoring treatment to each patient individually. The team also must act in a coordinated manner, addressing all the different implications of disease, whether local or systemic, physical or psychological. This multidisciplinary team should include representation from:

- Plastic surgery
- Social services
- Mental health
- Internal medicine– rheumatology, immunology, and infectious disease medicine
- Mastology
- Oncology
- Neurosurgery, specializing in peripheral nerves
- Vascular surgery

On this team, professionals from the different specialties must work in coordination with and for the patient. The intervention takes on special relevance in those patients in whom the injection of industrial silicones has generated some disabling chronic systemic disease, like fibromyalgia, ASIA syndrome, etc.

We must emphasize, repeat, insist, and explain very clearly to our patients that we will do whatever we can to help them, striving to reduce their symptoms and reverse the damage caused by the injection of silicones. However, we must not promise that we can cure them or remove all the injected material. Neither of these scenarios is at all likely.

Our psychotherapists see patients as part of each patient's preparation for surgery, to perform a comprehensive evaluation and to address whatever conflicts the patients have that might interfere with their understanding and accepting their current situation. The therapists see them again during the postoperative period. The total or partial loss of any body part causes psychological suffering to various degrees in humans, though every patient is different and their reaction influenced by a number of factors, like their chronological age, future family projections, the existence versus absence, and stability of a relationship with a partner, whether or not they intend to have more children, their work, the importance of aesthetics in their profession, and the personal significance that the woman places on her breasts. Add to this the real and/or the patient's own imagined postoperative consequences and each patient's personal and interpersonal resources for dealing with loss, it is clear

that psychologists play a huge role in helping patients to achieve a satisfactory resolution to their current crisis.

The mutilation of one or both of breasts will affect most women's image of herself and, as a consequence of this, her sense of sexuality. Some will fear that being unable to breastfeed her present or future child or children will weaken the bond between them. Some will feel shamefully inadequate relative to others of their gender, limited in their ability to seduce their partner or future partners. Many will feel burdened by the pain of losing one part of being a woman, which distinguishes them from men and, consequently, her own potential for pleasure in life⁴.

Likewise, the breasts are considered an object of love and an instrument of seduction, symbolized as such throughout history and across all cultures. Their mutilation creates tremendous strain on most women's psyche and fears of rejection by others⁵.

It is interesting to highlight the reasons women gave for choosing silicone injections as a way to augment their breasts. Some claimed they chose it because of their "ignorance"; others claimed to believe that injections posed a lower risk of complications than conventional breast implants, since the latter require anesthesia and a longer recovery time; while others pointed out the importance of low cost. However, lack of knowledge usually is not a valid argument to support their decision. On the contrary, it is important to highlight the existence of a necessary cause, but never enough to accept a silicone injection in such a precarious condition. This is beyond discussion.

This is how patients present themselves, with a fixed notion of their body image, an image they once sought to improve in response to societal expectations and their own need to find approval in others' gaze, to feel the thrill of others turning their heads to look, and their smiles of approval.

All these beliefs and expectations must be evaluated and dealt with, in some way, prior to reconstructive surgery, through a psychotherapeutic program that can provide patients with the basic tools they will need to mitigate whatever emotions that may arise in them postoperatively⁶.

Psychological intervention prior to surgery can be defined as the set of steps carried out by a psychotherapist, in collaboration with the medical team, to prevent—and eventually help resolve—any psychological crises that might prevent the patient from facing her operation hopefully but also realistically⁷.

The surgeon-patient relationship is another fundamental cog in the success of the surgical intervention. It is a two-dimensional construct, since it has both conscious and subconscious components. If the relationship established between the patient and the team is collaborative, the surgeon describing the surgical process and the patient who is striving to process it, properly

Graph 1. Therapeutic algorithm for injection-induced breast siliconomas^{22,23}.

prepared psychologically, can work together to moderate the patient's anxiety and improve the likelihood of success. If, on the contrary, the patient does not collaborate with the team or comply with its instructions, then any surgery is doomed to failure and should not be attempted.

GENERAL THERAPEUTIC CONSIDERATIONS

The following therapeutic considerations are the product of over 20 years of research conducted by the author and his colleagues, always in light of related literature in medical journals worldwide. Considerations were discussed and agreed upon in special scientific sessions which involved the following groups, the Council of Professors (CODEP) within the Faculty of Medicine at the University of Buenos Aires, the Argentine Society of Mastology (SAM), the Argentine Society of Plastic Surgery (SACPER), the Argentine Medical Association (AMA), and the following departments and divisions within the Faculty of Medicine at José de San Martín Hospital de Clínicas at the University of Buenos Aires (UBA): Oncological Surgery; Gynecology; Mastology; Mental Health Servi-

ces; Social Services; Department of Medicine; Rheumatology, Infectious Medicine; Immunology; Diagnostic Imaging; and Plastic Surgery.

Emphasis should be placed on the following:

- Certain medical treatments have been shown to modify some of the effects of silicones injected into tissues.
- Surgical removal of all the injected silicone is impossible without performing a mutilating intervention or causing high morbidity.
- It is possible to administer medical treatment in patients without cutaneous involvement and no family history of breast cancer.
- Pharmacological treatment prior to surgery reduces the inflammatory effects of silicone in functionally susceptible areas that need to be removed (near vascular or neural structures, the axillary lymphatic system, etc.).
- When inflammation is exacerbated, a short course of intravenous corticosteroids and antibiotics can help to control symptoms⁸.
- The surgeon, however, should not continue treating this way indefinitely; continued difficulty or

Figure 1. a-f. Shield-like breast siliconomas. Severe cutaneous involvement. Note the extensive infiltration by silicone that goes from the submammary zone to the cervical zone to the thyroid cartilage. Initial surgical plan: (a) first surgery, extended mastectomy on demand from the epigastrium to the suprasternal cervical region with placement of expanders under both latissimus dorsi muscles. (b) Drawing of the bilateral latissimus dorsi flaps. (c) Intraoperative right side view. Note the rigidity of the upper flap and the involvement of the pectoralis major muscle. (d) Intraoperative front view. Note the extent of the first resection that permitted direct closure of the defect by advancing flaps. (e) Intraoperative view: close-up of the right latissimus dorsi muscle expander and its remote valve at the moment of intraoperative insufflation. (f) Postoperative view of insufflated dorsal expanders; note the remote valves.

Figure 1. g-k. (g) Postoperative view of expanded latissimus dorsi flaps (side view). (h) Postoperative view of insufflated dorsal expanders (posterior view). Planning the second surgery. (i) Second surgery: resection of siliconoma remnants. Closure using a complete inverted dermolipectomy to the pubis. (j) Intraoperative resection and flap of complete inverted dermolipectomy up to the pubis; navel already disinserted. (k) Intraoperative closure by inverted dermolipectomy (seen from the head). In the center, the navel is in its place before its transposition. The drain that will come out through the pubis is on the left side of the photo. Planning the third surgery.

doubt pertaining to either the diagnosis or prevention of breast cancer or recurrent symptoms of pain and fever require that surgical resection of siliconomas be proposed.

- The basic objective of surgical management is to remove the hard painful masses that, in the breast, hamper evaluations for breast cancer and cause persistent pain. The inability to diagnose breast cancer that might develop in these patients, especially among those whose age renders them particularly susceptible to it, requires the resection and histopathological study of all excised tissue⁹.
- Partial resection of breast tissue is indicated for cases involving mild to moderate compromise, when siliconomas are circumscribed and located in a sin-

gle area. It is a little used technique, however, since most patients have multiple tumors distributed throughout the parenchyma¹⁰.

Removal by liposuction has been proposed by several authors^{11,12}; however, then reported having no further successful cases and concluded that liposuction is unable to remove injected silicone in its entirety, instead removing considerable healthy perilesional adipose tissue³, a conclusion with which we strongly agree. In our experience, it is extremely difficult, if not impossible, for liposuction to remove the fibrous and hardened, almost cartilaginous tissue found in siliconomas; instead, what ends up being aspirated is healthy perilesional adipose tissue, which leads to greater and totally unnecessary tissue damage, retractions, and deformity¹³.

Risk-reducing adenomastectomy is the removal of breast tissue in the absence of breast cancer. Consequently, it should not be overly aggressive, lest it damage the subdermal plexus and, in this way, increase the risk of postoperative sloughing.

The issue of prophylactic mastectomy is controversial. The practice of prophylactic mastectomy is not new. It has been used for several decades, its use peaking in the 1970s and 1980s¹⁴. At present, its indications have been revised, due to the detection of high-risk groups, like those with the genetic marker BRCA1 or BRCA2 and major advances in oncoplastic surgery.

In patients with mammary siliconomas by injection, the indication is to perform a “simile” of a prophylactic mastectomy. It is called a “simile” because it is not necessary to resect all the mammary parenchyma, as during a true adenomastectomy. Since there is no neoplasm, the remaining flaps can have a thickness of 1.5–2 cm, knowing that there will still be some remaining siliconomas but trying to avoid sloughing of the flaps.

Indications of a “simile” prophylactic mastectomy for silicone-related disease:

- The condition of the patient’s breast(s) poses severe diagnostic difficulties (a silent breast).
- The socioeconomic status of patients makes follow-up difficult.

The behavior of the siliconomas is progressive; that is to say that they appear to be evolving and moving toward some of the previously described complications, magnifying their impact on the patient’s health. The patient’s pain is progressive and only transiently improved by medical treatment (this is true of the majority of patients who consult us requesting this procedure).

Notwithstanding the fore-stated points, adenomastectomy is reserved for those patients who present with flexible and foldable breast skin, free of silicone infiltration. Only then can the skin and required 2 cm of mammary parenchyma be conserved, together with the areola-nipple complex, to allow for reconstruction with silicone gel implants placed partially submuscular. For such patients, this is usually the procedure of choice.

It is important to emphasize the following:

The removal of all silicone from the breast tissue is practically impossible and, in general, even discouraged, because of the high probability of tissue sloughing.

Reconstruction with breast implants is not homologous to augmentation mastoplasty in these patients. With few exceptions, the prosthesis is covered only by a layer of skin and irregular breast tissue, due to the remaining silicones that may impair the cosmetic result (even more evident upon palpation).

Figure 1. i-q. (l) Third surgery: creation of a new submammary groove using Ryan’s technique; transposition of the expanded dorsal myocutaneous flaps and placement of total retromuscular silicone gel breast prostheses. (m) Close-up of the fully insufflated dorsal expanders. (n) Intraoperative posterior view of the raised latissimus dorsi flaps, before their transposition to the mammary region. (o) Intraoperative posterior view of the raised latissimus dorsi flaps, before their transposition to the mammary region. (p) Intraoperative view with the latissimus dorsi flaps in position. Total retromuscular mammary implants. (q) Intraoperative view with the latissimus dorsi flaps in position. Total retromuscular mammary implants, side view.

Capsular and scar contractures can cause the shape of the breast to deteriorate over time.

The areola-nipple complex is often distorted.

Ultimately, neither the surgeon nor the patient is likely to be happy with the cosmetic result¹⁵.

In those patients with cutaneous infiltration, any attempt at conservative surgery is useless. For them, surgery should include the removal of all silicone-infiltrated skin, which then is replaced with a myocutaneous flap¹⁶.

In the most severe cases, numerous surgical procedures may be required to achieve acceptable reconstruction (average = nine).

Within our reconstructive arsenal, we have used musculocutaneous flaps from the latissimus dorsi and transversal of the anterior rectus abdominis (TRAM), as have others^{17,18}. The TRAM flap can be pediculated or free.

In terms of breast reconstruction with autologous tis-

Figure 1. r-w. (r) Immediately postoperative, with the latissimus dorsi flaps in position. Total retromuscular mammary implants, side view. The navel transposition scar can be seen in the inverted dermolipectomy. (s) Immediately postoperative, with the latissimus dorsi flaps in position. Total retromuscular mammary implants, three-quarter view. (t) Immediately postoperative, with the latissimus dorsi flaps in position. Total retromuscular mammary implants, top view. (u) Postoperatively, with the latissimus dorsi flaps in position. Total retromuscular mammary implants, side view. Final stage. (v) Fourth surgery: reconstruction of the areola-nipple complex and scar reduction. (w) Case completed.^{22, 23}

sue, the TRAM flap is widely accepted as the treatment of choice¹⁸.

For those patients in whom there is extensive silicone infiltration into the thorax, exceeding mammary confines and, therefore, the reconstructive potential of a single flap (TRAM or latissimus dorsi), I believe that a combination of flaps and other tissue sources should be considered. Thus, for example, in very serious cases (see **Figure 1: shield-like breast siliconomas**), an extended mastectomy can be performed in stages, so that each resulting defect can be closed individually. This approach requires several surgeries over time and a very cooperative patient.

The cosmetic result that should be expected from surgical treatment is "satisfactory" as a best-case scenario; and this must be explained carefully to each and every patient prior to planning surgery¹⁹.

The youth of many of these patients, combined with the concern in their appearance that they clearly exhibited when they received the silicone injections in the first place, requires that patients be afforded active participation in making decisions about which therapeutic approach will be adopted. A subset of patients will reject part or all of the proposed treatment²⁰ and even will not return.

In our experience, this same therapeutic approach can be used to treat other areas of the body affected by the injection of silicones or oils (gluteus, lower limbs, shoulders, facial, etc.), albeit with differences in each case.

The close link between a surgical act, determined by the professional and the patient upon whom the surgical procedure will occur, forces the doctor to justify his actions to an individual who might be seeking something that is unrealistic: a return not only to health but to functional and aesthetic normalcy. The problem is that aesthetics is a subjective phenomenon, complicated by the different definitions that different individuals have for beauty. Overall, roughly 70% of malpractice law suits are related to the doctor's failure to warn their patient about complications¹⁴. The patient's unrealistic demands often spring from them lacking essential information due to poor communication between the doctor and patient. The latter has the right to be informed and also the right to consent to or refuse any proposed treatment. When the doctor fails to adequately inform the patient about complications that have a realistic likelihood of occurring, that is considered negligence.

The informed consent form must include an adequate clinical history, so that it has sustenance at such time when the doctor may be questioned about a less-than-pleasing surgical outcome. It should include the diagnostic and therapeutic procedures that are being proposed and the risks involved. Also, the doctor is obliged to describe any outcomes that likely will occur if no treatment is undertaken. This should include clarifying objectives, possible complications, and the curative, palliative, or aesthetic nature of the treatment. The patient should be informed in simple, understandable language, avoiding technicalities and clarifying that the expected results cannot always be guaranteed, as well as the advantages and disadvantages of the procedure.

Patients typically only can choose treatment options proposed by their surgeon.

There must some interval of time between delivery of the form to the patient and their acceptance, so they have the time for and option of consulting with relatives or other doctors and, thus, obtain an adequate level of personal acceptance. This time is of great importance and transforms informed consent into a guide for dialogue with the patient, through which she can come to better understand of what is entailed.

CRITERIA FOR TREATMENT SELECTION: THERAPEUTIC ALGORITHM

In accordance with current bioethical standards, the desires of each patient are taken into consideration and respected after we inform our own patients at length about the different possible therapeutic alternatives.

The manifestations of this disease produced by the injection of substances to modify body contour and the degree of tissue involvement are so varied and imprecise that it is necessary to have a classification system to identify in which stage of disease each patient presents, before treatment is initiated, so that their long-term prognosis can be estimated and the most appropriate treatment decisions made^{21,23}.

The decision regarding what form or forms of treatment to offer must be adapted to each patient's clinical stage, since the presenting clinical manifestations of disease produced by the injection of oils or silicones are usually insidious, with nonspecific clinical and serological alterations, an unpredictable clinical course, and alternating symptomatic and asymptomatic periods.

We are particularly concerned about women who have injected silicones into their breasts, because of the inability to detect early breast cancer, which is why we have designed the following specific therapeutic algorithm for mammary siliconomas (**Graph 1**).

MASSIVE CUTANEOUS MAMMARY INVOLVEMENT: SHIELD-LIKE BREAST SILICONOMAS

The most severe case we have dealt with is depicted in **Figure 1**. Infiltration with silicones extended from the patient's epigastrium to suprasternal cervical region, greatly exceeding the limits of myocutaneous coverage with a single flap (TRAM or latissimus dorsi). For this reason, surgery was planned in stages, beginning with a mastectomy that would allow closure of the defect created after each of the subsequent resections by means of one of the following flaps or with the combination of different procedures:

- Rotation and advance flaps,
- Inclusion of expanders, to achieve maximum myocutaneous coverage,
- New flap advance,
- Myocutaneous bilateral latissimus dorsi flaps,
- Ryan's abdominal flap,
- Total retromuscular silicone gel prosthesis placement during the last surgery, with enough tissue for adequate coverage of the implant,
- Aesthetic refinements: reconstruction of the areola-nipple complex, scar reduction, etc.

This combination of planned therapeutic procedures was performed, beginning with a simple and sequential simple mastectomy from the epigastrium to the su-

prasternal cervical region and sequential reconstruction. By procedure, we performed:

- First surgery: cervical advancement and incomplete inverted abdominoplasty, placement of bilateral latissimus dorsi expanders (**Figure 1 a–e**),
- Second surgery: cervical advance and complete inverted abdominoplasty (**Figure 1 f–k**),
- Third surgery: bilateral expanded myocutaneous latissimus dorsi flaps and Ryan abdominal flap, with immediate placement of total retromuscular silicone gel prostheses (**Figure 1 l–u**),
- Fourth surgery: reconstruction of the areola-nipple complex and scar reduction (**Figure 1 v, w**).

CONCLUSIONS

The procedure of injecting liquid silicones to modify one's body is harmful to health. Seriously ill for life, many will require prolonged treatment.

Given the complexity of the clinical picture, we offer treatment with a multidisciplinary team, using set of guidelines to stage patients and, thus, be able to estimate each patient's prognosis and determine the best therapeutic approach.

Each treatment must be planned carefully, using a "therapeutic strategy" adapted to each individual patient, while considering their own personal history.

Pharmacological/immunomodulatory treatment plays a fundamental role in treatment: on one hand, to reduce inflammatory symptoms, allowing patients who were considered nonsurgical due to intense inflammation to ultimately benefit from surgery and, on the other, to control the symptomatology of the autoimmune disease caused by the injected substances.

The inability to diagnose early breast cancer in these patients requires that surgeons offer surgery to reduce the patient's risk of undetected cancer by excising silicone-filled breast tissue.

Poor to satisfactory cosmetic results can be expected from surgery, in most instances.

The surgeon who decides to operate on these complex patients must have extensive experience in reconstruction and work with a multidisciplinary team.

The surgical strategy should contemplate "rescue" procedures, thinking about the possibility of complications. As much as possible, surgery should not eliminate alternatives but keep them in reserve.

The simplest and most empirically effective procedure should always be chosen.

Prudence should always be used when planning procedures.

If implants are placed, the implant of the smallest possible volume should be chosen, even though it seems cosmetically insufficient.

Always keep in mind that "perfect is the enemy of good" and that the rule is that several surgical interventions will be necessary.

When tissue damage is extensive, surgery should be planned in stages.

In view of the consequences of injected silicones, this practice must be strongly condemned, including legislation to cease its occurrence. It also is essential that public health programs be designed to educate the ge-

neral public about the dire consequences that can befall those who fall victim to this type of practice. This education campaign should especially target those at greatest risk: teenagers, those of low income, those in the sex-trade industry, and the transgender population^{13,23}.

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