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Correspondence and Communications

Autologous breast reconstruction surgery outcomes in patients with autoimmune connective tissue disease☆

Dear Sir,

Autologous breast reconstruction following mastectomy remains an integral component in the management of these patients. Those with pre-existing medical conditions require special consideration, such as patients with autoimmune connective tissue diseases (CTDs). Autoimmune CTDs include a group of disorders with a wide spectrum of clinical manifestations that may adversely affect surgical outcomes.[1] Due to these factors, surgeons may be reluctant to perform autologous breast reconstructions in these patients, particularly using free tissue transfer. However, whether the presence of CTDs significantly increases the risk for adverse outcomes in autologous breast reconstruction remains unsettled.

Methods

We conducted a retrospective analysis of the Nationwide Inpatient Sample (NIS 2008–2011) to evaluate postoperative outcomes of autologous breast reconstruction in patients with CTD. Patients that underwent autologous breast reconstruction were identified using International Classification of Diseases, Ninth Revision, (ICD-9) codes. Cohorts consisted of patients with and without autoimmune CTDs.

Patient demographic factors, comorbidities, and in-hospital postoperative outcomes were analyzed. Microvascular complications were defined as those requiring re-intervention identified using ICD-9 procedure codes, as described previously.[2] We employed Pearson chi-square test for categorical variables and two-tailed student's *t*-test for continuous data. Multivariate logistic regression analyses were performed to evaluate independent risk factors for complications following autologous breast reconstruction. *P* values of < 0.05 were considered statistically significant. This study was exempt from full review by the Institutional Review Board at the University of Miami Leonard M. Miller School of Medicine.

Results

There were 56,522 autologous breast reconstructions performed during the study period. Of these, 830 (1.5%) were performed on patients with autoimmune CTDs. Among autoimmune CTDs, rheumatoid arthritis (RA) was the most common diagnosis (50.8%) followed by systemic lupus erythematosus (SLE) (24%), Raynaud's syndrome (7.1%), Sjogren's disease (8.7%), scleroderma (7%), and psoriatic arthritis (2.4%). Patients with CTD had higher rates of co-morbidities than non-CTD group (Table 1). Majority of patients underwent pedicled flap breast reconstructions (Table 1). However, CTD patients underwent free flaps less frequently than non-CTD patients (43.6% vs. 48.6%, $p < 0.01$). Postoperatively, patients with CTD experienced wound complications more frequently than patients without CTD (10.6% vs. 7.4%, $p < 0.01$). Among patients that underwent free flap-based breast reconstructions, there was no difference in rate of microvascular complications between CTD and non-CTD groups (2.5% vs. 2.3%, $p = 0.61$).

Rate of pulmonary embolism was significantly higher in CTD group (1.2% vs. 0.2%, $p < 0.01$). Overall medical complication rate was 8.3% in patients with CTD, compared to 5.2% in non-CTD group ($p < 0.01$). However, only respiratory complications were significantly higher among patients with CTD compared to non-CTD group (6.6% vs. 4.3%, $p < 0.01$) (Table 2).

On risk-adjusted multivariate analysis controlling for patient characteristics, comorbidities, and reconstruction type, CTD was independently associated with increased risk of wound complications (OR 1.40 95% CI 1.1–1.8) and major medical complications (OR 1.54 95% CI 1.2–2.0). CTD status was not associated with increased risk of microvascular complications.

Discussion

To our knowledge, this represents the largest study of autologous breast reconstruction outcomes in patients with autoimmune CTD. Our results suggest that patients with CTDs are at increased risk of postoperative wound complications and major medical adverse events. However, results indicate that CTDs did not increase the rate of microvascular free flap complications.

There are several factors in patients with CTD that may compound the risk of wound complications. CTDs are associated with systemic inflammation resulting in compro-

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Table 1 Characteristics of patients with and without connective tissue diseases (CTD) that underwent autologous breast reconstruction (NIS 2008–2011).

	Overall (n = 56,522, 100%)	Non-CTD (n = 55,692, 98.5%)	CTD (n = 830, 1.5%)	P value
Mean age (SD)	51.2 (9.8)	51.2 (9.8)	54.2 (9.1)	<0.01
Race				<0.01
White	72.4%	72.4%	68.5%	
Black	11.7%	11.6%	17.4%	
Hispanic	9.8%	9.8%	10.2%	
Asian	2.9%	2.9%	1.2%	
Native American	0.3%	0.3%	0%	
Other	3%	3%	2.7%	
Comorbidities				
Diabetes mellitus	7.1%	7.0%	10.6%	<0.01
Hypertension	25.8%	25.6%	39.5%	<0.01
Congestive heart failure	0.4%	0.4%	1.7%	<0.01
Chronic lung disease	8.0%	7.9%	15.4%	<0.01
Renal failure	0.3%	0.3%	<1%	0.20
Liver disease	0.5%	0.5%	2.9%	<0.01
Peripheral arterial disease	0.4%	0.3%	1.2%	<0.01
Obesity	7.6%	7.6%	7.7%	0.90
Immediate reconstruction (vs delayed)	40.7%	40.7%	41%	0.89
Free flap (vs pedicled)	48.5%	48.6%	43.6%	<0.01
Type of reconstruction				
Latissimus dorsi myocutaneous flap	30.4%	30.3%	33.3%	0.12
Pedicled TRAM flap	19.6%	19.6%	21.6%	0.053
Free TRAM flap	17.9%	17.9%	19.7%	0.07
Free DIEP flap	26.7%	26.7%	20.9%	<0.01
Free SIEA flap	1.3%	1.3%	2.7%	<0.01
Free GAP flap	0.7%	0.7%	0.0%	0.02
Free NOS flap	3.4%	3.5%	1.8%	0.01

NIS, Nationwide Inpatient Sample; CTD, connective tissue disease; SD, standard deviation; TRAM, transverse rectus abdominis myocutaneous; DIEP, deep inferior epigastric artery perforator; SIEA, superficial inferior epigastric artery; GAP, gluteal artery perforator; NOS, not otherwise specified.

Table 2 In-hospital postoperative outcomes of patients with and without connective tissue diseases (CTD) that underwent autologous breast reconstruction (NIS 2008–2011).

Outcome	Total (n = 56,522, 100%)	Non-CTD (n = 55,692, 98.5%)	CTD (n = 830, 1.5%)	P value
In-hospital mortality	0.1%	0.1%	0%	0.50
Wound complications	7.4%	7.4%	10.6%	<0.01
Hematoma	2.4%	2.4%	2.5%	0.86
Delayed healing	1.2%	1.1%	2.3%	<0.01
Seroma	1.1%	1.0%	2.4%	<0.01
Fat Necrosis	0.9%	0.9%	3.8%	<0.01
Hemorrhage	0.5%	0.5%	1.2%	<0.01
Dehiscence	0.8%	0.8%	1.2%	0.24
Infection	1.3%	1.3%	2.3%	<0.01
Microvascular flap complications	2.3%	2.3%	2.5%	0.61
Venous thromboembolism	0.6%	0.6%	1.2%	0.04
Pulmonary embolism	0.2%	0.2%	1.2%	<0.01
Deep venous thrombosis	0.4%	0.4%	0%	0.06
Blood transfusion	10.2%	10.2%	11.3%	0.30
Medical complication	5.3%	5.2%	8.3%	<0.01
Myocardial infarction	0.1%	0.1%	0%	0.48
Stroke	0%	0%	0%	0.79
Pulmonary	4.3%	4.3%	6.6%	<0.01
Acute kidney injury	0.5%	0.5%	0.5%	0.82
Mean length of stay, days (SD)	4 (3.2)	4 (3.2)	4 (2.3)	0.85

NIS, Nationwide Inpatient Sample; CTD, connective tissue disease; SD, standard deviation.

mised wound healing. In addition, chronic immunosuppressant therapy for these diseases may further impair wound healing. Results from small studies have also reported a relative high rate of wound complications in patients with CTD undergoing autologous breast reconstructions.[3,4]

As expected, our CTD cohort had significantly higher rates of comorbidities compared to patients without CTD. Postoperatively, patients with CTD experienced higher rates of pulmonary complications and VTE. Hypercoagulability is a associated with autoimmune CTDs, particularly patients with SLE with concomitant antiphospholipid syndrome. Given the risk of this complication, preoperative risk-stratification and adherence to VTE prevention guidelines is essential.

Our results indicate that patients with CTDs did not experience higher rates of microvascular free flap complications. Even after risk-adjusted analysis, CTD status was not found to be an independent risk factor for microvascular free flap complications. In other smaller studies on CTD patients that underwent autologous breast reconstructions, there were no reported cases of free flap failure.[4,5] Together, these results suggest that free tissue transfer breast reconstructions are feasible with low risk of flap failure in patients with CTDs. However, these results should be interpreted with caution. Microvascular complications were defined as those requiring reintervention. Hence, results may underestimate this complication rate.

In summary, autologous breast reconstructions, including free flaps, may be feasible in patients with underlying autoimmune CTD. However, reconstructive surgeons should be aware of the increased risk of postoperative wound complications, pulmonary complications and VTE. It is important to convey this information to the patients during consultations and incorporate these discussions into the informed consent.

Conflict of interest statement

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References

1. Tsai DM, Borah GL. Implications of rheumatic disease and biological response-modifying agents in plastic surgery. *Plast Reconstr Surg* 2015;**136**:1327–36.
2. Tuggle CT, Patel A, Broer N, Persing JA, Sosa JA, Au AF. Increased hospital volume is associated with improved outcomes following abdominal-based breast reconstruction. *J Plast Surg Hand Surg* 2014;**48**:382–8.
3. Chin KY, Chalmers CR, Bryson AV, Weiler-Mithoff EM. Breast reconstruction in the high risk patient with systemic connective tissue disease: a case series. *J Plast Reconstr Aesthet Surg* 2013;**66**:61–6.
4. Wang TY, Serletti JM, Kolasinski S, Low DW, Kovach SJ, Wu LC. A review of 32 free flaps in patients with collagen vascular disorders. *Plast Reconstr Surg* 2012;**129**:421e–427e.
5. Shuck J, Patel KM, Franklin B, Fan KL, Hannan L, Nahabedian MY. Impact of connective tissue disease on oncologic breast surgery and reconstruction. *Ann Plast Surg* 2016;**76**:635–9.

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The use of ultrasound guidance for foreign body removal

Dear Sir,

Patients with implanted subcutaneous foreign bodies (FB) are a common presentation to Plastic Surgery services. This implantation may be accidental, inflicted or part of a self-embedding behaviour. Removal of FB poses multiple risks including the usual risks of an operation, which may include a general anaesthetic and tourniquet. In addition, there are risks posed by removal of FB in particular. They are often sharp, posing a needlestick risk to the surgeon. They are also usually small, making identification potentially difficult, lengthy and occasionally unsuccessful.

Many departments use pre-operative imaging, either ultrasound or x-ray, to diagnose the site, size and number of FB prior to attempting removal.[1] Some surgeons may also use an image intensifier to check position. However, this

involves a radiation dose to patients, and does not allow imaging of radiolucent FB.[2]

Point of care ultrasound (POCUS) may allow the risks to patient and surgeon to be reduced. In recent years POCUS has increased in use across healthcare, in the hands of clinicians without formal training as a Radiologist.[3] It can be employed for diagnosis, such as the FAST scan. It can also be used for treatment through image-guided procedures, such as nerve blocks. Although widely employed in some medical specialties, particularly Anaesthetics, this has not yet been adopted in Plastic Surgery.

In appropriately trained hands, POCUS represents an option for guiding the removal of FB. This can be in the form of intraoperative localisation or image-guided removal. I would like to present a series of ultrasound-guided foreign body removal to illustrate the benefits of this technique.

To perform this, the FB should be visualised using a high frequency ultrasound probe, optimising depth, gain, orientation and position. Doppler and anisotropism can be used to delineate blood vessels and nerves. Local anaesthetic is injected around the object to help separate tissue planes, then a stab incision is made down on to the object. Forceps or a needle holder can then be inserted under guidance to remove it.

13 patients presented to the Plastic surgery department at Cambridge University Hospital with a total of 34 implanted FB. 54% of these were organic, with the others being a mix of needles, glass and fibreglass shards. 69% were removed under local anaesthetic infiltration alone, with all but one of the general anaesthetic cases being children. A tourniquet was not required in 69%. In three cases additional objects were removed which had not been identified preoperatively. Only one procedure took longer than one hour, during which time 14 objects were removed.

All identifiable foreign bodies were removed, and POCUS allowed confirmation of this. It was not required for very superficial objects (<0.5 cm deep), which are usually palpable and too close to the probe to allow image-guided removal.

Ultrasound can improve the accuracy and efficiency of foreign body removal. Increased familiarity in its use can be of benefit not only in this setting, but also in other situations such as joint injections.

Conflict of interest

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References

1. Ginsburg MJ, Ellis GL, Flom LL. Detection of soft-tissue foreign bodies by plain radiography, xerography, computed tomography, and ultrasonography. *Ann Emerg Med* 1990;**19**(6):701–3.
2. Anderson MA, Newmeyer WL 3rd, Kilgore ES Jr. Diagnosis and treatment of retained foreign bodies in the hand. *Am J Surg* 1982;**144**(1):63–7.
3. Moore CL, Copel JA. Point-of-care ultrasonography. *N Engl J Med* 2011;**364**(8):749–57.

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A novel modification of keystone flap for superficial defects repair

Dear Sir,

In 2003, Behan[1] was the first to report the Keystone Design Perforator Island Flap (KDPIF). The KDPIF has the advantages of simple design, convenient operation, certain perforator blood supply, adjacent tissue, good appearance and nearby texture. Therefore, it has been widely applied to repairing skin soft tissue defects caused by trauma, tumor resection, and scars.[2,3] However, the KDPIF has certain issues such as excessive tension, constraint on the closure of the donor area,[4,5] and skin contractures due to straight line scars across the joints in repairing large-size defects of the trunk, the joints or other moving areas. To address these problems, on the base of KDFIP, we designed an extra V shape on the lateral curve of the flap. Because the whole appearance of the flap like a boat, we also called this modified KDPIF as a Boat-Shaped Flap. The added "V" like a sail is the key point to reduce the tension of the flap and the surrounding soft tissues.

A Boat-Shaped Flap is designed beside the defect as shown in Figure 1: two perpendicular straight lines, AA1 and BB1, are designed on both ends of the arc-shaped "bottom of the boat (A1B1)" next to the fusiform wound. The arc that is far from the wound and parallel to the bottom of the boat is the "deck (AB)". The width (H) between AB and $A_1B_1 \approx$ 1–1.5 times the width of the wound (H1). Then the position of point O, the "head of the sail", is located at the midpoint of AB, and the height is the same as the maximum diameter of the defect. Along with $\angle\alpha$ and $\angle\beta$, 3 V-Y advancement flaps are formed, advancing together to the wound and maximally reduce the tension. If the tension is too much, the deep fascia is incised to increase the degree of movement of the flap. Compared with the traditional Keystone Flap which only separates a 2 cm area outside the flap,[1] our separation range adds the area under the fascia (shaded part in Figure 1). Also, a blunt separation with a scissor is needed provide an adequate degree of movement. The tight connection of the fascia is opened up longitudinally, and multiple tunnels are separated until the entire shaded area beneath the flap is opened up. During

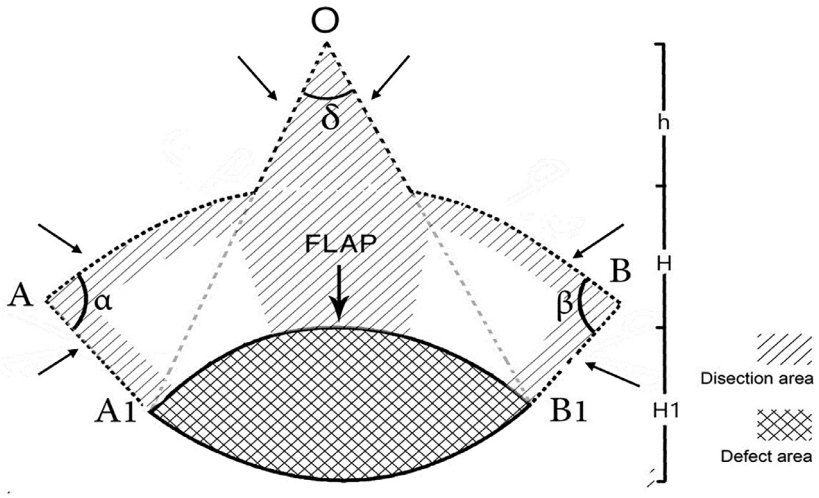

Figure 1 shows the design of Boat-Shaped Improved Keystone Design Perforator Island Flap. Incise the skin and the subcutaneous tissue. Then seprate the shaded part under the fascia and push the flap towards the wound via three V-Y advancement direction.

this process, the vessels that perforate upward from the muscle and muscle septum need to be protected. Then the flap is pushed towards the center of the wound via three V-Y advance movements. The extra portion of the flap is trimmed, and absorbable thread is used to perform subcutaneous sutures. Negative pressure suction can be used to form the pressure of about 100 mmHg, and a flap monitoring window is indwelled to facilitate observation of the blood supply.

After the resection of the basal cell carcinoma in a 73-year-old female, a 3×4.5 cm^2 wound was formed, and a Boat-Shaped Flap was designed on the lateral of the wound to repair the defect successfully (Figure 2, Supplementary Figure 1). We have done the operation for 31 patients to repair the defects on the trunk, face, and limb joints. Most patients were satisfied with the morphology and function of their repairs.

Compared with the traditional KDPIF, the modified KDPIF adds a new V-shape design (sail) on the outside arc, forming a third V-Y advancement flap, and the region between the "sail" and "hull" is opened to form an open tunnel (Figure 1). According to our clinical experience, the size of the $\angle\delta$ triangle is more flexible between 30° and 60°, with the general principle being that the triangle should be large rather than small on the basis of satisfying the release of tension. In addition, when the height of the "sail" $h = H$, it can satisfy the repair of most tensioned wounds. Our work suggests the new V-shape disperses the tension of the flap and reduces skin tension of the donor region, which plays an important role in the healing of the incision. Especially in moving areas, such as limb joints, the improved KDPIF also ingeniously changes the straight line of the incision that crosses the joint to a curved line, which effectively prevents scar traction at the joint and protects the motion function. In a word, The Boat-Shaped Flap reduce and disperse the tension of the flap and donor area with better effects in function and aesthetics, which can be widely applied in the reconstruction of the extensive superficial defects.

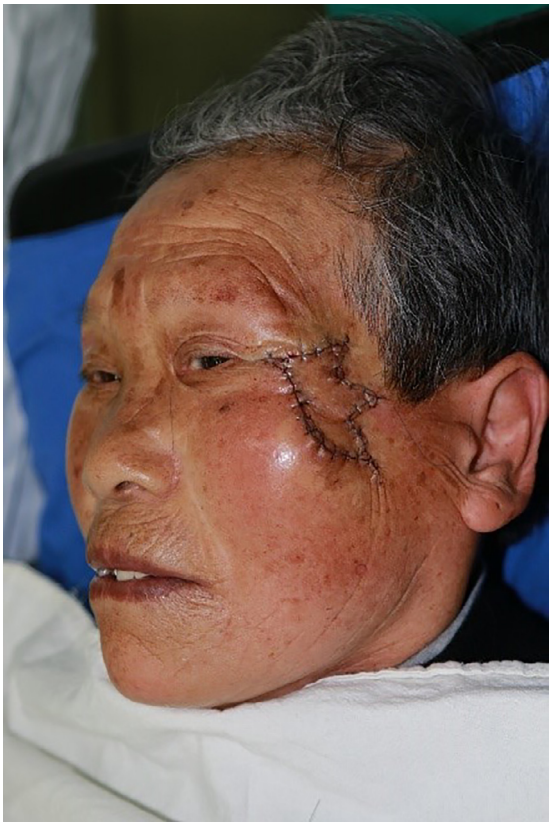

Figure 2 shows a Boat-Shaped Improved Keystone Design Perforator Island Flap repair the defect on the right temporalis immediately after the surgery.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.bjps.2018.12.041.

References

1. Behan FC. The Keystone Design Perforator Island Flap in reconstructive surgery. *ANZ J Surg* 2003;**73**(3):112–20.
2. Shayan R, Behan FC. Re: the "keystone concept': time for some science. *ANZ J Surg* 2013;**83**(7–8):499–500.
3. Behan FC, Paddle A, Rozen WM, et al. Quadriceps keystone island flap for radical inguinal lymphadenectomy: a reliable locoregional island flap for large groin defects. *ANZ J Surg* 2013;**83**(12):942–7.
4. Rao AL, Janna RK. Keystone flap: versatile flap for reconstruction of limb defects. *J Clin Diagn Res* 2015;**9**(3):PC05–7.
5. Hessam S, Sand M, Bechara FG. The keystone flap: expanding the dermatologic surgeon's armamentarium. *J Dtsch Dermatol Ges* 2015;**13**(1):70–2.

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Partially tubulized U-shaped supraclavicular flap: An excellent option for reconstruction of circumferential pharyngeal defects

Dear Sir,

Reconstruction of circular pharyngeal defects is a challenging procedure for both its functional involvement and the exposure to saliva and digestive enzymes. Radial forearm flap, anterolateral thigh flap (fasciocutaneous flaps) and jejunal flap are commonly used for partial or circumferential pharyngeal defects.[1] Nevertheless, microsurgical reconstruction may be severely hampered in cases of irradiated or infected surgical fields, or contraindicated in patients with poor clinical conditions. In recent years, there has been an increasing interest in the use of supraclavicular flap in head and neck reconstruction,[2,3] especially for oropharyngeal defects. However, far too little attention has been paid to the use of this flap for the reconstruction of circumferential pharyngeal defects.

We would like to share our experience in this field describing our favourite technique to repair circumferential pharyngeal defects using a U-shaped supraclavicular artery island flap. In actual fact, it has become our preferred workhorse flap for many head and neck defects. In our department five patients underwent circumferential pharyngeal reconstruction between May 2016 and December 2017 with a U-shaped supraclavicular flap. Three of them had previously been treated with chemoradiotherapy. In all cases the supraclavicular artery was identified preoperatively by means of an Eco Doppler device. A flap of approximately 7–8 × 18–22 cm, with a 7 × 10 cm skin paddle was harvested using the distal-to-proximal technique described by Pallua and Demir.[4]

The flap was then rotated 180°, superficial to the sternocleidomastoid muscle and the skin of the flap was orientated to become the inner surface of the neopharynx. After the circumferential defect was created, the posterior walls of the native pharynx and esophagus were sutured to the prevertebral fascia to prevent leakage. The lateral edges of the flap were then secured to the lateral prevertebral fascia conferring the flap into a "U" shape using a round needle 3.0 silk suture, as described by Spriano for pectoralis major muscle flap[5] (Figure 1). The distal end of the supraclavicular flap was then secured to the base of the tongue or pharynx anterolaterally and the proximal end was sutured to the anterolateral native esophagus. This technique produces a neopharynx with the anterolateral 270° made up of the pedicle supraclavicular flap and a posterior wall that is prevertebral fascia (Figure 2). The procedure required approximately 60 minutes. None of the patients presented significant functional limitations of the shoulder. The defect of the donor area was closed with a direct closure in all patients without the need for skin graft. Follow

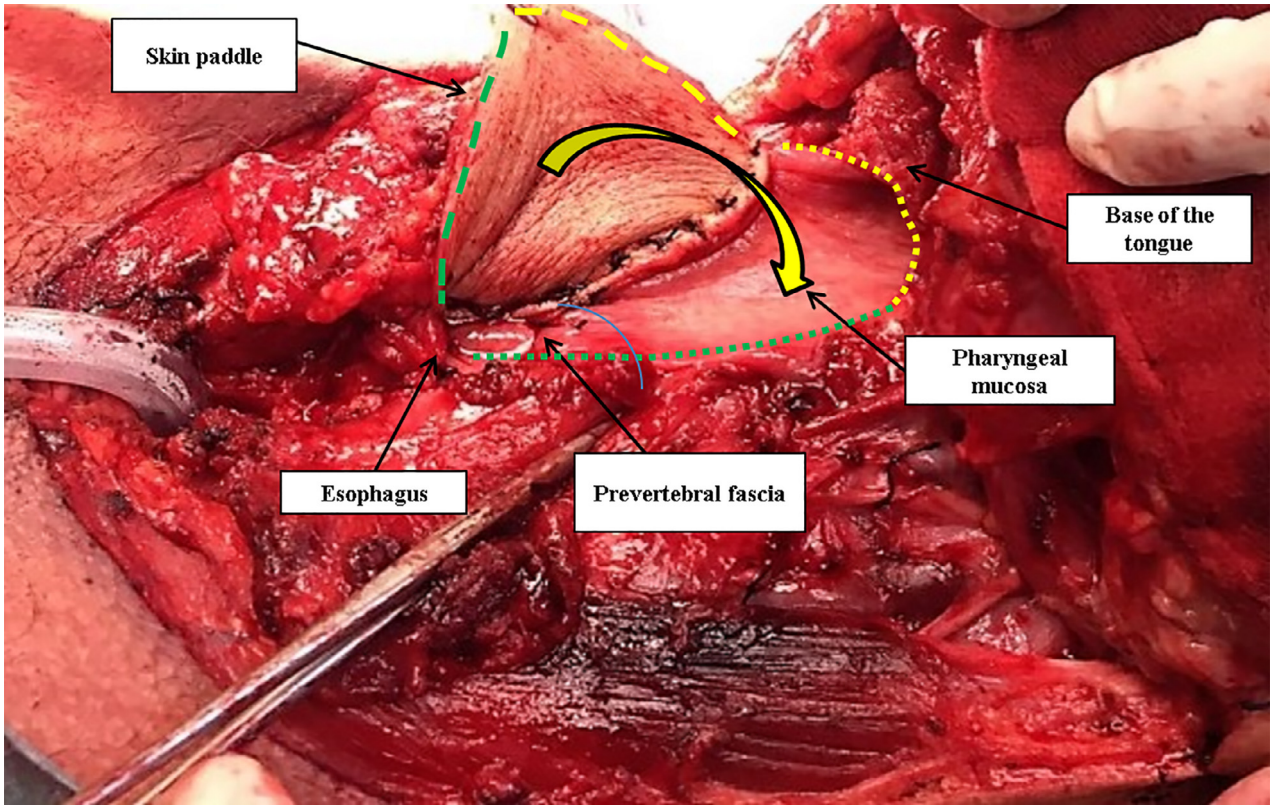

Figure 1 The flap is inserted and sutured to the prevertebral fascia, and to the pharyngeal and the esophagus remnants.

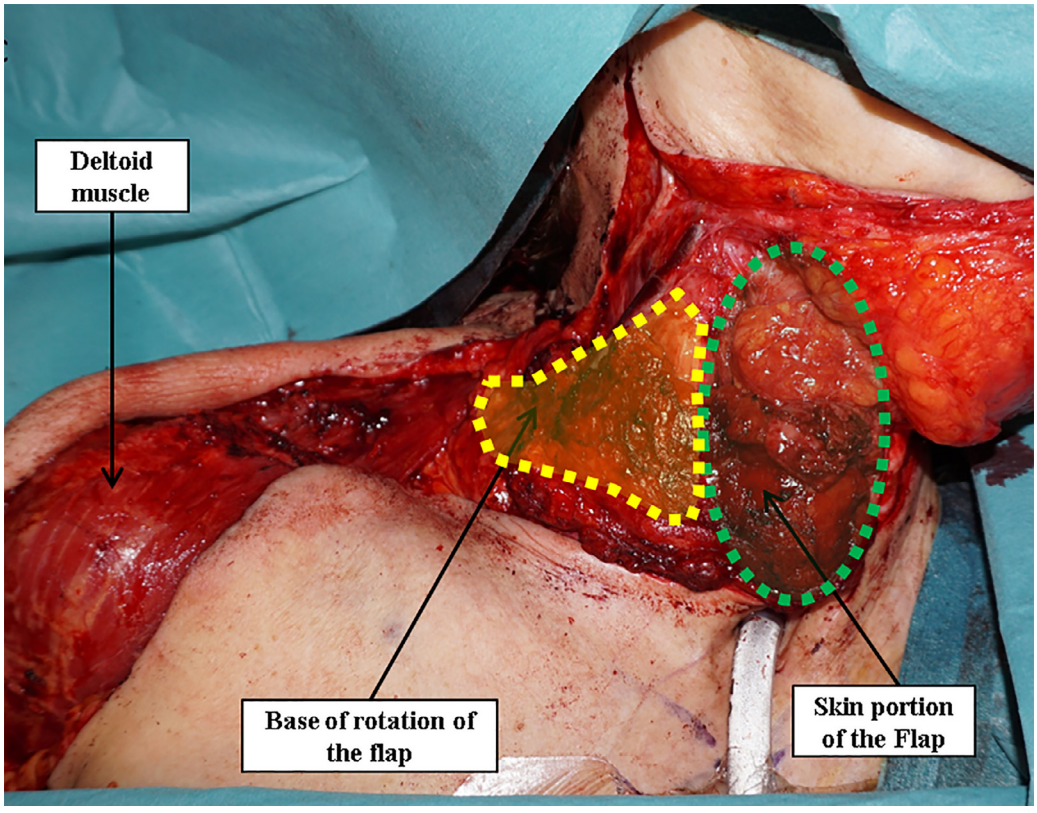

Figure 2 The neopharynx aspect after reconstruction.

up ranged between 10 and 30 months. One case of seroma was observed, and with respect to major complications one case of pharyngocutaneous fistula was conservatively managed with pressure dressing and botulinum toxin injection (50 units) into the submandibular glands to reduce sialorrhea. Before starting oral feeding, the patients were fed through a nasogastric tube for 3 weeks (untill modified barium swallow showed no leaks). Sequently oral tolerance was started, beginning with liquids with a gradual advance in diet. Indeed, all the patients have been able to maintain nutrition by oral intake during the follow-up. The principal advantage of the U-shape technique is that if a partially tubulized flap is performed, a 6–7 cm wide flap is sufficient to create a permeable neopharynx and a direct closure of the donor area is possible without the interposition of a skin graft. In fact, the direct closure of the donor area is possible with flaps of up to 8 cm wide.

Using a totally tubulized supraclavicular flap, a skin paddle of about 9–10 cm in length and $2 \times \pi \times$ R (ray of the circumference = 1.5 cm) wide ($3 \times \pi = 9.42$ cm) is required as well a skin graft to close the defect of the donor area.

Circumferential pharyngeal reconstruction is a challenging procedure. Regional flaps such as pectoralis major or deltopectoral may result in significant functional morbidity and microsurgical reconstruction may be severely hampered in cases of irradiated surgical fields. The supraclavicular flap presents several advantages. It is a thin and moldable flap, ideal for pharyngeal reconstruction, and it is harvested easily, quickly, with minimal donor-site morbidity and without the need to create two operative fields. Finally, its reduced weight and mass decrease the risk of leakage at superior suture with the base of the tongue.

The small number of patients limit the possibility of performing a statistical analysis of the results but we consider that the U-shaped supraclavicular flap is an excellent alternative procedure for the reconstruction of circumferential pharyngeal defects.

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Conflict of interest

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Ethical approval

Ethical approval was not required for this study. No experiment with humans or animals was performed.

References

1. Muray DJ, Novak CB, Neligan PC. Fasciocutaneous free flaps in pharyngolaryngoesophageal reconstruction: a critical review of the literature. *J Plast Reconst Aesth Surg* 2008;**61**:1148–56.
2. Granzow JW, Suliman A, Roostaeian J, et al. Supraclavicular artery island flap (SCAIF) vs free fasciocutaneous flaps for head and neck reconstruction. *Otolaryngol Head Neck Surg* 2013;**148**:941–8.
3. Zhang S, Chen W, Cao G, Dong Z. Pedicled supraclavicular artery island flap versus free radial forearm flap for tongue reconstruction following hemiglossectomy. *J Craniof Surg* 2015;**26**:527–30.
4. Pallua N, Demir E. Postburn head and neck reconstruction in children with the fasciocutaneous supraclavicular artery island flap. *Ann Plast Surg* 2008;**60**:276–82.
5. Spriano G, Piantanida R, Pellini R. Hypopharyngeal reconstruction using pectoralis major myocutaneous flap and prevertebral fascia. *Laryngoscope* 2001;**111**:544–7.

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Use of Integra Flowable Wound Matrix for nasal dorsum reconstruction or augmentation: A series of 6 cases

Dear Sir,

The nasal dorsum is one of the major components of the nose's architecture and its esthetics. Resection or reduction procedures are much more common that projection procedures. However, by definition, adding volume is more complicated than removing it as new materiel must be added to obtain this projection. There are many published studies on this topic.[1-5]

The Integra® Flowable Wound Matrix, which is derived from the Integra® Dermal Regeneration Template, is a bovine collagen matrix that can be revascularized and repopulated by host fibroblasts to recreate dermal tissue. After this matrix is rehydrated, it has a paste consistency that allows the surgeon to shape it as desired. We report our experience using the Integra® Flowable matrix for augmenting the nasal projection.

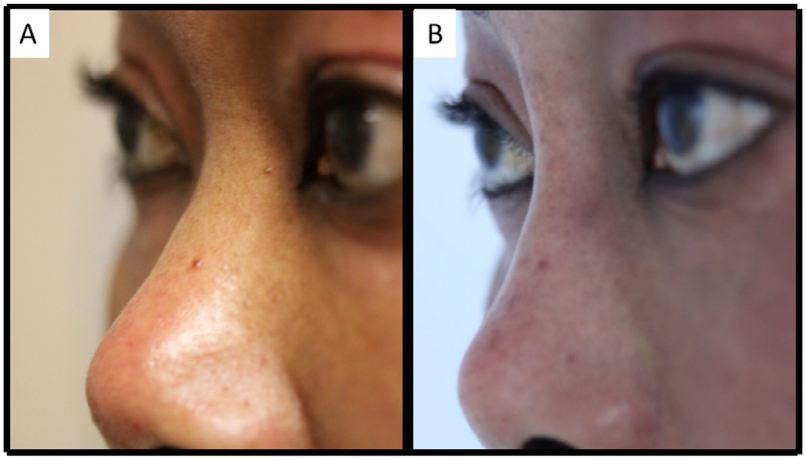

Figure 1 Female patient (31 y/o) who requested an augmentation of the dorsal projection. (A) Three-quarter view before surgery. (B) Three-quarter view at the 1-year follow-up after Flowable injection.

While classic rhinoplasty is still relevant, a less aggressive approach for more targeted problems has been developed. The injection of resorbable (hyaluronic acid)[2] or permanent dermal fillers (adipose tissue)[3] is one element of this less invasive care.

The Integra® Flowable Wound Matrix competes with these products because it has several advantages: immediate and unlimited availability, immediate visualization of the result, potential for secondary shaping, permanent product that will be revascularized.

The procedure was performed under local anesthesia when only the dorsum was being operated on. In all cases, dilute adrenalized xylocaine was injected at the site. This injection was done at least 10 min beforehand to ensure the anesthetic had enough time to resorb, so as to not interfere with Flowable dispersion.

The theoretical lateral defect was outlined with a felt pen on either side of the dorsum. A 1.5-cm incision was done at the glabella and the tissues detached with fine scissors to the previously marked boundary. This dissection should be limited to the desired projection area to avoid diffusion of the product (particularly on the lateral sides). The Flowable matrix was prepared according to the manufacturer's recommendations, with one change: the product was diluted slightly more by using 6 cm^3 of liquid instead of the recommended 5 cm^3. The paste was then injected through the glabellar incision, in a retrograde manner starting from the distal portion of the detachment, with the surgeon positioned at the patient's head. Regular lateral views are taken to stop the injection when the desired projection has been obtained. The injection was done with a CATHLON® 16G I.V. catheter in order to be more accurate. Over-correction is not necessary because no product resorption is expected. At this point, the Flowable matrix can be shaped as needed to correct any imperfections or asymmetry. The injection was then restricted with strips and a nasal cast was added. The cast was solely protective and did not apply pressure to the injected area to avoid modifying the initial result obtained during the injection and shaping. The cast was removed on the 5th postoperative day, but worn at night for up to 10 days.

Patients were reviewed at 5 days, 2 months and 1 year to assess the final outcome.

This technique was performed in 6 patients. Most were women (5 patients) and black patients who wanted to Europeanize their nose (Figure 1). The dorsum (glabella/tip of nose) was separated in three thirds: superior, middle, inferior. The photographs were magnified 3× and the difference in projection measured in the center of the superior third. The final result was evaluated by scaling the projection difference back to a normal scale.

Patient satisfaction was assessed on a scale of 1–10 during the 1-year follow-up visit.

There were no complications. The procedure was purely esthetic in five cases. For the sixth case, reconstruction was carried out because of excessive resection during a prior rhinoplasty procedure. A 3–7 mm projection was achieved.

Patient satisfaction was relatively high, as it averaged 7.8 and ranged from 6 to 10. No retouching was proposed by the surgeon or requested by the patients.

The results obtained with the Flowable matrix in our case series are stable over a 1-year period. It also confers a relative natural feel when touched. The creation of neodermis leads to the dorsum having a firm, physiological appearance (like cartilage), in contrast to the results obtained with adipose grafts that are softer and without tonus.

The ability to augment the projection is an important factor, but it is not the only factor. The ability of Flowable to be shaped after the injection is very valuable as this allows the surgeon to make the dorsum as physiological as possible with a very gradual, thus natural, connection with the other nasal structures. Because of the product's plasticity, the dorsum can be reshaped as needed to make it more or less pointed based on the clinical situation and the patients' and surgeons' wishes.

Conflict of interest

None.

Funding

None.

References

1. Duron JB. Cartilaginous graft in Rhinoplasty. *Ann Chir Plast Esthet* 2014;**59**:447–60.
2. Jallut Y, Nguyen PS. Rhinoplasty and dermal fillers. *Ann Chir Plast Esthet* 2014;**59**:542–7.
3. Nguyen PS, Baptista C, Casanova D, Bardot J, Magalon G. Autologus fat grafting and rhinoplasty. *Ann Chir Plast Esthet* 2014;**59**:548–54.
4. Gunter JP, Rohrich RJ. Augmentation rhinoplasty: dorsal onlay grafting using shaped autogenous septal cartilage. *Plast Reconstr Surg* 1990;**103**:1003–14.
5. Kelly MH, Bulstrode NW, Waterhouse N. Versatility of diced cartilage-fascia grafts in dorsal nasal augmentation. *Plast Reconstr Surg* 2007;**120**:1654–9.

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The influence of social media on women undergoing immediate breast reconstruction☆

Introduction

With nearly four-fifths of the United States population utilizing social media, these networks are quickly becoming a tool for physicians to disseminate and patients to find information.[1] While it is likely that social media is one of the sources through which breast reconstruction patients seek and obtain information, this has never been assessed. The goal of this study was to determine which, if any, social media sources were influencing women's choice in breast reconstruction and which were the most influential sources of information.

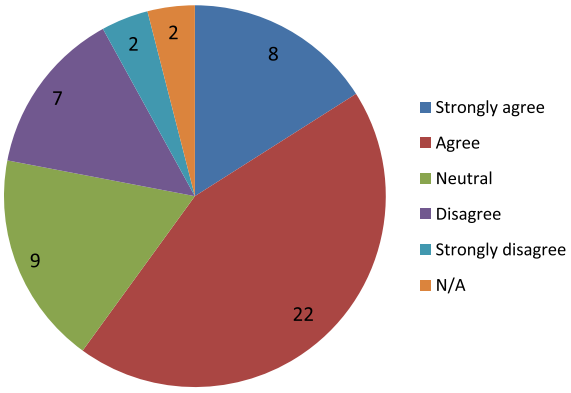

Figure 1 Assessing if a woman had an initial preference for which type of reconstruction to pursue.

Methods

Consecutive women undergoing immediate breast reconstruction at our institution with any staff member were presented the option to complete an anonymous survey on the morning of surgery until 50 patients had participated. This survey queried multiple aspects of a woman's decision-making process.

Results

50 women, with an average age of 50 years (range 21–70 years) participated. The majority of women (42, 84%) identified as White/Caucasian. The highest level of education was graduate school (19, 38%), college (23, 46%), and high school (8, 16%).

31 (63%) of women initially preferred prosthetic based reconstruction (Figure 1). Most (40, 80%) women strongly agreed/agreed they had the ability to choose which type of reconstruction to pursue and identified herself as the primary decision maker. Support networks were statistically more influential on the decision making process than spouse/significant other ($p < 0.001$).

For initial reconstructive preference, age, education and race were not independent predictors ($p > 0.05$). There was a trend towards younger women having an initial preference ($p = 0.08$). Most women did not cite social media or support groups as being influential and age had no effect on the degree of social medial utilization. Most women who had an initial reconstructive preference did not use Twitter ($p = 0.106$), Facebook ($p = 0.091$) or Pinterest ($p = 0.043$). Support groups and social media usage were not predictive of initial reconstructive preference ($p > 0.005$). 33 (66%) women indicated their physician as the most influential factor on their reconstructive choice. There was a significant difference between initial reconstructive preference and final reconstructive plan ($p = 0.032$) (Figure 2). 90% of women strongly agreed/agreed that they understood their procedure and 92% of women strongly agreed/agreed that they

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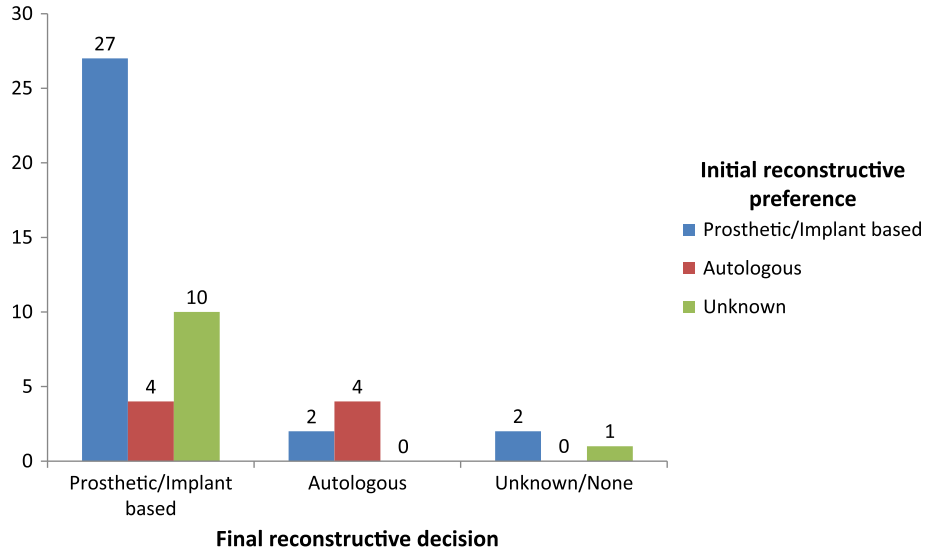

Figure 2 Changes from initial reconstructive preference to final reconstructive decision.

understood the outcomes and type of secondary procedures that would be required.

Conclusion

Social media's effect on patients seeking plastic surgery has been largely unreported. While there are reputable sources on social media, there are also forums, blogs and sites with misinformation that is easily accessible to patients. A study surveying women seeking breast augmentation found that more than half of the patients started their search for information on the internet, while only 11% sought a plastic surgeon's website, and only 10% first went to a plastic surgeon.[2] Thus, when patients first present for a consultation, they may have unrealistic expectations, goals or fears based on misinformation that must be addressed.

In our study, social media did not appear to influence patients' reconstructive decisions. Although our sample encompassed a wide range of ages, and prior studies have demonstrated age discrepancies in utilization of various types of social media,[1] we did not find the utilization of social media to be dependent on age, race or education.

The lack of social media utilization in our study may be due to the vast number of resources that are available online for breast cancer patients, as well as the fact that in general, breast cancer patients are older than aesthetic surgery patients. As opposed to aesthetic breast patients, reconstructive patients are typically treated in the context of a cancer diagnosis with the focus on care in a timely fashion, and thus, this patient population may be less likely to spend time seeking outside information.

Importantly, the majority of patients we surveyed indicated that their physician was the primary influence on their reconstructive decision. This in of itself may indicate a selection bias, indicating that physicians who are well prepared for consultation regarding breast reconstruction obviate the need for outside information. Thus, the surgeon's ability to convey the necessary information and reassurance seems to supersede external influences.

The limitations of this study include its small sample size and the restriction to a single-center. Although the study results were blinded, patients may have been hesitant to answer questions honestly. As surveys were delivered the morning of surgery, there may have been a degree of recall bias. Also, we did not capture patients who opted for no reconstruction.

This is the first survey to assess how women who are undergoing breast reconstruction receive information and make their reconstructive decision. Although final reconstructive choice is likely a cumulative effect of physician, personal, and extraneous influences, this study emphasizes the influence that physicians have in helping patients understand their options and determine the most appropriate reconstructive decision.

Conflict of interest

None.

Funding

None.

References

1. Sorice SC, Li AY, Gilstrap J, et al. Social Media and the Plastic Surgery Patient. *Plast Reconstr Surg* 2017;**140**:1047–56.
2. Walden JL, Panagopoulous G, Shrader SW. Contemporary decision making and perception in patients undergoing cosmetic breast augmentation. *Aesthet Surg J* 2010;**30**:395–403.

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Bio-Alcamid complications: A 10 year review

Dear Sir,

HIV related lipoatrophy is an adverse effect of the use of antiretroviral therapy. Doctors sought to improve the cosmetic appearance of these patients with the use of synthetic fillers. Bio-Alcamid is a non-biodegradable hydrogel polymer that was initially popular due to its longevity and resistance to hydrolysis. In 2010 the Edinburgh unit published their experience with eighteen patients with HIV-associated lipoatrophy who were treated with Bio-Alcamid between September 2005 and September 2007. It was found that of the eighteen patients, seven experienced complications. A ten year review has shown that two patients were lost to follow up, one patient was deceased and twelve had experienced complications; only three patients were found to have no complications. Below is a summary of complications and recommendations for management.

Complications

Of the original seven patients, four experienced further late complications with an average onset of nine years. The complications included migration, capsule formation and recurrent abscesses. Of the nine patients who had late removal of Bio-Alcamid, five developed at least one episode of post-operative infection requiring further washout. All patients had satisfactory HIV haematological parameters throughout their treatment (Table 1).

Discussion

Since Bio-Alcamid came onto the market in 2001, early results were promising, however long-term follow up highlighted much higher complication rates.[2,3] Nadarajah et al showed that of 267 patients treated with Bio-Alcamid, 19% developed infections associated with the implant.[4] This was in spite of antibiotic prophylaxis and strict adherence to manufacturer recommendations. At the 12th International Workshop on Adverse Drug Reactions and Co-morbidities in HIV, 6 November 2010, it was recommended that Bio-Alcamid no longer be offered as a treatment for facial lipoatrophy. In March 2012 NICE prepared an overview based on rapid review of the medical literature and specialist opinions, although the Interventional Procedures Advisory Committee has not made any formal recommendations.

Management recommendations

Once the decision to remove the product has been made, there is a significant risk to the patient of postoperative infection. In our review of late complications, five out of nine patients developed a post-operative infection, in the form of an abscess, requiring at least one further washout. The difficulty with removal of the filler is that complete clearance cannot be guaranteed and any filler left behind tends to become infected following a removal procedure. The other issue is that following removal the encapsulated pocket fills with exudate, which also has a tendency to become infected. These infections are difficult to eradicate

Table 1 Summary of patients treated with Bio-Alcamid in the Edinburgh Unit.

Summary of patients (Total 15)						
Onset	Early complications Within 6 months		Intermediate complications 6 months to 5 years		Late complications 5–10 years	
Complication						
	Infection	3/15	Capsule formation	1/15	Capsule formation	2/15
	Asymmetry	4/15	Inferior migration	2/15	Inferior migration	4/15
	Capsule formation	1/15	Extrusion	1/15	Recurrent abscesses	3/15
			Chronic inflammation	1/15		
Total		8/15		5/15		9/15
Incidence		53.3%		33.3%		60%

10 year overall complication rate: 12/15 (80%).

and often require a period of inpatient stay, intravenous antibiotics and either aspiration or formal wash out in theatre. Due to the high risk of post-operative infection noted following removal, it has been the senior author's practice to use prophylactic antibiotics peri and post operatively, as well as a drain for 24 h. Various methods to attempt complete removal of the filler have been described. Kirkpatrick and Foroglou[5] advocate the use of pre-operative MRI scans with contrast to delineate the plane of the filler, as well as the degree of encapsulation. Options for removal include stab incisions and expression as well as an open approach; the two may be combined as required. If an open approach is to be used, the upper face may be accessed via biocoronal incisions, mid face via a lower lid transconjunctival incision and the lateral cheek via a facelift incision. Kirkpatrick also employs the use of intraoperative ultrasound to help guide the placement of stab incisions and also to demonstrate the degree of filler removal. There is also some debate as to whether the product should be removed electively in asymptomatic patients. The reasoning behind this is to avoid the significant scarring and aesthetic deformity that ensue once an infection has developed. The argument against doing so is the high risk of postoperative infection once an attempt at filler removal has been made.

Conclusion

Despite early promising results with the use of Bio-Alcamid in our unit, extended follow up has led us to discontinue it's use for HIV associated lipoatrophy. We also strongly caution against its use in this group of patients who are potentially immunocompromised and are thus more susceptible to infections, especially following any intervention required to remove the Bio-Alcamid. Bitter experience has dissuaded us from the use of permanent synthetic injectable fillers in any part of the body. Unacceptably high complication rates as well as difficulties associated with insuring complete extraction make these products unsafe, this is in contrast to solid implants, which can be fully removed with confidence.

Conflict of interest

None declared.

Funding

None.

References

1. Nelson L, Stewart KJ. Early and late complications of polyalkylimide gel (Bio-Alcamid) ®. *JPRAS* 2011;**64**:401–4.
2. Karim RB, Hage JJ, van Rozelaar L, et al. Complications of polyalkylimide 4% injections (Bio-Alcamid): a report of 18 cases. *JPRAS* 2006;**59**:1409–14.
3. Goldan O, Georgiou I, Grabov-Nardini G, et al. Early and late complications after a nonabsorbable hydrogel polymer injection: a series of 14 patients and novel management. *Dermatol Surg* 2007;**33**:199–206.
4. Nadarajah JT, Collins M, Raboud J, Su D, Rao K, Loutfy MR, Walmsley S. Infectious complications of Bio-Alcamid filled used for HIV- related facial lipoatrophy. *Clin Infectious Dis* 2012;**55**(11):1568–74.
5. Kirkpatrick, N, Foroglou, P. Treating permanent dermal filler complications. https://aestheticsjournal.com/feature/treating-permanent-dermal-filler-complications

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Patient satisfaction after levator aponeurosis surgery for the treatment of involutional blepharoptosis

Dear Sir,

Levator aponeurosis surgery, in which the levator is reattached or advanced to the tarsus, is a widely used technique for the treatment of involutional blepharoptosis. Although this surgical treatment can achieve good results both functionally and aesthetically, few studies have analyzed patient satisfaction after this surgical treatment. In the present study, we investigated the patient satisfaction after levator aponeurosis surgery by asking patients to complete a postal questionnaire, and we analyzed the factors affecting their satisfaction/dissatisfaction.

The study was approved by the Ethics Committee at Kyorin University School of Medicine. We retrospectively reviewed the cases of 448 patients who underwent levator aponeurosis surgery for bilateral involutional blepharoptosis between January 2010 and December 2016. We mailed a questionnaire to the patients, and the patients returned

Table 1 The questionnaire distributed to the patients and the results.

Question 1: Please rate your overall satisfaction with blepharoptosis surgery.	
5: Very satisfied	35.5%
4: Satisfied	39.8%
3: Neutral	3.5%
2: Dissatisfied	17.0%
1: Very dissatisfied	4.2%
Question 2: If you chose 5 (very satisfied) or 4 (satisfied), please choose the reasons for satisfaction (multiple answers allowed).	
1. Aesthetic improvement	61.3%
2. Easiness in eyelid opening	73.7%
3. Enlargement of visual field	59.3%
4. Relief from stiff neck	14.9%
5. Relief from headache	13.4%
6. Decreased forehead wrinkle	18.0%
7. Other	4.6%
Question 3: If you chose 2 (dissatisfied) or 1 (very dissatisfied), please choose the reasons for dissatisfaction (multiple answers allowed).	
1. Aesthetic problem	67.3%
2. Insufficient improvement of ptosis	49.1%
3. Dry eye	21.8%
4. Lacrimation	14.5%
5. Glare	18.2%
6. Pain during operation	18.2%
7. Pain after operation	20.2%
8. Other	36.4%

the questionnaire together with an informed consent for the analysis of their data. The questionnaire asked the patient about his or her satisfaction with a five-point Likert scale, from 1 (very dissatisfied) to 5 (very satisfied). The reasons for the satisfaction or dissatisfaction were also explored with multiple-choice questions. The average duration between the surgery and the survey was 3.3 ± 2.0 years.

The response rate of the questionnaires was 57.8% (259/448 patients). Ninety-two patients (35.5%) scored 5, 103 patients (39.8%) scored 4, nine patients (3.5%) scored 3, 44 patients (17.0%) scored 2, and 11 patients (4.2%) scored 1. Among the reasons for the satisfaction, 'easiness in eyelid opening' was the most common reason (73.7%), followed by 'aesthetic improvement' (61.3%) and 'enlargement of visual field' (59.3%). Among the reasons for the dissatisfaction, 'aesthetic problem' was the most common reason (67.3%), followed by 'insufficient improvement of ptosis' (49.1%) (Table 1). Some dissatisfied patients reported detailed reasons such as 'asymmetry of eyelids' (19 patients), 'unexpected double eyelid' (12 patients), 'unnatural appearance' (eight patients), 'more swelling than expected' (seven patients), 'larger subcutaneous hemorrhage than expected' (three patients), and 'operative scar' (one patient). The age of the patients did not affect the satisfaction score; nor did the patients' sex. Eleven plastic surgeons with various numbers of years of experience were involved in this patient population. All surgeons performed levator aponeurosis surgery by means of a transcutaneous approach, as described previously.[1] There was no significant difference in the satisfaction score among the 11 surgeons. The patients with severe blepharoptosis, defined as a marginal reflex distance <0 mm, showed significantly higher satisfaction scores (4.13 ± 1.08) compared to the patients with non-severe blepharoptosis (3.71 ± 1.22) ($p = 0.017$). Among the 259 patients, 68 patients (26.3%) underwent a reoperation. The patients without reoperation showed significantly higher satisfaction scores (3.97 ± 1.31) than those with reoperation (3.51 ± 1.14) ($p = 0.006$). The reoperation rate in the dissatisfied group (score 1, 2) was significantly higher than that in the satisfied/neutral group (score 3, 4, 5) (38.1% vs 23.0%, $p = 0.024$).

Questionnaires have been used before for the postoperative evaluation of eyelid surgery, but there have been few studies about patient satisfaction after levator aponeurosis surgery.[2,3] No studies have analyzed the factors affecting the patient satisfaction after levator aponeurosis surgery. Since 75.3% of the patients in our present study were satisfied (35.5% very satisfied and 39.8% satisfied), the levator aponeurosis surgery seems to be satisfactory. Taherian et al. reported patient satisfaction with a three-step grading system, and stated that 59.3% of the patients scored the results as good, 8.7% as suboptimal, and 32% as poor.[3] The satisfaction scores are thus similar to those obtained in our present investigation. There were no significant between-group differences in the patient age or sex or the surgeons in our study. Mehta et al. described that there was no significant difference in blepharoptosis repair outcomes between trainees and experienced staff surgeons.[4] Our previous study revealed that there was no significant difference in the rate of reoperation among surgeons.[1] We believe that even experienced surgeons encounter unexpected and unfavorable results in levator aponeurosis surgery. Here, the patients with severe blepharoptosis showed significantly higher satisfaction than those with non-severe blepharoptosis. Among the reasons for the satisfaction of the former group, functional improvements such as 'easiness in eyelid opening' and 'enlargement of visual field' were major reasons. The patients with severe ptosis were more likely to feel the functional improvements postoperatively. The rate of reoperation after levator aponeurosis surgery varied from 8.7% to 32.5% in previous reports,[1] and the corresponding rate was 26.3% in this study. Although reoperation after levator aponeurosis surgery is unavoidable to some extent, we need to realize that the reoperation affects patient satisfaction, as shown by our present findings. We believe that the balance between the right and left sides should be carefully adjusted intraoperatively to decrease the rate of reoperation.

Funding

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Conflict of interest

None.

References

1. Suga H, Ozaki M, Narita K, et al. Preoperative asymmetry is a risk factor for reoperation in involutional blepharoptosis. *J Plast Reconstr Aesthetic Surg* 2017;**70**:686–91.
2. Mahroo OA, Hysi PG, Dey S, et al. Outcomes of ptosis surgery assessed using a patient-reported outcome measure: An exploration of time effects. *Br J Ophthalmol* 2014;**98**:387–90.
3. Taherian K, Atkinson PL, Shekarchian M, Scally AJ. Comparative study of the subjective and objective grading of ptosis surgery outcomes. *Eye* 2007;**21**:639–42.
4. Mehta VJ, Perry JD. Blepharoptosis repair outcomes from trainee versus experienced staff as the primary surgeon. *Am J Opthalmol* 2013;**155**:397–403.

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