Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

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Correspondence and Communications

Major incidents: Are Burns & Plastics Prepared?

Dear Sir,

Major incidents (MIs) can encompass many catastrophic scenarios. Hospitals, departments and healthcare professionals must have a high level of preparedness and readiness. Events in recent years have highlighted this, such as the Manchester Arena Bombing and the Grenfell Tower Fire.

A recent article on the preparedness of on-call registrars in Anaesthetics, Emergency Medicine, General Surgery and Orthopaedic Surgery across the UK demonstrated 64% of registrars were unsure, or did not know, what role they would play in a MI.[1] This analysis did not include Burns and Plastic Surgery.

The Queen Elizabeth Hospital (QEHB) is a Major Trauma Centre and Burns Centre in Birmingham. It has a mature Major Incident Plan (MIP) that includes the provision of Action Cards that articulate individual roles. The plan clearly states that, if upon its activation you have not previously read the plan, it is too late to do so during the event. During the COVID-19 Pandemic, QEHB implemented a surge capacity plan which involved the retraining and redeployment of a large proportion of the Burns and Plastics department.

We aimed to assess the awareness of the Junior doctors within QEHB's Burns and Plastics Department as to their planned role in a MI. An online questionnaire was distributed to registrars in our department. The original survey gained responses from 29th January 2020 to 1st February 2020. The second (Post-COVID) survey received responses from 7th May 2020 to 16th May 2020.

For the original survey, we received 26 responses, including 16 registrars. For the second (Post-COVID) survey we received 22 responses, including 13 registrars. The results can be seen in Tables 1 and 2.

The role of plastic surgeons in the management of open fractures and trauma is now well-established and is recognised by NICE and the British Orthopaedic Association (BOA) as the standard of care. Orthoplastics' surgical role has also been documented in mass casualty events, such as the Manchester Arena bombing.[2,3] The significant role of plastic surgeons in MIs and mass casualty events is briefly discussed in the literature and not appropriately included in training and planning for MI. Given the ongoing threat of MIs, whether this manifests as a mass casualty burn or terrorist event, Burns and Plastic surgeons also need to be prepared.

A review of 30 years of burn disasters in the UK, highlighted 37 mass casualty events that involved cutaneous burns.[4] This article emphasised how a comparatively small number of burns can completely overwhelm regional burn services highlighting the importance of MIPs and early notification of National Burns Bed Bureau.

In our original survey, we found a significant proportion (56.3%) of our registrars had read no part of our hospital MIP. This is in keeping with the national data, which observed 44.9% of the registrars had read no part of their hospital MIPs and when looking specifically at General Surgery and Trauma and Orthopaedics this increased to 63.0% and 59.3%, respectively.[1] Only two (12.5%) of our registrars knew what role they would play if a MI came into effect whilst they were on-call and nine (56.3%) said they did not know. Mawhinney's findings show that registrars had much greater knowledge of each of their roles, 36% answered 'yes', 37% were 'unsure' and 27% answered 'no'.[1] The greatest understanding from an individual speciality was Emergency Medicine with only one registrar (2.7%) stating they did not know what role they would play. This difference could be explained by the undefined role of Burns and Plastics in MI historically, as well as lack of education and training on the topic.

Although not as immediate in its onset as a major fire or terrorist event, the worldwide COVID-19 pandemic is a MI. The role played by the Burns and Plastic department in our Trust's response to COVID-19 has been one of retraining and redeployment as well as covering the typical acute speciality aspects. Taking part in such a significant event on a regional, national and global scale could present an opportunity to re-familiarise oneself with the MI plans produced by the hospital. However, this is not seen in our findings. The uptake of MIPs and the understanding of the roles remain largely unchanged between the original and post-COVID surveys. Our findings reiterate that the distribution of MIPs alone is not enough to significantly increase understanding and confidence when dealing with MIs, but highlights the importance of teaching, simulation and 'disaster drills' to increase readiness.

The current MI structures and systems may not leave QEHB vulnerable to a Mass Casualty event, but there is a lack of confidence and preparedness within the Burns and Plastics Junior Doctors at QEHB. If Burns and Plastics are expected to take on increasing roles in MI, there should be additional education to increase the preparedness and readiness of the speciality.

Table 1 Registrar understanding of Major Incident Plans.

	Have you read the QE's Major Incident Plans?			Do you know where you can access the QE's Major Incident Plan?			Do you know what role you would play if a major incident plan came into effect while you are on call?		
	All	Part	None	Yes	Unsure	No	Yes	Unsure	No
Original	1 (6.3%)	6 (37.5%)	9 (56.3%)	5 (31.3%)	6 (37.5%)	5 (31.3%)	2 (12.5%)	5 (31.3%)	9 (56.3%)
Post-COVID	1 (7.7%)	4 (30.8%)	8 (61.5%)	4 (30.8%)	3 (23.1%)	6 (46.2%)	2 (15.4%)	3 (23.1%)	8 (61.5%)

Table 2 Registrar preparedness for Major Incidents.

		How prepared do you feel for a potential Major Incident?				
	Total numbers	Not at all prepared	Not so prepared	Somewhat prepared	Very prepared	Extremely prepared
Original	16	7 (43.8%)	4 (25%)	5 (31.3%)	0	0
Post-COVID	13	2 (15.4%)	3 (23.1%)	7 (53.8%)	1 (7.7%)	0

Ethical approval

Approval was given by the QEHB's Clinical Audit Department. Reference number: CARMS-15829

Funding

None.

Declaration of Competing Interest

None.

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Letter to the editor regarding: Posterior auricular artery free flap reconstruction of the retroauricular sulcus in microtia repair

Dear Sir,

We read the article "Posterior Auricular Artery Free Flap Reconstruction of The Retroauricular Sulcus in Microtia Repair" by Chihena H. Banda et al. published on December 27,2020 with interest.[1]

The application of local postauricular fascia (PAF) flap with free skin graft for ear elevation had been described in many studies previously.[2-5] Many ear reconstruction surgeons consider ipsilateral postauricular fascia flap a routine coverage for the posterior surface of the reconstructed ear[6] because of its convenience to harvest and invert for coverage and its high vascularization from postauricular artery.[7] As discussed in this study, Posterior auricular artery perforator (PAAP) free flap technique provides thinner, more matching and stable soft tissue coverage than PAF. PAAP free flap certainly also has shortcomings, such as prolonged operational time which increased surgical risks and rising costs of examinations of PAAP which burdened patients. We think that a prudent criterion should be put forward for patient selection as every surgical technique has its suitable conditions. Elasticity, mobility, thickness, scarring of postauric-

ular skin and hairline are factors that affect the choice of technique. Detailed conditions of these 3 patients weren't elaborated. In our clinical practice, we would perform this technique only under severe conditions; for example, the ipsilateral fascia flap is damaged or postoperative complications require free flap to repair.

Operation on bilateral ear resulted in the elevation of the affected ear, yet the possible projection reduction of the contralateral ear is a consequence of flap harvest. The defect of flap donor site was closed by primary closure. Symmetry is difficult to achieve in cases of bilateral ears. We think pre- and post-operative data on projection of bilateral ears should be compared and consideration regarding the effect on contralateral ear should be provided.

Henceforth, we believe that the innovative use of contralateral PAAP free flap without skin grafting would provide surgeons a new approach for the formation of retroauricular sulcus.

Ethical approval

Not required.

Declaration of Competing Interest

None declared.

Funding information

None.

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Donor site morbidity of postauricular free flaps and full thickness skin grafts

Dear Sir,

We would like to sincerely thank Tongyu Cao et al. for their insightful comments and observations regarding our article "Posterior Auricular Artery Free Flap Reconstruction of The Retroauricular Sulcus in Microtia Repair".[1,2] As precisely highlighted by Cao et al., achieving ear symmetry is an important yet challenging component of bilateral ear surgery and should be considered when applying the posterior auricular artery perforator (PAAP) free flap in microtia repair.[1] The need for symmetrical ears with well sculpted retroauricular sulci is perhaps more important now than ever before due to the advent of the Covid-19 global pandemic and the subsequent wide-spread use of facemasks.

While the posterior auricular artery territory and potential PAAP flap size is quite large,[3] as with all microsurgical free transfers, the size of the free flap harvested needs to be balanced with donor site morbidity. In order to determine the flap size for PAAP flap harvest for microtia repair we consider the following two factors; First, the flaps size must allow for donor site direct primary closure, and second, it must result in minimal loss of projection and retrouricular sulcus depth of the normal ear. Both these factors are easily assessed preoperatively by skin pinch test and by approximating the planned edges of the flap to observe the anticipated change in ear projection after flap harvest. Inclusion of hair-bearing skin is discouraged only to avoid the need for future hair removal procedures.

The limitation on flap size also governs our patient selection criteria for choice of pure skin perforator (PSP) flap use in microtia reconstruction. The PAAP flap is best suited for most common moderately sized skin defects seen in microtia retroauricular sulcus repair, while in patients with inadequate contralateral postauricular skin, unusually large defects or defects requiring additional external auditory canal reconstruction, superficial circumflex iliac artery perforator (SCIP) PSP or traditional temporoparietal flaps with skin grafts or tissue expanders may be more appropriate.[2,4] Furthermore, it is not uncommon for many surgeons to deliberately overexaggerate and widen the retroauricular sulcus and projection of the reconstructed ear in anticipation of narrowing with time due to cartilage absorption and contracture. However, based on our experience with PAAP and SCIP PSP free flaps, we believe this exaggeration (and the

subsequent need for larger skin cover) is not necessary as the enhanced vascularity provided by the flaps adequately supports the cartilage framework.

Because the skin flap is harvested in the subcutaneous plane, the donor site morbidity is identical to that following full thickness postauricular skin graft harvests that are already a popular workhorse in reconstructive surgery. The use of contralateral ear postauricular skin grafts for microtia have also been widely reported.[5] The resulting minimal decrease in projection of the normal ear is not considered significant and according to Zhang et al., based on a review of their 350 cases, it positively contributes to attainment of frontal ear symmetry in microtia repair.[6] Correspondingly, our experience using PAAP free flaps for reconstruction of various other defects asides microtia shows minimal changes in donor ear projection. As with the harvest of postauricular skin grafts, the remaining scalp skin edges may also be undermined to facilitate tension free donor site closure. Thus, we believe the postauricular skin is a good donor area for flaps and grafts in head and neck reconstruction, and skin harvest does not significantly affect ear projection. However, we do concur that larger detailed studies on donor site morbidity and clinical benefits of the PAAP flap technique in microtia, as suggested by Cao et al., are required.

Funding

None

Ethical approval

Not required

Declaration of Competing Interest

No conflict of interest.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.bjps.2021.03.004.

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Letter comments on: "A comparison of the efficacy of autologous fibrin glue/platelet-poor plasma versus suction drainage in preventing hematoma and seroma in rhytidectomy: A randomized, double-blind, controlled study"

Dear Sir,

We have read with great interest the article entitled "A comparison of the efficacy of autologous fibrin glue/platelet-poor plasma versus suction drainage in preventing hematoma and seroma in rhytidectomy: a randomized, double-blind, controlled study " by Rezende ARDR

et al.[1] in a recent issue of the journal. We are appreciated that the authors provide us the worthy clinical results, especially the effective techniques to prevent hematoma or seroma following rhytidectomy procedures. In this communication, we would like to make several suggestions and amendments.

First, all patients enrolled in the study underwent anthropometric assessment (weight, height, and body mass index (BMI)) and had data collected on smoking, diabetes mellitus (DM), and systemic hypertension (SHT). We noticed patients in the suction drainage group were older and had a higher BMI than those in the autologous fibrin glue group. Additionally, there were two patients with DM and three with SHT in the suction drainage group, compared with no patients with DM or SHT in the autologous fibrin glue group. As previous studies have reported that the history of SHT and high BMI were associated with an increased rate of hematomas[2]. Therefore, we suggest that the baseline data of the two groups should be statistically analyzed. The conclusions would be more convincing only if there were no significant differences in baseline data between the two groups.

In addition, the authors stated in the methods "*Male patients, patients with comorbidities other than DM, SHT, and tobacco use*." This statement seems to be incomplete and confusing. According to the context, we wish to amend the statement as "*Male patients, patients with comorbidities other than DM, SHT, and tobacco use were excluded*". Despite their minority status in facelifting surgery, male patients were more commonly associated with hematomas compared to female counterparts[3]. Numerous publications have documented the male gender was an independent risk factor of hematoma due to hormonal factors, prominent facial follicle differences, and the thicker, more vascular facial flaps[4]. Moreover, there is a lack of information on aspirin or nonsteroidal anti-inflammatory drug intake related to hematomas. Herein, we recommend the male gender and data collected on medication should be included and recorded, thus making the trial more complete.

Of the 72 participants of this study, two patients were diagnosed with acute hematoma in the suction drainage group. Thus, the rate of clinically significant hematomas was 5.56% (2/36) in the suction drainage group. However, the authors in the discussion stated that "*Consistent with these findings, our study showed a hematoma rate of 9% in the suction drainage group* versus *0% in the fibrin glue group*." The results may need to be corrected.

In conclusion, we commend the authors on a well-written article on a novel technique to prevent hematoma or seroma following rhytidectomy procedures. Although leaving us some questions to explore, they provided us with valuable guidance for carrying out clinical work. We look forward to more discussion in the future.

Declaration of Competing Interest

None.

Ethical Approval

No human or animal subjects were involved in my study.

Funding

None.

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Letter comments on: "A comparison of the efficacy of autologous fibrin glue/platelet-poor plasma versus suction drainage in preventing hematoma and seroma in rhytidectomy: A randomized, double-blind, controlled study"

Dear Sir,

We would like to thank doctors Du H. et al. comments.

Regarding the baseline differences found, we considered them to be of no clinical importance. Although there was statistical significance among BMIs, we do not forsee that the difference of 1.92 kg/m^2 will influence the outcomes under study. The p-values found for age, BMI, DM, and SHT were 0.351, 0.012, 0.493, and 0.239.

Regarding the exclusion criteria the sentence starting with "*Male patients, patients with comorbidities other*

than DM, SHT, and tobacco use." should read "Male patients, patients with comorbidities other than DM, SHT, and tobacco use were excluded from the study" The exclusion of male patients was undertaken because men tend to have a higher risk of developing acute hematoma and the demand for surgery in men is lower than in women, so we would not be able to achieve an expressive number of patients to create another group with the same impact. We understand the importance of having data on male subjects, however this enterprise requires the conduct of another trial.

Considering acute hematomas, only two cases presented this condition in the drainage group, so the actual should be 5.56%, instead of 9%. The fact hematomas only occurred on the drainage group, although excluded from the main analysis, only reinforces the overall results obtained.

Finally, we would like to thank Dr. Du H. et al. for their wit observations about our study.

Thank you for the opportunity of discussing the article.

Declaration of Competing Interest

None.

Financial disclosure

The authors have no financial relationships relevant to this article to disclose.

Ethical approval

All procedures were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This study was approved by the Research Ethics Committee of Hospital de Clínicas de Porto Alegre (reference number: 2018-0077), and written informed consent was obtained from all patients included in the study.

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Re: "Hyperbaric Oxygen therapy for large composite grafts: An alternative in pediatric facial reconstruction"☆

Dear Sir,

We read with great interest a case series by Camison at al,[1] and would like to congratulate them on their results. Large composite grafting represents a significant challenge, and results can be suboptimal. However, we would like to remind readers about an oft overlooked technique that reports similarly good outcomes, with less resource usage: Cooling technique for composite grafting.

Firstly, we would like to discuss the availability and cost associated with its use. We appreciate that in some areas the necessary facilities are easily accessible, allowing for such treatment to be initiated in a timely fashion. Currently, NHS England commissions hyperbaric facilities for limited conditions, including failing flaps and grafts.[2] This treatment is available only at certain centres fulfilling NHS criteria. Access to hyperbaric chambers is variable, with many being privately owned, or run in association with diving centres, meaning that only a few would be accessible for trauma paediatric patients, a number which is reduced further by the need for a higher capacity chamber to allow a parent to accompany their child. Camison at al series used 14-20 BD sessions in hyperbaric chamber; this is a significant amount of time and resources to take into consideration. Additionally, looking outside the U.K., on an international level, not all healthcare systems or insurers may cover this costly and not readily available therapy.

The cooling technique for composite grafting has been proposed as early as 1956 by Conley and von Fraenkel.[3] The authors used it not only for larger grafts, but also in more challenging recipient sites, such as irradiated fields, with good results. This effective technique appears to have been forgotten for many decades until Hirase published his series in 1993. Unfortunately, it appears to be sinking into obscurity again.

Initially proposed by Conley et al, cooling has been suggested as being beneficial to graft take by lowering the metabolic demand of a graft, by slowing it down. Lower temperatures slow down the velocity of many biological processes, thereby retarding the division of cells, and reducing their biological requirements.[3] Hirase demonstrated in his case series that the by covering the composite graft

☆ Content or abstract has not been presented at any meetings.

with aluminium foil, and this applying a vinyl bag containing crushed ice and water for 72 h post-operatively.[4] This case series showed a significant improvement in survival in composite grafts for both fingertip reattachments and composite cartilaginous grafts in the face and ear. Composite grafts fail due to irreversible damage in the graft before any neo-vascularisation can occur; neovascularisation takes roughly 72 h to occur, explaining the reasoning behind the 72 h cooling time period. By reducing the metabolic requirements of the graft, which relies on diffusion prior to any neo-vascularisation, there is slower cell turnover, leading to lower levels of tissue necrosis. This increases overall survival of composite grafts, and reduces the amount of necrosis, if there is any.

We are fully aware that the cooling of a composite graft is not a straight forward procedure, especially in already traumatised paediatric patients. This would seem to be a significant benefit of the treatment demonstrated in Camison's paper. Yet, in slightly older patients, or where the location of a composite graft allows for the aforementioned cooling technique, it could be considered to improve outcomes, especially in countries without an abundance of hyperbaric chambers or where the cost presents a significant hurdle. In light of this, we would advocate to consider this often overlooked technique involving cooling of composite grafts.

Funding

None.

Ethical approval

N/A

Declaration of Competing Interest

None.

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Correspondence to the article: "Hyperbaric oxygen therapy for large composite grafts: An alternative in Pediatric Facial Reconstruction" by Camison et al., Published in JPRAS (J Plast Reconstr Aesthet Surg. 2020 Dec;73(12):2178-2184)

Dear Sir,

We have read the article entitled "Hyperbaric oxygen therapy for large composite grafts: An alternative in Pediatric Facial Reconstruction" by Camison et al.[1] published in the Journal of Plastic, Reconstructive & Aesthetic Surgery in December 2020 with great interest and want to congratulate to the successful reconstructions using adjunctive hyperbaric oxygen therapy which ensures proper oxygenation to the distal parts of the transplant and thus raises its viability.

Nonetheless exists an almost forgotten surgical method which has been described by Mladick et al.[2] dating back to 1971. We successfully used this technique in a 25 year old male, who suffered from a total amputation of a concha part of the ear due to trauma (Figure 1). The amputate was sutured exactly and a postauricular pocket was formed, where the amputate was transposed temporarily (Figures 2 and 3). The key principle consists of interim nutrition of the composite graft via diffusion by creating a postauricular pocket under which the reattached transplant is buried after it has been deepithealized using dermabrasion.[1]

15 days after pocket creation and transplantation of the graft the revascularization at the suture site regained properly, so that the ear could be removed from the pocket (Figure 4). Over the next 3-4 weeks secondary reepithelialization took place without further treatment (Figure 5).

This method has also granted successful outcomes in five of six patients of the Division of Plastic Surgery in the

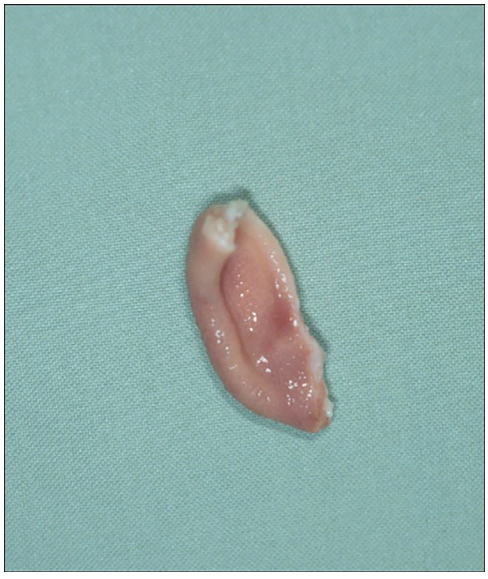

Figure 1 Totally amputated part of the right concha in a 25 year old male due to trauma.

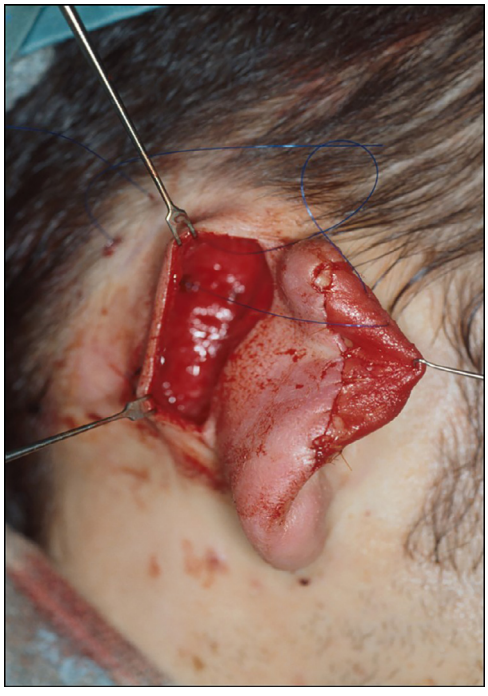

Figure 2 Sutured and dermabraised amputate and postauricular subcutaneous pocket formation.

Brigham and Children's Hospital in Boston, Mass, USA as stated by Pribaz et al. in 1997.[3]

For sure this is only a technique, which can be used for ear replantations and logically has no value for injuries of the nose.

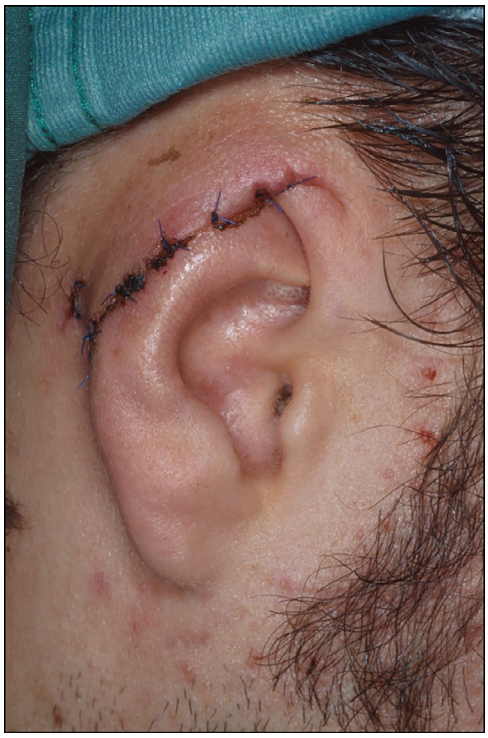

Figure 3 Closed postauricular subcutaneous pocket with the transposed replanted part of the ear.

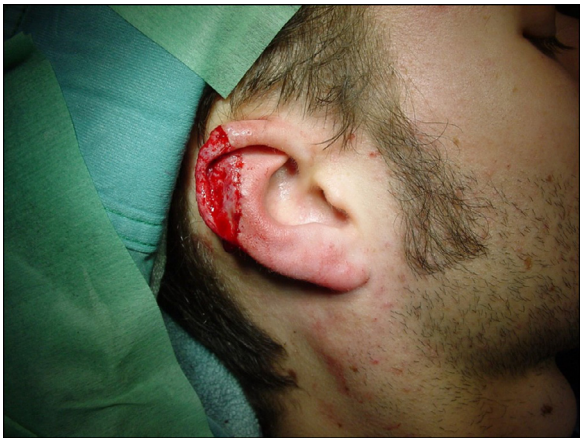

Figure 4 Removal of the replanted part of the ear from the subcutaneous pocket 15 days later.

Ethical approval

N/A.

Declaration of Competing Interest

The authors have no financial or personal relationships with other people or organizations that could inappropriately in-

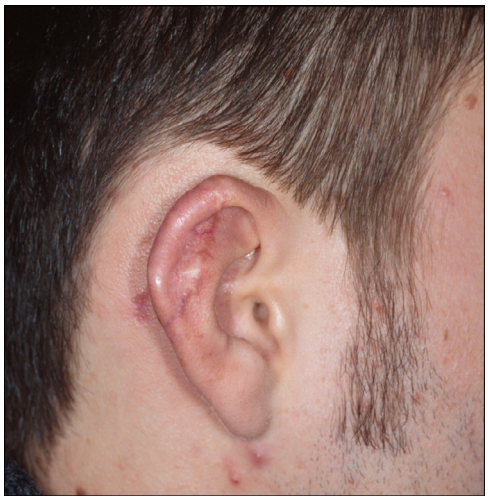

Figure 5 Final result 3 months postoperatively.

fluence this work. The authors declare that they have no conflict of interest.

Funding

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Reducing postoperative venous thromboembolism in DIEP free flap breast reconstruction: Extended pharmacological thromboprophylaxis within an enhanced recovery programme

Dear Sir,

We have previously published our venous thromboembolism (VTE) rates in patients undergoing breast reconstruction with the deep inferior epigastric artery perforator (DIEP) flap.[1] This 5-year retrospective review (January 2010 - December 2014) highlighted 5 cases of postoperative VTE (all symptomatic pulmonary embolism (PE)) in 667 patients providing an overall VTE rate of 0.75%.[1] Although this rate was low in our series and comparable with other published literature, VTE is a recognised complication that, although life-threatening, is potentially preventable.[2]

This initial audit led to the implementation of new, extended pharmacological thromboprophylaxis guidance and modifications in our DIEP enhanced recovery programme (ERP). We increased the duration of low molecular weight heparin (LMWH) from 5 to 7 days for all unilateral standard cases. All bilateral cases and unilateral patients with a high BMI (>30) or other additional risk factors (such as family history of VTE or concurrent Tamoxifen therapy) completed a total of 14 days of therapy (Figure 1). We also modified our ERP to ensure earlier mobilisation of patients achieved through physiotherapy and earlier removal of drains, intravenous lines and urinary catheters. Other VTE prevention strategies included: utilisation of mechanical VTE prophylaxis (anti-embolic stockings and intermittent pneumatic compression); appropriate postoperative analgesia (rectus sheath block and early wean of patient controlled analgesia (PCA)). These measures are summarised in our previous work.[1] We aimed to prospectively review the impact of extended pharmacological thromboprophylaxis on the rates of VTE.

The re-audit following the introduction of the new DIEP ERP was conducted at the same single centre (The Royal Marsden Hospital, London) over a 5-year period from 2015 to 2019 as part of ongoing prospective audit and service evaluation. A total of 1012 patients underwent autologous breast reconstruction with a DIEP flap. There were a total of 1179 DIEP flaps raised (unilateral, $n = 845$; bilateral, $n = 167$). The flap failure rate was 0.3%. The mean length of inpatient stay was 4.8 days. Demographics are summarised in Table 1.

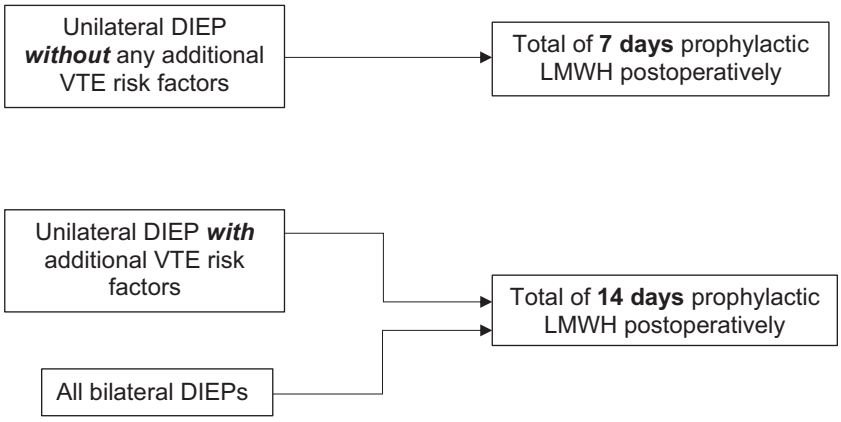

Figure 1 Flowchart illustrating proposed duration of extended pharmacological thromboprophylaxis.

Table 1 Comparison of baseline audit and re-audit demographics and outcomes.

	Baseline Audit 2010-14	*Re*-Audit 2015-19
Demographics		
Patients, n	667	1012
DIEP flaps, n	754	1179
Unilateral, n	580	845
Bilateral, n of pts	87 (174 flaps)	167 (334 flaps)
BMI, mean (range)	Unilateral - 26.4 (18.6 - 46.4). Bilateral - 28.6 (21.0 - 40.5)	Unilateral - 27.05 (18.8-43.2). Bilateral - 29.4 (21.0 - 44.4)
Outcomes		
Flap failure rate,%	0.4	0.3
Length of inpatient stay, mean	5.9 days	4.8 days
VTE events*, n	5	1
VTE rate,%	0.75 (unilateral - 0.6; bilateral - 2.3)	0.1 (unilateral - 0.1; bilateral - 0)
Return to theatre for evacuation of haematoma,%	2.7 ($n=18$)	2.8 ($n=28$)

* All symptomatic PE within 3-months of surgery, no recorded cases of DVT.

There was only 1 reported VTE event (symptomatic PE) over this time, occurring in a delayed, unilateral reconstruction. This isolated case had a significant VTE risk profile (BMI 30; concurrent Tamoxifen; neoadjuvant chemotherapy; family history of VTE; and was sent home with a drain in situ that may have resulted in reduced mobility). The overall VTE rate for the re-audit period was 0.1%. This was a significant improvement from the baseline audit (VTE rate: 0.75%) and the concept of extended pharmacological thromboprophylaxis appears to be effective in reducing the risk of VTE development further when combined with the other VTE prevention strategies. However, patients (in both audit cycles) were not actively screened for subclinical VTE. These lower rates of VTE are in keeping with the use of extended pharmacological thromboprophylaxis in other patient cohorts such as cancer patients undergoing abdominal or pelvic surgery.[3] The mean length of hospital inpatient stay was also reduced from 5.9 days in the baseline audit compared to 4.8 days in the re-audit period. This is in-keeping with previous studies that have shown that ERPs in microvascular breast reconstruction are associated with shorter inpatient stay and reduction in patient care costs without compromising patient safety.[4] We believe that incorporating extended thromboprophylaxis measures within our ERP, contributed to a reduction in postoperative, symptomatic VTE. Of course, it is not possible to conclude this definitively as there are several confounding factors which are not controlled for in the current study. The rates of return to theatre for evacuation of haematoma were similar between the baseline audit and re-audit groups (2.7% versus 2.8%), thereby indicating no significant additional bleeding risk with extended pharmacological thromboprophylaxis.

There is no consensus on the optimal measures to reduce VTE in these patients and there is a lack of data globally.[5] The results of this study provide some evidence for a safe effective regime to reduce VTE rates in this patient population which could be adopted by other units.

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Declaration of Competing Interest

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None.

Ethical approval

Conducted as part of audit and service evaluation.

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Seeing White: Management of TIVA during autologous breast reconstruction

Dear Sir,

We would like to share our experience of two cases where crucial anaesthetic drugs were identified in the cephalic vein of patients undergoing a 'turndown' procedure during bilateral autologous breast reconstruction. This observation is previously unreported and highlights the unanticipated effect this surgical procedure can have on the delivery of general anaesthesia.

Background

Deep Inferior Epigastric artery Perforator (DIEP) free flap breast reconstruction commonly uses an Enhanced Recovery After Surgery pathway (ERAS) and this has been the practice in Bristol since 2014. This includes Total IntraVenous Anaesthesia (TIVA), involving the maintenance of anaesthesia with a continuous propofol infusion.[1] Propofol is a non-water-soluble phenol composed of glycerol, oil, and lecithin. It is a short-acting anaesthetic agent, used for initiating and maintaining a decreased level of consciousness, causing retrograde amnesia. Propofol has been referred to as "milk of amnesia", as the intravenous preparation forms tiny oil droplets that scatter light giving its characteristic opaque white colour.

The free DIEP flap is the gold standard treatment for autologous reconstruction of mastectomy defects due to its durability, the similarity of the reconstruction to breast tissue and overall patient satisfaction.[2] Free flap surgery has inherent risks and the venous drainage of the DIEP flap is particularly vulnerable to congestion. In these cases, an algorithm for flap salvage should be followed and one of the final steps in this process is a cephalic vein transposition.[3]

Our experience

We describe two patients undergoing mastectomy and immediate bilateral DIEP breast reconstruction. Both patients were fit and well prior to diagnosis of breast cancer and were identified as being high risk for developing contralateral cancer. Following multidisciplinary team (MDT) review both patients were advised to proceed with bilateral mastectomy and reconstruction with DIEP flaps.

In the first case, venous congestion was noted after patent anastomosis to the internal mammary vein (IMV), suggesting additional venous drainage was required. In the second case, the IMV was severely fibrotic, a result of mantle radiotherapy for Hodgkin's lymphoma over 20 years previously; attempts to hand sew or use a coupler were unsuccessful and the IMV was considered unusable. Alternative solutions were sought prior to a turndown but were unsatisfactory in managing the venous congestion.

During dissection of the cephalic vein using a standard open approach, white fluid was clearly visible within the vein prior to transection (see Image 1). The anaesthetist was informed, and the cannula resited to allow TIVA to continue uninterrupted. The cephalic vein was anastomosed to the superficial inferior epigastric vein (SIEV) and in both cases resolution of the venous congestion was seen.

Discussion

Venous congestion is seen in 2–6% of DIEP flaps and is more common when a single perforator is used.[4] The causes are multifactorial and the surgeon should work through an algorithm for the management of this situation.[3] A popular first

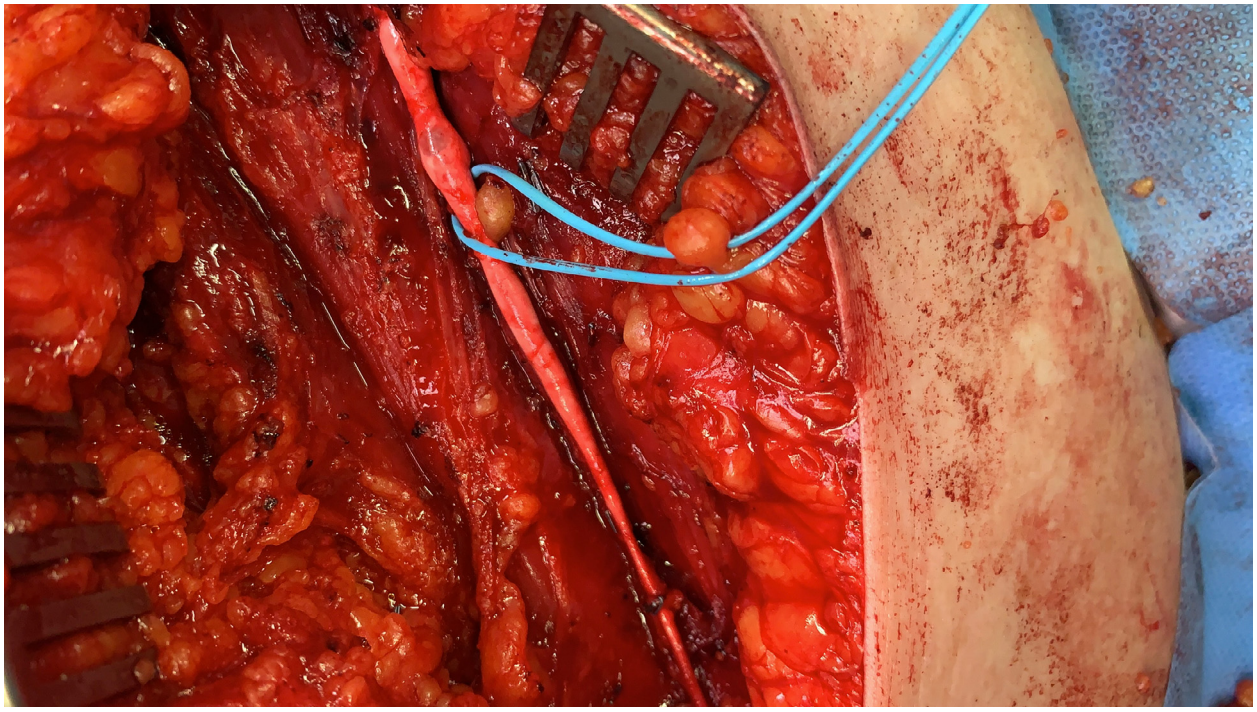

Image 1 Photo showing a vascular sloop around the cephalic vein of the left shoulder. White fluid from the TIVA propofol infusion is visible within the cephalic vein.

step is the 'SOS technique'.[5] However, if venous drainage is required from outside the flap i.e. super-charging/draining, or if the IMV is not suitable, the cephalic vein is an obvious choice. Its' consistent anatomy, and location away from the irradiated chest wall field makes it a reliable vein for additional venous drainage of the DIEP flap.

Propofol has many advantages for the initiation and maintenance of anaesthesia. Patients emerge from anaesthesia quickly and experience significantly reduced rates of post-operative nausea and vomiting (PONV) following propofol TIVA compared to inhalational anaesthetics.[1] However, this method requires a continuous infusion to maintain anaesthesia, which can be interrupted if the cephalic vein requires harvesting.

However, suitable sites for intravenous access can be challenging in these patients. Not infrequently there has been previous axillary surgery, and although evidence suggests no increased risk of lymphoedema, clinicians and patients prefer to avoid prolonged cannulation in this limb. In order to provide continuous infusion, the feet are suboptimal as intermittent pneumatic compression stockings are used routinely to reduce the risk of deep vein thrombosis.

These cases emphasise the importance of timely and open communication between the entire theatre team to avoid significant disruption to the anaesthetic which may compromise the outcome of the procedure.

Conclusion

The scenarios highlighted in these cases are rare. However, good preoperative planning and communication between the theatre team for all eventualities, continuing through the operation, are vital for the success of the procedure.

Whilst our findings are interesting, they also highlight the potential effects vein harvesting or transposition may have on the safe and effective delivery of anaesthetic agents and other medication. We hope these cases prompt a discussion in the preoperative stage for alternate strategies for monitoring and intravenous access in response to diversions from the standard operating procedure.

Declaration of Competing Interest

None.

Funding

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Ethical approval

N/A.

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Letter to the editor regarding 'six-year experience of oncoplastic volume replacement using local perforator flaps' by Quinn et al

Dear Sir,

We read with great interest your recent publication 'Six-year experience of oncoplastic volume replacement using local perforator flaps' by Quinn et al.[1]. The article provided valuable insight into one unit's learning curve and oncological outcomes following breast volume replacement using local perforator flaps.

The authors advocate transitioning from 2 stage to single stage procedures when adopting this procedure. We note the low (15%) re-excision rate, completion mastectomy rate (<3%) and the increased costs associated with 2 admissions and operations (and general anaesthesia) for 85% of the patients. In our experience, with similar re-excision (<10%) and completion mastectomy rates (<3%) we think that units should consider adopting a single stage approach from the time of inception of this procedure. In our experience re-excision after perforator flap reconstruction is procedurally straightforward as the viable flap can be pushed to one side or even removed to allow access to the margin of interest. We have not noticed a dramatic difference in early cosmetic outcome following re-excision of margins in these cases, however long-term outcomes and results following radiotherapy are awaited.

It is stated that 3 patients required completion mastectomy. The management of these patients is of interest. Specifically, the indication for mastectomy and what type of mastectomy and immediate reconstruction (if any) was performed. In our experience, chest wall perforator flaps can be preserved and utilised during conversion to a simple mastectomy to improve overall cosmesis. It is also possible to preserve the flaps during skin (+/- nipple) sparing mastectomy facilitating smaller volume implant or autologous tissue replacement.

The authors state "no drains are used". We note 2 patients had wound complications, including 1 dehiscence of the donor site. In our experience, patients with larger flap volumes (>200cc) may produce clinically significant seromas which led to a change in our practice to use drains. In particular, we have noticed an increased seroma rate, for those in whom synchronous axillary clearance has taken place. It would be interesting to evaluate if there is clinically significant seroma formation between single versus 2 stage immediate reconstruction.

Finally, whilst the use of adjuvant radiotherapy in the BCS cohort was mentioned, there are no details of which patients if any underwent a tumour bed boost and if so, how this was undertaken and whether this had any impact on outcomes. This is a pertinent issue for volume replacement as exemplified by Garreffa et al.[2] and is worthy of further investigation.

Ethical approval

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Declaration of Competing Interest

None.

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Exposing a geographic barrier in rural medicare abdominal free flap breast reconstruction

Dear Sir,

Clear barriers to breast reconstruction have been established including patient age, race, insurance status, household income, education, and geographic location. Rural geographic location of both the treatment institution and patient are independently associated with a reduced odds of reconstruction.[1] Rural patients are also more likely to have federal insurance such as Medicare, which negatively impacts the likelihood of breast reconstruction. Furthermore, Medicare patients are more likely to undergo reconstruction with prostheses than flaps,[2] and are therefore less likely to experience benefits inherent to autologous reconstruction.

No study has evaluated the "rurality" (percentage of rural population) of the institution location where pedicled transverse rectus abdominis muscle flap (pTRAM), free TRAM (fTRAM), and deep inferior epigastric perforator (DIEP) breast reconstruction have taken place in the US Medicare population. We hypothesized that the geographic locations where DIEP flaps have been utilized were significantly less rural than where TRAM flaps were performed. We queried Medicare parts A and B insurance claims from 2008 to 2014 to analyze the US counties where pTRAM, fTRAM, or DIEP breast reconstruction took place.

1707 patients (1678; 98.3% female) underwent pTRAM flaps (Supplemental Table 1). Los Angeles County, California (0.6% rural) had the highest volume of pTRAM claims (47; 2.8%) (Supplemental Table 2). 1549 patients (1516; 97.9% female) underwent fTRAM flaps. Philadelphia County, Pennsylvania (0% rural) had the highest volume of fTRAM claims (108; 7%). 1935 patients (1918; 99.1% female) underwent DIEP flaps. Bexar County, Texas (4.5% rural) had the highest volume of DIEP claims (168, 8.7%).

There were 802 total counties where pTRAM (368; 45.9%), fTRAM (286; 35.7%), or DIEP (148; 18.4%) flaps occurred. The average county ruralities were 17%, 15.7%, and 9.1%, respectively. DIEP counties were significantly less rural than pTRAM ($p < 0.01$) and fTRAM ($p < 0.01$). However, the county ruralities did not differ significantly between pTRAM and fTRAM groups ($p = 0.19$). This suggests that rural Medicare patients face a geographic barrier in receiving muscle-sparing DIEP reconstruction compared to pTRAM or fTRAM.

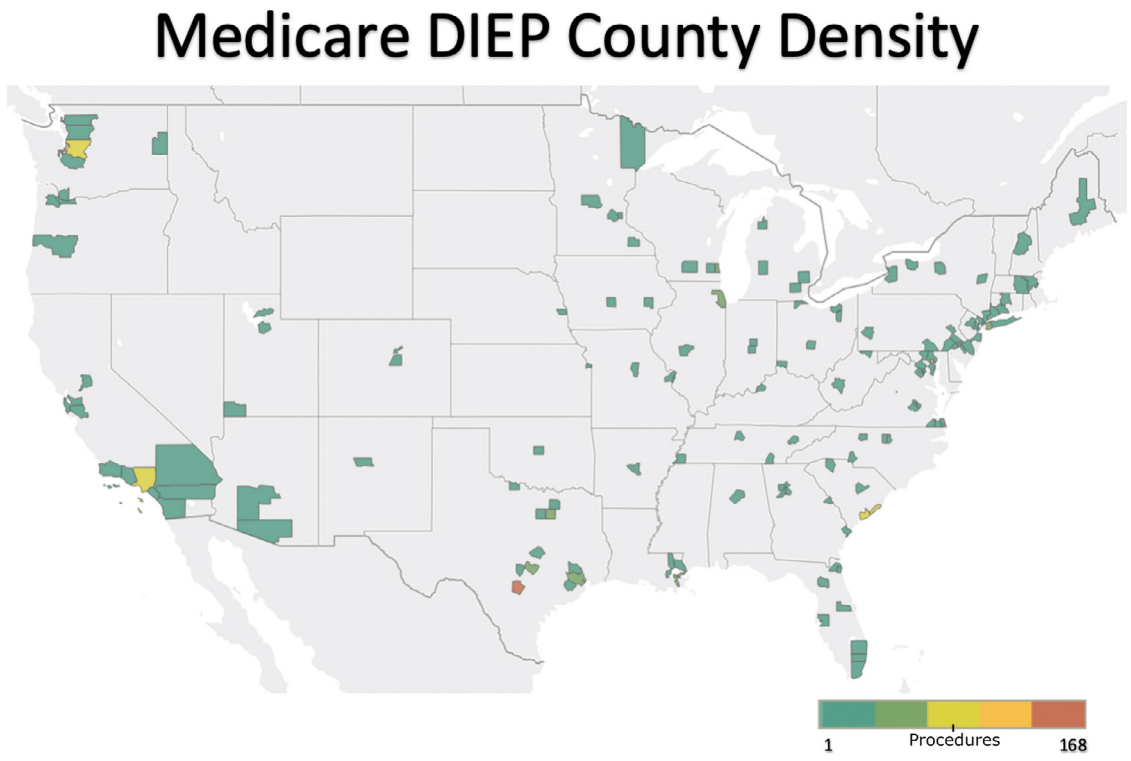
Figure 1 (Tableau®, Seattle, WA, USA) displays the vast geographic distances between counties where DIEP reconstruction occurred in the Medicare population during the study period. DIEP flaps had the highest total claim volume, however, occurred in the lowest number of counties that were the least rural. Furthermore, increasing geographic scarcity is seen in counties where pTRAM, fTRAM, and DIEP flaps occurred, respectively (Figure 1, Supplemental Figure 1). Most counties overall—particularly those with higher claim densities—have disproportionately small rural populations.

The rural Medicare patient's geographic barrier in free flap breast reconstruction largely stems from longer travel distances to tertiary centers—a finding consistently shown in the literature. Patients have to travel farther, generally to an urban academic center, to undergo autologous reconstruction.[3] We found a weak, positive correlation between population-controlled county claim volumes and increased county rurality (pTRAM ($r_s = 0.31$, $p = 0.07$), fTRAM ($r_s = 0.28$, $p = 0.12$), DIEP ($r_s = 0.23$, $p = 0.14$)). These data were heavily influenced by outliers (i.e. rural counties with high claim volumes) (Supplemental Figure 2). For example, Grafton County, New Hampshire (Dartmouth-Hitchcock Medical Center) had a rural population of over 68% and over 10 pTRAM procedures per 100,000 population. Therefore, unless a rural Medicare patient lives near a major center, they face a significant geographic barrier for abdominal free flap breast reconstruction.

US Medicare insurance policy holders are already at an established disadvantage in receiving breast reconstruction;[4,5] and have been shown to be 222% less likely to undergo microvascular autologous breast reconstruction and 423% less likely to receive a perforator flap than commercially insured patients.[2] Our study is the first to highlight the geographic barrier decreasing the access of Medicare patients to abdominal perforator flaps for breast reconstruction—suggesting that rural Medicare patients must overcome the cumulative burden of both factors. Therefore, any legislative steps taken to increase access to autologous breast reconstruction for Medicare patients must also address the geographic disadvantage that tens of thousands of these patients face.

The abdomen has become the preferred donor site for autologous breast reconstruction, and DIEP flaps are increasingly becoming the flap of choice for many post-mastectomy patients treated at resource-rich centers. Unfortunately, despite the temporal growth and large volume of DIEP flaps in the Medicare population seen in this study, they occur in significantly less rural counties compared to pTRAM or fTRAM reconstructions. The vast majority of rural

Elements of this manuscript were presented at the 2020 American Society for Reconstructive Microsurgery (ASRM) Meeting in Fort Lauderdale, FL, January 12, 2020.



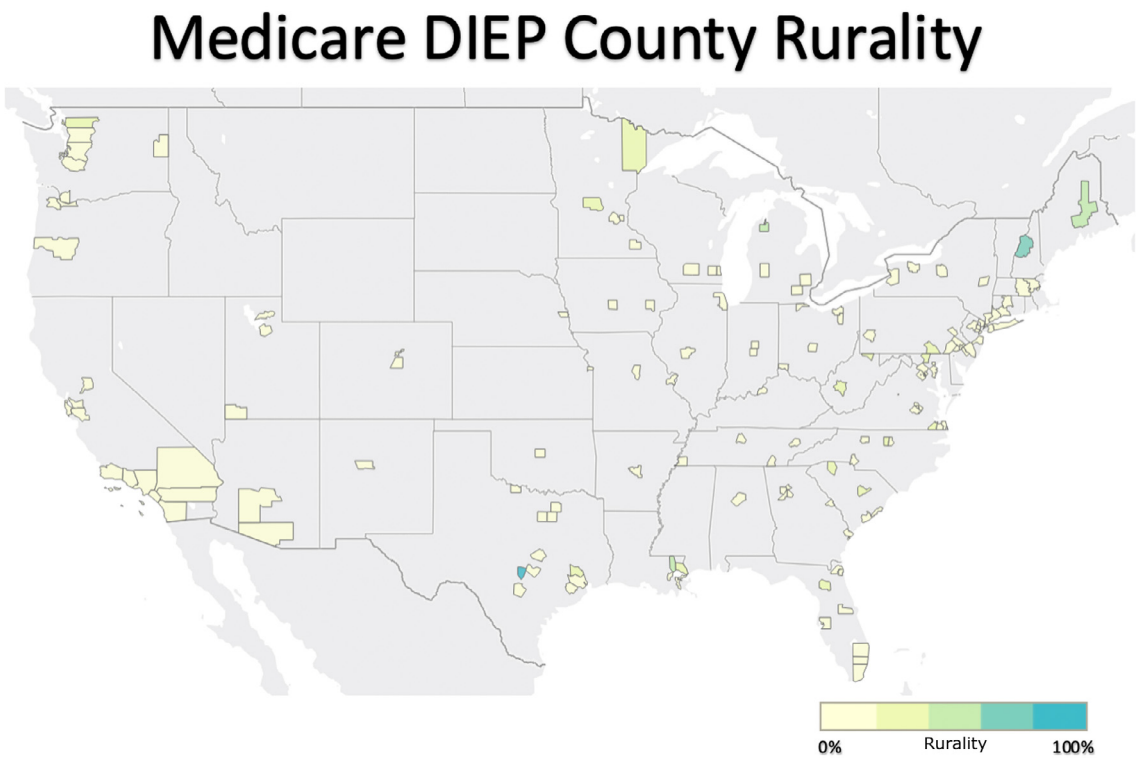


Figure 1 (Top) Insurance claim density map of the contiguous United States displaying the counties where deep inferior epigastric perforator (DIEP) flaps took place from 2008 to 2014. (Bottom) Rurality map showing the percent rural population of each correlating county where DIEP flaps occurred. Of note, areas that are grey in color represent counties that are a "desert" for free flap abdominal autologous breast reconstruction following mastectomy.

Medicare patients that do not live close to a major academic center are not currently able to reap the potential benefits of muscle-sparing DIEP reconstruction that more urban patients are.

Declaration of Competing Interest

None declared.

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Financial disclosure statement

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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.2021.03.043.

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Triple clip anastomosis - A novel microvascular coupling technique

Dear Sir,

There has been a continuous quest for refining existing techniques to reduce operative time and improve outcomes in micro-vascular reconstructive surgeries. In this correspondence we describe a pilot study undertaken to devise a new method for coupling veins using vascular ligation clips. Informed consent was obtained from all patients. The study was carried out in accordance with the principles laid out in the declaration of Helsinki. All cases were operated upon by the senior author (MS).

The veins are placed in double clamps and vessel preparation is done in the usual way. Three stitches are taken at the angles of 120°, joining the vessel walls together. The suture ends are kept long for easy handling. The non-dominant hand of the surgeon holds the suture thread nearest to them (suture 1). The assistant holds the opposite suture (suture 2) and suture on the undersurface of the vessel (suture 3). The sutures are pulled to stretch the vessel gently. An appropriately sized vascular clip is applied between first and second sutures at a level just below that of the suture. The clip should reach just short of the second suture leaving approximately 1 mm vessel circumference for application of the next clip. The vessel is rotated by 120° towards the surgeon and another clip is applied between the second and third suture in a similar fashion, again leaving around 1 mm of vessel circumference for the application of last clip. One final turn is given to the vessel towards the surgeon and

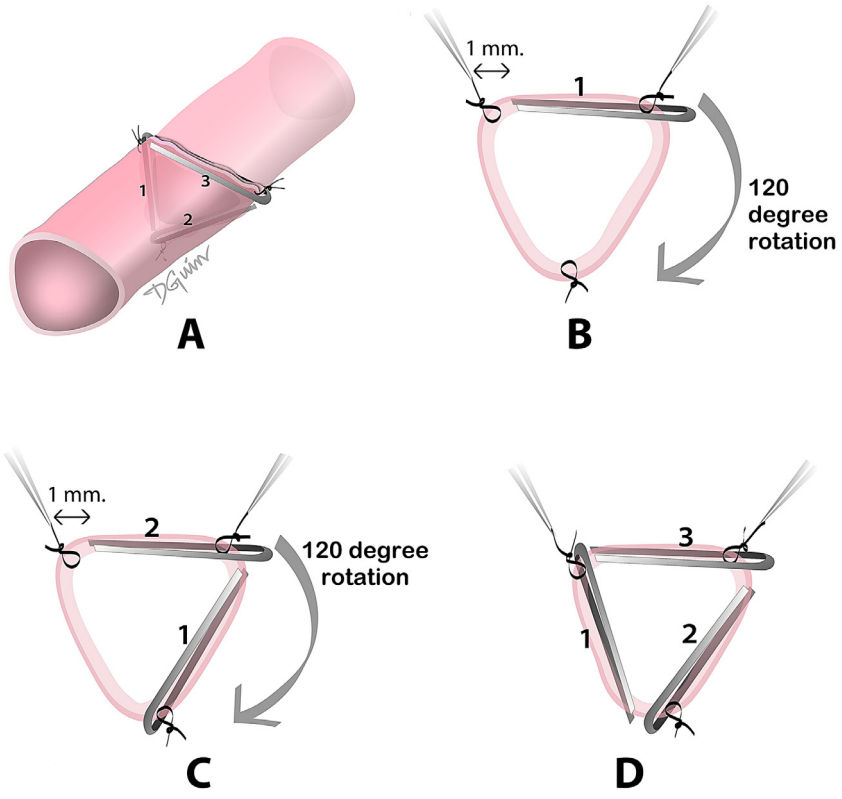

Fig. 1 **A.** Illustration of the completed anastomosis with the 3 clips labelled 1, 2 and 3; **B-D.** Illustration of the steps of application of sutures and vascular clips to perform the "triple clip anastomosis".

the third clip is applied between the third and first suture completing the anastomosis. This clip is applied as close to the second clip as possible so that no gap remains between the clips, completely sealing the vessel circumference (Figures 1, 2 and supplementary videos 1-4). In case of vessel size mismatch, the additional circumference of the bigger vessel everts out during the clip application. In case the size of the clip is bigger than 1/3rd of the vein circumference, the proximal portion of the clip can be left protruding out during clip application. The Weck Horizon Ligation system® was used for all surgeries.

The technique was first tested in a segment of Cephalic vein discarded during Radial forearm flap reconstruction. The anastomosis confirmed no leakage when distended with normal saline. Microscopic examination of the venous lumen at the anastomotic site (done by splitting the vein longitudinally across the anastomosis) showed that no suture material or any other extra-luminal material protruded within the lumen. Subsequently the technique was used in 5 patients for anastomosis of the second vein of the flaps to assess feasibility, refine the technique and ensure safety. First vein was anastomosed using routine microvascular technique (sutured anastomosis).

Between June 2019 and February 2020, 7 consecutive patients underwent 7 free flaps. In these patients all veins were anastomosed using "triple clip anastomosis" technique only. Five flaps had only 1 vein and 2 flaps had 2 veins available for anastomosis. Patient demographics, comorbidities, indication for free flap reconstruction, type of free flap reconstruction, and number of veins anastomosed was recorded. Time taken for each anastomosis, patency of anastomosis using Harvey test, any revisions/ re-explorations and overall flap survival was also recorded.

Immediate patency of the anastomosis was 100 percent as seen by Harvey's test checked in 9 anastomoses. Mean time taken for anastomosis was 7.1 min (range 4 min to 10 min).

One patient required re-exploration of his flap due to hematoma which was unrelated to the anastomosis or the flap. The flap survival rate was 100 percent.

Vascular clips are routinely used to ligate bleeding vessels. They have been used previously in microsurgery to manage small anastomotic leaks, to adjust luminal discrepancy and to prevent kinking of the blood vessels after anastomosis.[1,2] Our "triple clip anastomosis" technique uses these non-penetrating vascular clips at the circumference of the venous wall, approximating and everting the vessel ends while creating a triangular anastomosis. Presence of rigid metallic clips all along the circumference of the anastomotic site prevents collapse of the anastomosis. The clips stay below the three anchoring stitches which excludes the suture material from the lumen of the vessel. This technique permits venous coupling within a timeframe comparable to that of the established coupling devices.[3,4] An added benefit is the cost, which is only a fraction of the cost of traditional devices. The limiting factor in the application of this technique is the size of the presently available vascular

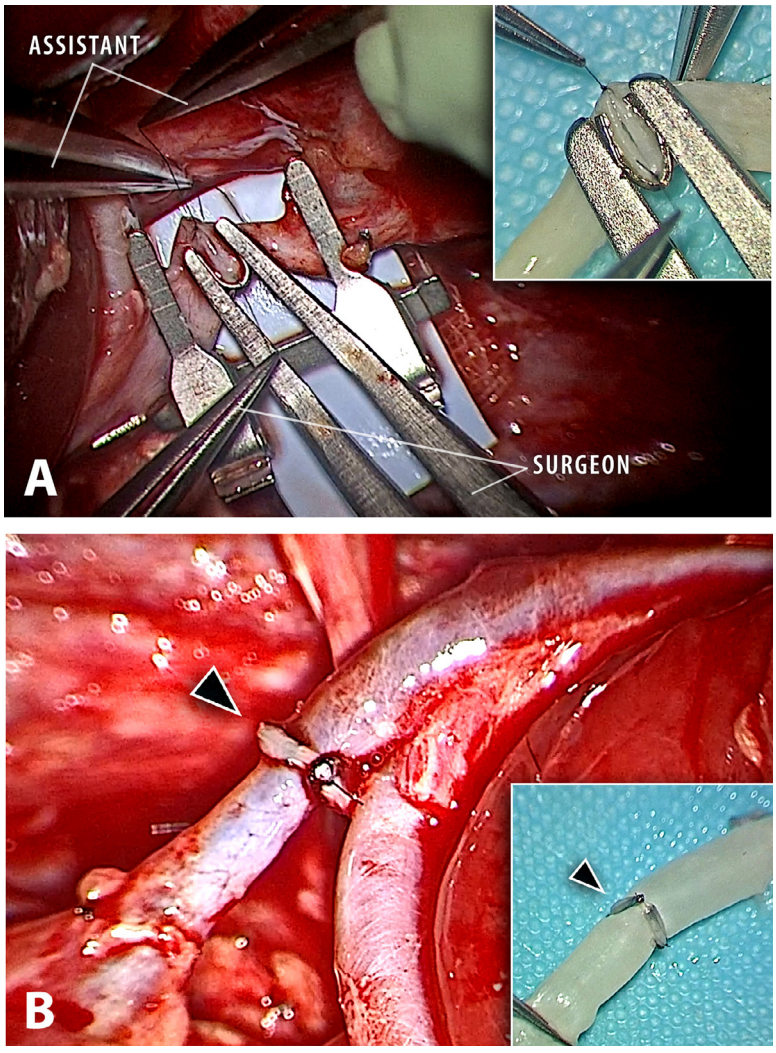

Fig. 2 **A.** Clinical photograph showing application of the first clip; **B.** Clinical photograph showing the completed anastomosis; **Insets.** Corresponding bloodless demonstration on a segment of vein in the laboratory.

ligation clips. It may not be possible to use it for very small sized vessels, like digital vessels and for super-microsurgery. Further larger studies are warranted to look at factors such as long-term anastomotic patency, learning curve, comparison with other existing devices etc.

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Ethical approval

Ethical clearance was obtained from the Institutional Ethics Committee.

Declaration of Competing Interest

The authors have no conflict of interest to disclose.

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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.2021.03.069.

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A simple technique to protect recipient vessels during ortho-plastic surgery

Dear Sir,

Background

Open lower limb fractures frequently require microsurgical free flap reconstruction, and it is therefore imperative during fracture stabilisation that the neurovascular bundles are not damaged. In our large major trauma centre, we perform around 150 free flaps for limb reconstruction per year.

Commonly in our practice, the recipient vessels in the lower leg are assessed and prepared outside the zone of injury prior to our orthopaedic colleagues performing fracture fixation. Once bony stabilisation is achieved, the microvascular anastomosis is performed, and the flap is inset. On occasion vessels have been caught or damaged during the orthopaedic fixation. Additionally, there is an increasing use of antibiotic impregnated bone graft substitutes such as Cerament® (Bonesupport AB, Lund, Sweden), which may migrate following application. This frequently leaves a residue on the previously prepared vessels, requiring further time-consuming "clean-up" and preparation.

The posterior tibial artery, if patent, is commonly used as the recipient vessel. Other vessels used to perform anastomoses include the anterior tibial, peroneal, dorsalis pedis and genicular vessels, depending on the level of injury. The anterior tibial artery is at highest risk of iatrogenic injury due to its anatomical course.[1] High tibial osteotomy, external fixation and pin placement and intermedullary nailing with insertion of locking screws are most likely to result in intraoperative vessel injury.[2] This has been demonstrated in post-operative CT-angiography studies and cadaveric studies.[3]

We have developed a simple technique used to highlight the location of the recipient vessels during open fracture fixation, with the goal of reducing the incidence of iatrogenic vessel injury and protecting them from residue migration resulting from the use of bone graft substitutes. This is even more important in limbs that may be already be reliant on dual or single vessel perfusion at the time of operation.

Technical note

Once the recipient vessels in the lower limb are prepared a coloured elastomeric tube is cut to the required length and incised longitudinally; this is then wrapped around the vascular bundle (Figure 1). The tube is removed once fracture fixation has been completed, prior to free flap anastomosis.

In our practice we use the Rusch® Robertazzi type 32Fr nasopharyngeal airway tube (Teleflex Corporation, Morrisville, NC). This was chosen primarily due to its low cost, ease of availability, high visibility (bright green), and pliability. In addition, this tube is latex free and made of a soft thermoplastic polymer which minimises the potential for vessel trauma. Other thermoplastic polymer or silastic tubes of an appropriate diameter could also be selected depending on departmental availability. Our technique is preferential to vascular sloops as the sloops are often overlooked, dislodged or pulled on too severely, resulting in vessel spasm.

Conclusion

This universally applicable technique highlights the recipient vessel location, reduces the risk of iatrogenic injury and may reduce operative anxiety for both the orthopaedic and plastic surgeons.

Declaration of Competing Interest

None.

Funding

None.

Ethical approval

N/A.

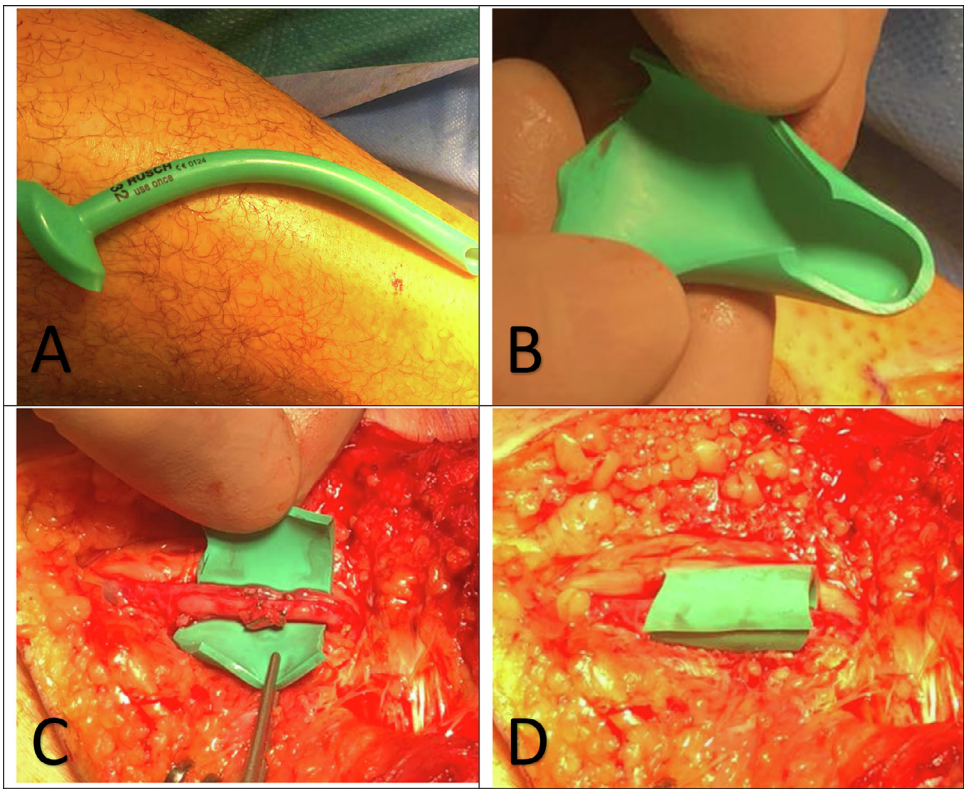

Figure 1 A: Rusch® Robertazzi type 32Fr nasopharyngeal airway tube. B: The tube is incised longitudinally and cut to the required length. C: The tube is carefully placed around the exposed vascular bundle. D: The tube is wrapped around the vascular bundle.

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Communication: Regional anesthesia perioperative analgesia for free flap reconstruction

Dear Sir,

Although current pain management practices utilize a multimodal approach, we still rely heavily on opioids to manage most moderate to severe pain. Strong evidence of the ill effects of opioids exists, as well as their potential for long term abuse.[1] To effectively manage pain, while limiting opioids, current practices in pain management after head and neck reconstruction need to be reconsidered. Regional anesthesia techniques are well established to be superior to intravenous opioid analgesics, as well as effective and safe.[2] Catheter based regional anesthesia can be delivered post-operatively over the course of a few days, resulting in less overall opioid use and less opioid related side effects, while being less invasive and with fewer side effects than epidural anesthesia. This technique is newer to head and neck surgery and reconstruction, but is quite proven in multiple

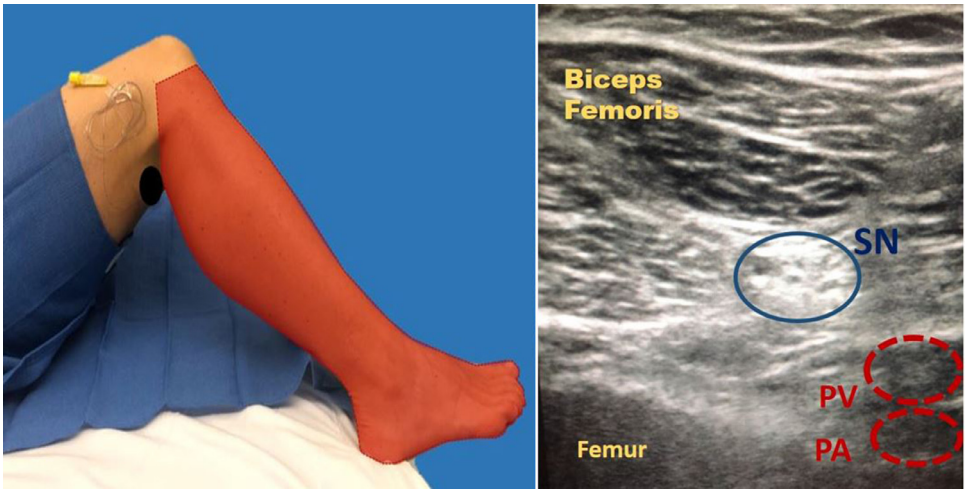

Figure 1 Anatomical Markings and Ultrasound Imaging for Popliteal Block. (Left) The ultrasound transducer is placed transverse in the area of the black circle. Sensory anesthesia is as shown with highlights. Motor blockade includes dorsiflexion/foot eversion via the common peroneal, and plantar flexion/foot inversion via tibial nerve. (Right) Ultrasound anatomy of the popliteal nerve block. The nerve is located between biceps femoris and the semimembranosus muscle. The sciatic nerve (SN) is shown just prior to division, and the anatomical relationship to the popliteal vein (PV) and artery (PA).

other surgical disciplines.[3] Small cohorts have demonstrated the efficacy of this technique for head and neck; however, it is still not in widespread use today.[4] Thus, our goal is to detail our methods of regional anesthesia for free flap donor site perioperative analgesia, while highlighting its ease of use, while still being safe and effective for patients.

In preoperative holding, the patient is connected to standard monitors, and lightly sedated. The patient is positioned supine with leg as shown in Figure 1, and the skin is prepped and draped. Specifically, for fibula free flap (FFF), a catheter based popliteal block is performed using a 3.125-inch 18-gage Contiplex Tuohy needle, guided by anatomical landmarks and ultrasound to insert the needle in the vicinity of the sciatic nerve (Figure 1). Incremental injections of 0.5% ropivacaine without epinephrine are administered, under direct visualization on ultrasound, while monitoring the patient for: heme aspiration, hemodynamic instability, painful injection, resistance to injection, neurological changes, or paresthesia. A closed end 20-gage catheter is then threaded over the needle and placed next to the nerve, allowing for continuous local anesthetic infusion, and secured out of the surgical field for surgery (Figure 1). A bupivacaine 0.125% infusion is connected to the nerve catheter at a fixed rate of 8 mL/hour via On-Q® pump, either during surgery to assist with perioperative analgesia, or when the patient is in recovery. Additional bolus doses of local anesthetic can also be given if needed. Patients are evaluated immediately postoperatively by the Anesthesia team, and then daily for pain level, motor and sensory block, catheter position, dressing integrity, compartment syndrome, and side effects from the nerve block. The catheter is removed on postoperative day three.

A modified technique, utilizing a wound bed catheter, can be used for anterolateral thigh (ALT) or radial forearm free flap (RFFF). When the flap has been separated from the donor site, but prior to closure, a closed end 20-gage anesthetic catheter is placed into the wound bed. It is placed away from the suction drain, with injection end exiting the incision proximal, between closure sutures, and secured (Figure 2). Similar to FFF protocol, bupivacaine is infused via On-Q® pump for three days, with similar monitoring, but only by the head and neck surgery team, as this technique is associated with fewer side effects.

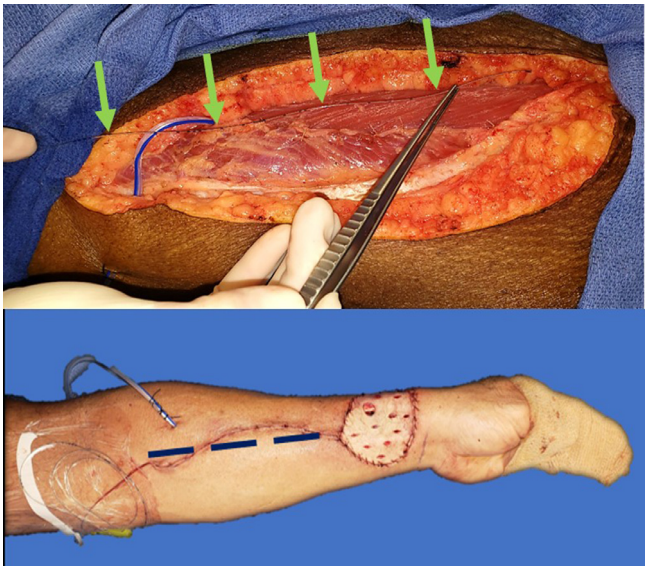

Figure 2 Placement of the catheter into the ALT and RFFF wound beds intraoperatively. Placement of the wound bed catheter, as indicated by arrows for ALT (above) and dotted line for RFFF (below). Note the catheter was not placed under the split thickness skin graft.

There are many additional regional anesthesia blocks that can be performed by a well-trained anesthesia team. Popliteal block was chosen for its superior safety profile to the femoral block, and it can be performed faster. Wound

bed catheter was chosen for RFFF, over a supraclavicular or interscalene block, to avoid the risks for pneumothorax or phrenic nerve block, as many head and neck cancer patients have chronic lung diseases and would not be good candidates.

We completed a small case series, following five patients that underwent these techniques (3 FFF, 1 ALT, 1 RFFF), with no delay to operating room start times and no complications associated with the regional anesthesia. The mean pain score of the donor site was 1/10, compared to 4.5 for the head and neck ablative site. We compared average oral morphine equivalent (OME) consumption[5] of the three FFF patients over 72 h, to that of a historical control group ($n = 30$). The average OME consumption for the control group without regional anesthesia was 221.0 ± 100.5 (range 75.0–457.5), compared to 155.2 ± 73.0 (range 95–258) for the patients receiving regional anesthesia ($p = 0.218$). The additional time to perform the blocks prior to surgery was negligible, as the popliteal catheters were placed by the Anesthesiologist in approximately 15 min, during preoperative preparations.

Our intention of this communication is to detail our technique for regional anesthesia as a pain management adjunct, which can be performed in conjunction with the majority of free flap surgeries. We find this technique could be incorporated into most reconstructive surgery practices, requiring only a good relationship with the anesthesiology department and minimal training for the surgical team to manage these patients postoperatively.

Declaration of competing Interest

NA.

Ethical approval

Ethical approval was given. University of Florida Institutional Review Board. #IRB201902708

Funding

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Financial disclosure statement

Nothing to disclose.

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The use of lidocaine gel to optimize pedicle condition during microsurgery

Dear Sir,

Vasospasm is a relatively common problem during microsurgical procedures that can pose technical challenges as well as potentially influencing flap survival and outcome. Prolonged vasospasm reduces the blood flow, promoting clot formation and thrombosis. The topical use of lidocaine during microsurgery has been previously described to prevent arterial spasm, improve flow, and facilitate surgical technique. We present a novel technique of using lidocaine gel externally on the harvested flap pedicle and recipient vessels to prevent tissue desiccation as well as to minimise vasospasm during the surgery.

Intraoperative tissue desiccation is a consequence of environmental exposure leading to cellular dehydration, and if prolonged, can lead to irreversible tissue damage. These effects can be accelerated by theatre temperature, aridity and heat from the theatre lights or microscope. Inadequate care of the vessels is considered poor surgical practice and may result in a higher rate of anastomotic complications

if the flap pedicle or recipient vessels dry out. Techniques commonly used to maintain moisture include regular flushing with preparations of heparinised saline. Microsurgical anastomoses can be challenging and require concentration. In the inexpert hand, or if there are complications, keeping the tissue moist by regular flushing can easily be neglected.

We routinely use 11 ml of Instillagel per flap. We have utilised this method in 86 patients undergoing various reconstructive procedures. A total of 93 flaps were recorded including 59 deep inferior epigastric artery (DIEP), 26 Anterolateral thigh (ALT), 2 Medial sural artery perforator (MSAP), 2 thoracodorsal artery perforator (TDAP), 1 Latissimus dorsi (LD), 1 osteocutaneous fibula, 1 free ulnar perforator and 1 superficial circumflex iliac artery (SCIP). There was one flap failure (MSAP) due to arterial thrombosis secondary to external compression from a tightly fitted cast. We did not encounter any adverse allergic reactions in this series.

We have applied the aforementioned dual effect of lidocaine gel routinely during our free tissue reconstruction. Following free flap harvest and before starting microsurgical anastomosis, we apply the lidocaine gel on the flap pedicle and recipient vessels externally. We do this in conjunction with the regular practice of using moist gauze to cover exposed areas of tissue. The microscopic field is cleared of gel prior to performing the anastomosis to avoid inadvertent ingress into the vascular lumen. The gel covering the pedicle out with the field typically does not evaporate in the time it takes to complete the anastomosis. The gel itself protects the length of the pedicle that is not directly visualised from desiccating, and the lidocaine prophylactically prevents vasospasm on completion of the anastomosis.

Lidocaine gel preparations available commercially include Instillagel, Instillagel Lido, Uro-jet, Glydo and Xylocaine Jelly. Instillagel contains lidocaine hydrochloride 2%, chlorhexidine gluconate 0.25% and preservatives while Instillagel Lido contains no chlorhexidine. Glydo is FDA approved lubricant that contains 2% Lidocaine; it has no chlorhexidine component while Uro-jet has no preservatives. Glydo and Uro-Jet are not available for use in the United Kingdom. Instillagel is widely used as a lubricant gel in endourologic operations. It is worth noting that there have been limited reports of anaphylaxis attributed to use of Instillagel in urological procedures as an adverse reaction to chlorhexidine component of the gel.[1] The use of Instillagel Lido avoids this problem owing to the absence of chlorhexidine in its content. However other contraindications of local anaesthetic usage still apply. These preparations are licensed for external use and care should be taken to prevent inadvertent intravascular exposure.

The amount of lidocaine used should also be noted to ensure it does not exceed the safe maximum dose and thus prevent toxicity. However, a study by Chafin et al. conducted to measure the systemic absorption of lidocaine during microsurgical procedures showed that the doses that are considered to be toxic when used through the intravenous and mucosal routes, are safe when applied topically during the procedure.[2]

Lidocaine gels are readily available in most operating theatres, and when compared to other methods of vasodilation and tissue hydration are cost effective. The cost of a single syringe of Instillagel containing 11 ml is £1.576. Papaverine (30 mg / 2 ml) costs £12. One ampule of verapamil (5 mg/2 ml) costs £1.082. Multiple ampules of vasodilators may be used during a procedure.

The use of non-vasoactive lubricant gels (Aquagel) to prevent desiccation of tissue has been previously reported by Arya et al.[3] Similarly, lidocaine has been widely used intraoperatively to prevent vasospasm; with some authors reporting its use postoperatively, either topically on the flap itself, or to irrigate the micro anastomosis site for same purpose.[4,5] However, the use of lidocaine gel has not been reported to date up to our knowledge. Lidocaine gel is cost-effective, readily available, and in our experience, it achieves the dual effect of maintaining the vessel hydration as well as dilating the length of the pedicle.

Declaration of Competing Interest

None.

Financial disclosure statement

All of the authors have consented for this publication. None of the authors has a financial interest in any of the products, devices, or drugs mentioned in this manuscript.

Ethical approval

Not required.

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Three-dimensional video scanning, planning and printing to optimise autologous ear reconstruction

Dear Sir,

Introduction

Autologous costal cartilage remains the gold standard for auricular reconstruction, both for total and sub-total auricular defects.[1, 2] The carving of the three-dimensional framework units has traditionally been guided by two-dimensional (2D) templates but is limited due to its inability to recreate the true shape, detail, and visuospatial aspects of the three-dimensional ear. Furthermore, such 2D templates are unable to provide an accurate template for partial ear reconstructions. Since 2016, the Scottish National Ear Reconstruction Service have been creating bespoke three-dimensional templates of ears to be reconstructed using 3D scanning and printing technology. Here, we describe the workflow we use and our experience.

Methods

We start by acquiring a scan of the patient's contralateral ear with an Artec Spider 3D optical surface scanner (Artec Group, Luxemborg) as a complement to traditional pre-operative photography. This handheld video scanner uses structure blue light technology to obtain the volumes, avoiding the need for ionising radiation. The data is then processed using a standard surface scan workflow and converted into a stereolithography interface format (STL) file using the native Artec Studio Version 9.0 Software (Artec Group, Luxemborg). The digital 3D model of the contralateral ear is then inverted to transform it into a predictive model for the auricle to be reconstructed. The volume render of the ear is then imported into Meshmixer© (Autodesk, inc.). From the auricle surface model we extract a "cartilage" model by applying a hollow filter with an offset distance between 0.25 to 1 mm from the original scan surface to remove the thickness of the skin. The model is then digitally separated into its component parts (base plate, helical rim, antihelix, tragus and antitragus), to create a volume rendered bespoke rib carving template. To finalise the model for easy assembly of the subunits, we generate posts and corresponding holes using 123D Design CAD package (Autodesk, inc.) The processed STL files are then exported, sliced and printed using the Roland Mono-Fab ARM-10 3D DLP printer with hard resin (PRH35-ST2). These templates are then sterilised using ethylene oxide gas and made available intra-operatively. The 3D frame modelling time is currently about 90 min or less. For partial defects, the 3D template for the 'defect' is produced by subtracting the partial ear from the full ear. The process and materials adopted to create these serve as templates and therefore does not qualify as a medical device. Supplementary Figure 1 demonstrates our workflow.

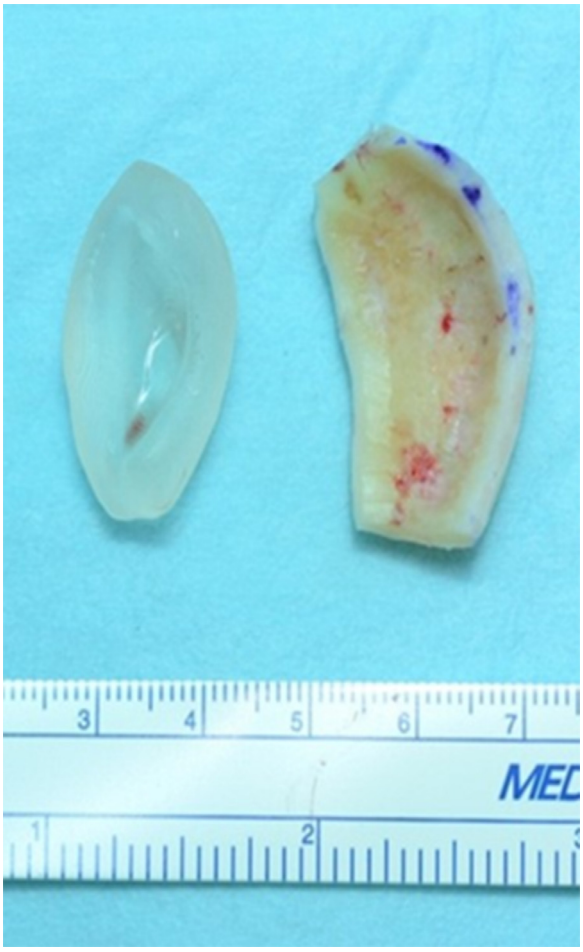

Figure 1 An intra-operative picture of a partial reconstruction of a right ear defect following a traumatic amputation showing the 3D template and carved cartilage template.

Results

We have used these templates in 29 patients from April 2016 to February 2018, 13 males and 16 females (1 of the templates was used to make a prosthetic ear). The age range of the patients was 9–84 years. Eleven cases were partial reconstructions, 15 cases were total reconstructions, of which 14 cases were unilateral reconstructions and 4, bilateral reconstructions. Of this cohort of patients, two patients had a small area of cartilage exposure and delayed wound healing. One patient had an ear infection leading to a total loss of the cartilage framework. This was thought to originate from local acne pustules (a first such complication in our 14 year experience). Two patients had problems with extruding wires. Additional informed consent was obtained from all individual participants for whom identifying information is included in this article. Figures 1 and 2 demonstrate our

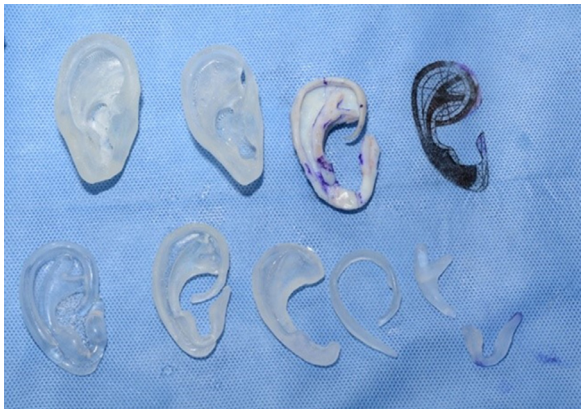

Figure 2 Intra-operative photograph showing the 2D template, the cartilage 3D template, the deconstructed 3D template as well as the carved cartilage framework.

3D templates being used intra-operatively. Supplementary Figure 2 demonstrates pre-, intra- and post-operative photographs of a partial ear reconstruction. Supplementary figure 3 demonstrates an early post-operative result for a unilateral auricular reconstruction.

Discussion

With the advent of 3D printing, the cost of producing bespoke templates have reduced significantly. We have found that after the initial setup costs of procuring the necessary equipment, subsequent costs of in house manufacturing of the 3D template was minimal.

The blue structured light scanner is safe for scanning people and avoids the use of ionising radiation. It provides 3D point accuracy up till 0.05 mm and 3D resolution up till 0.1 mm.[3] High level 3D scanners have been shown to be superior to low-cost scanners in measuring smaller body parts although the scanning process may take longer.[4] In our experience, the scanning process itself takes less than 30 min and patients are done in the same sitting as pre-operative clinical photographs. Having an alternative method to obtain 3D images other than through ionising radiation also allows us to utilise this in the adult cohort for partial ear reconstruction.

We are of the opinion that the intraoperative availability of the templates as a direct reference significantly facilitates the carving of the cartilage frame as well as the preparation of the subcutaneous pocket, which can be carried out at the same time as the cartilage being harvested, improving the efficiency and accuracy of the operation. We therefore present a cost-effective solution to generate a patient bespoke 3D template for ear reconstruction which can potentially be a step towards achieving the 'holy grail' of bespoke autologous ear templates.[5]

Declaration of Competing Interest

There are no conflicts of interest to declare.

Funding

None.

Ethical approval

Formal ethical approval was not required.

Informed consent

Informed consent has been gained from patients for use of the clinical pictures in publication.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.bjps.2021.03.087.

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"The You-Adson-Brown Forceps": A quantifiable instrument for graft fixation

Dear Sir,

Without a doubt, the development of manufacturing technology in rhinoplasty medical devices has catalyzed the field into a new era and made possible for hundreds of surgeries, like endoscope, power tools or piezoelectric technique.[1, 2] Adson-Brown forceps is one of the most commonly used instruments in rhinoplasty. Over the years, there have been series of modifications on the device like 'tusked forceps ',[3] Frankel-Adson forceps,[4] and to the most recent 'The Humayun-Adson-Brown forceps'.[5]

Standing on the shoulders of these pioneers, we have further modified the structure. This new design's core purpose is to provide a new set of features that makes the forceps structurally more durable and the fixation of cartilage grafts more accurately, which consequently improves surgical efficiency. We name it the You-Adson-Brown forceps.

Technical details and advantages

This design's key features are as follows: The tip width slightly increased to a total of 3.5 millimeters (mm) to contain the widened groove in between the teeth. The track is further processed into four apertures with a diameter of 1 mm and three cut lines that distances 3 mm to each other (Figure 1).

During the operation, the widened tips have greater control of the cartilages to avoid slipping. The holes and lines of the groove allow direct observations of the fixation points. The suture needle goes through the grafts from one pair of holes. Then, based on the actual requirements, the suture passes through another pair of holes and tie knots. As a result, the distance between the fixating sutures is quantifiable. The purpose of making the fixation with more precision is achieved. Furthermore, these forceps are particularly helpful in fixating two thin pieces of grafts together (Figure 2).

Compared with the 'Humayun-Adson-Brown forceps', our forceps have some significant improvements. First and foremost, instead of having two separate "arms", the framework of the tip is an intact piece. Such "unibody" design does not compromise the intrinsic functions of the original Adson-Brown forceps. It further enhances the structural durability by the increased width of the tip. In addition, when Humayun-Adson-Brown forceps are applied to grasp or clamp the cartilage grafts, the two arms renders uneven forces, especially when the cartilage grafts have round surfaces. Under such circumstances, the two arms will get distorted or even broken in severe cases, causing grafts to slide or slip. Our design has comparatively more physical integrity. Secondly, the designated spaces between the apertures make the every suture have a specific distance. As a result, the grafts could be fixated in a more proportionate and therefore more stable manner.

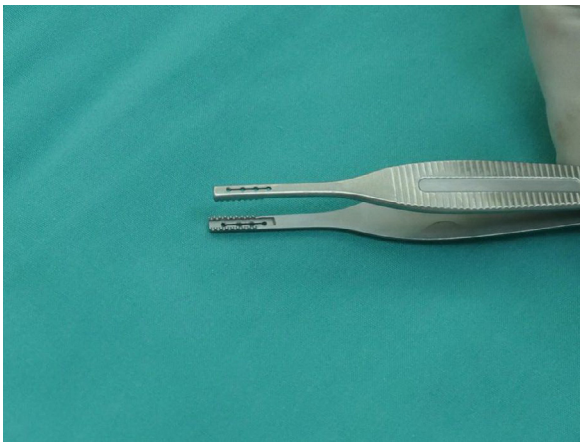

Figure 1 Structure of the You-Adson-Brown forceps.

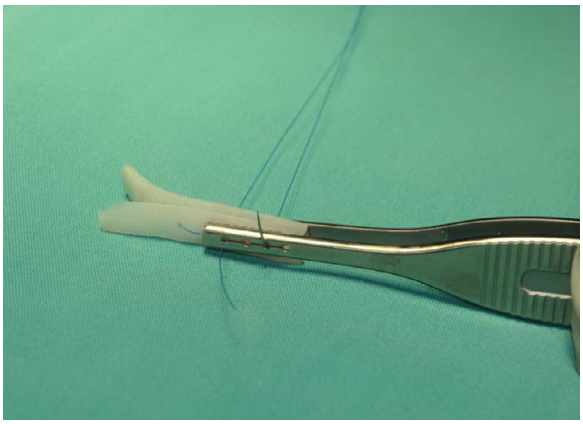

Figure 2 Easy handling of fixating cartilage grafts. Sutures can enter and exit at the designated points on the forceps, resulting in proportionately different lengths.

Disadvantages

The delicate combination of the apertures and grooves requires some time to get used to. We often set aside one designated suture with a bent-straight needle to conduct the suturing process. Furthermore, such refined structures cast some challenges on the manufacturing process, as well as the quality of the alloy material.

Conclusion

This new modification has distinctive merits in both structure and function, which facilitate more precise fixations in rhinoplasty procedures.

Declaration of Competing Interest

This You-Adson-Brown forceps (the instrument) is conceptualized and designed by the authors, and manufactured by the Department of Equipment and Apparatus of Plastic Surgery Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College. The expenses on the manufacturing was subsidized by the Special Research Fund for Plastic Surgery Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College. This instrument is not commercially available. All authors receive no interests in any forms with regards to the instrument.

Funding

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Ethical approval

Approved by the Institutional Review Board of the Plastic Surgery Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College.

The patent of the design has been authorized to the authors of this manuscript (JY, LW, HW, FF) by China National Intellectual Property Administration. (Patent No. ZL 2019 2 0708895.2)

Financial disclosure statement

None.

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Measurements of range of motion of finger joints with simple digital photography: A validation study

Dear Sir,

It is well observed by Hand surgeons that there is a high DNA (did not attend) rate amongst hand trauma and less so with elective hand patients. This is also well documented in studies involving injuries in hand patients,[1] that authors of hand surgery articles especially the trauma related ones accept data at two months after surgery as 'acceptable'. This potentially leaves a significant body of knowledge on what happens to the patients beyond this period weakening the power of conclusions that can be reached. Some patients with less than satisfactory results may appear down the line with problems that could have easily been prevented or remedied if the patient was seen earlier.

Therefore, a need to assess hand function or increase the amount of valuable data that can be gained beyond this period is warranted. The recent Corona virus pandemic and it's issues add immeasurable significance to this as the future of consultations are unlikely to return to the pre-pandemic pattern at least in the foreseeable future. And there is a need for clinicians to continue to review their patients remotely whenever possible and/or acceptable, We hypothesized that by using a simple and readily available goniometer, the range of motion (one of the measurements of hand function) can be obtained by measuring the degrees obtained in a joint through a true lateral photography of the joint in full extension and full flexion. For this purpose, we focused our attention on the interphalangeal joint of the thumb. The thumb was chosen as it sits on a different plane to and not crowded by other digits, therefore easier to obtain data by photography; and because of the clarity/uniformity of nomenclature of the thumb unlike other digits known by different names for e.g. index versus

Part of this study was presented as an oral communication in FESSH CONGRESS June 1720, 2015. Milan, Italy.

Figure 1 Shows the smart phone used in this study (iPhone 5) and the indices we compared (clinical measurement of extension / flexion of the interphalangeal joint in the thumb) and the photographs sent by patients.

Table 1 Combined flexion and extension: "ρ" is nearly 1 (0.934) which is close to a perfect correlation, and is statistically significant ($P \leq 0.001$).

Correlations				
			Measured angle	Photo angle
Spearman's rho	Measured angle	Correlation Coefficient	1.000	0.934
		Sig (2-tailed)		0.000
		N	120	120
	Photo angle	Correlation coefficient	0.934	1.000
		Sig (2-tailed)	0.000	
		N	120	120

**Correlation is significant at the 0.01 level (2-tailed).

forefinger, middle versus long finger etc. These pros for the thumb by inference potentially poses a problem with the other digits.

This study was a prospective observational analytical study involving 60 participants. Half (30) had thumb injuries or pathology (hands with pathology) and the other half selected randomly in the outpatient clinic (healthy hands) had none. Ethical approval was sought and obtained. Consent form was obtained and signed by each participant.

An iPhone 5S, a Participant Information Sheet (PIS) explaining the projections that were needed and examples of the correct photographs were provided to each participant.

Variables measured in our study by two clinicians independently were (Figure 1):

a. Maximum active extension of the IPJ of the thumb, clinically.
b. Maximum active flexion of the IPJ of the thumb, clinically.
c. Maximum active extension of the IPJ of the thumb in the lateral projection of the thumb, assessed using the photographs provided by the participant.
d. Maximum active flexion of the IPJ of the thumb in the lateral projection of the thumb, assessed using photographs provided by the participant.

Identities of the participants were anonymized and, a third investigator, blinded, studied the correlation between measurement and inter-observer error.

Paired data of measurements of the range of motion clinically ('gold standard') and in photographs were analyzed using Spearmanś Rank correlation coefficient and Lins concordance correlation.

Table 1 shows the results. In group 1, hands with pathology, was composed by 8 males and 22 females. Mean age was 49.51 (range 30–82). Group 2, healthy hands, was composed by 11 males and 19 females. Mean age was 39.44 (range 24–74).

Digital photography have been used to assess the ranges of joint motion both experimentally and clinically in the upper limb especially the elbow and less so the digital joints[2] though it has not achieved routine acceptance and usage.

Our study concludes that smartphone photography with simple goniometry is likely a valuable tool in the remote assessment of patients with hand problems. It is possible to obtain an accurate measure the range of motion of the interphalangeal joint of the thumb through a true lateral photograph of the joint. This can be applied to the other digits as far as there are clear instructions to the patient on what to do.

Though a virtual consultation would always remain 'inferior' to a face to face consultation, in certain circumstances such as in a pandemic lockdown, it may suffice and be clinically preferable.

We hypothesize that this simple method will reduce the incidence of 'Do not attend' (DNA) to clinic, unnecessary clinic or hand therapy appointments, provide a triaging system to identify patients with higher clinical priority and have an overall very positive economic impact on the NHS. And once the new goniometer apps make it into routine clinical use, the measurements tasks would be further simplified.

Potential shortcomings include lack of access to a smart device and/or understanding the use especially with the older generation and the time and effort needed by the clinicians to assess the images and decide if they are satisfactory.

Funding

None.

Declaration of Competing Interest

None declared.

Ethical approval

Not required.

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Preoperative perforator mapping: Accuracy, bias, concordance and the devil

Dear Sir,

We applaud Kiely et al.[1] for their excellent systematic review and meta-analysis of the accuracy of different modalities of perforator mapping. They reported findings with regard to preoperative perforator mapping and intraoperative perforator selection from studies involving women (over the age of 18 years) undergoing unilateral breast reconstruction using a deep inferior epigastric perforator (DIEP) flap. Two search methods were utilized. Exclusion criteria are not specified in the text. But from the PRISMA flowchart (Fig. 1) we surmise that these were conference abstracts or studies that provided insufficient data or were not available in English. The authors also emphasize that none of the included studies provided a definition of 'concordance' between imaging and surgical findings. However, in 2017 we reported the only known study on this matter that has the term 'concordance' in its title and in which it is defined in the text.[2]

Our study – published in English, available as a Free PMC (PubMed) article – showed that, in spite of a good protocol and the best intentions, concordance between preoperative computed tomography angiographic mapping and intraoperative perforator selection for DIEP flap breast reconstructions can be rather variable. Whether inclusion of our study would have tipped the scales in either the systematic review or the meta-analysis by Kiely et al. we do not know. What we do know is that selection bias is a devil in disguise. Kiely et al. mention one: studies that included non-consecutive patients. But it may also take the shape of unspecified exclusion criteria, a limited number of search methods or choosing publications in a single language, to name but a few. Doughty defenders of Evidence-based Surgery know that bias does not equal blunder. Researchers may be dogged by bias. Readers should be alert to or aware of it. It may influence outcome. It does not, and never should, diminish our respect for those with courage who tackle tough topics.

Ethical Approval

N/A.

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Declaration of Competing Interest

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Pharmacological flap thinning with local injection of triamcinolone acetonide

Dear Sir,

Recent advances in flap surgery have provided excellent developments in the field of reconstructive surgery. However, in some special areas, such as the extremities, the bulkiness of the transferred flap sometimes shows poor functional and esthetic results. Several surgical thinning procedures, such as primary fatty tissue excision of the flap[1] surgical debulking after flap transfer, and liposuction of the transplanted flap,[2] have been reported to be effective. However, these methods necessitate multi-staged operations and are associated with risk of flap necrosis as they jeopardize the circulation of the flap. Here, we report a new pharmacological treatment using local injection of triamcinolone acetonide, the steroid of choice for intralesional treatment of keloid.[3] This study was performed to examine the use of triamcinolone acetonide as an alternative to reduce flap thickness.

Eight patients, consisting of six men and two women ranging in age from 20 to 78 years, underwent hand and foot reconstruction using a flap. Their flaps consisted of six free anterolateral thigh flaps, one free scapular flap, and one pedicle groin flap. Flap survival was uneventful in all cases. These flaps were bulky after transfer and showed poor cosmetic results and restricted mobility in some cases, so we attempted to reduce the thickness of the flaps by non-surgical treatment during postoperative rehabilitation. Exclusion criteria were diabetes mellitus (DM), concomitant infection, and other systemic diseases.

For treatment, 20 mg of triamcinolone acetonide (10 mg/ml) was diluted with 3 ml of saline, and this solution was injected evenly into the subcutaneous layer of the whole flap using a 26 G needle. Triamcinolone injection was repeated at 4-week intervals until the desired effect was achieved. Before every injection, the flap thickness was measured with calipers and adverse effects were checked. Statistical analysis of flap thickness was performed using Student's paired *t*-test.

Each patient received a total of two or three injections. Final measurement was performed at 3 months after final injection. The mean (SD) improvement of flap thickness was 1.1 (0.35) cm in the total of eight cases (Table 1). The difference in measured value after treatment was significant ($p < 0.05$). This study showed that triamcinolone injection was effective in thinning the flap and the esthetic results were improved in all cases. There were no complications in any of our patients.

Figure 1 showed flap thinning effect by injection of triamcinolone acetate in case 1.

Major toxicities of corticosteroid esters include depigmentation, atrophy of the skin, and lipoatrophy. We investigated whether the lipoatrophy effect could be used to thin flaps non-surgically. In the present study, injection of 20 mg of triamcinolone was effective to reduce flap thickness and showed a mean (SD) improvement of flap thickness of 1.1 (0.35) cm after two or three injections.

In a surgical thinning cadaveric study, Prasetyono et al.[1]reported that the mean improvement of ALT flap thickness was 1.02 cm in their study, which was close to our results. Triamcinolone acetate injection was effective to reduce flap thickness to the same extent as surgical thinning without risk of flap necrosis.

Table 1 .

Pat.	sex	age	Flaps	Flap size	injection	Improvement
1	F	42	ALT flap	3 × 8cm	2 times	0.5cm
2	M	68	ALT flap	8 × 4cm	3 times	0.7cm
3	M	70	ALT flap	10 × 4cm	3 times	1.3cm
4	F	50	ALT flap	3.5 × 4cm	3 times	1.3cm
5	M	60	groin flap	1 × 2cm	2 times	0.2cm
6	M	36	ALT flap	2 × 3.5cm	2 times	1.2cm
7	M	20	Scapular flap	6.5 × 8cm	2 times	2cm
8	M	78	ALT flap	2.5 × 5cm	3 times	1.3cm
					mean(SD)	1.1(0.35)

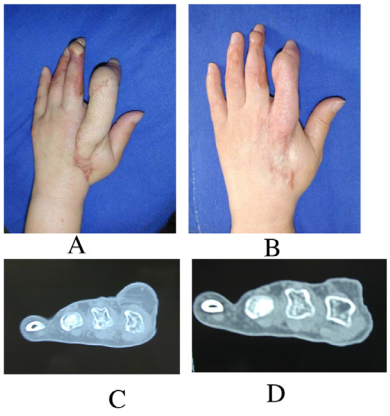

Figure 1 Case 1. A) Before triamcinolone injection. B) After injection three times, the ALT flap became 5 mm thinner and its appearance improved. C, D) CT before and after injection. Atrophy of fatty tissue was apparent.

Hayward et al.[4] reported that intralesional single injection of 40 - 80 mg of triamcinolone acetonide achieved a 60% reduction in lipoma size and a 100% reduction in symptomatology associated with lipoma. Small lipomas (1–3 cm) were injected with 40 mg triamcinolone acetonide, while large lipomas (4–6 cm) were injected with 80 mg of triamcinolone acetonide. Two patients had mild hypopigmentation of the skin and there were no cases of infection or other serious adverse reactions. They speculated the mechanism involved lymphatic spread of the corticosteroid crystals along the lymphatic channels resulting in linear atrophy of the adjacent tissues after injection. Corticosteroid injection could produce apoptotic adipose and stromal tissue.

Triamcinolone acetonide treatment was useful in thinning of small or medium size flaps, because flap size in our study ranged from 15 to 48 cm^2.

We believe this treatment is a safe alternative to traditional methods and can achieve sufficient thinning of flaps both functionally and esthetically without delaying rehabilitation.

Ethical approval

The study was reviewed and approved by the Committee for Medical Ethics of Japanese Red Cross Society Nagano Hospital.

Funding

None.

Declaration of Competing Interest

None.

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Serial excision of skin paddles to correct oral incontinence and color/texture mismatch after microvascular reconstruction of through-and-through cheek defects involving the oral commissure: An algorithm-based approach

Dear Sir,

Fasciocutaneous flaps have revolutionized reconstruction of through-and-through cheek defects involving the oral commissure. However, not rarely, oral incontinence complicates the outcomes, especially when the defects involve the

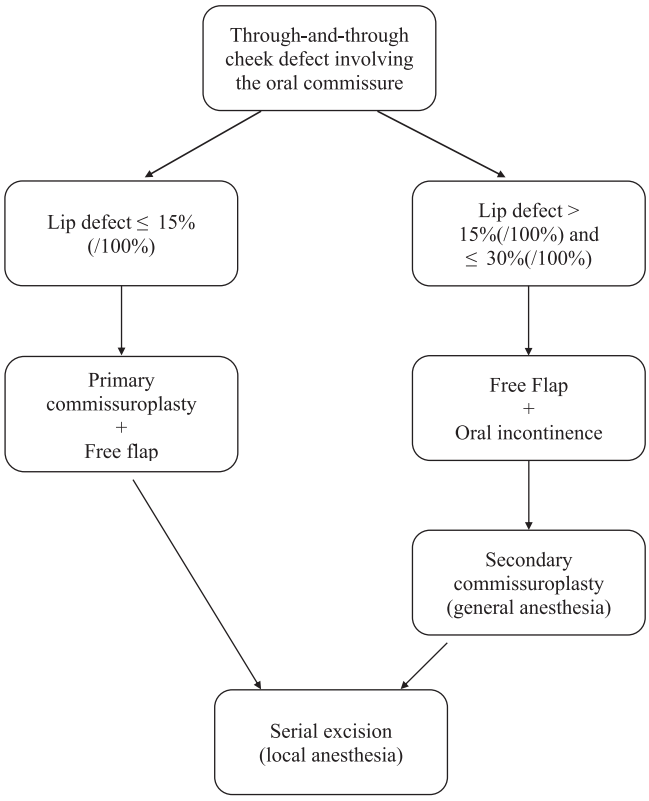

Figure 1 Proposed algorithm for use of serial excision to improve functional (i.e. oral incontinence) and esthetic (color and texture mismatch) outcomes after microvascular reconstruction of through-and-through cheek defects involving the oral commissure.

commissure, making secondary surgery necessary. Moreover, the problem of color and texture mismatch remains largely unsolved.

Serial excision, i.e. excision of the skin paddle in more than one stage, starting from the lesion's center to the periphery, is a fundamental plastic surgery approach, based on skin viscoelasticity, with various uses. We, herein, propose an algorithm (Figure1) for correction of oral incontinence or/and color/texture mismatch after oromandibular reconstruction, by means of serial excision.

Oral sphincter is defined as a complete circumference formed by the upper lip and the lower lip.[1] Oral incontinence results from flap redundancy and major loss of the orbicularis muscle of the lower and upper lip. Therefore, its incidence depends on the lip defect size. Oromandibular defects are classified to those with lip defect size $\leq$15/100% and those with defect size between 15/100% and 30/100%. Serial excision is not suitable for lip defects $>$ 30%, because of the severe microstomia resulting.[2]

Patients with lip defect size $\leq$15/100% undergo primary commissuroplasty, simultaneously with the free flap reconstruction. In our experience, such patients do not develop oral incontinence but may ask for esthetic improvement. In this case, serial excision is performed in local anesthesia to correct the color/texture mismatch. Patients with lip defect size between 15/200% and 30/200% undergo free flap without primary commissuroplasty. In most cases they develop moderate oral incontinence, which affects their life quality. For this reason they undergo secondary commissuroplasty, i.e. the first stage of excision, in general anesthesia. They are left to heal and undergo the rest stages with in 4-6-month intervals in local anesthesia.

The first stage is performed in general anesthesia but local anesthesia can additionally be applied to foster hydrodissection. The final scar preferably mimics the commissure line and, if possible, is positioned along the relaxed skin tension lines. Its position is determined at the first operation. After the commissure is reshaped, an ellipse is excised from the edge or the center of the mismatched paddle. The skin is slightly undermined with preservation of the fat tissue and closed under mild tension. It is left to "recruit" and the procedure is repeated, if necessary, after 4-6 months. Subsequent staged excisions can be performed in local anesthesia.

We applied the above algorithm in 16 patients with through-and-through cheek defects involving the oral commissure, following reconstruction with free fasciocutaneous flaps after squamous cell carcinoma resection. Patients with recurrences were excluded from the study. Oral incontinence was defined as the presence of drooling or sphincter static incontinence. The patients had to be disease-free for at least 6 months after initial tumor resection. Radiotherapy was performed where necessary to achieve long-term local and regional control. Six months after radiotherapy completion, the staged excision was considered. All patients were males and had a mean age of 63 years (range 40-79). Thirteen patients (81%) had mild oral incontinence. Eight patients (50%) required two stages of serial excision, six patients (38%) underwent three serial excisions and two patients (12%) had to be operated four times. Skin paddle surface ranged from 4×4 cm to 10×6 cm. The mean interval from flap date to first serial excision was 12 months (range 6-17), whereas the mean period from flap date to final excision was 22 months (range 13-40). No complications were observed and all patients were satisfied with the final outcome (Table 1).

Serial excision is utilizing viscoelastic skin properties, which reflect its response to the stress of an applied force. The most important of these properties are stress relaxation and creep. The former represents the decay in stress over time required to maintain skin stretched and held at constant length. Creep is divided into biological and mechanical. Biological creep occurs under slow expansion, eg. obesity or pregnancy, and is a dynamic process, in which new epithelium, blood vessels, collagen, elastic fibres are created, gradually resulting in stretching of the overlying skin. Mechanical creep is the skin elongation, when a constant load beyong the intrinsic extensibility of skin is applied, and represents the initial response to the tension applied in each stage of serial excision.[3] It is followed by stress relaxation and biological creep.[4] The procedure lasts several weeks and is triggered by each excision and closure. Over 50% of postoperative stretching occurs within 1 cm of the suture line.[5]

The most important disadvantage of the staged approach remains the number of operations needed, even if, in our experience, two excisions are sufficient for the majority of the patients. Obviously, active malignancy is a contraindication for serial excision to be applied.[4]

Table 1 Demographical and clinical data of all patients treated with serial excision for esthetic improvement of the color mismatch, after prior free tissue reconstruction for oral cancer. RTx: Radiotherapy.

No	Sex	Age	Localization	TNM Stage	Flap	RTx	Skin paddle size (cm)	Number of stages	Oral incontinence	Interval flap to 1st excision (months)	Interval flap to last excision (months)
1	m	62	Left Buccal	T4N2M0	ALT	yes	6 × 6	2	No	15	20
2	m	64	Left Buccal	T3N0M0	ALT	no	4 × 4	2	Yes	6	24
3	m	65	Right Buccal	T2N1M0	ALT	no	6 × 5	3	Yes	17	27
4	m	63	Right buccal	T2N0M0	ALT	no	5 × 5	3	Yes	7	21
5	m	70	Left Buccal	T4N0M0	ALT	no	8 × 6	2	Yes	8	16
6	m	58	Right Buccal	T2N0M0	ALT	no	7 × 6	2	Yes	9	13
7	m	63	Right Buccal	T2N0M0	ALT	no	6 × 4	2	No	12	16
8	m	59	Left Buccal	T3N1M0	ALT	yes	6 × 4	3	Yes	16	24
9	m	62	Left Buccal	T2N0M0	ALT	no	5 × 5	2	Yes	16	20
10	m	40	Left Buccal	T3N1M0	ALT	no	8 × 8	3	Yes	12	20
11	m	72	Left Buccal	T4N1M0	ALT	yes	6 × 6	2	Yes	16	21
12	m	65	Left Buccal	T2N0M0	ALT	no	4 × 4	2	No	15	18
13	m	50	Left Buccal	T3N2M0	ALT	no	10 × 6	4	Yes	7	24
14	m	79	Left Buccal	T3N2M0	ALT	no	10 × 6	3	Yes	6	26
15	m	63	Left Buccal	T4N0M0	ALT	yes	6 × 5	4	Yes	24	40
16	m	66	Right Buccal	T2N0M0	Forearm flap	no	6 × 4	3	Yes	6	24

We conclude that the algorithm-based serial excision, can significantly improve the functional and esthetic outcomes in patients with oral incontinence and color/texture mismatch after free tissue transfer for through-and-through cheek defects involving the oral commissure.

Ethical approval

EMRP24101N

Declaration of Competing Interest

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A longitudinal assessment of the surgical treatment of symptomatic neuromas and their surgical management in the American College of Surgeons National Surgical Quality Improvement Program database

Dear Sir,

Disorganized nerve regeneration after injury is responsible for the formation of a neuroma, a common cause of

Table 1 The incidence of neuromas, reconstruction, rates of reconstruction, and type of reconstruction for each type of neuroma.

Type of neuroma	Incidence of Neuroma (n)	Rate of peripheral nerve management, n, (%)	Most common method of peripheral nerve Management
CUTANEOUS NEUROMA	182	32, (17.6)	Buried (25), synthetic conduit (5), transposition (2)
DIGITAL NEUROMA	103	23, (22.3)	Synthetic conduit (14), digital nerve repair (5), Implant (2)
HAND OR FOOT NEUROMA	153	23, (15)	buried (11), Synthetic conduit (6), digital nerve repair (2), ulnar nerve repair (1), minor mobilization (1)
MAJOR PERIPHERAL NEUROMA	283	66, (23.3)	buried (46), Synthetic conduit (8), major transposition (3), nerve transfer (3), ulnar nerve repair (2), mobilization (1), hand/ft nerve repair (1), autologous conduit repair (1), allograft nerve repair (1)
SCIATIC NEUROMA	4	1, (25)	Buried (1)
TOTAL	725	145 (20)	

neuropathic pain. Patients living with neuroma pain report a lower quality of life and higher rates of unemployment when compared to the normal population.[1] Multimodal treatments typically involve pain medication, neuroleptics, and other non-surgical methods performed by pain specialists. The surgical treatment of neuropathic pain attributed to a neuroma remains controversial despite a demonstrated improvement in surgically treated patients' quality of life, and function.[2]

Within the medical community at large, the surgical treatment of neuromas remains controversial without consensus on how to manage neuropathic pain attributed to a neuroma. To evaluate national trends in neuroma excision and peripheral nerve management(PNM), the authors queried the American College of Surgeons National Surgical Quality Improvement Program (NSQIP) database for excision of neuroma and PNM from years 2005 to 2018 using the neuroma excision and PNM current procedural terminology codes (CPT).[3] NSQIP is a de-identified dataset comprised of surgical outcomes data from over 800 hospitals world-wide. Data collection at each site is performed Specially trained nurses at each participating site collect and input the data from randomly selected cases consisting of pre-, intra-, and post-operative outcomes for a period of thirty days from the surgery. The random selection of cases creates a representative sampling of the types of operations performed at participating sites. CPTs reflect what operation has been performed allowing one to determine how often a procedure is performed, its associated complication rate, etc. PNM includes any active or passive nerve management after resection of the neuroma. The data were trended on an annual basis for both the incidence of neuromas surgically treated and their reconstruction.

The total number of neuromas treated, the types of neuroma treated, and their associated PNM were tabulated. For each type of neuroma surgically treated, the types of PNM examined were determined. Trends were analyzed over time using a two-tailed Mann-Kendall trend test with a 95% confidence interval and an $\alpha = 0.05$.

A total of 704 patients and 725 neuromas were treated during this time (Table 1). It should be noted that for years 2005 and 2006, the results are contained in a single report and is thus reported as such (Table 1). The most commonly treated neuromas involved a major peripheral nerve (39%). Surgically treated neuromas had a significant increase of $\sim$38% in annual treatment volume from 2005 to 2018 with $p<0.001$ (Figure 1).

PNM after neuroma excision was uncommon with only 20% of neuromas being reconstructed; Table 1 displays the locations and rates neuromas treated and the rate of adjunctive nerve management. The most common PNM was burying the nerve in muscle or bone (59%) followed by synthetic conduits (23%). The use of nerve transfers, neurorrhaphy and nerve grafts was low in this cohort with only three nerve transfers, eight neurorrhaphies and one nerve allografting reported.

Neuromas are a discrete, potentially surgically correctable cause of neuropathic pain. By addressing the root cause of neuropathic pain, peripheral nerve surgeons may increase the patient's quality of life and extremity function, while reducing need for pain medication.[2] There is a clear, growing interest in the field of surgical neuroma management.[4] This study sought to determine if the surgical treatment of neuromas is increasing over time and if PNM is being peformed more often for these patients.

This cohort is comprably sized to recent publications on this topic;[4] the fourteen years of NSQIP data analyzed indicate that neuromas are uncommonly treated surgically despite this being an active area of basic, clinical and translation research. The data indicate that there is an increase in the number of patients being surgically treated for neuromas (Figure 1, $p < 0.01$). The annual amount remains low in the study period but has increased by almost a factor of two from the first year of data reporting for NSQIP.

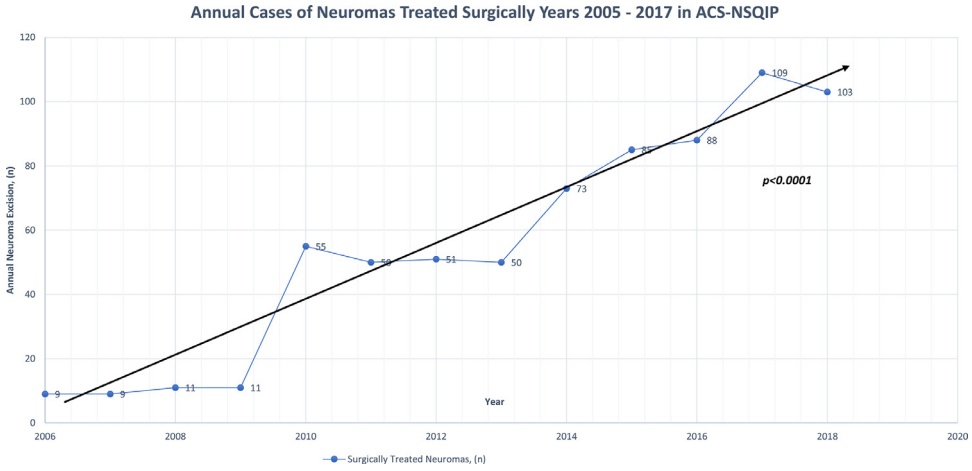

Figure 1 Annual cases of neuromas treated surgically years 2005–2017 in ACS-NSQIP.

Our data indicate that PNM of excised neuroma defects is relatively nascent and not widely adopted by the surgical community as evidenced by ∼60% of PNM reported in our cohort being a passive form of nerve management including burying the nerve end into bone or muscle. The low rate of active nerve reconstruction indicates that a paradigm shift in the treatment of neuromas has not yet occurred and that the surgical treatment of neuromas remains in the early stages of the cycle of scientific innovation currently.[5]

Neuromas vary by the type of nerve involved, location in the body, and response to conservative treatment yet the pain, disability and detrimental quality of life remain constant. A multitude of surgical techniques for PNM have been researched and shown to improve patients symptoms and quality of life when compared to neuroma excision alone and currently appear underutilized.

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Orbicularis Oculi function following transfer of the masseteric nerve to the main trunk of the facial nerve for complete facial paralysis

Dear Sir,

We hope to share with you our experience of ophthalmic outcomes following masseteric to facial nerve transfer for patients with complete facial paralysis in Queen Elizabeth Hospital, Birmingham. There are numerous strategies to protect the cornea following injury to the facial nerve. This paper discusses one particular method to achieve dynamic reanimation and restore ophthalmic function. The technique performed in this study involves using the masseteric branch of the trigeminal nerve as a donor nerve for transfer, which was first described by Spira in 19,78[1]. Since then, a number of variations of the technique have been developed, including coaptation of the masseteric nerve to the distal branches of the facial nerve[2,3]. However, from our experience, direct coaptation to the main trunk of the facial nerve offers more advantages to the patient, as it allows preservation of a greater number of branches of the facial nerve. This results in reinnervation of a greater number of muscle groups, therefore, improving overall symmetry of the face and enhanced muscle excursion[4].

Between October 2013 and July 2018, a total of 17 patients with complete facial paralysis underwent masseteric-to-facial nerve transfer surgery at the Queen Elizabeth Hospital, Birmingham. A retrospective analysis was performed on 9 patients from this cohort (4 males, 5 females) who met inclusion criteria. Using the Sunnybrook Facial Grading System[5] and photographs (taken at rest and on smiling), we assessed whether transfer of the masseteric nerve to the main trunk of the facial nerve resulted in improved orbicularis oculi function following complete paralysis. As not all patients had a complete set of pre- and postoperative photographs, only postoperative photographs were used for analysis. Using Adobe Photoshop CC 2019 software, the Palpebral Fissure Height (PFH) and Lower Margin-to-Reflex Distance (MRD2) were measured. Change in MRD2 from rest to smile was used as a measure of Contractile Activity of the lower part of the orbicularis oculi muscle.

The mean postoperative Palpebral Fissure Heights (PFH) of the initially paralysed and non-paralysed eyes at rest were 8.65 mm and 9.24 mm, as seen in Figure 1. The mean difference between sides was 0.599 mm (95% CI, −2.02 to 0.820; $p = 0.359$). Improved Contractile Activity was seen in 7 patients, seen in Figure 2. In 5 of these patients, lower lid movement was >1 mm from rest to smile. The mean difference between sides was 0.710 mm (95% CI, −1.59 to 0.174; $p = 0.101$). Total Sunnybrook Facial Grading score increa' sed in 8 out of 9 patients. There was a significant increase in mean score of 33.9 points, following nerve transfer (SE 6.46; $p = 0.001$). Post-operative synkinesis occurred in 8 out of 9 patients.

The results of this study have demonstrated improved facial nerve function, according to the Sunnybrook scores. Although not specific to recovery of ophthalmic function, there is evidence of global facial reanimation in nearly all patients. Postoperative photograph analysis demonstrated that there was no significant difference in mean Palpebral Fissure Height or Contractile Activity between sides. This indicates recovery of facial symmetry following nerve transfer. Additionally, as all patients presented with complete paralysis, the Contractile Activity noted postoperatively in 7 patients can be viewed as an improvement in dynamic function of the orbicularis oculi muscle. However, use of the masseteric nerve as a donor nerve still results in variable degrees of synkinesis (present in 8 patients). This is an inevitable risk of any nerve transfer; however, facial rehabilitation and neuromuscular re-education may help the patient control these unwanted facial movements.

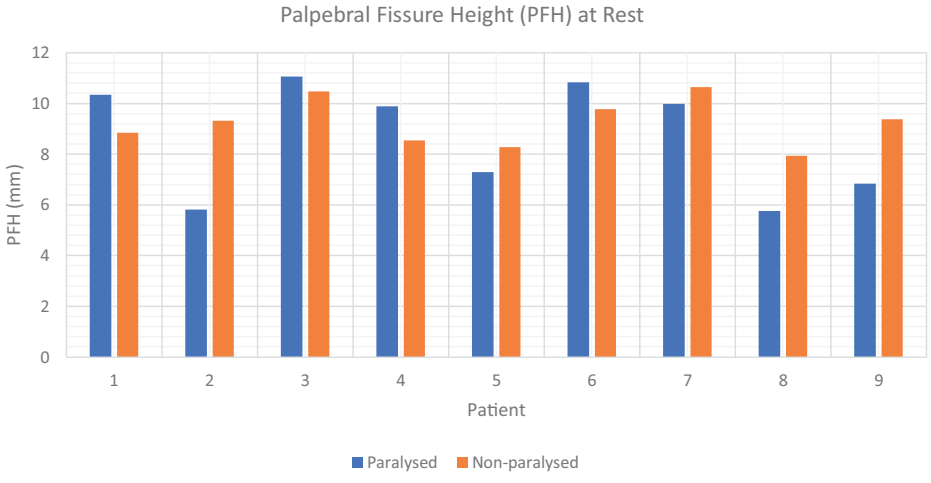

Figure 1 Postoperative Palpebral Fissure Height (PFH) at Rest.

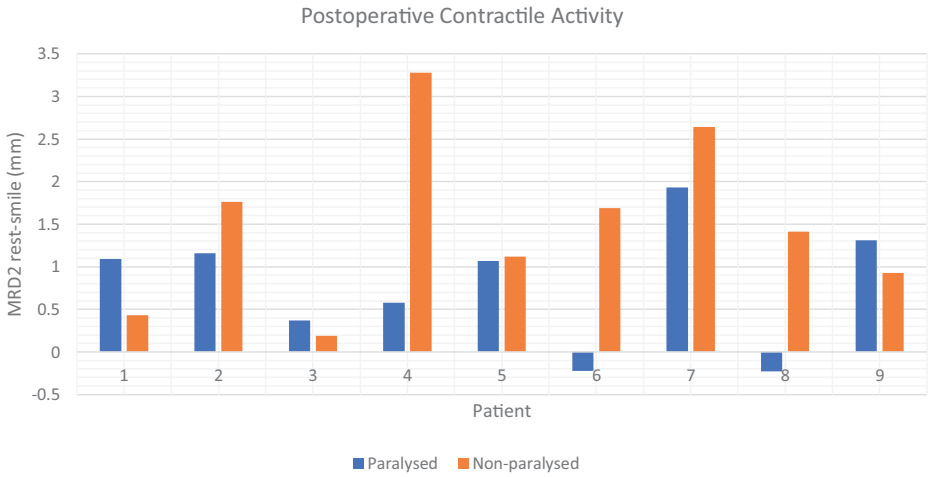

Figure 2 Postoperative Contractile Activity at Rest.

Limitations of this study include that patients were at different stages of recovery at the time of analysis, had varying aetiology of paralysis, age, and degrees of engagement with physiotherapy. The majority of patients also had adjunctive eyelid surgery. Although these procedures confounded our analysis of resting symmetry, we were still able to comment on the recovery of dynamic function by comparing PFH on resting and smiling. However, without a complete series of pre-operative photographs, it was not possible to isolate and quantify with statistical accuracy the impact that this nerve transfer had on ophthalmic recovery.

In conclusion, our study identifies an improvement in both static and dynamic orbicularis oculi function. Fundamentally, this is an essential component of corneal protection and the avoidance of associated eye disease. We hope that this series acts as a valuable pilot study to guide future research into facial to masseteric nerve transfer for facial paralysis.

Ethical Approval

The study was performed in accordance with the institutional ethical guidelines. Verbal and written consent was gained for each patient's participation in the study. Written consent was also obtained for the video attached.

Funding

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Declaration of Competing Interest

None declared.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.bjps.2021.03.015.

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Wide awake local anaesthetic no tourniquet (WALANT) technique in hand trauma surgery: A prospective study of efficacy and peri-operative patient experience

Dear Sir,

Traditionally, hand surgery has necessitated an arterial tourniquet (AT) to preserve a bloodless field and optimise visibility for efficient and safe surgery. The resulting discomfort experienced by the awake patient following prolonged use of an AT may require sedation, regional or general anaesthesia (GA), carrying an additional clinical risk to the patient and a cost burden to the healthcare provider.

The Wide Awake Local Anaesthetic No Tourniquet (WALANT) technique obviates the need for a tourniquet and regional/general anaesthesia, through the injection of tumescent local anaesthetic (LA) and adrenaline into the operative field. Outcomes of WALANT in elective hand surgery have been well documented,[1] however, its role in the management of traumatic hand injuries and the associated patient experience have not been studied.

We conducted a prospective study of patient experience with WALANT in hand trauma surgery. Consecutive adult patients presenting to the Royal Free Hospital London, between May and June 2018 with open flexor tendon (zones I-IV), extensor tendon (zones I-VI) and digital nerve injuries were included. Patients who declined WALANT, had a documented allergy to lidocaine or conditions predisposing to poor distal upper limb perfusion were excluded. All patients provided informed consent. The study was undertaken in accordance with the World Medical Association's Declaration of Helsinki Ethical Principles and approved by our governance team. Patients were provided with an 11-question visual-analogue scale (VAS) questionnaire and asked to rate levels of anxiety, comfort, pain, satisfaction with duration of surgery and overall satisfaction with the operation (Figure 1).

All patients received a lidocaine/adrenaline mix, injected at the recommended maximum dose of 7 mg/kg of body weight by the operating surgeon, 20 min prior to skin incision. A 20 ml mixture of 15 ml commercially available 1% Lidocaine with adrenaline 1:200,000 and 5 ml 0.9% normal saline was prepared and injected into the injured hand in accordance with the technique originally described by Lalonde.[2] Patients were fitted with an uninflated brachial tourniquet before skin preparation, for use if required.

Thirty patients (22 males, 8 females) with a mean age of 30.4 years (range 19–52 years) underwent 14 flexor tendon repairs, nine extensor tendon repairs and seven digital neurosyntheses by Consultants or Registrars on a day-case basis. No procedure required tourniquet inflation, use of sedation or conversion to a general anaesthetic. No patient had previously experienced WALANT.

Patient experience of WALANT was almost unanimously excellent (Table 1). Pre-operatively, patients reported a median score of 6/10 (IQR =2.5) for anxiety and 4/10 (IQR =1) for pain on injection. Intra-operatively, patients reported a median score of 7/10 (IQR =1) for comfort, 3/10 (IQR =2) for anxiety and 2/10 (IQR =1) for pain. Post-operatively, patients reported a median score of 1/10 (IQR =1) for anxiety and 0/10 (IQR =0.75) for pain. Patients reported a median score of 8/10 (IQR =1) for satisfaction with the operating time and 8.5/10 (IQR =1) for overall experience with WALANT. Ninety percent of patients stated they would choose to have WALANT again.

WALANT offers several advantages. Patients avoid pre-operative fasting and cardiopulmonary investigations, tourniquet-related complications and risks associated with GA, including post-operative nausea and vomiting. It facilitates a safe and streamlined path to surgery, with potential cost savings to the provider by optimising valuable resources; benefits of particular relevance during the current global COVID-19 pandemic.

While our cohort consisted of a relatively small sample size with variations in LA administration technique amongst operators, our study demonstrates that WALANT in hand trauma surgery is associated with high levels of intra-operative comfort, low levels of intra-operative anxiety and pain, resulting in an excellent overall patient experience. Two of the largest series on patient experience of WALANT in the elective setting, reported by Teo[3] and Gunasagaran,[4] closely mirror our results in the emergency setting.

All but three of our patients would choose to have WALANT again. Of the three that would not, reasons included "uncomfortable injection of local anaesthetic" in two patients, and "excessive intra-operative anxiety" in the third. The discomfort of LA injection can be reduced by including 8.4% sodium bicarbonate in the LA mixture, while excessive intra-operative anxiety may be managed through distraction by playing the patient's preferred choice of music or conversation with a member of the operating theatre team intra-operatively.

Our study demonstrates that surgery for hand trauma can be performed under WALANT with excellent overall patient experience, concurring with published evidence in the elective setting. We recommend WALANT in suitable patients as a safe, efficient and well-tolerated alternative to traditional GA.

Declaration of Competing Interest

None.

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NHS Foundation Trust

WIDE AWAKE LOCAL ANAESTHESIA NO TOURNIQUET (WALANT)

Patient Experience Survey of WALANT in Hand Trauma Surgery

(Please circle as appropriate)

Pre-operatively:

- Have you previously had WALANT surgery? Y N
- How anxious did you feel before the surgery? 

- How painful was the injection of local anaesthetic? 

Intra-operatively:

- How comfortable were you during the surgery? 

- How anxious did you feel during the surgery? 

- How painful was the surgery? 

Post-operatively:

- How anxious did you feel after the surgery? 

- How much pain did you experience following surgery? 

- How satisfied are you with the duration of the surgery? 

- How was your overall experience of WALANT? 

- Would you choose to have WALANT again? Y N

If not, please state reason

.....

.....

.....

Figure 1 VAS Questionnaire.

Table 1 Summary of results.

	Pre-op Anxiety	Pain on injection	Intra-op Comfort	Intra-op Anxiety	Intra-op Pain	Post-op anxiety	Post-op pain	Operating time satisfaction	Overall experience
Median	6	4	7	3	2	1	0	8	8.5
1st quartile	5.25	4	7	2	1	1	0	8	8
3rd quartile	7.75	5	8	4	2	2	0.75	9	9
IQR	2.5	1	1	2	1	1	0.75	1	1

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The CQC's recommendations on psychological assessment for cosmetic surgery patients: Will they improve the patient's journey? A review of current practice in the UK based on a survey of 71 plastic surgeons

Dear Sir,

Introduction

The number of people undergoing cosmetic surgery continues to increase yearly, with over 28,000 cosmetic procedures carried out in the UK in 2019.[1] There is a substantial subgroup of patients who do not derive any benefit from cosmetic procedures. It is important to identify those at risk of a poor post-operative outcome and understand the reasons why.

It is widely reported that this patient population is more likely to suffer from a number of psychological conditions such as body dysmorphic disorder (BDD). Identifying any underlying condition is vital as it will affect all aspects of patient care. These patients are likely to be discontent with the outcome of surgery, despite a clinically satisfactory outcome and by treating these patients, the surgeon is at risk of negatively affecting the patient. Furthermore, the surgeon places himself at higher risk of possible legal action relating to expectations of the outcomes of surgery.[2]

In Oct 2019, the Care Quality Commission (CQC) emphasised the importance of such assessment to all cosmetic surgery providers, indicating the need for psychological assessment and stating that questionnaires in themselves would not be seen as appropriate. They gave no further information or guidance of how clinicians should assess patients.[3]

We carried out a study to review the current practise of UK plastic surgeons and whether they agreed with the CQCs mandate.

Method

Participants were asked to complete an online survey. The questionnaire consisted of 8 questions to assess current practise and views on psychological assessment (Figure 1).

Results and discussion

Our respondents consisted of 71 plastics surgeons, who undertake a mixture of both NHS and private practice. The majority of participants had been practising cosmetic surgery for at least 10 years (69%) and either worked fulltime in the private sector or split their time between NHS and private work.

Our results show that at present more than 50% of surgeons do not use any form of screening tools as part of their psychological assessment, prior to surgery. This may be representative of the fact that there is a limited availability of validated psychological screening tools that have been developed for cosmetic surgery patients. Current screening tools have been criticized for being too long and expensive. They can be difficult to administer, score and consequently are time consuming.[4] While the majority of screening measures focus exclusively on screening for BDD, there also remains an inconsistency in addressing wider risk factors.[5] Our results may exemplify that our respondents were significantly experienced and perhaps were able to confidently

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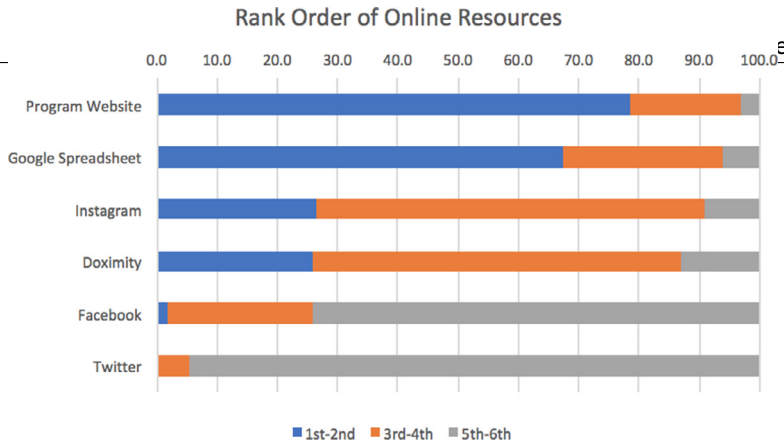

Figure 1 Participant questionnaire.

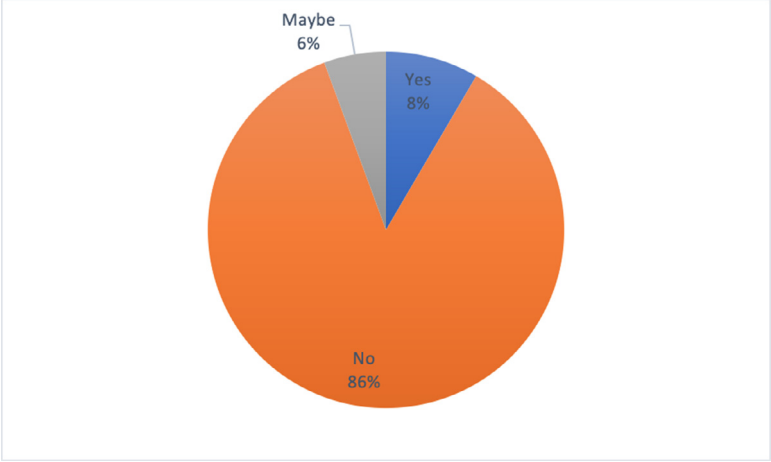

Figure 2 Do you support CQC's mandate of all patients having cosmetic surgery to have a psychological assessment by a clinical psychologist?

assess patients without specific screening tools. It may also demonstrate that present tools are not practical for routine practice.

Whilst there was acknowledgement that a clinical psychologist is an invaluable member of the current cosmetic multidisciplinary team (MDT), our results showed that 92% of our participants did not feel it was essential for all patients to be referred for a psychological assessment. Instead, a patient tailored referral was felt to be more appropriate when it was clinically indicated. This was reflected in the respondent's current practice, where a quarter of the participants had never referred a patient for a psychological assessment. Of those that had, the key questions that cosmetic surgeons wished to address included the presence of dysmorphobia, whether expectations were realistic and whether the patient would be able to cope with a result that did not match their expectations.

Our results showed that 49% of surgeons were unsure whether a psychologist in isolation would be reliably able to comment on dysmorphobia relating to a body part that they were not aesthetically trained to assess. Moreover, there were suggestions to provide psychologists' some cosmetic training and insight into the techniques, precision and refinements required to achieve patient goals. This may then assist in allowing the psychologist to better quantify what would constitute severe asymmetry or unrealistic goals.

The results demonstrated surgeons overwhelmingly did not support the CQC's mandate of a psychological assessment for all patients undergoing cosmetic surgery (Figure 2). Our respondents felt that the mandate was not pragmatic for a variety of reasons including logistics, time and the paperwork in referring every patient to a clinical psychologist even when it was not deemed clinically necessary.

Conclusion

It is clear that a psychological assessment with a screening tool or formal referral is helpful for many patients requesting aesthetic surgery. However, the CQC mandate will be a major change to practice, with no clear rationale or guidance. Although there is a wide variation in the views of this group, it is clear that most currently do not send patients for formal psychological assessment and do not see any clinical need to change their practice.

Declaration of Competing Interest

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Ethical statement

Ethical approval not required.

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Social media: Is it worth the hype for plastic surgery residency program recruitment?☆

Dear Sir,

Plastic Surgery residency programs' (PSRP) social media accounts are a potentially effective tool for recruitment and have been adopted as a new form of program promotion.[1] Our aim was to determine how applicants engage with or are influenced by social media throughout the application cycle.

Table 1 Social media presence of plastic surgery interns and applicants including frequency of Instagram posts.

Social Media Platform	Percent (%)
Instagram	89
A few times a year	38
Once a month	32
Once a week	17
A few times a week	12
Every day	1
Multiple times a day	1
Facebook	83
Twitter	20
No social media use	5

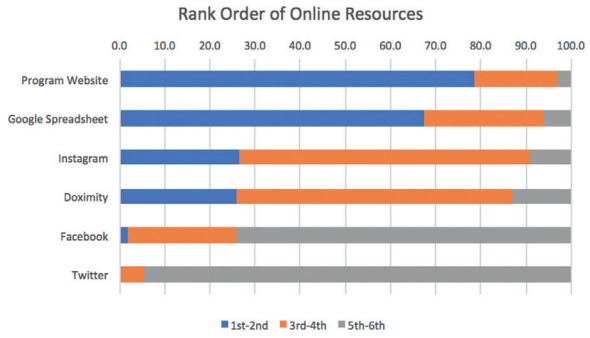

Figure 1 Importance of online resources for learning about a PSRP.

Our secondary aim was to provide an update on PSRPs' social media presence.

A survey was e-mailed in March 2020 to Plastic Surgery interns and applicants who applied to Duke Plastic Surgery in the 2019-2020 application cycle to collect information about social media use and its influence on applicants' decisions. Social media presence was assessed in May 2020 by querying Facebook, Instagram, and Twitter for hospital and integrated PSRP accounts. Instagram posts from the five accounts with the most followers were categorized into research/awards, educational events, and social events.

A total of 403 emails were sent with a response rate of 42%. Table 1 displays social media usage. Nearly all applicants who used social media followed programs' accounts on Instagram (89%), while only 14% posted more than once a week on Instagram themselves. Additional data showed that 35% of applicants allowed programs to follow them on Instagram, half changed their name on social media (49%) and posted less frequently (55%), while 20% deactivated an account. A quarter (25%) changed the content of their posts and three applicants (2.5%) posted more frequently. When learning about a program on Instagram, the majority (86%) found social posts useful, approximately half found posts of research/conference (57%), program information (54%), and visiting professors (44%) useful, and 33% found operative posts useful.

The program's website and Google spreadsheet, a crowdsourcing platform of applicants' impressions of programs from sub-internships and interviews, were the two most useful online resources (Figure 1). Instagram was the third

☆ The paper was presented at the North Carolina Society of Plastic Surgeons Annual Meeting on October 11-13, 2019.

most useful, with applicants who posted at least once a week ranking it as more useful than those who posted less frequently ($p = 0.01$). Although Doximity information and rankings are based on survey data and may not be accurate, PSRPs should recognize that 25% ranked it as the 1st- 2nd most useful online resource. Among the application cycle stages, Instagram was most beneficial when learning about PSRPs, with 36% reporting it helped them at least a moderate amount. Conversely, when applying for a sub-internship, deciding where to interview, and making their rank list, over 90% reported that Instagram influenced their decision a little or not at all.

All hospitals with an associated integrated PSPR had Facebook and nearly all had Instagram (98%) and Twitter (95%) accounts. Of the 81 integrated PRSPs, 57 (70%) were on Instagram, 32 (40%) used Facebook, and 22 (27%) had Twitter. The average number of Instagram posts was 97 (SD: 89) and the average number of followers was 1232 (SD: 581). There was a significant correlation between number of posts and followers ($r^2 = 0.69$, $p < 0.01$). Programs with more than two residents per year were more likely to have an Instagram account ($p < 0.01$), post more often ($p = 0.02$), and have more followers ($p < 0.01$). Among the five programs with the most followers, the majority of the posts were of educational events (56%), followed by social events (23%), and research/awards (21%).

With a growing number of PSRPs, applicants need complete and transparent information. Previous studies show that PSRP and microsurgery fellowship websites are inadequate, often with incomplete information and missing links.[2-4] Social media is an attractive supplement to websites as a visual, widely used, and interactive platform. Unfortunately, despite the increasing effort programs put into Instagram accounts, they are only moderately effective in helping applicants learn about programs and have little to no effect on applicants' major decisions throughout the process. When applicants use social media, they are hidden observers. While they follow PSRPs, they post infrequently, change their names, and do not allow programs to follow their accounts. One potential way to make Instagram more influential may be to post more social-related photos in order to demonstrate the culture or potential fit of a program. While social posts were reported by the most applicants as useful, this study shows that photos of social outings comprise only a quarter of total posts. Given that most of the Instagram accounts were created in the last two years, programs are likely still learning how to use the platform for recruitment, and applicants are skeptical about whether this information is accurate.[5]

COVID-19 could augment the importance of social media given that in 2020–2021, sub-internships and interviews were canceled or moved to a virtual format. Thus, this data should be a call to action to update program websites, monitor the crowdsourcing spreadsheet to correct misconceptions and answer questions, and display the resident culture robustly and accurately on social media. Future studies should examine whether social media's influence grows as many aspects of our lives shift online.

Declaration of Competing Interest

None declared.

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Not required.

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Non-invasive radiofrequency therapy modulated histone acetylation status without change heat shock proteins in healthy women

Dear Sir,

Among the non-invasive methods available for the reduction of localized adiposity and waist circumference, radiofrequency (RF) has received particular distinction in recent years. In this sense, *Vanquish™ (BTL Aesthetics, Prague)* is an innovative method characterized by a non-invasive selective RF able to reduce localized abdominal adiposity which differs from another's RF because does not have direct skin contact.[1]

It has been pointed out that high temperatures might stimulate Heat shock proteins (HSPs).[2] Among the regulatory processes associated with HSP expression, the modulation of epigenetic machinery, including histone acetylation levels, seems to exert a pivotal role.[3] In this sense, histone acetylation is linked to enhanced transcriptional activity, a process controlled by histone acetyltransferases (HAT) and histone deacetylases (HDAC) enzymes, which adds and removes respectively, acetyl groups in lysine (K) residues on the amino-terminal tails of histones.[4]

Despite these findings, the impact of the non-invasive RF on HSP and epigenetic modulation has been poorly investigated. Therefore, this study aimed to analyze the impact of the non-invasive RF technology on anthropometric variables, histone H3 acetylation and HSP 47 and 60 levels in peripheral blood from healthy women.

Twenty healthy adult women aged between 25 and 38 years were recruited and separated into two groups: control/sedentary ($n = 10$) and exercised/physically active ($n = 10$). For the exercised group it was defined as inclusion criteria to be practicing aerobic physical activity 2-4 times a week and for control group, to be sedentary for at least 6 months prior to the study. The exclusion criteria were used for the two groups: women who were pregnant or who intend to become pregnant during the intervention, those who had undergone a surgical procedure in the area of treatment in the last 6 months, presence of active implants such as stents, pacemakers, cochlear implants, intrauterine device, proximal metal prostheses, metallic rods, individuals who presented clinical conditions such as diabetes mellitus, hyperthyroidism or hypothyroidism, systemic arterial hypertension, present active local dermatological conditions, caloric restriction diets and the use of anti-inflammatory drugs.

Participants were made fully aware of the experimental procedure and possible risks involved in the study prior to giving their written informed consent. The study was approved by the Ethics and Research Committee of the Centro Universitário Metodista - IPA (number 1.772.345).

In order to assess the acute and chronic effects of global histone H3 acetylation and HSP 47 and 60 levels in response to non-invasive RF treatment, blood samples were taken (15 mL) in the antecubital region of the control and exercised group in 3 different moments: before the intervention (T1), immediately after the first intervention (T2) and after 4 sessions (T3). The anthropometric measurements were done before and after the treatment protocol. All participants were advised not to ingest alcoholic beverage or practice physical activity 48 h prior to blood collection. Treatment sessions, the biomarker analysis as well as the anthropometric measurements were done as previously described by Arpini et al.[5]

Of the 20 participants recruited into the study, 19 successfully completed the 4 RF sessions, while one woman withdrew for undisclosed reasons. Table 1 highlights the impact of the intervention on the anthropometric data. Importantly, no significant differences were found between the groups in T1, demonstrating the similarity of the sample in the baseline period.

A significant reduction in the body mass and fat mass in the exercised group in T3 when compared to T1 (Table 1, $p = 0.017$, $p < 0.001$, respectively). However, these variables were not changed in the control group or when comparing both groups.

Regarding HSPs measurements, it was demonstrated that the intervention is not able to alter HSP 47 or HSP 60 levels at any of the times evaluated in both groups tested ($p > 0.05$, data not shown).

On the other hand, a significant increase on global histone H3 acetylation levels was observed at T2 compared to T1 in exercised group ($p = 0.047$; Figure 1), while no

Table 1 Sample characteristics regarding anthropometric variables.

		Bodymass (kg)	BMI (kg/m²))	Fat body (%)
	T1	62.37 ± 11.28	22.65 ± 3.12	27.43 ± 7.44
Control	T3	61.11 ± 11.95	22.70 ± 3.29	27.16 ± 7.65
	p (time)	N.S	N.S	N.S
	T1	57.00 ± 6.56	21.61 ± 1.55	24.28 ± 3.65
Exercised	T3	56.37 ± 6.82*	21.34 ± 1.47	22.88 ± 4.17*
	p (time)	0.017	N.S	*p* <0.001
	p (group)	N.S.	N.S.	N.S.

Data presented as mean ± SD.
BMI, Body mass index. N.S., Non-significant value.
* Denotes statistical difference between T1 and T3 ($p < 0.05$).

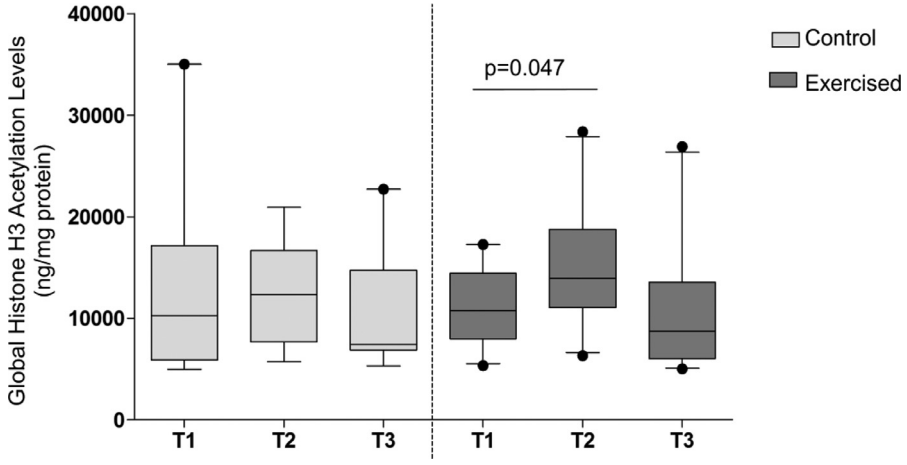

Figure 1 The effect of non-invasive RF intervention on global histone H3 acetylation levels in exercise and control groups at different time-points.

changes in this epigenetic mark were found in control group nor between exercised and control group ($p>0.05$; Figure 1).

To the best of our knowledge, we demonstrated for the first time the effect of non-invasive RF intervention on HSPs markers in healthy adult women. In summary, non-invasive RF is able to improve anthropometric measurements such as body mass and fat body in physically active healthy women without provoking any change in these variables in the sedentary group. This response might be related to acute histone H3 hyperacetylation status with not delay effects, contributing to the transcriptional machinery homeostasis, which might be linked to the gene expression of specific genes related to anthropometric improvement. Future studies should be done in order to evaluate the expression of potential genes engaged in this response.

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Ethical approval

Ethics and Research Committee of the Centro Universitário Metodista – IPA (number 1.772.345).

Declaration of Competing Interest

None declared.

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Letter comments on "Autologous fat grafting seems to alleviate postherpetic neuralgia – A feasibility study investigating patient-reported levels of pain"

Dear Sir,

We read with interest the article entitled "Autologous fat grafting seems to alleviate postherpetic neuralgia – a feasibility study investigating patient-reported levels of pain " (J Plast Reconstr Aesthet Surg 2020 Aug 21)[1] where Sollie et al. presented a prospective single-arm study on ten patients to investigate the use of autologous fat grafting for the treatment of postherpetic neuralgia. Their results showed improvements in both the average and maximum level of pain based on a visual analog scale. Moreover, all parameters investigating neuropathic pain were significantly reduced, although no improvement was seen in the quality of life. We would like to congratulate with Sollie and coworkers for their paper and kindly thank them for citing our studies. Considering the data listed in the article, we would like to contribute by adding our more recent experience in the treatment of postmastectomy pain syndrome (PMPS).[2] Breast cancer represents the most frequent cancer in female population and nowadays both conservative and non-conservative surgical approaches may be adopted.[3] About 20—50% of patients undergoing breast surgery for oncologic reasons develop PMPS, defined as chronic neuropathic pain located in the front of the chest, in the axilla and in the upper arm that arises after mastectomy or quadrantectomy and persists for more than 3 months after surgery. Recently, we performed a prospective study on the use of autologous fat grafting in 37 female patients who underwent mastectomy or quadrantectomy with pathologic scarring and chronic persistent neuropathic pain, resulting in a statistically significant reduction of the perceived pain after 1 month and 3 months. Clinical questionnaires also showed that the cicatricial areas improved in terms of color, thickness, skin pliability, and surface irregularities.[2] Therefore, lipofilling has also become more and more popular in the treatment of facial scars, derived from burns, traumas, degenerative diseases and radiotherapy. Its properties, thanks to the presence of mesenchymal stem cells stored in the harvested fat, are able to affect the pain, itching, scar vascularization and pigmentation of the injured tissues.[4]

We also adopted autologous fat grafting in the treatment of postirradiation fibrosis and pain following orbital enucleation for locally advanced retinoblastoma and subsequent radiotherapy and we obtained a significant release of scar retraction, reduction of fibrosis and orbital rim contraction together with an important improvement of pain symptoms.[5] The local changes observed enabled an ease placement of an ocular prosthetic implant.

In conclusion, our results are encouraging both in terms of improvement of clinical characteristics of the scars and in patient's pain experience and quality of life. Because of its safety, efficacy, and optimal tolerability, we support its adoption in a variety of clinical conditions where chronic pain affects the patients' life.

Ethical approval

N/A.

Declaration of Competing Interest

The Authors declare no conflicts of interest.

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Comment on: "The safety and efficacy of autologous fat grafting during second stage breast reconstruction"

Dear Sir,

We read with interest the article entitled "The safety and efficacy of autologous fat grafting during second stage breast reconstruction"[1] which depicts how autologous fat graft has become a widely spread technique used to improve breast shape, size and overall satisfaction in patient who undergo autologous or implant-based reconstruction. Particularly so, this study shows how fat grafting in second stage reconstruction reduces additional surgery and allows patients to end their reconstruction path in a shorter time, without a statistically relevant increase of post-surgical complication.

We would like to congratulate with Patel AA and coworkers for their paper; we would like to contribute with your achievements by remind our experience in autologous fat grafting.

Our team has widely use the autologous fat grafting technique to treat different clinical conditions in various frameworks that go beyond usage of this technique in breast reconstruction: treatment of facial scar and autologous fat graft employed in irradiated orbit post-enucleation[2,3] are just few example of how versatile this tool could be: the properties of fat, thanks to the presence of mesenchymal stem cells stored in the harvested fat, are able to affect the pain, itching, scar vascularization and pigmentation of the injured tissues.

In breast reconstruction setting, we performed a large number of trial on the usage of autologous fat grafting in treatment of post-mastectomy pain syndrome.[4] In particular, we performed a prospective study on the use of autologous fat grafting in 37 female patients who underwent mastectomy or quadrantectomy with pathologic scarring and chronic persistent neuropathic pain, resulting in a statistically significant reduction of the perceived pain after 1 month and 3 months. Clinical questionnaires also showed that the cicatricial areas improved in terms of color, thickness, skin pliability, and surface irregularities.[4]

We also retrospectively evaluated the complication rates of PMRT using VMAT technique to immediate tissue expander-based reconstructions.[5] Both the use of VMAT technique and the rou- tine AFG at the time of expander implant exchange provided a reduction of complication rates and an increase of the patients' compliance and tolerance to the treatments.

In conclusion, our results in all analyzed studies are encouraging regarding improvement in patient' quality of life.

For its profile of safety and tolerability for the patients, we totally support the usage of autologous fat grafting in a large variety of clinical conditions.

Declaration of Competing Interest

None.

Ethical approval

No.

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None.

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Reply to Microvascular breast reconstruction and thromboembolic events in patients on hormone therapy: audit of practice from a tertiary referral centre

Dear Sir,

We read with interest the recent work by Samaras et al. looking at the risk of thromboembolic events following microvascular breast reconstruction in patients taking hormone therapy.[1] They found no significant impact of hormone therapy on intra-operative microvascular thromboses and post-operative microvascular complications, in contrast to a recent meta-analysis that found hormonal therapy associated with increased flap loss and donor morbidity.[2]

This retrospective study of 233 patients certainly adds useful data to the literature and the authors must be commended. We would like more detail to give more clarity to their conclusions. It would be useful to know exactly what type of flaps (DIEP, SIEA, MS-TRAM, other) were used in the hormone and no-hormone therapy groups and their respective complication rates as previous papers have identified non-abdominal flaps were associated with higher thromboembolic events.[3]

Samaras et al. provide details of age, BMI, smoking status, timing of surgery (immediate or delayed), and pre-operative chemotherapy between the hormone and no-hormone therapy cohorts. However, to better assess the comparability of the two cohorts, further detail is required to identify any significant difference in pre-operative radiotherapy treatment (in the paper by Kelley et al. there was a greater incidence of pre-operative radiotherapy in the Tamoxifen group),[3] proportion of patients undergoing bilateral versus unilateral reconstruction, and relevant co-morbidities such as diabetes or peripheral vascular disease. Ideally, this information could also be further stratified by no hormone therapy, Tamoxifen, and aromatase inhibitor use; analogous to how the complications are stratified and presented.

Most previously published papers on this topic have looked at rates of flap loss (partial or complete) as important complications. It would be useful to determine exactly what is meant by post-operative microvascular complication in this study by Samaras et al. and whether this translates into partial or total flap loss. Additionally, the total length of follow up would be beneficial to know in order to determine at what point any partial or total flap losses occurred. Parikh et al. found no difference in the rate of total flap loss in their meta-analysis of four studies.[4] However, they did find a significantly greater incidence of all thrombotic flap complications (which includes partial flap loss) in the Tamoxifen group. Similarly, in the meta-analysis by Spera et al. when the outcome variable combines partial and complete flap loss, there is a significant difference favouring the no hormone therapy group.[2] Partial flap loss is a highly subjective outcome variable and furthermore the study by Kelley et al. (the only one to find a significant difference in flap loss) is heavily weighted in both meta-analyses.[2,4]

Finally, it is interesting that the authors chose to not only include deep venous thrombosis and pulmonary embolism, but also superficial venous thrombosis (SVT) in their analysis. While previous work has recognised an increased risk of deep venous thrombosis and pulmonary embolism associated with superficial venous thrombosis (especially in proximity to the saphenofemoral junction), for many people SVT is a self-limiting condition requiring minimal treatment.[5] The inclusion of SVT into the thromboembolism group may create uncertainty and for this reason it would be important to know the incidence of SVT separately to DVT and PE, and whether these events were symptomatic whether these were symptomatic patients and what was the timing post-surgery.

We would be very grateful if the authors could expand on their findings to address these outstanding points which we feel would benefit all readers and increase the relevance

of their results to existing published data on this important topic.

Ethical approval

N/A.

Declaration of Competing Interest

No conflict of interest to declare.

Funding

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Immediate autologous free-flap breast reconstruction in the COVID-19 era can be safely performed

Dear Sir,

The COVID-19 pandemic has changed the way in which elective services are delivered across healthcare. For several months breast reconstruction services were halted. We published guidance on restarting immediate abdominal based reconstructive surgery following mastectomy in the breast cancer setting[1]. This included details of patient selection, COVID-19 testing, and recommended in-patient and out-patient follow-up protocols. Here we present our initial data from this service reconfiguration compared to the outcomes to the corresponding time-frame in 2019.

During the period of the first peak of COVID-19 within the UK we performed no autologous breast reconstruction from 23rd March at the Imperial College Healthcare NHS Trust Plastic Surgery Unit until our restart on 9th June 2020. From this time until October 8th 2020 we performed 29 immediate free-flap reconstructions on 25 patients. The first six were performed in the private sector owing to lack of capacity within the NHS (Table 1).

As planned, all women referred by the breast surgeons were discussed at a formal oncoplastic breast MDT (run via a virtual platform) to ensure consensus regarding safe patient selection. Those women who fulfilled criteria for consideration of immediate breast reconstruction were seen at a face-to-face appointment pre-operatively, when an abdominal wall perforator mapping CT scan was performed, along with pre-operative blood tests (including vitamin D levels). Vitamin D was supplemented with 10, 000IU daily for 2 weeks pre-operatively, if found to be below 70 nmol/L. Patients who were of Black and Minority Ethnic origin were counselled regarding increased risk of COVID-19 related death[2], but not denied surgery based on ethnicity.

The second pre-operative appointment was typically virtual; information was also available via a virtual breast reconstruction seminar. No patient was denied reconstruction on the basis of a CT scan. All patients were admitted on the morning of surgery, and asked to take private-hire or personal transport into hospital. Patients were asked to self-isolate for 14 days pre-operatively, and undergo a PCR COVID-19 antigen test 3 days prior to surgery. Family and friends were not allowed to visit the hospital. Patients were treated within a risk-managed pathway, and were separated from patients with potential or confirmed COVID-19.

No patients developed COVID-19 pre-operatively, during their hospital admission, or in the post-operative period. There were no flap losses, and there was one return to theatre within 30 days of surgery, for washout of infected

Table 1 Outcomes of immediate autologous free flap breast reconstruction following the first peak of COVID-19.

	9.06.2020 – 8.10.2020	9.06.2019 – 8.10.2019
Number of patients	25	38
Number of free flaps	29	44
Number patients contracting COVID-19	0	N/A
Free flap losses	0	0
Immediate:Delayed breast reconstruction	29:0	40:4
Mean Age (range)	49.5 (23–63)	50.3 (31–70)
Mean BMI (range)	26.4 (20.3–34.6)	27.2 (20.3–36.5)
Age >70	0	1 (2.6)
BMI >30.0	4 (16%)	9 (23.7%)
BMI >35.0	0	3 (7.9%)
Diabetes	0	2
Chronic cardiac, renal or respiratory disease	1 (4%, well controlled asthma)	5 (13.2%)
Immunosuppression	0	0
Therapeutic:risk reducing mastectony	26:3 (90%:10%)	40:4 (90.9%:9.1%)
Active smoker	3 (12%)	4 (10.5%)
Percentage of Black & Minority Ethnic patients	40%	36.8%
Vitamin D Deficiency	11 (44%)	N/A
Mean length of stay (days)	3.9	4.7
Number of returns to theatre within 30 days	1 (3.4%)	1 (2.3%)
Mean mastectomy weight (g)	532 g	552 g
Mean flap weight (g)	613 g	564 g
Number of pre-operative face-to-face appointments	1.2	2.2
Number of virtual pre-operative appointments	1.0	0
Number of post-operative face-to-face nurse-led dressing clinic appointments	5.4	4.1
Number of post-operative face-to-face nurse-led dressing clinic appointments, when doctor called to review	3.1	1.8
Number of post-operative face-to-face appointments with doctor	0.2	1.2
Number of post-operative virtual appointments with doctor	0.9	0

breast seroma. The same pre-operative COVID-19 testing and isolation protocol was employed for this, and she did not develop COVID-19.

The mean age of the women was 49.5 years (range 23–63 years old), with a mean BMI of 26.3 (21.0–34.8). Due to the pandemic, we looked to reduce the face-to-face contact with patients, and move to virtual consultations. Pre-operatively, we have evolved from a mean of 2.2 to 1.2 face-to-face consultations, and from zero to one virtual meeting. The mean inpatient stay has reduced from 4.7 to 3.9 days. Although the post-operative dressings clinic visits have increased from 4.1 to 5.4, the post-operative face-to-face consultations with a doctor have decreased from 1.2 to 0.2, with a corresponding increase in virtual doctor-patient interactions (increasing from 0 to 0.9). This demonstrates increased multi-disciplinary contact, where patients are seen by their surgeon and dressing clinic staff concurrently during the pandemic. This therefore facilitates virtual immediate post-operative consultation, reducing patient risk to nosocomial infection.

During the pandemic, evidence suggested that age over 65 and BMI over 35 increased the risk of severe COVID-related illness[1]. In terms of co-morbidities, our COVID-19 pathway meant that we could no longer offer the surgery to patients with diabetes, those over the age of 70, those with a BMI greater than 35.0, and those with chronic cardiac, respiratory or renal disease. Prior to the pandemic, these alone would not have been contra-indications. All patients were discussed at the oncoplastic MDT, where a consensus was achieved as to the suitability of each patient for surgery.

Throughout the pandemic, we continued to follow the published pathway, but also reviewed it regularly, in line with available evidence. We reconsidered offering surgery to patients with diabetes, however, research published following the first peak of COVID-19 suggested that it remained unsafe to do so[3, 4]. Although the intention was to restart delayed breast reconstruction, a second surge in cases has meant that the staff availability could not be guaranteed, and this has therefore not been recommenced as of January 3rd 2020.

In summary, our data show that there are mechanisms to provide safe care for these women. Although they do not allow comment on the delayed breast reconstruction pathways, the results support the fact that immediate breast reconstruction in selected women should not be neglected due to the COVID-19 pandemic. This surgery should only be precluded if staff availability is limited, or the surgery is unsafe.

Declaration of competing Interest

None.

Ethical approval

N/A

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