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Fibrin tissue adhesive for face- and necklift

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Summary *Introduction:* Although available for decades, fibrin-based tissue adhesives (FTAs) have enjoyed only variable popularity in aesthetic surgery since their introduction in the 1980s. Whilst benefits in facelift surgery have been reported for a range of measures, including expanding haematoma, oedema and ecchymosis, irrefutable evidence has not yet been forthcoming. We instigated a prospective study to test the hypothesis that an underappreciated property of FTA, namely its ability to distribute tension, would reduce complications and revision due to early relapse.
Patients and methods: The study group comprised 100 consecutive facelifts with FTA. The comparative group comprised the immediate preceding 100 patients who underwent similar interventions, but with drains instead of FTA. All surgery was undertaken by the senior author using standard techniques and statistical analysis employing Fisher's exact test.
Results: The groups were comparable in age, gender distribution, co-morbidity and declared cigarette smoking. Complications were recorded in 24 patients with significantly more in the comparative group ($p = 0.048$), particularly hypertrophic scarring ($p = 0.029$). Although there appeared a greater prevalence of revision and cutaneous necrosis in the comparative group, these did not reach statistical significance.
Discussion: To the many published benefits, we can add that FTA can reduce complications, particularly hypertrophic scarring, and it now forms an important part of our facelift practice.

Introduction

Given its fundamental role in the coagulation cascade, it is no surprise that the haemostatic nature of fibrinogen has been known for some time, having been first elucidated at the start of the 20th century.[1] In fact, it is over a century since its first clinical use, during cranial surgery.[2] Another chief property appeared more recently with the demonstration of improved skin graft adhesion 1944.[3] Intuitively, a naturally haemostatic and adhesive product would appear

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to be of tremendous benefit, particularly with wide areas of dissection typified by aesthetic surgery, and the use of fibrin tissue adhesive (FTA) in facelifting was duly reported in 1982.[4] Although embraced by numerous other surgical specialties, the literature has fallen short of proving conclusive benefit in this arena. Possible explanations include the recanting[5] of one of the early proponents[6,7] and equivocal evidence for the most feared complication, expanding haematoma. There are, however, numerous proven benefits, including the reduction of wound drainage by 25–70%,[4,5,8] oedema and ecchymosis,[6,9–11] and comfort[4,8,10] that may merit fresh consideration of the role of FTA.

Aesthetic surgery continues to evolve, but not as quickly as our patients' expectations: perfect healing with no downtime are considered attainable outcomes by an increasing number. Having previously used FTA for the face in the early 1990s, the senior author undertook a short trial that appeared to improve oedema, patient comfort and speed of healing. With a geographically widespread and fastidious clientele, comprising a large proportion of secondary facelifts, we were particularly interested in complications and their reduction. Whilst not a formal randomised clinical trial, this study reports its prospective use in 100 consecutive patients, and it compares outcomes to an equivalent cohort (level III evidence). The literature has also been summarised for those interested in considering FTA.

Patients and methods

Patients were eligible for inclusion having undergone face- and/or necklift after the introduction of FTA in January 2010. One hundred consecutive cases were included, and they form the *study* group. The previous 100 received concertina drains, and comprise the *comparative* group.

Patients underwent a variety of techniques, all of which have been employed by the senior author as he first started facelift surgery 30 years ago (Table 2). The preferred technique being extended superficial musculoaponeurotic system (SMAS) dissection[12] under normotensive general anaesthesia with a single 1.5 g dose of cefuroxime on induction. The neck was approached via a transverse submental incision and direct sub-platysmal lipectomy undertaken as required. Platysmal apposition took the form of a two-layer corset. After completion of the SMAS manoeuvre, meticulous haemostasis was followed by 1 ml aerosolised TISSEEL (Baxter, Newbury, Berkshire, UK) applied in a thin, uniform layer to one surface of each subcutaneous pocket. Two strategically placed staples were found to be particularly useful in setting the initial skin tension before the flap was subjected to constant manual pressure for a minimum of 3 minutes. This important step yields the very stable adhesion as shown in Figure 1, and it permits excess skin removal in the standard fashion. All patients had a lightly compressive crêpe bandage applied

Table 1 Key demographic features of the two groups.

		Comparative	Study
Number		100	100
Median age (range)		59 (35–81)	60 (39–75)
Female		94	91
Smoker		12 (+1 ex > 10 years)	8 (+3 ex > 10 years)
Primary		62	43
Secondary		38	57
Co-morbidity	Nil	56	62
	Hypertension	15	15
	HRT	12	5
	Hypothyroidism	6	2
	Other cardiac	4	4
	Depression	4	3
	Malignancy	3	3
	Autoimmune	3	5
	Diabetes mellitus	1	1

Table 2 Distribution of specific surgical technique by group. 'Thin' referring to an SMAS layer too attenuated for a planned SMAS flap thereby requiring plication.

		Primary		Secondary		
		Comparative	Study	Comparative	Study	
Face-/necklift	Plication	22 (14 thin)	4	23 (8 thin)	29	78
	SMAS flap	16	11	7	15	49
	E-SMAS	20	25	2	4	51
Necklift		4	3	6	9	22
	$\sum$	62	43	38	57	200