ABSTRACT
For volume restoration of the face, hyaluronic acid is conventionally injected through long, large-bore, 18-gauge needles because of the higher viscosity subtypes required. These hyaluronic acids are either more highly cross-linked or larger in particle size than the less-viscous subtypes. The microdepot injection technique involves using the 31-gauge BD insulin syringe (Becton-Dickinson, North Ryde, NSW Australia) to deposit small amounts of filler (0.05–0.1 mL) throughout the area of volume loss. The procedure is extremely well tolerated, requiring only topical and ice anaesthesia. Using this method, volume restoration can be achieved naturally and progressively over a period of time. Fractional filling every 3–4 months is continued until the desired level of volume correction is attained. Patients undergoing fractional filling followed over a 12-month period did not indicate any observable compromise in filler longevity, even when highly viscous hyaluronic acid fillers were injected through small-bore, 31-gauge insulin syringes.

Key words: dermal filler, filler layering, 31-gauge needle, insulin syringe.

INTRODUCTION
The ageing face is characterized by changes in skin complexion, cutaneous laxity and volume loss. Progressive loss of soft tissue and skeletal volume results in hollowing of the midface, temples, orbital region and lips. Current approaches to facial rejuvenation routinely address volume replacement in these areas for a more youthful facial contour.

Hyaluronic acid (HA) fillers are often selected as volumizing agents on account of their safety, efficacy, versatility and ease of administration.1 Conventionally, HA volume restoration of the midface requires a long, large-bore needle (18-gauge, 70 mm) to inject the highly viscous HA gel into the deep subcutaneous or supraperiosteal planes.2

An alternative method of filler delivery can be accomplished using a 31-gauge insulin syringe and the microdepot technique.3,4 This technique is easy to learn, minimally invasive and, in some instances, may be more acceptable to practitioners and patients.

TECHNIQUE
The microdepot method refers to the following HA filler injection technique. As described in detail previously,3 the HA filler is decanted from a single proprietary syringe into multiple 31-gauge, 0.5 mL, 0.25 mm × 8 mm, Ultra-Fine II (product no. 328822) insulin syringes (31-G BD; Becton-Dickinson, North Ryde, NSW Australia). Each 31-G BD syringe (0.5 mL) can accommodate 0.2 mL HA filler.

The face is assessed for volume loss and treatment areas are marked (Fig. 1). For mid-facial volume replacement, the main treatment areas are the malar, zygoma and zygomatic arch regions. Proprietary or compounded topical anaesthetic agents (containing lignocaine and/or prilocaine) should be applied 15–20 min prior to the procedure. After this, a temporary skin marker is used to map the injection points. Typically eight to 10 points per cheek are required to cover the midface region as defined above. Each injection site is further anaesthetised with ice for 10–20 s immediately prior to injection. Using the preprepared 31-G BD syringes, each point is injected with 0.05–0.1 mL HA gel.

Abbreviation:
HA 
hyaluronic acid
The spacing between microdepot injection points is approximately 0.5–1 cm. The needle enters the skin at 90° (perpendicular) to the skin surface and can be inserted into either the subcutaneous space or deeper into the supraperiosteal space. A total of 1–2 mL HA gel, spread over 10–20 injection points (microdepot technique), is typically injected bilaterally in one session. The area is gently massaged at the end. The session may be repeated every 3–4 months until the desired level of volume correction is achieved, an approach known as fractional filling (Fig. 1a–c).

**DISCUSSION**

Mid-facial volume loss over the malar and zygomatic regions imparts the impression of ageing by increasing the skeletal appearance mid face and contributes to skin laxity inferiorly through soft tissue ptosis, which further accentuates nasolabial folds and mandibular jowls. For volume restoration, there is a preference for ‘thicker’ or ‘harder’ fillers, which are either more highly cross-linked or have a larger particle size. Provided they are appropriately placed within the deep subcutaneous or supraperiosteal planes, these fillers offer increased filler duration \textit{in vivo}. Conventional and proprietary product recommendations dictate that the prepackaged filler is delivered via bolus and/or threading injections using the accompanying 18-gauge long cannula, tunnelling from the zygomaticotemporal region to the midface.

An alternative approach outlined here involves injection of relatively small amounts of HA filler (by microdepot) directly into the treatment field using 31-gauge short needle insulin syringes. The treatment sessions are repeated at regular intervals until the desired level of volume restoration is achieved. This natural and progressive revolumization over time contrasts with large volume correction in one sitting using the bolus technique.

The authors’ combined experience of injecting over 100 cheeks in the past 18 months demonstrates an excellent safety and side effect profile. The most troublesome side-effect is post-injection bruising, which is minimal and transient. The overall rate of bruising is low, with no cases of haematoma encountered. Bruising can be minimized by: (i) pre-operative cessation of non-essential prescription and over-the-counter anticoagulants; (ii) direct pressure after treatment for 5 min; and (iii) the use of small-bore needles (31-G BD) that limit vessel wall damage.

Fractional filling with 31-gauge syringes is arguably less invasive, more intuitive and potentially offers better control of filler delivery, filler placement and treatment end-point, all of which are appealing to a subset of practitioners and patients. Understanding and utilisation of the microdepot technique and fractional filling approach enables the use of different filler subtypes in your patient in the one sitting, known as the potpourri approach (discussed previously by Lim\textsuperscript{4}). The proposed 3–4 monthly interval for fractional filling is intended to parallel cosmetic botulinum injection intervals, because there is often concurrent product use in these patient groups.

The microdepot technique may also complement bolus filling. It is particularly well suited to periorbital injections (tear troughs, lateral orbital hollowing), where long cannula injections may be challenging. It may also be used for top-up treatments to correct asymmetrical results from initial bolus injections.
Potential drawbacks of the microdepot technique include additional preparatory time in decanting the filler gel. The fractional filling approach is not suited to patients preferring an instant ‘make-over’ transformation, because they will be dissatisfied with the subtle, incremental changes.

An important issue relating to microdepot injections is a theoretical concern that the 31-gauge small-calibre lumen may damage or alter the physical and biochemical properties of the HA filler and adversely affect its in vivo stability and duration. It is recommended that practitioners use cohesive HA fillers (e.g. Juvederm VOLUMA; Allergan Australia, Gordon, NSW, Australia) rather than granular HA fillers because the latter may be susceptible to fragmentation when injected through a small-bore needle. Our experience with the microdepot technique and photodocumentation of patient progress over 12 months indicates that injecting highly cross-linked cohesive HA fillers through 31-G syringes does not appear to compromise filler longevity clinically. Thus, we present this novel technique as a useful addition to the current approach to mid-facial volume restoration.

REFERENCES