ABSTRACT
Hyaluronic acid gel is a commonly used skin/soft tissue filler in cosmetic dermatology. Hyaluronic acid fillers are packaged in proprietary luer-lock syringes that can be injected via a 50-gauge, 27-gauge or larger diameter needle depending on the consistency of the gel. A method of decanting proprietary hyaluronic acid fillers into multiple 51-gauge insulin syringes for injection is described. The use of a 51-gauge insulin syringe for filler injections can potentially enhance the injection process through more accurate product delivery and placement. This has the potential to produce a more balanced and symmetrical outcome for patients. Additional benefits include less injection pain, less bleeding/bruising and higher levels of patient satisfaction.

Key words: dermal fillers, skin fillers, cosmetic fillers, fractional filling.

INTRODUCTION
Hyaluronic acid (HA) fillers are widely used in cosmetic dermatology on account of their safety, efficacy, versatility and relative ease of administration. HA fillers are commercially packaged in ready-to-go syringes (mean: 0.8–1 mL; range: 0.5–2 mL). HA fillers are typically injected via either a 50-gauge, 27-gauge or larger diameter needle depending on HA particle size, concentration and degree of cross-linking, which determines the viscosity or thickness of the HA gel. More viscous HA gels require larger diameter needles.

Patients undergoing filler injections prefer a procedure that is effective, quick, relatively painless, and associated with minimal downtime. Proprietary filler syringes with larger diameter needles tend to increase injection pain and may be associated with increased risk of bleeding and bruising. Accurate estimation of small injection volumes (0.05–0.1 mL) can also be more difficult resulting in greater likelihood of asymmetrical product placement. Hence, even experienced injectors with meticulous technique may not consistently achieve a positive outcome using proprietary syringes.

On the other hand, injecting HA fillers through a 51-gauge 0.5-mL 0.25 mm × 8 mm Becton-Dickinson Ultra-Fine II (product number 328822) insulin syringe (51-G BD syringe) offers better syringe handling and control and will ensure that the procedure is less painful and associated with a lower incidence of adverse effects such as swelling, bruising and asymmetrical product placement.

TECHNIQUE
Under sterile/aseptic conditions, the HA filler is decanted from a single proprietary syringe into multiple 51-G BD syringes. Each 0.3-mL 51-G BD syringe will comfortably accommodate 0.1–0.2 mL of filler material. For example: one syringe of Restylane® (1 mL) can make five separate 51-G BD syringes with 0.2-mL filler product; one syringe of Juvéderm® (0.8 mL) can make four separate 51-G BD syringes with 0.2-mL filler product.

Following is an outline on how to decant proprietary fillers into 51-G BD syringes.

Material: (i) sterile dressing pack; (ii) proprietary filler syringe; (iii) 26-gauge needle (or 18-gauge blunt drawing needle); and (iv) multiple 51-G BD syringes.

Method: (i) place all the listed material on an opened sterile dressing pack; (ii) remove the plunger from the rear of the 51-G BD syringe; (iii) insert the proprietary filler syringe (with a 26-gauge needle or 18-gauge blunt drawing needle) into the rear of the 51-G BD syringe; (iv) inject 0.1–0.2-mL filler into the 51-G BD syringe; (v) replace the plunger and push the filler to the needle end of the 51-G BD syringe; and (vi) the 51-G BD syringe with filler content is now ready for use.

DISCUSSION
The 51-G BD syringe has several features that can enhance the filler injection process when compared with proprietary
syringes: (i) small needle diameter (0.25 mm diameter); (ii) lubricant-coated needle; (iii) thin needle wall with larger lumen; (iv) small plunger diameter; (v) clearly marked scale of 0.01-mL graduation; (vi) flat plunger tip that lines precisely with scale; (vii) no dead space.

The smaller needle diameter with silicon lubricant coating results in greater injection comfort for the patient (needle diameter: 0.25, 0.30, 0.40 mm for 31-gauge, 30-gauge, 27-gauge needles respectively). For similar reasons, insulin syringes with either 30-gauge or 31-gauge needles have been described for cosmetic botulinum and filler injections. Injections are well tolerated and associated with minimal discomfort when used in conjunction with topical and ice anaesthesia. The 31-G BD syringe can be used to inject any HA filler that utilizes a 30-gauge or 27-gauge needle. For thicker or more viscous HA fillers, there is insufficient data to routinely recommend use of the 31-G BD syringe. Further studies are required to determine whether pushing more viscous fillers through a 31-gauge needle can affect its physical properties such as filler duration within the tissue.

The thin needle wall and larger lumen diameter result in improved injection flow of filler product (Fig. 2). The 31-G BD syringe has a comparable lumen diameter to a standard 50-gauge needle (BD Medical, pers. comm., 2009). The plunger diameter is also smaller which correlates with a lower injection force for a given injection rate (injection force = injection rate x plunger diameter). One of the key benefits of the 31-G BD syringe is the ease of injection (lower plunger pressure) with correspondingly smoother flow of filler product. The 51-gauge needle also enables more consistent injection of fillers into the dermal plane for more effective correction of fine wrinkles, superficial skin creases and acne scars.

Proprietary syringes are often difficult to read clearly as the syringe barrel is translucent instead of frosted (Fig. 3). The injector also has to repeatedly subtract backwards from the start point to calculate how much filler has been used. This is fraught with potential confusion and errors of calculation that could lead to unequal product placement and asymmetrical outcome. The 31-G BD syringe has clearly marked scale of 0.01-mL increments compared with 0.05 mL for proprietary filler syringes, markedly improving accuracy and consistency of injection volume (Fig. 5). The 31-G BD syringe has a flat plunger tip that lines precisely with the scale markings allowing for accurate reading and delivery of filler product. The absence of dead space in the needle hub and barrel tip eliminates wasting of trapped fillers.

Decanting HA fillers breaks the sterility chain and introduces potential microbial contamination that can in turn affect filler shelf life. To what extent filler shelf life is affected by the decanting process is unknown. The author has not experienced any contamination problems with this method, over a 12-month period, where the decanted product is stored no longer than 6–8 weeks and refrigerated when not in use.

In summary, the 31-G BD syringe offers more precise and smoother filler injections with less waste. Fillers prepared in this way can also be accurately delivered in precise volumes resulting in more consistently symmetrical outcome. Additional benefits include less bleeding and bruising with greater injection comfort and patient satisfaction.

REFERENCES


Figure 1 Decanting of proprietary filler into a 31-gauge insulin syringe through the rear.

Figure 2 The 31-gauge insulin syringe has a smaller needle diameter, thinner needle wall and comparable lumen diameter to a 50-gauge needle (figure not to scale).

Figure 3 Comparison of a proprietary filler syringe with attached 50-gauge needle versus a 31-gauge insulin syringe with integrated needle.