

Special delivery

Dr Olivier Amar and Mr Shaheel Chummun on restoring contour defects with the Sterimedix GTI cannula (Amar)

ABSTRACT

Tethered scars can often be unsightly and there is a growing desire of patients to improve the appearance of such scars. The GTI cannula (Amar) has been specifically designed to divide the deforming forces in the tethered scars and help improve their appearance. An excellent patient satisfaction and operator ease of use was noted following the introduction of the cannula.

INTRODUCTION

Scarring, irrespective of the cause, can have a negative impact on the psychological wellbeing of patients, leading to an increased level of anxiety and self-consciousness (Tebble, Thomas et al. 2004). There is no doubt that the increased popularity of social media has made people more self-conscious about their appearance, and as a consequence, demand a simple and effective procedure to improve the quality of their scars and enhance their appearance. It is estimated that acne scars affect about 90% of adolescents worldwide.

Scarring is a normal physiological process of the body's response to injury to the skin integument.

Any injury to the deeper reticular layer of the dermis will lead to the formation of a scar. This can be a hypertrophic scar, a keloid scar or an atrophic scar (Gu, Li et al. 2018). In keloid and hypertrophic scars, there is an abnormal accumulation of extra-cellular matrix, mainly in the form of collagen. On the other hand, an atrophic scar can be sunken, pigmented or hypopigmented, and is often seen in patients with facial acne. It is the loss of collagen, elastin and dermal fat that leads to the downward pull of the epidermis, producing the sunken appearance typically seen in acne scars (Yug, Lane et al. 2006).

TREATMENT MODALITIES

While a variety of treatments have been described for the management of scars, it is primordial for the operator to carefully evaluate the cause of the scarring and subsequently formulate the most appropriate treatment plan. It is also crucial for the operator to manage the patient's expectations so that the latter can understand what can be achieved. It is not unusual for a combination of treatment modalities to be used to manage the various components of a scar; resurfacing techniques, in the form



of chemical peels, lasers and dermabrasion, can be used to improve the contour of a scar, fat grafting and fillers can be used to replenish any loss of volume, and surgery used for revision and excision of scars (O'Daniel 2011; Cho, Park et al. 2006; Tanzi and Alster 2004; Gu, Li et al. 2018; Newberry, Thomas et al. 2018).

Fillers

The use of fillers in restoring volume in the face has seen an exponential rise in the last decade and has been well documented. More recently, fillers are being used more frequently, in combination with other treatment modalities, to replenish any volume loss seen in facial scars. It has been suggested that the ideal filler would recreate a subcutaneous scaffold, while stimulate the local tissue for neo-collagenesis (Beer 2007). There is some evidence that supports the use of poly-L-lactic acid and hyaluronic acid in the management of acne facial scars (Forbat, Ali et al. 2017).

Fat grafting

The success of autologous fat grafting in improving contour deformities and restoring volume loss while improving the quality of scars is well documented (Negenborn, Groen et al. 2016; Pallua, Baroncini et al. 2014). The use of nanofat with fat graft, and nanofat graft combined with platelet-rich plasma and fractional carbon dioxide laser has been shown

to improve the quality of facial scars (Tenna, Cogliandro et al. 2017; Gu, Li et al. 2018). Under the right conditions, fat grafting can produce a stable, long term outcome, reducing the risks of fat graft resorption (Coleman 2006).

Subcision

The tethering of the dermis by fibrous bands and the loss of the underlying connective tissue usually result in the depression seen in superficial scars (Barikbin, Akbari et al. 2017). Division of these fibrous bands forms the basis of subcision, and this can be achieved using sharp needles such as NoKor needles, cataract blades and wires. However, the safety and efficiency of subcision by using these needles have been questioned, as an increased incidence of injuries to the operator and to neurovascular bundles have been reported (Barikbin, Akbari et al. 2017). This has subsequently led to the development of blunt cannulas for subcision, that have been reported to be safer and more efficient (Barikbin, Akbari et al. 2017; Gheisari, Iranmanesh et al. 2018).

Scarring, irrespective of the cause, can have a negative impact on the psychological wellbeing of patients, leading to increased anxiety and self-consciousness

NEEDLES VS. CANNULAS

As the techniques for facial rejuvenation have involved over the years, there has been a shift towards the use of cannulas for delivery of the filler material to the desired anatomical location. The use of needles has been associated with increased pain, bruising, haematoma, and infiltration of vessels, resulting in catastrophic life-changing events, >

including blindness (Hexsel, Soirefmann et al. 2012; Tansatit, Apinuntrum et al. 2017). On the other hand, the use of blunt-tipped cannulas is associated with fewer complications (Fulton, Caperton et al. 2012).

Moreover, cannulas have been shown to be superior at delivering the filler material most accurately at the desired anatomical area, with less spilling into the neighbouring tissues (Pavicic, Frank et al. 2017, van Loghem, Humzah et al. 2017). Nonetheless, one has to be cognisant of the fact that intra-vascular embolisation can occur with both needles and cannulas (Tansatit, Apinuntrum et al. 2017, van Loghem, Humzah et al. 2017). Intra-vascular embolisation can still happen (van Loghem, Humzah et al. 2017), even when a needle is applied perpendicular to the periosteum, a technique that was previously thought to be safe.

THE STERIMEDIX GTI CANNULA (AMAR)

The Sterimedix GTI cannula (Amar) is a new cannula that has been designed for the treatment of facial scars and contour defects on the face and body. It was felt that there was a gap in the operator's repertoire required for the safe delivery of a filler agent or fat to restore contour defects, while performing subcision and to divide any adherent bands that may cause the tethering seen in scars.

To restore the contour defects seen in scars, the tethering bands are subcised, using either a sharp needle or blade, followed by infiltration of the desired volume to restore the contour. The GTI cannula (Amar) is specifically designed to do both, obviating the need for small blades and needles and additional cannula. The blunt cannula has a unique grooved tip that allows it to pass easily through the fibrous adherent bands, undertaking the subcision process as it passes through (Figure 1). With a conventional non-grooved cannula, considerable force is often required to pass the cannula through the scar tissue, which can potential cause more trauma to the surrounding structures or damage the cannula itself.

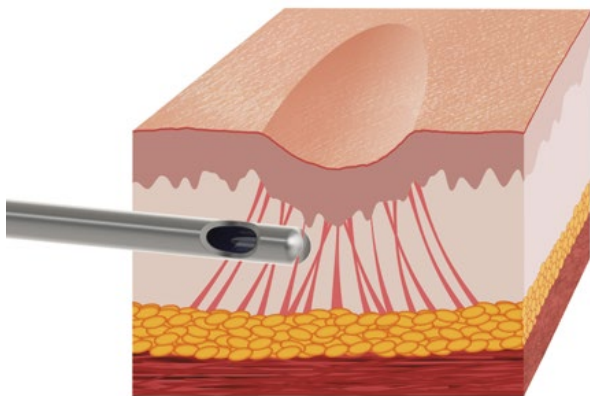


Figure 1. The grooved tip allows easy glide of the cannula through the scar tissue, while performing a subcision.

As the GTI cannula (Amar) divides the restricting bands, the tension from the overlying skin is released (Figure 2), allowing the operator to accurately deliver the filler agent or fat at the desired location (Figure 3). This would be difficult with a non-grooved cannula, as the operator would need to remove the small blade used for the subcision and then introduce a cannula for the delivery of the filler agent.

This would often not be accurate as the area targeted would often fill with blood while the changeover of instruments is being carried out.

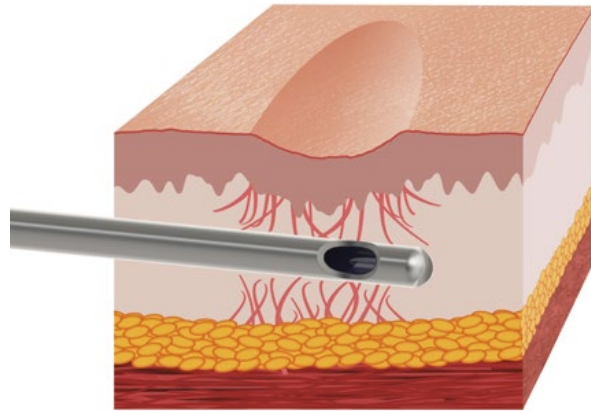


Figure 2. With the tethering bands divided, the deforming forces on the skin surface are removed.

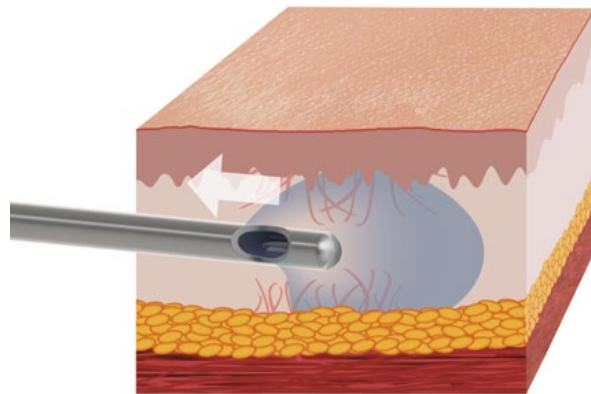


Figure 3. The contour deformity can be corrected with filler/fat as the cannula is withdrawn.

The GTI cannula (Amar) also has a black arrow at the base of the needle, which is in line with the side opening of the cannula. This allows the operator to orientate the cannula and accurately place the filler material at the desired location in a much more controlled fashion.

The first Sterimedix GTI cannula (Amar) was the 25g 40mm cannula that comes with a 23g pre-hole sharp needle (GTI 1). It is designed to fit like any other cannula on any filler syringe and can also be used with Luer lock syringes for fat transfer. Its fine bore makes it very useful for facial scars and small superficial scars on the body. Following the ease of use and satisfaction from both operators and patients with the 25g cannula, a second cannula, the GTI 2, with similar design as the GTI 1 but with a longer and wider bore (18g 80mm) (Figure 4) and a 19g pre-hole sharp needle, was designed to address denser scars on the body. This proved to be equally successful in operator and patient satisfaction.



Figure 4. The wider calibre and longer GTI 2 cannula® (Amar), 18g 80mm, designed for thicker scars on the body



CASE STUDY 1

A 49 year-old patient with a depressed scar to the forehead (Figure 5) was managed with the GTI1 cannula (Amar) where subcision was performed to release the underlying deforming bands and the contour deformity was restored with non-permanent filler. The final result, immediately after the procedure, shows restoration of the contour and no bruising or haematoma (Figure 6).



Figure 5. Depressed scar to right forehead

Figure 6. Contour deformity to right forehead restored using the GTI1 cannula (25g 40mm), with minimal bruising

CASE STUDY 2

This patient presented with a tethered scar on her lower abdomen (Figure 7). The pre-hole needle was used to create the guide hole through the thick caesarean section scar, through which the wide bore GTI 2 cannula (Amar) 18g 80mm was inserted to divide the tethering



bands (Figure 8). Non-permanent filler was used to improve the contour of the area (Figure 9).

Figure 7. Patient presenting with tethered lower abdominal scar



Figure 8. The pre-hole needle used to puncture the thick scar to provide the guide hole. The GTI 2 cannula® (Amar), 18g 80mm, is inserted into the guide hole in the thick scar before the tethering bands of the scar in the suprapubic area are subcised with the cannula.

Figure 9. The tethered area in the middle of the scar has been released and the contour improved with non-permanent filler



CONCLUSION

The GTI cannula (Amar) has been specifically designed to allow the operator to safely divide any fibrous tethering and deforming structures and allow for a safe and accurate restoration of volume, in a bid to enhance the contour of any scar. Our initial experience has shown the cannulas to have a high patient and operator satisfaction. **AM**

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CASE STUDY 3

This patient presented with a tethered dense scar of her back (Figure 10). The wider bore GTI 2 cannula (Amar) was used to release the tethered scar and non-permanent filler was used to improve the contour of the scar (Figure 11).



Figure 10. Depressed scar on the back, released with the wider bore GTI 2 Cannula (18g 80mm) and volume restoration with non-permanent filler



Figure 11. Contour deformity improved following subcision and volume restoration