



The magic suture in periocular reconstruction

Vladimir T. Thaller¹ · Kaveh Vahdani²

Received: 26 June 2020 / Revised: 14 September 2020 / Accepted: 16 September 2020 / Published online: 22 September 2020
© The Royal College of Ophthalmologists 2020

To the Editor:

The advantages of direct defect closure over skin grafting or flaps are both obvious and well documented. There is no additional scarring, no donor site, and as only local skin is used, the tissue match is perfect. We read with interest the recent article by Peden et al. who studied patients with small margin (≤ 2 mm) excision of clinically well-demarcated primary periocular BCCs in the non-Mohs setting of one-stop clinic, achieving 87% rate of one-stage excision and direct closure, while 13% had excision with delayed reconstruction [1].

We wish to draw attention to an evolved subcutaneous suture placement technique that aids direct closure of larger defects than conventionally recommended in the oculo-plastic literature, thus facilitating one stage surgery for the majority of eyelid tumours. By strategically placing a single suture a seemingly impossible periocular tissue defect can be transformed into one that can easily be closed directly (Fig. 1). No undermining of the surrounding skin is required. Because such transformation appears impossible, we call this ‘the magic suture’ technique.

Transformation of a defect’s geometry is possible because of the inherent mobility of the face. One can demonstrate this for oneself by placing a finger on one’s cheek bone noting that the skin can be moved in all directions by two or more centimetres. Consequently, there is absolutely no need for undermining, a practice that creates more scar planes.

We all know that there is no such thing as a free lunch and direct defect closure invariably distorts the surrounding area. However, we also know that tissues expand when

under tension, over a period of days and weeks, so the induced distortion gradually disappears [2, 3]. This process can be helped by post-operative massage.

The salient properties of any suture bite are its direction, its length and depth and the tissue it engages. With the magic suture all three properties differ significantly from those of conventional subcutaneous sutures.

The most critical factor is the suture direction. In conventional wound closure the sutures are parallel to the short axis of the defect. For the ‘magic suture’ the direction of tension must be parallel to the tangent at the nearest point on the lid margin, irrespective of the defect’s axes. The resulting scar will therefore be perpendicular to the lid margin (Fig. 2).

The bite length on each side of the wound should be no less than 5 mm within the eyelid area and no less than 10 mm in the surrounding area. It should be deep enough to strongly engage the subcutaneous tissues (Fig. 2a–d).

Within the periocular area the subcutaneous tissue is mostly orbicularis muscle. Care should be taken not to engage inadvertently immobile structures, such as the orbital septum, as this would limit wound edge movement. Occasionally one may deliberately choose to engage the canthal tendon in the knowledge that this side of the repair will remain fixed and all the mobility will come from the opposite bite.

The actual suture material used for the magic suture technique is not critical. As suture tension invariably dissipates [4], through suture migration, we use an absorbable suture on a half circle needle. No advantage is gained from using longer lasting, non-absorbable, sutures. 6/0-gauge sutures work well within the eyelid area. Stronger 4/0-sutures are preferable more peripherally.

Generally, the magic suture is placed at the midpoint of each side of the wound, as this is the point at which maximum closure tension will develop. The suture bites should start and end in the base of the wound so that the suture knot becomes buried. The subcutaneous suture passage should be as close to the skin as possible.

When tying the suture, it is helpful to have an assistant push the wound sides towards each other, temporarily reducing the wound tension. Once the first double suture throw

✉ Kaveh Vahdani
kaveh.vahdani@nhs.net

¹ The Royal Eye Infirmary, University Hospitals Plymouth NHS Trust, Plymouth, UK

² Moorfields Eye Hospital NHS Trust, London, UK

Fig. 1 Intraoperative clinical photographs showing transformation of the periocular defect geometry using magic suture, and post-operative results. Single suture wound transformation (a–c). **a** Post tumour excision defect. **b** after a single suture placement, **c** at 12-day follow-up. Brow defect reconstruction with two magic sutures (d–f). **d** The defect. **e** After 2 magic suture placement. **f** After 8 months.

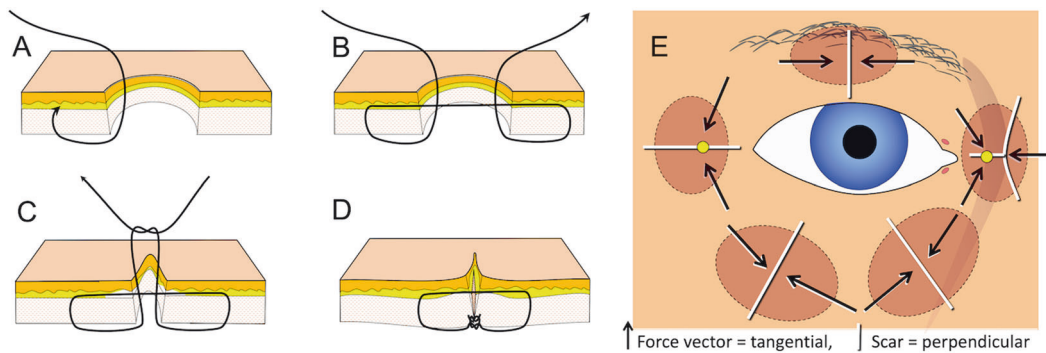
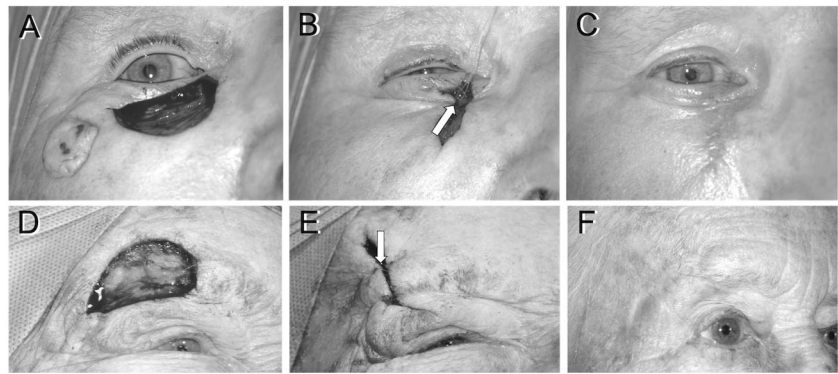


Fig. 2 The magic suture technique. **a** Suture is passed from the base of wound for 10 mm, then up through orbicularis, into the subcutaneous plane. **b** Keeping within the subcutaneous plane, the suture is taken back out and across the wound. On the opposite side of the wound, after passing subcutaneously for 10 mm, the suture is directed down, through muscle and brought out at the wound base. **c** The suture

has been placed, it is lifted clear of the tissues by simultaneously lifting and pulling on the suture ends. Rocking the suture knot slightly side to side encourages the suture to slide through the tissues and bring the edges together. While maintaining the suture tension the knot is then snugged down again as it is tightened. This manoeuvre of lifting, rocking, and tightening may need to be repeated a few times until the wound edges come together. During this staged process the phenomenon of ‘tissue creep’ is occurring [2, 3].

Occasionally more than one magic suture is required (Fig. 1d–f). If even stronger tissue holding is needed a buried horizontal mattress configuration is possible. However, the placement steps essentially remain the same.

This magic suture technique has evolved gradually. It has been in routine use by the senior author for the last 20 years. It is a very useful trick which converts the geometry of many seemingly excessively large skin defects into ones that are easily manageable by direct closure. Such closure not only saves surgical time but usually results in better outcomes with fewer scars.

A further important advantage is that the magic suture instantly simulates the effect that the planned closure will have on the lid margin position. This allows one to judge whether to proceed with the reconstruction, whether

is tightened to approximate the muscle edges and tied. **d** The knot is buried and the defect almost closed. Within the eyelid area a shorter suture bite length of about 5 mm suffices. Wound closure vectors. Black arrows show the tangential wound closure tension. White lines indicate the final closure axis.

adjustment of the closure direction is required or whether to perform a different type of reconstruction altogether. Such rapid simulation saves time and helps to avoid unsatisfactory outcomes.

An often-overlooked bonus of directly closing a defect is the scar lengthening that it causes. In the extreme case of directly closing a circular defect, circumference = $2\pi r$, the resulting scar length will equal half this circumference or πr . This is roughly 50% longer than the original defect diameter. Such lengthening helps to compensate for the inevitable scar contraction that comes with healing.

In conclusion, we commend this simple magic suture technique for all to try. The investment of the few minutes that it takes can pay major dividends.

The video of the technique [5] can be accessed via <https://youtu.be/tR0o75zLLiA>.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

Publisher's note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

References

1. Peden R, Radwan M, Wright M. Small margin (up to 2 mm) excision of periocular basal cell carcinomas in the setting of a one-stop clinic - long-term outcomes at a minimum of 11 years' follow-up. *Eye*. 2020. <https://doi.org/10.1038/s41433-020-0768-5>.
2. Argenta LC. Controlled tissue expansion in reconstructive surgery. *Br J Plast Surg*. 1984;37:520–9.
3. Thaller VT, Then KY, Luhishi E. Spontaneous eyelid expansion after full thickness eyelid resection and direct closure. *Br J Ophthalmol*. 2001;85:1450–4.
4. Linberg JV, Mangano LM, Odom JV. Comparison of nonabsorbable and absorbable sutures for use in oculoplastic surgery. *Ophthalmic Plast Reconstr Surg*. 1991;7:1–7.
5. “The magic suture in eyelid reconstruction”. YouTube, uploaded by Ok-ulooplastics, 12/06/2020, <https://youtu.be/tR0o75zLLiA>.