

## The Mercedes flap: a modified closure for circular skin defects around the eyebrow

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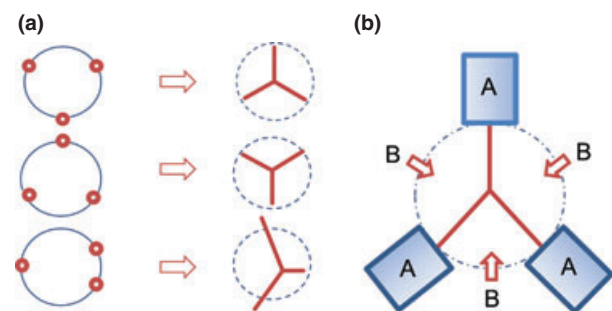
Circular skin defects are common after excision. Traditional closure requires removal of some healthy skin to make a fusiform elliptical defect and then close the defect directly. This closure may distort the tissue around the eyebrow, making the eyebrows asymmetrical.<sup>1</sup> Furthermore, although a purse-string suture can be used to provide closure for a circular skin defect around the eyebrows, this method will pull all the skin around the defect to the centre, producing puckering and buckling of the skin.<sup>2–5</sup> An alternative method of closure for circular skin defects around the eyebrow is the Mercedes flap, which involves excision of less of the healthy tissue and requires less tissue to be pulled to the centre of the defect, making the scar less visible. We report a series of patients treated with this technique.

During the period July 2010 to May 2012, the Mercedes flap was used to treat surgical defects in 42 patients (13 men and 29 women, mean age 47.5 years; range 22–68). Of the 42 lesions, 37 were melanocytic naevi, 2 were seborrhoeic keratoses, 2 were dermatofibromas and 1 was a basal cell carcinoma. The defects were located on the head of the eyebrow in 23 cases, within the eyebrow in 10, on the lateral end of the eyebrow in 5, and above the eyebrow in 4. All defects were circular or oval, ranging from 8 × 8 mm to 15 × 18 mm in size.

First, the circular or oval defect was evaluated after resection of the neoplasm. Before carrying out the Mercedes flap technique, the wound edge was undermined to facilitate pulling of the surrounding skin to the centre of the defect. Then, three points were chosen for insertion of intradermal 5-0 absorbable sutures (PDS II; Ethicon, San Angelo, TX, USA). The sutures were then gently pulled taut and tied at the same time. This process resulted in closure of the wound

with the appearance of the logo used on Mercedes Benz cars. The three points were chosen depending on the direction or length needed for the three 'arms' of this formation. This meant we could decrease the movement on specific structures (such as the head of eyebrow), which would eventually leading to fading of the scar(s) left by one or two of the arms of the Mercedes flap in specific areas (such as the eyebrow) (Fig. 1). Subsequently, we removed any excess skin (Burow triangles) if necessary. Then, we used an intradermal interrupted suture on the three arms of the flap with 5-0 absorbable sutures as before. Finally, the epidermis was sutured with 7-0 or 8-0 nonabsorbable sutures (Prolene), and the wound dressed. The dressing was changed on the first day after surgery, and subsequently every 2 days. The epidermal interrupted sutures were removed within 1 week of surgery.

Using this technique, all the wounds were closed completely. During the immediate postoperative period, some oedema was seen surrounding the sutures, but this disappeared completely within a week. There was no marked distortion of the nearby structures, especially in the eyebrows. Moreover, after the Burow triangles were removed, the scar line was inconspicuous,

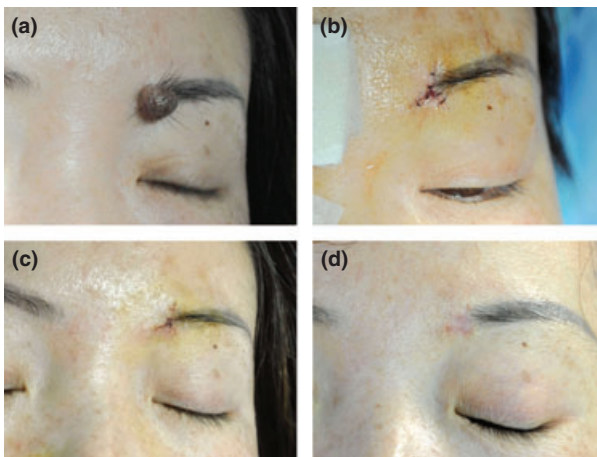


**Figure 1** The three-point suture. (a) The same defect (blue circle) becomes a very different scar (red Mercedes sign-like arms) after being sutured at a different set of three points (red circle on defect). (b) Performing the Mercedes flap: (a) movement of the three arms is minimized, and the structure around these areas will not acquire too much distortion (blue rectangle); (b) area (red arrow) pulled to the centre of the defect.

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**Figure 2** Defect on the head of the left eyebrow: (a) before repair (diameter 15 mm); (b) immediately after repair; (c) after removal of sutures; (d) 1 month after repair. Two of the three 'arms' of the Mercedes flap have now faded out because the head of the eyebrow was pulled into their crossing angle.

and optimal cosmesis was achieved (Fig. 2). No complications such as wound dehiscence, infection or haematoma occurred.

Circular or oval surgical skin defects are often created when neoplasms are excised. Such defects are usually closed with traditional closure or purse-string sutures, which may cause puckering and buckling of the skin, and result in a noticeable final scar.<sup>6</sup> By contrast, the Mercedes flap we describe here could save more of the healthy skin and make the scar less visible.

To perform the Mercedes flap, the three-point suture can be placed horizontally in the dermis to close the defect without puckering and buckling. However, very large defects may result in too much tension during closure. Therefore, we would only use this flap to repair a defect of 5–20 mm in diameter. In addition, the location of the three suture points needs careful consideration, especially if the defect is near the eyebrow, as the location of these three points can alter the appearance of the scar. Choosing the best location for these sutures can decrease movement of the

nearby tissue, making the scar form in the most favourable direction, and hiding or fading out the scar to the greatest extent possible.

Before performing this three-point intradermal suture, the wound edges are undermined. In our practice, the undermining is performed over the plane of the subcutaneous tissue. However, for defects under the eyebrows, we suggest deeper undermining in order to avoid destruction of the eyebrow follicles. We believe that the range of the undermining should be up to 10 mm. This undermining creates the flaps that are required for pulling to the centre of the defect, promotes easier sealing of the wound, and reduces tension of the closure. However, we do not recommend undermining the margins of any defects near the eyelid.

In conclusion, we report the successful use of the Mercedes flap in 42 patients with excellent short-term and long-term cosmetic and functional results. The Mercedes flap redistributes the tension around the defect and allows closure to be achieved more easily.

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