British Journal of Ophthalmology, 1986, **70**, 135–137

Bipalpebral sliding flap in the repair of inner or outer canthal defects

J P ADENIS[1] AND F SERRA[2]

From the [1]Service d'Ophtalmologie, CHU, 87042 Limoges Cedex, and [2]Antibes, 06, France

SUMMARY Seven patients were successfully treated with a bipalpebral sliding flap for the repair of medial or lateral canthal defects. In our experience this technique minimises the size of the associated surgical repair–a skin graft for the inner canthus or a cheek rotation flap for the outer canthus.

The bipalpebral flap (BPF) consists of two cutaneous flaps–a sliding flap from the lower lid and a rotating flap from the upper lid. These skin flaps are dissected from the orbicularis muscle with careful coagulation of all tiny bleeding vessels. Skin flaps were preferred to myocutaneous flaps because they allow a simpler surgical procedure.

The principal advantage of this technique is that it minimises the size of the associated repair, decreases the size of the skin graft in large defects, and uses adjacent skin of similar appearance and thickness to that lost from the defect.

We report our experience with the BPF, an underused but effective technique to repair medial or lateral canthal defects, using both upper and lower lid skin. We believe the BPF was first reported on by Brun and Morax[1] in 1899, but since that time the technique has been forgotten.

Correspondence to Dr J P Adenis, 22 Rue Chateau Gaillard, 87000 Limoges, France.

Patients and methods

Seven patients underwent surgery for medial or lateral canthal lesions. In six cases the lesion consisted of a basal cell carcinoma which was excised with frozen section control; the remaining case was of lentigo maligna. Five cases had medial canthal defects and two had lateral canthal defects.

A BPF operation was performed in all cases, and the flap was sufficiently large completely to cover the defect in two cases. In two other cases with medial defects a skin graft was required in addition to the BPF. A glabellar flap and a skin graft in addition to the BPF were required to cover a large medial defect in one case.

Details of these cases are summarised in Table 1.

SURGICAL TECHNIQUE

As illustrated in Figs. 1 and 2 (medial canthal and lateral canthal defects respectively), the BPF consists

Table 1 *Clinical data and summary of the results*

Case	*Age*	*Localisation*	*Surgery bipalpebral flap (BPF)*	*Histological data*	*Frozen section control*	*Previous treatment*	*Cosmetic results*	*Follow-up (months)*
1	76	OA	BPF + sliding flap	Lentigo maligna	No		Good, slight ectropion	4
2	86	OA	BPF + sliding flap	BCC	Yes, CE		Good	6
3	82	IA	BPF + skin graft	BCC	Yes, CE		Good	16
4	65	IA	BPF + skin graft	BCC	Yes, CE		Good	12
5	66	IA	Full thickness lid graft + glabellar flap + BPF	BCC	Yes, CE	Radiotherapy	Moderate	22
6	63	IA	BPF	BCC	Yes, CE		Good	3
7	63	IA	BPF	BCC	Yes, CE	Surgery	Good	2

BCC=basal cell carcinoma. CE=complete excision. IA=inner canthus. OA=outer canthus.

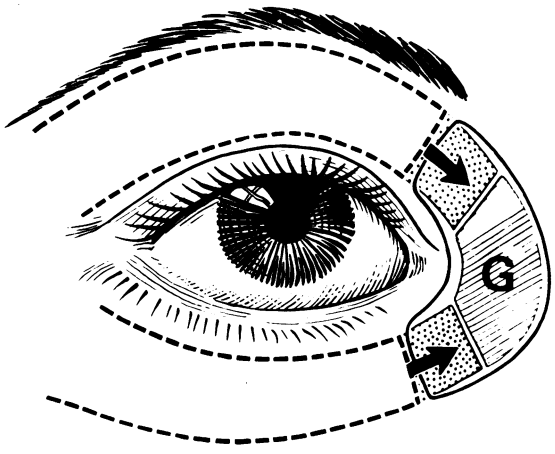

Fig. 1 *Bipalpebral sliding flap associated with a skin graft for the closure of a medial defect.*

of two cutaneous flaps. The skin is dissected from the orbicularis muscle with scissors, and the tiny bleeding vessels are carefully coagulated. The upper lid incisions for both inner and outer canthal defects are made 2 mm above the cilia and 2 mm below the eyebrow. For outer defects the lower lid incisions consist of a horizontal incision 2 mm below the cilia and a curved incision starting from the lower part of the defect to the inner portion of the cheek. For an inner defect the upper incision of the lower lid starts 2 mm below the cilia at the outer angle. A parallel incision is made 10 to 20 mm beneath this incision.

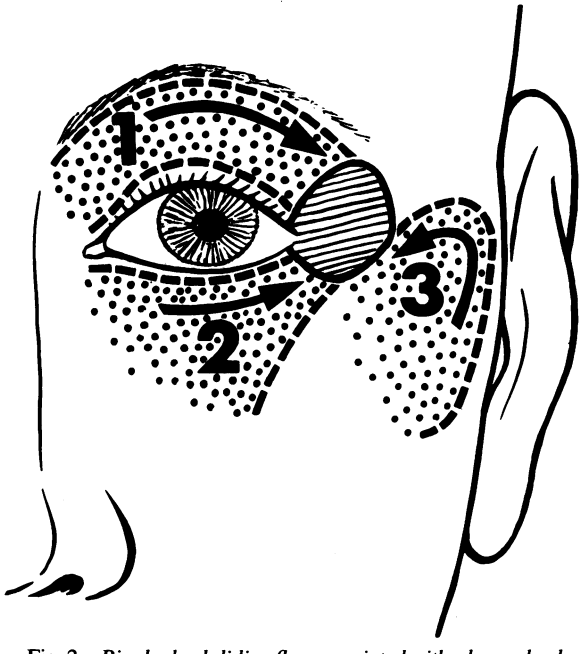

Fig. 2 *Bipalpebral sliding flap associated with a large cheek rotation flap for a large lateral defect.*

Flaps are sutured with 6–0 Prolene without a local pressure bandage in most cases. However, POR-8 (Sandoz) was used to decrease the bleeding. When a skin graft is necessary, additional 5–0 Prolene sutures are placed through the skin in the middle part of the graft for fixation to the orbicularis muscle or to the periosteum.

After resection of the lacrimal portion of the eyelid in the inner angle, the tarsi are reattached to a wire fixed to the anterior lacrimal osseus crest.

Frozen section control was used in six cases. Small pieces of skin were excised all round the main defect as well as tissue underlying the tumour for examination as described by Chalfin and Putterman[2] and Adenis *et al.*[3]

Results

Seven patients were treated successfully with a BPF to help close medial and lateral canthal defects. The cosmetic results were good in all cases except case 5, with only a moderately satisfactory cosmetic result. Cases 1 and 2 had moderate lower eyelid ectropion which disappeared in six months. In case 6, moderate epiphora remained but did not require another surgical procedure. No patient had ptosis before or after treatment.

The excision of basal cell carcinoma in all six cases was performed under frozen section control. This technique enabled us to excise the tumour completely in all cases. The average follow-up was 10 months in these six cases, but since the maximum follow-up period was only 22 months there has not been sufficient time to exclude absolutely any future recurrence of these tumours.

Discussion

Different techniques have been used in *the surgical repair* of the angles of the eye.

Medial canthal defect: (a) The 'laissez-faire' first described by Fox and Beard.[4] (b) The full thickness skin graft, which is used by a large number of authors listed in a recent paper.[3] (c) The tarsoconjunctival flap from the upper eyelid.[5] (d) A V-Y glabellar flap or a midline forehead flap, as recommended by Collin.[6] (e) A free tarsoconjunctival graft from the upper eyelid combined with a nasal pedicle skin-muscle flap, as described by Leone and Hand.[7]

Lateral canthal defects: (a) Direct closure with adequate undermining of the surrounding eyelid skin. The cut edges of the tarsal plates can be sutured to the orbital rim. 8-10 (b) Full thickness skin grafts

have been used by Mustarde[11] and Fox[12] for moderate defects but are not very suitable for large outer canthal defects because of the difference in skin thickness. (c) A cheek rotation flap described by Mustarde[11] can provide a large amount of skin in the inferior portion of the angle. (d) The forehead flap of Fricke from above the eyebrow. (e) A tarsoconjunctival flap from the upper eyelid.[5] This technique is recommended by Mac Cord,[8] Soll,[13] and Putterman.[14]

ADVANTAGES OF THE BFP

All these techniques except skin grafting are difficult to use in cases of large canthal defects. With large skin grafts poor results are frequently encountered after radiotherapy. The BPF is very useful in covering these extensive defects and/or minimising the amount of skin graft needed, particularly in treating recurrences following radiotherapy. Another advantage of the BPF is to cover the canthal defect with skin which is of similar thickness and color. If histological control is positive, this repair can more easily accommodate the larger defect following excision. The principal value of the technique, however, is to minimise the size of the associated repair–a skin graft or a cheek rotation flap.

CONCLUSION

The operation of bipalpebral sliding flap is a useful technique in repairing inner or outer angle defects when associated with another flap or with a skin graft. It minimises the size of the associated repair and is cosmetically acceptable.

We thank JRO Collin for reading the paper, his advice, and stimulating discussion.

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Accepted for publication 16 May 1985.

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doi: 10.1136/bjo.70.2.135