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# A simplified pedicle delay for axial pattern flaps

A. G. BATCHELOR

*St James's University Hospital, Leeds*

Summary—An alternative method of delay of the axial blood vessels of an axial pattern flap is presented.

The technique of pedicled transfer of an axial pattern skin flap to a distant site remains a mainstay of plastic surgical practice. Depending on the adequacy of the initial inset or the necessity to use the pedicle skin at a second stage, a surgical delay of the axial vessels may be prudent (Mcgregor and Jackson, 1972). Such a delay may still lead to necrosis of part of the flap and unfortunately surgical delay is irreversible. The patient will certainly require an extra visit to the operating theatre even if, as is usual, the delay is performed under local anaesthesia.

The technical modification described below is an attempt to avoid these problems by a simple manoeuvre which can be readily incorporated into the existing surgical technique.

## Technique

The flap is raised in the usual manner according to the surgeon's custom. He folds the flap back across the palm of his non-dominant hand, holding it with his thumb. It is then a simple matter to pass a thick monofilament suture across the base of the flap in a sub-dermal plane using a large Colt hand needle. The ends of this suture are left long and untied while the rest of the procedure is completed as usual. When the secondary defect has been closed and as the pedicle is tubed the ends of the "delay" suture are led through the suture line in the pedicle and taped to adjacent skin in a suitable position.

Two to three weeks after the initial procedure, according to the individual surgeon's preference and judgement, the "delay" suture can be tied tightly while the patient remains on the ward (Fig. 1). This manoeuvre will occlude all the blood supply encompassed by the suture, most importantly the axial vessels. Thus in few seconds, with minimal disturbance to the patient, a sub-dermal delay has been achieved.

This technique has been employed as a routine for the last 3 years. No complications of the technique have been encountered. The delay achieved appears to have been satisfactory in all cases. This observation may be non-contributary as it is impossible to tell if a delay was essential or not. No flap has suffered necrosis as a result of this

**Fig. 1**

Figure 1—The suture in position having been tied.

suture being tied. The suture has not had to be divided, when tied, in an attempt to avert total flap loss.

It has been the author's habit to tie the suture a day before division is contemplated, then if the flap circulation is in doubt the flap division has been deferred a further week. If the flap appears to have a robust inset, division is performed as planned.

## Discussion

The precise mode of action of surgical delay of random pattern skin flaps remains obscure despite extensive investigation (Reinisch, 1974; Finseth and Cutting, 1978). The technique of delay of the axial vessels of an axial pattern flap appears to have escaped such close attention but is just as ill-understood (Muir *et al.*, 1968). However, clinical experience certainly supports its use.

Choosing which individual flap warrants delay is difficult but possible. There are several techniques which one can employ, in combination with clamping the flap's base, to determine the safety of the inset (Creech and Miller, 1975). All these methods are time-consuming and subject to problems with interpretation. There is no way in which one can predict the effect of axial delay alone short of performing it surgically.

The delay described may be reversible to some extent. If, in the few hours following the suture being tied, it becomes clear that total flap survival is in doubt then the suture may be cut. This may relieve the situation and allow for a more traditional delay to be performed in the future when the inset has become more secure.

Clamping the base of the flap may be considered a suitable non-surgical alternative. In fact, this is only an alternative to complete flap division as it interrupts all blood supply. Intermittent clamping and release of the base of the flap, so-called "flap training", does not mimic delay as it only produces transient hyperaemia (Grabb, 1979).

The technique described has been designed to provide a simple solution to the problem of delay or no delay, as it is easy enough to incorporate as a routine to afford an added degree of safety to every axial flap transferred.

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## The Author

**Andrew G. Batchelor, FRCS(Plastic Surgery),** Consultant Plastic Surgeon, St James's University Hospital, Beckett Street, Leeds LS9 7TF.

Requests for reprints to the author.

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