



## Optimal closure of surgical wounds in forefoot surgery : Are adhesive strips beneficial ?

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**A subcuticular suture is an ideal closure method of surgical wounds where the aim is healing by primary intention. The addition of adhesive strips over the subcuticular suture appears to be based on anecdotal, rather than experimental evidence.**

**We performed a prospective study to compare the postoperative wound complications of combination closure with subcuticular closure alone. The wounds of 60 consecutive patients undergoing foot surgery were assessed clinically for wound complications at one week postoperatively.**

**Patients who had a combined closure were more likely to develop wound complications. They were also twice as likely to return to clinic for a further wound check.**

**The addition of adhesive strips to such a closure appears to offer no clinical benefit, and can be detrimental to wound healing. We recommend meticulous closure of surgical wounds with continuous, absorbable, subcuticular suture without adhesive strips, for an optimal outcome.**

**Keywords :** wound closure ; monocryl ; steristrips.

strips appears to be based on anecdotal, rather than experimental evidence (8). The outcome of combination closure has not previously been compared to absorbable subcuticular closure alone, but has been shown to have a slightly superior cosmetic result when compared to sutureless and nylon closures (3, 13).

### MATERIAL AND METHODS

We performed a prospective study to compare the wound healing in two groups of patients, those with a combination closure, and those with subcuticular closure alone. Both closure methods were used in our clinical practice before the study.

All patients over a 3-month period were included in the study. Patients were all elective, ASA grade I & II and all underwent forefoot surgery, by a single consultant surgeon. Patients were allocated to each group on an alternate basis and were discharged within 48 hours post

### INTRODUCTION

A subcuticular suture is an ideal method of surgical wound closure, where the aim is healing by primary intention (8). Despite this, the addition of adhesive strips over the subcuticular suture has evolved as an acceptable method of wound closure. This combination of suture closure and adhesive

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Table I. — Frequencies out of 30 patients of each complication

	Combined closure	Subcuticular closure
Wound discharge	7	2
Swelling	5	6
Redness	1	2
Friable skin	16	1
Non opposition of edges	18	7
Oral antibiotics	0	0
Return to clinic	7	3

Table II. — Distribution of surgical procedures in both groups

	Combined closure	Subcuticular closure
1 <sup>st</sup> MT Osteotomy	18	12
Cheilectomy	2	5
1 <sup>st</sup> MT Fusion	7	3
Excision of Neuroma	1	3
Lesser Toe Fusion	1	3
Other	1	4
Total	30	30

op with no reported wound problems. They were then followed up in the routine post op wound clinic at one week when the wound dressing was changed, adhesive strips were removed and suture knots were trimmed. The wounds were assessed clinically, by the nurse specialist, for the presence or absence of the seven wound observations listed in table I. The observations form part of a postoperative wound proforma used within our own foot & ankle department. Friable skin was defined as skin that was easily damaged by the removal of the adhesive strips, trimming of sutures or dressing change. Patient sex, surgical procedure, indication for surgery and closure method was also recorded. Age and length of wound were not recorded for the purpose of this study.

In the combined closure group, 3/0 Monocryl & steri strips were used and 21/30 patients were female. In the subcuticular only group, 3/0 Monocryl alone was used and 24/30 patients were female. The distribution of surgical procedures is listed in table II. The indication for surgery in each case was uncontrolled pain and / or deformity. The steri strips were applied perpendicular to the wound edges in a parallel, non-overlapped fashion. A curved needle was used for the continuous, subcutaneous, Monocryl suture, and the knots formed flush to the skin, away from the wound edges.

## RESULTS

As illustrated in table I, patients with combined closure were more likely to have a wound discharge (23% vs 7%), friable skin (53% vs 3%) and were more likely to have non-opposed wound edges (60% vs 23%). They were also twice as likely to return to clinic for a further wound check (20% vs 10%).

## DISCUSSION

Adhesive strips were originally developed as wound dressings and not as a method of wound closure. Whilst combination closure has become commonplace, the benefit of adhesive tapes and strips has been questioned. Their use can be advantageous in terms of their inhibition of the proliferation of skin flora (9) and protection against wound infections (4, 10). However, adhesive strips are known not to increase the tensile strength when added to subcuticular wound closure (16). They are often used only to improve the cosmetic appearance of the wound when the apposition of the wound edges is sub-optimal. Questions also remain regarding their adhesive properties (11, 12, 15), epidermal injury from the tape (1, 2, 14) and the ideal method of tape application (6, 12).

Patients in our study, who had a combined closure, were more likely to develop wound complications than those with subcuticular closure alone. We therefore suggest that the addition of steri strip adhesive tape, to a continuous, absorbable, subcuticular wound closure, has an adverse effect on wound healing. This may represent a reaction of the surrounding tissues, allergic, chemical or otherwise, to the adhesive in the strips.

Debate also arises in the literature over the ideal properties of a suture used to close surgical wounds. Subcuticular sutures are recognised to have benefits over percutaneous closure (5, 8) and a continuous subcuticular suture is likely to be as effective as an accurately placed interrupted, subcuticular suture (5). A continuous, absorbable, subcuticular suture doesn't require removal and potentially reduces the risk of wound tension or

damage. However there is evidence to suggest there is no significant difference in the outcome of wound closure between absorbable and non-absorbable groups (7).

### CONCLUSION

The addition of adhesive strips to subcuticular suture offers no clinical benefit in forefoot surgery, and can be detrimental to wound healing. We recommend meticulous closure of surgical wounds with continuous, absorbable, subcuticular suture without adhesive strips, for an optimal outcome.

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