A Comparison of Skin Graft Success in the Head & Neck With and Without the Use of a Pressure Dressing

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Abstract

Background The success of skin grafting is dependent on the interplay between many factors including nutrient uptake and vascular in-growth. To allow this, it is important that the graft is immobile and traditionally a ‘pressure dressing’ has been placed over the graft to improve outcome and graft ‘take’. We present the findings of our comparative study of full-thickness skin grafts performed in the head, neck and face region over a period of 24 months. We felt that there was an unacceptably high infection rate and graft failure using pressure dressings.

Methods Data was collected retrospectively from the case notes on 70 patients who had undergone full-thickness skin grafting to the head, neck and face over a 2 year period. Thirty-five patients underwent grafting with pressure dressing and 35 without. The group with the pressure dressing had the same ‘bolster’ specification-type dressing and those without had their graft ‘quilted’ in and chloramphenicol ointment applied topically. Success was determined by the percentage ‘take’ of the grafts and absence of infection i.e. purulence.

Results Infection in those with a pressure dressing stood at 26 % in contrast to those without, at 9 %. Without a pressure dressing we observed no total graft failures, compared to 6 % in those with a pressure dressing.

Conclusions The results confirmed the perception that there was a higher infection and graft failure rate where a pressure dressing was applied; however, this was not a statistically significant difference and a randomised control trial with a larger sample size would be required to validate the results.

Keywords Skin-graft · Infection · Failure · Head and neck · Quilting · Bolster · Pressure-dressing

Introduction

The harvesting of skin grafts is one of the most commonly performed surgical procedures. It is therefore unsurprising that several techniques with many modifications have been described in search of the optimal skin graft dressing.

Once a clean, well vascularised recipient site is prepared, the most important factors in graft take is the close, uniform apposition through even pressure and immobilisation [1]. This not only helps to reduce dead space and haematoma/seroma formation but also prevents shearing forces which facilitates plasmatic imbibition and capillary inosculation.

Many immobilisation compression techniques and dressings have been described. Some of the dressings used include adhesive dressings, foam sponge bolsters [1], ‘pull out’ tie over dressings [2] and negative pressure dressings [3].

In spite of the vast literature on skin grafting, there has been little evidence to support the use of any one particular technique especially in the head, neck and face region.

We felt that there was a higher rate of infection of skin grafts performed in the head and neck where a pressure dressing was applied. The infection led to variable loss of

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Fig. 1 Full-thickness graft quilted down with resorbable sutures

the skin graft and subsequent morbidity. We present the results of a retrospective, comparative study carried out in our department assessing the outcomes of skin graft ‘take’ with and without the application of a pressure dressing.

Materials and Methods

Data was collected retrospectively from the case notes on 70 patients, treated at the Oral & Maxillofacial Surgery department at Crosshouse Hospital, Kilmarnock. Patients who had undergone full-thickness skin grafting to the head, neck and face during 2006–2008 were included in the study.

The pressure dressing was a ‘tie-over’ bolster with a proflavin impregnated cotton wool, secured with radially arranged sutures around the wound and then tied over the bolster [4]. In the other group, the graft was ‘quilted’ down using resorbable sutures and was left uncovered (Fig 1). Chloramphenicol ointment was applied topically at regular intervals.

Graft success was measured by clinical assessment of the healing graft. Where there was graft loss, the area was measured as a proportion of the total grafted area at 10 days.

Statistical significance of the results was assessed using Fisher’s exact test.

Table 1 Graft recipient site in each group

Graft site	With pressure dressing	Without pressure dressing
Forehead	9	4
Pre/post-auricular	4	5
Tip of nose	4	8
Eyebrow	1	1
Dorsum nose	0	2
Temple	5	4
Scalp	5	6
Occipital	0	1
Chin	1	0
Cheek	6	2
Alar notch	0	1
Parietal	0	1

Table 2 Recipient site infection in each group

Graft site infection	Infection with pressure dressing	Infection without pressure dressing
Forehead	1	–
Pre/post-auricular	2	–
Tip of nose	1	–
Eyebrow	1	–
Dorsum nose	–	–
Temple	2	–
Scalp	1	1
Occipital	–	1
Chin	1	–
Cheek	–	1
Alar notch	–	–
Parietal	–	–
Total	9 (26 %)	3 (9 %)

Results

Seventy patients were included in the study; 35 with pressure dressing and 35 without. The mean age was 62 years, with a male: female ratio of 5:4. The size of the grafts ranged from 225 to 3600 mm².

The preferred donor site for skin graft harvest was supraclavicular (63 %, n = 44). The remainder of the grafts were harvested from the abdomen (26 %, n = 18), and post-auricular area (11 %, n = 8). The grafts were all full thickness.

The commonest recipient site was the forehead (18 %, n = 13). The remainder of the defects were pre/post auricular, nasal tip, eyebrow, dorsum of nose, temple, scalp, occipital, chin, nasal alar and parietal regions (Table 1).

Table 3 Percentage graft failure per site in each group

Graft failure	With pressure dressing		Without pressure dressing	
	Number of cases	(% Graft failure)	Number of cases	(% Graft failure)
Forehead	1	70	–	
Pre/post-auricular	2	30, 40	–	
Tip of nose	1	20	–	
Eyebrow	1	100	–	
Dorsum nose	–		–	
Temple	1	100	–	
Scalp	–		2	40, 20
Occipital	–		1	40
Chin	–		–	
Cheek	1	30	1	20
Total	7 (20 %)		4 (11 %)	

The overall graft infection rate was greater in the dressing group (26 %, $n = 9$) compared to the group with no dressing (9 %, $n = 3$), (Table 2). However, these findings were not statistically significant ($p = 0.1103$).

Complete graft ‘take’ occurred in 80 % ($n = 28$) of cases in the group with the pressure dressing, and 89 % ($n = 31$) in the group without. No total graft failures occurred in the group without a pressure dressing, compared to 2 (6 %) cases in the group with a pressure dressing. Incomplete graft ‘take’ was seen in 7 cases (20 %) in the dressing group and 4 cases (11 %) in the group without (Table 3). Again, this difference in ‘take’ was not statistically significant ($p = 0.513$).

Conclusions

Atherton et al. [5] carried out a randomised controlled trial comparing jellonet and proflavin as a tie-over dressing for small skin grafts. The sample size was similar to our study and no statistically significant differences between the two groups was found, as in our results. Apart from this, no studies were found that were suitable for a true comparison with our study.

It may be that graft failure and infection rates would improve if no pressure dressing was applied, however for a statistically significant result a prospective, randomised controlled trial would be required to validate these findings.

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