



## Excision of benign pigmented skin tumours by deep shaving

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**SUMMARY.** Benign pigmented skin tumours are frequently removed by shave excision. There is little information as to how often the method achieves a complete excision of the lesion and how often the full thickness of the dermis is removed.

43 benign pigmented skin tumours, on the trunk and proximal parts of the limbs, were removed by deep shaving and the shaved areas were then removed by elliptical excision. The shave excision achieved complete tumour removal in 72% of the lesions and did not divide the dermis to fat junction in 63%. Both objectives were achieved in 46%.

Shave excision of these lesions may be preferable to elliptical excision in sites where the incidence of hypertrophic scarring is high, as preservation of some thickness of the dermis may result in a more acceptable scar.

Benign pigmented skin tumours are present in virtually all human beings. Requests for them to be removed are common for cosmetic reasons, for reasons of comfort or if the patient fears that the lesions may be malignant or pre-malignant.

Benign pigmented skin tumours may be removed by full thickness skin incision; the wound may be closed primarily or allowed to heal by secondary intention.<sup>1</sup> Alternatively the lesions can be removed by superficial shaving of the skin, electrodesiccation, cryotherapy or a combination of these methods.<sup>2,3</sup> The combination of shaving and electrodesiccation has been widely favoured.

Shave excision has been reported to give good cosmetic results<sup>4</sup> and to produce a better cosmetic result than excision by removing a full thickness skin ellipse.<sup>3</sup> This could be an advantage when removing lesions on the trunk and proximal limbs, where subsequent hypertrophic scarring is more common than on the head and neck.<sup>5</sup>

The present investigation was undertaken with the limited objective of evaluating excision by deep shaving as a surgical technique for removing benign pigmented skin tumours from the trunk and proximal limbs. At the time of writing, full thickness elliptical excision was the accepted method of removing benign pigmented skin tumours in the Department of Plastic Surgery. The investigation was designed to assess deep shaving without altering the current practice of the department.

### Patients and methods

All the patients underwent operation under local anaesthetic as outpatients. The skin was anaesthetised by an intradermal injection of 2% lignocaine with 1/80000 adrenaline. Time was allowed for the skin to blanch.

The operation was performed under  $\times 2$  loupe magnification. The lesion was circumscribed with a number 15 scalpel blade, 1 mm beyond the limits of the pigmentation, without incising the full depth of the dermis. The lesion was then removed by cutting horizontally at the maximum depth of the circular incision.

Haemostasis was achieved with pressure, and the shaved wound was examined under loupe magnification, to see if the dermis had been completely penetrated at any point during the excision.

The shaved area was then excised elliptically through the full thickness of the skin, carrying the ellipse as close as possible to the edge of the shaved area. The wound was closed with a subcuticular monofilament absorbable suture, which was left in place for a period of 2 weeks.

The shave biopsy and the residual skin ellipse were fixed overnight in 10% formal saline. The shave biopsy was then bisected across the narrowest margin or, if greater than 6 mm in diameter, cruciate blocks were taken. The ellipse was then cut longitudinally into 2 or 3 blocks, depending on width. After routine paraffin processing, 3 micron sections were cut and stained with haematoxylin and eosin.

The slides of both the shaved specimen and the further ellipse were examined to determine whether all the naevus cells had been removed by the shave excision. Microscopic evidence of breach of the dermis to fat junction was sought. If the junction was found to have been divided, an estimate of the extent of the division was made.

### Results

The details of the patients are shown in Table 1 and the diagnoses of the lesions excised are shown in Table 2. Of the 43 lesions, 38 were benign melanotic skin tumours and 5 were basal cell papillomata.

**Table 1** Patient details

|                                 |                      |
|---------------------------------|----------------------|
| Number of patients              | 30                   |
| Number of lesions excised       | 43                   |
| Age (years)                     | 11–57, mean 29.9     |
| Sex ratio                       | 4 M:26 F             |
| Site of the lesions             |                      |
| Deltoid region                  | 5                    |
| Abdomen                         | 4                    |
| Back                            | 16                   |
| Presternal area                 | 9                    |
| Pubis                           | 1                    |
| Thigh                           | 5                    |
| Profile of the lesion           |                      |
| Flat                            | 21                   |
| Raised                          | 22                   |
| Largest dimension of the lesion | 3–15 mm, mean 6.8 mm |

**Table 2** Diagnosis of pigmented skin lesions n = 43

|                                  | <i>Clinical</i> | <i>Histological</i> |
|----------------------------------|-----------------|---------------------|
| Intradermal naevus               | 29              | 24                  |
| Compound naevus                  | 6               | 12                  |
| Junctional naevus                | 7               | 0                   |
| Simple lentigo                   | 1               | 1                   |
| Atypical melanocytic hyperplasia | 0               | 1                   |
| Basal cell papilloma             | 0               | 5                   |

**Table 3** Results: completeness of excision of pigmented lesions

| <i>Histological diagnosis</i>    | <i>Complete excision</i> | <i>Incomplete excision</i> |
|----------------------------------|--------------------------|----------------------------|
| Shave                            |                          |                            |
| Intradermal naevus               | 16                       | 8                          |
| Compound naevus                  | 9                        | 3                          |
| Basal cell papilloma             | 5                        | 0                          |
| Lentigo                          | 0                        | 1                          |
| Atypical melanocytic hyperplasia | 1                        | 0                          |
| Totals: all lesions              | 31                       | 12                         |
| Final ellipse                    |                          |                            |
| Totals: all lesions              | 42                       | 1                          |

**Table 4** Results: apparent state of the dermis to fat junction after shave excision

| <i>Method of assessment</i> | <i>Intact</i> | <i>Breached</i> |
|-----------------------------|---------------|-----------------|
| Loupe examination           | 31            | 12              |
| Histological examination    | 34            | 9*              |
| Both methods                | 27            | 5               |

\* The breach in the dermis to fat junction was extensive on histological examination in 1 specimen and focal in 8 specimens.

The rates of complete and incomplete excision of the lesions are specified in Table 3. Overall, 72% of the lesions were completely removed by the shave excision. Complete removal of the lesion was achieved in all but one of the elliptical excisions.

No evidence of breach of the dermis to fat junction was detected, by both histological and loupe examination, in 27 out of 43 shave excisions (63%). Breach of the junction was identified in 12 specimens by loupe magnification alone, in 9 by histology alone and in 5 by both methods. Histological examination showed that breach of the junction was extensive in only one

specimen, involving an estimated area of 40–50% of the shaved area. One specimen had an estimated area of breach of 10–20%, and in the other 7, breach of the junction was estimated to involve an area of less than 10%.

The shave excision achieved a complete excision of the lesion with conservation of the dermis to fat junction in 20 out of 43 lesions (47%).

## Discussion

The results of this investigation demonstrate that excision of benign pigmented skin tumours by deep shaving achieved complete removal of the lesion without breach of the dermis to fat junction in approximately half of the lesions. When the dermis to fat junction was breached, the breach was extensive in only one specimen.

The method of deep shaving used in the present investigation differs in a number of respects from superficial shaving with electrodesiccation,<sup>3</sup> in which the mole is shaved at the level of the surrounding skin and the raw area is lightly diathermied. The electrodesiccation will destroy a proportion of the dermis which has been left by the shave but the depth of the dermal destruction cannot be accurately controlled or measured. Also, whilst the superficial part of the lesion is available for histological diagnosis, it is not possible to be certain how many further naevus cells have been destroyed by the diathermy. By contrast, after deep shaving under magnification, all the tissue removed is available for histology. The division of the dermis is a controlled procedure, carried out entirely under direct vision.

Shave excision cannot assure complete excision of a benign melanotic skin tumour but there is no evidence that the incomplete removal of these lesions exposes the patient to the risk of skin malignancy.<sup>2,3,6</sup> Subsequent biopsy has shown naevus cells to persist in 99 of 142 cases (69%), after removal of intradermal and compound naevi by superficial shaving and electrodesiccation.<sup>2</sup> Junctional activity was shown to have been stimulated during the first year after the surgical trauma.<sup>2</sup> There is no evidence that these changes are harmful.<sup>2</sup> These changes were not observed after incision biopsy in a series of 15 cases.<sup>7</sup> In a small number of cases, benign melanotic skin tumours have been found to recur in a manner which is difficult to distinguish from a malignant melanoma, on both clinical and histological grounds (pseudomelanoma).<sup>8–10</sup>

Experience with partial thickness burns and split skin graft donor areas suggests that skin injuries heal with a better quality of scarring if some of the dermis is preserved. Superficial partial thickness burns heal without scarring, whereas deep dermal burns may subsequently form a hypertrophic scar. It has been suggested that breach of the dermis to fat junction in these patients may be an initiating factor in the formation of a hypertrophic scar.<sup>11</sup> The quality of scar after cutting a split thickness skin graft is known to be poorer if the subcutaneous fat is exposed when the graft is cut. These results suggest that there might be

some advantage in conserving the dermis to fat junction, when benign skin lesions are being removed from anatomical locations where scar formation is known to be poor.

The literature suggests that incomplete removal of benign melanotic skin tumours does not expose the patient to any excess risk of malignancy and that, on the trunk and proximal limbs, shave excision may give a better quality of scar than full thickness elliptical excision. Shave excision of benign pigmented skin tumours has been shown in the present investigation to remove the lesion completely in more than two thirds of patients. A significant amount of dermis was preserved in all but one specimen.

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