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[Intervention Review]

Surgical excision margins for primary cutaneous melanoma

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ABSTRACT

Background

Cutaneous melanoma accounts for 75% of skin cancer deaths. Standard treatment is surgical excision with a safety margin some distance from the borders of the primary tumour. The purpose of the safety margin is to remove both the complete primary tumour and any melanoma cells that might have spread into the surrounding skin.

Excision margins are important because there could be trade-off between a better cosmetic result but poorer long-term survival if margins become too narrow. The optimal width of excision margins remains unclear. This uncertainty warrants systematic review.

Objectives

To assess the effects of different excision margins for primary cutaneous melanoma.

Search strategy

In August 2009 we searched for relevant randomised trials in the Cochrane Skin Group Specialised Register; the Cochrane Central Register of Controlled Trials (CENTRAL) in *The Cochrane Library* (Issue 3, 2009), MEDLINE, EMBASE, LILACS, and other databases including Ongoing Trials Registers.

Selection criteria

We considered all randomised controlled trials (RCTs) of surgical excision of melanoma comparing different width excision margins.

Data collection and analysis

We assessed trial quality, and extracted and analysed data on survival and recurrence. We collected adverse effects information from included trials.

Main results

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We identified five trials. There were 1633 participants in the narrow excision margin group and 1664 in the wide excision margin group. Narrow margin definition ranged from 1 to 2 cm; wide margins ranged from 3 to 5 cm. Median follow-up ranged from 5 to 16 years.

Authors' conclusions

This systematic review summarises the evidence regarding width of excision margins for primary cutaneous melanoma. None of the five published trials, nor our meta-analysis, showed a statistically significant difference in overall survival between narrow or wide excision.

The summary estimate for overall survival favoured wide excision by a small degree [Hazard Ratio 1.04; 95% confidence interval 0.95 to 1.15; $P = 0.40$], but the result was not significantly different. This result is compatible with both a 5% relative reduction in overall mortality favouring narrower excision and a 15% relative reduction in overall mortality favouring wider excision. Therefore, a small (but potentially important) difference in overall survival between wide and narrow excision margins cannot be confidently ruled out.

The summary estimate for recurrence free survival favoured wide excision [Hazard Ratio 1.13; $P = 0.06$; 95% confidence interval 0.99 to 1.28] but again the result did not reach statistical significance ($P < 0.05$ level).

Current randomised trial evidence is insufficient to address optimal excision margins for primary cutaneous melanoma.

PLAIN LANGUAGE SUMMARY

Surgical excision margins for primary cutaneous melanoma

Whilst melanoma accounts for only 5% of skin cancers, it is important because it is the cause of 75% of all skin cancer deaths. For primary cutaneous melanoma, standard treatment is complete surgical removal of the melanoma with a safety margin some distance from the visible edges of the primary tumour. The purpose of the safety margin is to remove both the primary tumour and any melanoma cells that might have spread into the surrounding skin. However, the optimal width of the safety (excision) margin remains unclear.

This systematic review summarises the evidence about how much tissue (safety margin) should be removed for primary cutaneous melanoma (skin cancer). Excision margins are important because there could be a trade-off between a better cosmetic result but poorer long-term survival if excision margins become too narrow.

It is important to note that for the purposes of this review we consider only invasive melanoma - that has invaded into the deeper layer of the skin (dermis) - and not melanoma-in-situ where the melanoma cells are confined to the outermost layer of the skin (epidermis).

We found five published randomised trials, none of which showed a statistically significant difference in overall survival for patients who had either narrow or wide removal of the melanoma and surrounding tissue. Similarly, our meta-analysis showed there was no statistically significant difference in overall survival between the two groups treated with either narrow or wide excision.

The summary estimate for overall survival favoured wide excision by a small degree, but the result was not significantly different. This result is compatible with both a 5% relative reduction in overall mortality favouring narrower excision and a 15% relative reduction in overall mortality favouring wider excision.

Current randomised trial evidence is insufficient to address optimal excision margins for primary cutaneous melanoma.