products have been marketed with the implication that they are equivalent to silicone gel sheeting in efficacy.[8] However, no comparative clinical trials have been performed on these products.

For scars that fail to respond to silicone gel sheeting several prospective studies show the efficacy of local injections of insoluble steroid (triamcinolone).[3 9] No good evidence exists to support the efficacy of topical steroids, presumably because of a lack of penetration into the underlying deep dermis.

Surgical excision of hypertrophic scars may be efficacious but requires meticulous adherence to the surgical principles and adjunctive measures discussed above.

Laser treatment for scars has received considerable media attention. Multiple different laser wavelengths and treatment protocols have been proposed, and anecdotal evidence supports their use.[3] However, without prospective randomised studies we cannot know whether laser treatment accelerates the normal process of scar resolution or actually results in long term improvement.

Burn scars, and hypertrophic scars that develop from other open wounds with delayed epithelisation, also respond to silicone gel sheeting and steroids, but local pressure achieved with elastic garments has achieved widespread acceptance since its was first described 30 years ago, despite a lack of favourable prospective randomised trials.[9]

Several therapeutic options for the treatment of scars may become available in the next few years. Several pharmaceutical companies are engaged in research, to identify novel targets for therapy. Experimental evidence implicates the importance of members of the transforming growth factor β family in cutaneous scarring, as well as scarring in other organs.[10] A number of different approaches have been taken to modify activity of transforming growth factor β locally.[11] The other principal strategy being undertaken by pharmaceutical companies is to interfere with collagen synthesis locally, and this has been effective in an animal model.[12]

Keloids represent the most extreme example of cutaneous scarring and are the most difficult to treat. Many papers blur the definition of a keloid (which grows in a progressive fashion beyond the borders of the initial injury) and hypertrophic scars (which are self limiting in their growth). Many keloids are unresponsive to silicone gel sheeting or steroids, and radiation therapy (1200-2000 gy in five doses) has been used with success, although the risks have made some clinicians avoid it altogether.[3] An intriguing approach to treat difficult scars and keloids in small uncontrolled series is the use of local chemotherapeutic agents, such as bleomycin and 5-fluorouracil.[3]

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Sentinel lymph node biopsy

Is now an established and widely available technique for breast cancer and melanoma

Sentinel lymph node biopsy has developed over the past decade as a minimally invasive technique to assess regional lymph node status in patients with malignancy. This technique allows us to find out the status of a lymph node basin by removing only a small number of nodes. These nodes stand sentry to the rest of the nodal basin: if malignant disease is going to affect a nodal region it must first pass through the sentinel node. Therefore the nodal basin will contain malignant cells only if the sentinel node is first involved. The specific and limited removal of the sentinel node reduces surgical insult and morbidity compared with conventional lymphatic clearance. Sentinel lymph node biopsy is now widely available, and most cancer surgeons offer this as part of their diagnostic protocol for patients.

Sentinel lymph node biopsy was initially developed to detect lymphatic metastasis in parotid carcinoma.[1] As this technique has developed it has been used in the management of penile carcinoma, but it is now predominantly used in the diagnosis of lymphatic metastasis from breast cancer and melanoma.[2–4] It can also be used to detect extent of spread of a wide range of gastrointestinal and endocrine tumours.[5] The shortcoming of this technique in these diseases is that primary surgery with sentinel lymph node biopsy, though feasible, may not be practical: a second surgery for lymphatic clearance for pancreatic or gastrointestinal malignancy is less practical and a greater surgical

Additional references w1-w3 are on bmj.vom

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insult than for breast or melanoma disease. For these reasons sentinel lymph node biopsy is used primarily in the diagnosis of breast cancer and malignant melanoma.

The advent of intraoperative touch imprint cytology may alleviate this problem. This technique uses immunohistochemistry to examine sentinel lymph nodes rapidly for malignant cells. This can be performed at the time of surgery, with sensitivity and specificity similar to standard haematoxylin and eosin staining and greater accuracy than frozen section when used in breast cancer.[6] This technique will further vitalise sentinel lymph node biopsy. The speed of pathological diagnosis could mean that lymphatic clearance may be performed at the same operation as sentinel lymph node biopsy.

The technical concept of sentinel lymph node biopsy relies on understanding the intricate process of lymphatic dissemination of tumour. Embryologically the breast develops entirely within the superficial fascia of the skin—the breast with overlying skin can be regarded as a single functional lymphatic unit.[7] Two techniques are used to map the sentinel nodes. A gamma radiation emitting sulphur colloid is injected around the tumour before the operation, and a vital blue dye (isosulphan blue) is injected intradermally at the time of surgery. Sentinel node biopsy can then be performed by identifying the blue and gamma emitting nodes. However, there is no consensus among surgeons whether these techniques should be used alone or together.

The same technique is applied to melanoma. The main problem here is that truncal lymphatic drainage is less predictable. To address this problem preoperative lymphatic scintigraphy scanning is useful to identify which nodal basin is primarily draining the tumour site. Specific sentinel lymph node biopsy can then be directed to this region.

Several trials in Europe and North America are under way to examine outcome after sentinel lymph node biopsy. The axillary lymphatic mapping against nodal axillary clearance (ALMANAC) trial, which is sponsored by the Medical Research Council, randomises patients to axillary dissection or sentinel node biopsy. If the sentinel node is negative, patients will have no further surgery and if positive, patients will proceed to axillary dissection. The national surgical adjuvant breast and bowel project (NSABP-B-32) plans to recruit 5400 patients with negative sentinel lymph node biopsy for operable breast cancer and then compare outcome after axillary dissection. The American College of Surgeons Oncology Group (ACOSOG-Z0011) will recruit 1900 patients with early breast cancer and positive sentinel lymph node dissection; these patients will then be randomised to receive axillary lymph node dissection or follow up.[w1] [w2] [w3] Hopefully these studies will answer whether sentinel lymph node biopsy for breast cancer offers the same long term control of the cancer as axillary clearance and if patients with positive sentinel nodes really require further surgery.

Quality control is essential for sentinel lymph node biopsy. Current studies show that surgeons should complete 30 procedures, which include sentinel lymph node biopsy followed by lymphatic clearance, before routinely adopting this surgery. These should give the surgeon 90-95% sensitivity and specificity to detect sentinel nodes accurately.[8] [9] The ongoing ALMANAC trial in the United Kingdom demands even higher standards, with 95% sensitivity and less than one case in the first 40 resulting in a false negative, before a surgeon can participate in this study. This quality assurance is essential if surgeons are to offer patients a quality and evidence based standard of surgical care.

Ultrastaging has now become a dilemma in sentinel lymph node biopsy. Previously occult micrometastatic lymphatic disease is now detected in sentinel nodes. The prognostic significance of these less than 2 mm tumour deposits is not clear but it is likely they signify a worse prognosis for patients.[10] Analysis of patients with melanoma shows that occult tumour deposits may have been present and if dealt with at initial surgery progression of disease could have been halted.[11] For this reason sentinel lymph node biopsy is indicated in patients with melanoma lesions greater than 0.75 mm in thickness without clinical evidence of involvement of nodes. Patients with thinner melanomas are very unlikely to have positive nodes. Those patients who are found to have melanoma in sentinel lymph node biopsy specimens should then undergo lymphatic clearance.[12] In patients with melanoma, sentinel lymph node status is a strong and independent prognostic factor.[13]

In the near future the results of ongoing trials will answer the question whether sentinel lymph node biopsy can be regarded as a definitive local lymphatic treatment for patients or whether they will still require lymphatic clearance.

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