CHAPTER 3

SKIN AND SUBCUTANEOUS LESIONS

The most common lesions of concern to plastic surgeons include tumors and scars.

I. TUMORS

Important to differentiate between benign and malignant. Biopsy (generally excisional biopsy) is done if lesion is suspicious or if patient is concerned.

A. Benign
  1. Verruca (wart)
    a. Usual viral etiology
    b. May disappear spontaneously or respond to medical treatment
    c. Do not excise as recurrence is likely; use cautery or liquid nitrogen
    d. Do use pulsed dye laser for recalcitrant warts
  2. Nevus (mole)
    a. Classification
      i. Intradermal (dermal)
        (a) Most common, usually raised, brown, may have hair
        (b) Essentially no potential for malignant change to melanoma
      ii. Junctional
        (a) Flat, smooth, hairless, various shades of brown
        (b) Nevus cells most likely at basement membrane
        (c) Low malignant potential
      iii. Compound
        (a) Often elevated, smooth or finely nodular, may have hairs
        (b) Low malignant potential
      iv. Large pigmented (bathing trunk nevus)
        (a) Congenital lesion commonly occurring in dermatome distribution
        (b) Potential for malignant transformations, therefore excision usually indicated

      v. Dysplastic nevus
        (a) Irregular border
        (b) Variegated in color
        (c) Often familial
        (d) Most likely nevus to become malignant melanoma
      vi. Nevus sebaceous
        (a) Most often seen on scalp and face
        (b) 15-20% incidence of basal cell carcinoma
        (c) Yellowish orange, greasy elevated plaque
    b. Treatment
      i. Excision and histological examination of all suspicious pigmented lesions based on:
        (a) Clinical appearance
        (b) History of recent change in:
          [i] Surface area (enlarging)
          [ii] Elevation (raised, palpable, nodular, thickened)
          [iii] Color (especially brown to black)
          [iv] Surface characteristics (scaly, serous discharge, bleeding and ulceration)
          [v] Sensation (itching or tingling)
      ii. Excision of unsightly or constantly irritated nevus (beltline, under bra or beard area)
      iii. Careful follow-up of very large pigmented nevus, with excision of any area of change (nodularity) or staged excision of as much lesion as possible (tissue expanders and primary closure, or skin grafts when necessary)
  3. Keratoses
    a. Seborrheic
      i. Elevated, brown, greasy feeling, more frequent in older individuals, common on trunk, not premalignant, look "stuck on"
      ii. Treat by curettage, superficial electrodesiccation or freezing with liquid nitrogen
      iii. Excise if diagnosis uncertain

b. Actinic or senile
    i. Crusted, inflamed, history of exposed areas of face and scalp, chronic sun exposure or history of x-irradiation
    ii. Premalignant, biopsy of suspicious lesions, especially when nodular (excision), liquid nitrogen, topical chemotherapy (5-fluorouracil)
c. Keratoacanthoma
    i. Rapidly growing, nodular, umbilicated lesion in sun-exposed areas
    ii. Mistaken diagnosis of squamous carcinoma on incision biopsy often
    iii. May in fact be malignant and excision required

4. Cyst
    a. Epidermoid (often misnamed sebaceous)
        i. Almost always attached to overlying skin, frequently acutely inflamed if not excised
        ii. Excise with fusiform-shaped island of overlying skin attachment (including puncture) when not inflamed
        iii. Acutely inflamed cyst may require incision and drainage with subsequent excision
    b. Dermoid
        i. Congenital lesion usually occurring in lines of embryonic fusion (lateral 1/3 of eyebrow, midline nose, under tongue, under chin)
        ii. CT scan of midline dermoid to rule out intracranial extension
        iii. Excision
5. Lipoma
    a. Subcutaneous, feels fluctuant, but no inflammation, not adherent to overlying skin
    b. Excise large lesions
6. Fibromata
    a. Fibroma
        i. Subcutaneous, solid, encapsulated, moveable without overlying skin involvement
        ii. Can be associated with internal malignancy
        iii. Excision for definitive diagnosis

b. Neurofibroma
    i. Intradermal, usually circumscribed, sometimes with overlying skin pigment changes, sometimes multiple, possibility of malignant transformation, familial, *café au lait* spots
    ii. Excise when symptomatic, for appearance, to decrease bulk
c. Dermatofibroma
    i. Nodular intracutaneous lesion with slight pigment change
    ii. Treatment is excision

7. Vascular Lesions — most common benign tumor of infancy
    a. Hemangioma
        i. Hemangioma (strawberry nevi)
            (a) Most common benign vascular tumor, appears at or shortly after birth and increases in size for up to 6-7 months, then stops growth, whitens in areas and then begins to regress over several or more years
            (b) Need for treatment very rare. Observe frequently at first and reassure parents
            (c) In critical areas, laser therapy may be indicated early
            (d) Involved areas of skin may require excision for appearance
            (e) Radiation therapy is not indicated for hemangiomas
            (f) Steroids may be indicated for rapidly enlarging hemangiomas
            (g) Interferon may be indicated for uncontrolled hemangiomas
    b. Malformations
        i. Capillary malformations (port-wine stain)
            (a) Pink-red-purple stain in skin, usually flat, but may be elevated above skin surface. Does not regress
            (b) Laser therapy best, can be covered by cosmetics, excision not indicated

ii. Venous
(a) Large blood-filled venous sinuses beneath skin and mucous membranes. Low flow. No bruit
(b) Angiography for larger and progressive lesions. Absolute alcohol or tissue glue injection. Excision may be indicated
iii. Arterio-venous
(a) Progressive increase in size and extent, multiple arteriovenous fistulas, bruit
(b) A-V shunts or angiography
(c) Treatment is embolization under angiographic control by itself or prior to surgical excision
iv. Lymphatic
(a) Subcutaneous cystic tumor (cystic hygroma) of dilated vessels which can be massive and disfiguring
(b) May cause respiratory obstruction, may become infected
(c) Spontaneous regression can occur, but surgical excision is often indicated
(d) Lymphatic malformation can occur with arteriovenous malformation
v. Mixed

8. Miscellaneous
a. Pyogenic granuloma
i. Ulcerating, tumor-like growth of granulation tissue, the result of chronic infection, may resemble malignant tumor
ii. Treat by excision, curettage, laser
b. Xanthoma (xanthelasma)
i. Small deposits of lipid-laden histiocytes, most common in eyelids, sometimes associated with systemic disorders (hyperlipidemia, diabetes)
ii. Treat by excision
c. Rhinophyma
i. Severe acne rosacea of the nose, overgrowth of sebaceous glands causing bulbous nose
ii. Treat by surgical planing (shaving) with dermabrasion or laser

B. Malignant
1. Squamous cell carcinoma in situ (Bowen's Disease)
a. Scaly brown, tan or pink patch
b. Frequently associated with chronic arsenic medication
c. May be associated with internal malignancy
d. May develop into invasive squamous carcinoma
e. Treat by excision
2. Basal cell carcinoma
a. Most common skin cancer
b. Types — all types may show ulceration, with rolled smooth pearly borders
i. Nodular — well-defined "rodent ulcer"
ii. Superficial
iii. Pigmented — resembles melanoma
iv. Morphea Type — sclerosing — poorly defined borders, high recurrence rates
c. Usually seen on face or other sun-exposed areas of body, caused by UVB ultraviolet radiation
d. Slow-growing (years), destroys by local invasion, particularly hazardous around eyes, ears, nose
e. Very rarely metastasizes
f. Surgical excision with adequate margins or with frozen section or with Mohs micrographic surgical excision followed by reconstruction
3. Squamous cell carcinoma
a. Rapidly growing (months) nodular or ulcerated lesion with usually distinct borders
b. Occurs on exposed areas of body and x-irradiated areas and in chronic non-healing wounds (Marjolin's ulcer). Can metastasize to regional lymph nodes (10%)
c. Treatment is surgical excision with adequate margins or with histologic frozen section or with Moh's micrographic surgery followed by reconstruction
4. Melanoma
a. Cause of great majority of skin cancer deaths
b. Early lymph node and systemic blood-borne metastases — frequently considered a systemic disease

c. Usually appears as black, slightly raised, non-ulcerative lesion arising de novo or from a pre-existing nevus
d. Early recognition of changes in color, size or consistency of a pigmented nevus is critical
e. Classification
    i. Pre-malignant: Lentigo maligna (Hutchinson's freckle)
        (a) Flat, varied shades of brown pigmentation, larger than most nevi, irregular borders, smooth
        (b) Usually slow-growing, most often on face, more frequently in elderly
        (c) High incidence of development of invasive melanoma
        (d) Treat by excision, with graft or flap reconstruction if necessary
    ii. Invasive
        (a) Lentigo maligna melanoma (10%)
            (i) Develops in a Hutchinson's Freckle, usually as a thickened, elevated nodule
        (b) Superficial spreading melanoma (70%)
            (i) Flat to slightly elevated, may have a great variety of colors
            (ii) Lesion initially spreads horizontally
        (c) Nodular melanoma (15%)
            (i) Characteristically blue/black in color
            (ii) May be unpigmented (amelanotic)
            (iii) Grows vertically, often with early surface ulceration
        (d) Acral lentiginous melanoma (5%)
            (i) On mucous membranes, palms, soles and subungual
            (ii) May be amelanotic in African-Americans

f. Histologic staging and correlation with metastases
    i. Breslow's depth of invasion — more reliable indicator of prognosis than Clark's level (Fig. 3-1)
        (a) Less than 0.76 mm — metastases virtually 0%
        (b) 1.50-3.99 mm — metastases 50%
        (c) Greater than 4 mm — metastases 66%
    ii. Clark's levels of cutaneous invasion (Fig. 3-1)
        (a) Level I (in situ) above the basement membrane — node metastases extremely rare
        (b) Level II — in the papillary dermis — metastases in 2-5%
        (c) Level III — to the junction of papillary and reticular dermis — metastases in up to 20%
        (d) Level IV — into the reticular dermis — metastases in 40%
        (e) Level V — into the subcutaneous tissue — metastases in 70%
    iii. Staging
        (a) Stage I: lesions less than 2 mm thick without ulceration
        (b) Stage II: 1-2 mm thick with ulceration or greater than 2 mm thick with or without ulceration

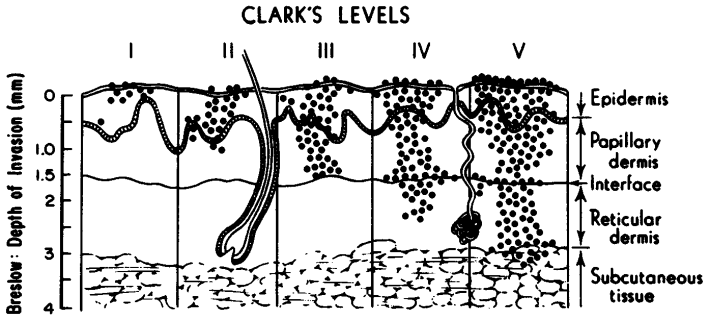

Fig. 3-1

(c) Stage III: regional node metastasis
(d) Stage IV: distant metastasis

g. Treatment
i. Most important is the manner in which the primary lesion is removed
ii. Complete excisional biopsy is necessary to determine level and thickness
iii. Treated by "wide" excision with primary closure, split-thickness skin graft, or flap closure
(a) Thin lesions (less than 1 mm) = 1 cm margin
(b) Thick lesions (greater than 1 mm) = 2 cm margin
(c) Note that margin also depends on location and may be compromised in critical areas
iv. Sentinal node biopsy is used to determine regional metastases.
v. Regional node dissection indicated for positive sentinel nodes
vi. Node dissection performed for palpable nodes
vii. Extremity perfusion may be helpful for selected cases
viii. Radiotherapy, chemotherapy, and immunotherapy have not been proven curative but may have some palliative effect

5. Dermatofibrosarcoma
a. Requires wide excision to avoid recurrence

II. SCARS

A. Hypertrophic
1. Often confused with keloids but differ in that regression may occur spontaneously with time
2. Treatment
a. Primarily by prevention with elastic pressure support over long period of time
b. Intralesional steroid injections and occasionally excision may be indicated
c. Use of silicone sheeting

B. Keloid
1. Abnormal over-abundance of collagen (scar fibrous connective tissue) beyond bounds of original lesion
2. Commonly seen on earlobes, deltoid, and pre-sternal areas
3. Higher incidence in dark-skinned races
4. Treatment
a. May be responsive to repeated intralesional injection of long-acting steroids and steroid-impregnated tape
b. Excision is reserved to reducing tumor bulk in the steroid responders — generally not used initially nor in steroid resistant cases
c. Pressure therapy may be helpful
d. Excision in combination with radiotherapy may be indicated in very stubborn cases
e. No single method of treatment is uniformly successful and recurrences are frequent

III. MISCELLANEOUS

A. Hidradenitis suppurativa
1. A chronic, recurrent inflammatory disease of apocrine sweat glands
2. Occurs in axilla, groin and perineum and breast
3. Treatment
a. In early stages, antibiotics and local care including incision and drainage of abcesses
b. Later stages require excision of all involved tissue and primary closure or closure by secondary intention or skin grafting

IV. EXCISING SMALL SKIN LESIONS

The goal in excising a benign skin lesion is to leave a scar less apparent than the original lesion

A. Factors under control of surgeon
1. Incision placement in relaxed skin tension lines so the scar will be as inconspicuous as possible (Fig. 3-2)
2. Appropriate operative technique
a. Fusiform (misnamed elliptical) excision of sufficient length to prevent excess or heaped-up skin at the ends of the wound called "dog-ears"

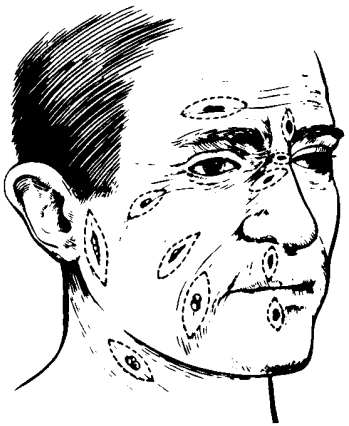

Fig. 3-2

b. Layered closure including intradermal sutures to allow early skin suture removal and to prevent wound tension on skin sutures (Fig. 3-3)

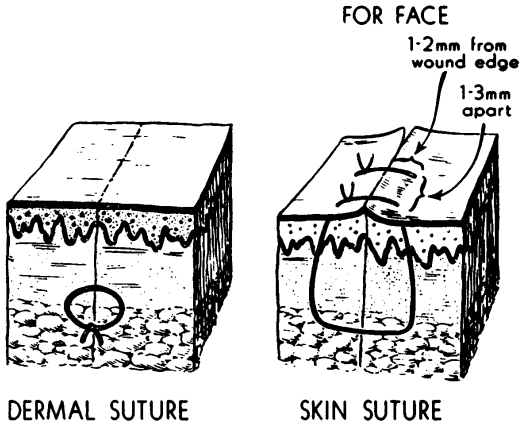

Fig. 3-3

CHAPTER 3 — BIBLIOGRAPHY

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