involvement occur occupationally, such as in barbers and shearers. The affected site, including the scar tissue, should be completely excised (Fig. 21.27).

8. Branchial cyst

A branchial cyst is an epidermal-cyst-like cyst that occurs on the preauricular region and neck. As it is caused by branchial debris, mobility is not fully present at the bottom of the cyst. There is a palpable cordlike substance in the cyst. Excision should not be decided quickly. Branchial cysts caused by thyro-lingual debris are called thyroglossal duct cysts.

9. Median raphe cyst of the penis

A tumor of several millimeters in diameter occurs in the penile raphe of young men (Fig. 21.28). It occurs solitarily at the urethral openings in most cases. The cyst may reach several centimeters in diameter. Its wall is histopathologically composed of single- or several-layered cylindrical epithelia or cubical epithelia that resemble urethral transitional epithelia.

F. Neural tumors

1. Neurofibroma

A neurofibroma is thought to be a benign tumor that derives from peripheral nerve Schwann cells or from perineurial or endoneurial cells. The tumor is sharply margined, dome-shaped, soft and of normal skin color or light pink (Figs. 21.29 and 21.30). It lacks a covering membrane and contains myxoid stroma. The tumor slowly enlarges (Figs. 21.29 and 21.30). There are almost no symptoms; however, subcutaneous neurofibroma (nodular plexiform neurofibroma) is often accompanied by tenderness. In neurofibromatosis type 1 (NF1), neurofibromas occur multiply on the whole body. In NF5, localized areas, such as on the trunk, may be affected by mosaicism. Nearly all of the subcutaneous tumors caused by NF1 are nervous neurofibromas, and neurilemmomas are not usually found (also see Chapter 20).

2. Neurilemmoma

Synonym: Schwannoma

Clinical features

A neurilemmoma is a Schwann-cell-derived benign tumor that
usually occurs solitarily. However, multiple neurilemmoma is caused by neurofibromatosis type 2 (NF2). An axonal myelin sheath forms. The tumor is palpable, elastic, firm, spherical, and intradermal or subcutaneous. When it softens, palpable pulsation is present. It may appear singly or in beaded pattern. It is accompanied by tenderness, and pain may radiate from the pressured site to the periphery. Malignant transformation occurs in rare cases (malignant neurilemmoma) (Fig. 21.31).

**Pathology**

Neurilemmomas are characterized by a biphasic pattern of Antoni A areas and Antoni B areas that is visible by microscopy. Antoni A areas form the cellular component of the lesion and are composed of fairly closely packed spindle cells with tapering, elongated, wavy nuclei. Nuclear palisading is a prominent feature. Antoni B areas are characterized by irregularly scattered spindle or stellate cells set in abundant loose myxoid stroma.

**Treatment**

Excision should be conducted carefully, to avoid injuring the displaced nerves.

### 3. Traumatic neuroma

A traumatic neuroma, also called amputation neuroma, is a tumor that occurs in the peripheral nerve stump. Intense spontaneous pain and tenderness are present. Histopathologically, nerve fibers proliferate in all directions and are surrounded by Schwann cells and fibrotic tissue. Excision may be necessary, depending on the severity of pain. Neuroanastomosis is performed when possible.

### 4. Rudimentary polydactyly

A small tumor of 1 cm to 2 cm in diameter is present in a finger, often the thumb, at birth. Histopathologically, natural amputation of embryonic polydactylyism is thought to cause outgrowth of nerve fiber bundles and nerve end corpuscles such as Meissner corpuscles and Vater-Pacini corpuscles.

### 5. Granular-cell tumor

A small tumor of 3 cm or less in diameter occurs on the skin and in the genitalia, tongue, lung, esophagus, stomach, intestine, bladder or uterus (Fig. 21.32). The tumor is histopathologically composed of large polygonal cells that contain eosinophilic granules. It is covered by epidermis. It is easily misdiagnosed as squamous cell carcinoma. It is thought to originate from Schwann cells. The cytoplasm contains numerous eosinophilic granules. It is resistant to diastase, PAS positive and S-100 positive. There is malignant transformation in some cases.

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**Fig. 21.31** Histopathology of neurilemmoma (schwannoma).

**Fig. 21.32** Histopathology of a granular-cell tumor.