

A Contemporary Perspective on Hand Tumours

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The human hand is an anatomical marvel, capable of delicate precision and immense strength, with delicate orchestration of muscles, tendons, nerves, vessels, and bones that allow us to create, communicate, and care. Yet, within this small and complex space, even the tiniest tumour can disrupt harmony. Although not as common as tumours in larger anatomical regions, those occurring in the hand carry significant clinical implications. Their proximity to vital structures like tendons, nerves, and joints means even benign lesions may impair motion, sensation, or dexterity. While most hand tumours are benign, the burden lies in early and accurate diagnosis, surgical finesse, and an unwavering focus on preserving function.

The most frequently encountered hand tumour is the ganglion cyst. These swellings, thought to arise from joint capsules or tendon sheaths, can occasionally press on nerves, leading to pain or tingling. Aspiration offers temporary relief, but recurrence is a common occurrence. Surgical excision remains the definitive treatment, with low recurrence rates in expert hands.¹ Trailing closely are tenosynovial giant cell tumours. These are slow-growing, firm nodules, often found on the volar aspect of fingers. While histologically benign, they are locally aggressive and notorious for recurrence.^{2,3} Excision is often sufficient, but surgical precision is paramount, given their tendency to wrap around neurovascular bundles.

Other benign soft tissue tumours include lipomas, epidermoid inclusion cysts, hemangiomas, fibromas, and peripheral nerve sheath tumours. Lipomas are rare in the hand but may present in the thenar or hypothenar areas,

occasionally compressing nearby nerves. Inclusion cysts, often post-traumatic, arise from implanted epithelium and can mimic neoplasms. Schwannomas and neurofibromas, both arising from nerve sheaths, present as firm, mobile masses.

The glomus tumour is a rare, benign vascular tumour of the hand, usually found under the nail. It presents with the classic triad of severe pain, point tenderness, and cold sensitivity. Patients can often localize the lesion precisely. Diagnosis is clinical, aided by MRI, and confirmed histologically. Surgical excision is curative.

Benign osseous tumours, though less common than soft tissue lesions, include some noteworthy entities. Enchondromas are the most prevalent, typically found in the small bones of the hand, especially the proximal phalanges. Most are asymptomatic and discovered incidentally or following a pathological fracture. Radiographs often reveal central, radiolucent lesions with punctate calcifications. While small, asymptomatic lesions may be observed, symptomatic or enlarging ones are treated with curettage and, if needed, bone grafting. Malignant transformation is rare but should be suspected in cases with cortical destruction or pain without fracture, particularly in syndromic conditions such as Ollier disease and Maffucci syndrome.⁴ Nora's lesion, bizarre parosteal osteochondromatous proliferation, is a rare but aggressively appearing benign tumour arising from the bone surface. Though histologically benign, its recurrence rate after excision is high, reaching 50% in some series.⁵ Other rare benign bone lesions in the hand include osteoid osteomas, aneurysmal

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bone cysts, and giant cell reparative granulomas.

Malignant tumours, though rare, present a more sinister clinical scenario and are often diagnosed late due to their indolent course or resemblance to benign lesions. Synovial sarcoma, for instance, often affects young adults and presents as a painless, slow-growing mass, sometimes confused with a ganglion or fibroma. Its diagnosis relies heavily on imaging and biopsy, and definitive management involves wide local excision with or without radiotherapy.⁶ Epithelioid sarcoma, another rare but aggressive soft tissue malignancy of the hand, typically presents in the distal extremities and has a strong propensity for lymphatic spread. Early diagnosis is critical, as delay can lead to extensive surgeries or even amputations. Malignant peripheral nerve sheath tumours are fast-growing, painful lesions that may transform from pre-existing neurofibromas. Their treatment is surgical, with wide margins, and the prognosis remains guarded. Clear cell sarcoma, angiosarcoma, and dermatofibrosarcoma protuberans are among other rare soft tissue malignancies that may arise in the hand and demand aggressive excision and long-term follow-up.

Skin malignancies of the hand are rare but carry serious implications because treatment must balance oncologic safety with preservation of function. Squamous cell carcinoma (SCC) is the most frequent and most aggressive, often occurring on the dorsum, in scars, or chronic ulcers, and can be misdiagnosed, leading to deep invasion and morbidity.⁷ Basal cell carcinomas (BCC), though less common on the hand than on the face, can cause significant local destruction and functional impairment.⁸ Melanoma, especially the acral lentiginous and subungual types, is frequently detected late and thus carries a poor prognosis. Early suspicion, prompt biopsy, and timely wide local excision or Mohs surgery remain the cornerstones of management, with outcomes heavily dependent on early diagnosis.

Adding to the complexity are metastatic lesions to the hand, known as acrometastases. Though exceedingly rare, their occurrence, often in the distal phalanges, should not be dismissed as infection or trauma. Lung, breast, and renal carcinomas are the most common primaries. These lesions

often indicate advanced systemic disease, and treatment is usually palliative, aimed at pain relief and preservation of function.⁸

The evaluation of any hand mass should begin with a thorough history and examination. Clues such as mobility, consistency, transillumination, and tenderness offer early diagnostic hints. Imaging is critical: plain radiographs reveal osseous involvement, while ultrasound helps assess cystic versus solid nature. MRI is indispensable for deep-seated or ambiguous lesions, delineating soft tissue planes, neurovascular involvement, and relationship to tendons or bone. In lesions with atypical features, biopsy must precede excision to allow for proper oncologic planning.⁹

Surgical management of hand tumours walks the tightrope between oncologic safety and functional preservation. Benign lesions typically require marginal excision. In contrast, malignant lesions necessitate wide local excision or, in some cases, ray resection or amputation, followed by reconstruction using tendon transfers, flaps, or bone grafts. The development of function-preserving surgical techniques, such as microsurgical reconstruction and nerve-sparing excisions, continues to evolve, offering hope for improved quality of life post-treatment.

In conclusion, hand tumours, though often overlooked, represent a cross-section of oncological and reconstructive complexity. Whether benign or malignant, each lesion carries the potential to disrupt the delicate balance of form and function. As clinicians, our aim must extend beyond tumour eradication to the holistic restoration of the hand's most human attributes of sensation, dexterity, and the ability to heal and express.

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