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Thenar lumps: a review of differentials

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Most soft-tissue lumps in the hand are benign, with ganglions being the commonest, but in the thenar region, solid soft-tissue masses are more common than a ganglion. In this review, we focus on soft-tissue lesions (neoplastic and non-neoplastic) presenting as a palpable lump in this region. A specific diagnosis can often be reached using ultrasonography and/or magnetic resonance imaging. Most of these lesions are managed in local hospitals or primary care, whereas some are referred to specialist centres. This review article will help both general and musculoskeletal radiologists to diagnose and characterise these lesions, provide a guide for further imaging, and provide an insight into imaging features that may need specific investigations such as core biopsy, tertiary referral, and further review at multidisciplinary meetings.

Introduction

The vast majority of lumps in the hand (approximately 95%) encountered in clinical practice are benign, ganglion being the commonest[1]; however, in the thenar region, solid soft-tissue masses are way more common than ganglions, in our experience. Most of these are managed in primary or secondary care, while some get referred to regional tumour centres.

For the purpose of this review, we will focus on soft-tissue lesions (neoplastic and non-neoplastic), which clinically present as a palpable lump, in this region. The word thenar comes from the Greek verb *thenein,* meaning to strike. The thenar eminence, commonly known as the ball of the palm, comprises of a group of muscles at the base of the thumb namely abductor pollicis brevis, adductor pollicis, flexor pollicis brevis, and opponens pollicis. It also includes the neurovascular structures such as common palmar digital nerves, the branches of the median nerve, and ulnar nerve to thenar muscles; flexor pollicis longus (FPL) tendon and tendon sheath with its synovial lining; underlying inter-carpal and first carpo-metacarpal joint ligaments/capsule, subcutaneous fat and overlying skin.

Soft-tissue lesions in the thenar region can be categorised based on their tissue of origin, anatomical segments, and pathology (Table 1). They form a diverse group of disorders and are almost always referred for imaging. A specific diagnosis can often be reached using ultrasonography (US) and magnetic resonance imaging (MRI) or a combination of both, although often plain radiographs can also provide additional information.

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Table 1
Classification of thenar lesions.

Neoplastic
Tumours (Subclassified by tissue types)
Benign – Lipoma, Schwannoma, GCT
Malignant – Sarcoma
Vascular malformation (Klippel Trenauny, Mafucci syndrome, true haemangioma)
Non-neoplastic
Degenerative
Ganglion/synovial cysts
Tenosynovitis/tendinopathy
Traumatic (history of trauma/chronic repetitive injury)
Haematoma
Foreign body granuloma
Implantation cyst/epidermoid
Tenosynovitis/tendinopathy
Infection
Abscess
Inflammatory
Granuloma
Rheumatoid nodule
Tophi
Foreign body granuloma

This review article will help both general and musculoskeletal radiologists to diagnose and characterise these lesions, provide a guide for further imaging and give an insight into imaging features that may need specific investigations such as core biopsy, tertiary referral, and further review at multidisciplinary meetings.

Neoplastic

Benign tumours

Lipoma

Lipomas (Fig 1) are the most commonly occurring soft-tissue tumour in the whole body and can develop in any fat-containing compartment. They can be superficial or deep; the former being more common and can be found in subcutaneous, interfascial, subfascial, or intramuscular planes. They are hyperechoic encapsulated compressible masses separate from the surrounding fat containing linear internal echoes on ultrasound. In our experience, intramuscular lipomas are often infiltrating and can be confused with muscle tear/scarring. Characteristic MRI features include a well-defined lesion that is T1 and T2 hyperintense with homogeneous signal loss on fat-suppressed (FS) sequences. It is recognised that some lipomas can show contrast enhancement, more so if there is a fibrovascular stromal structure.[2–4]

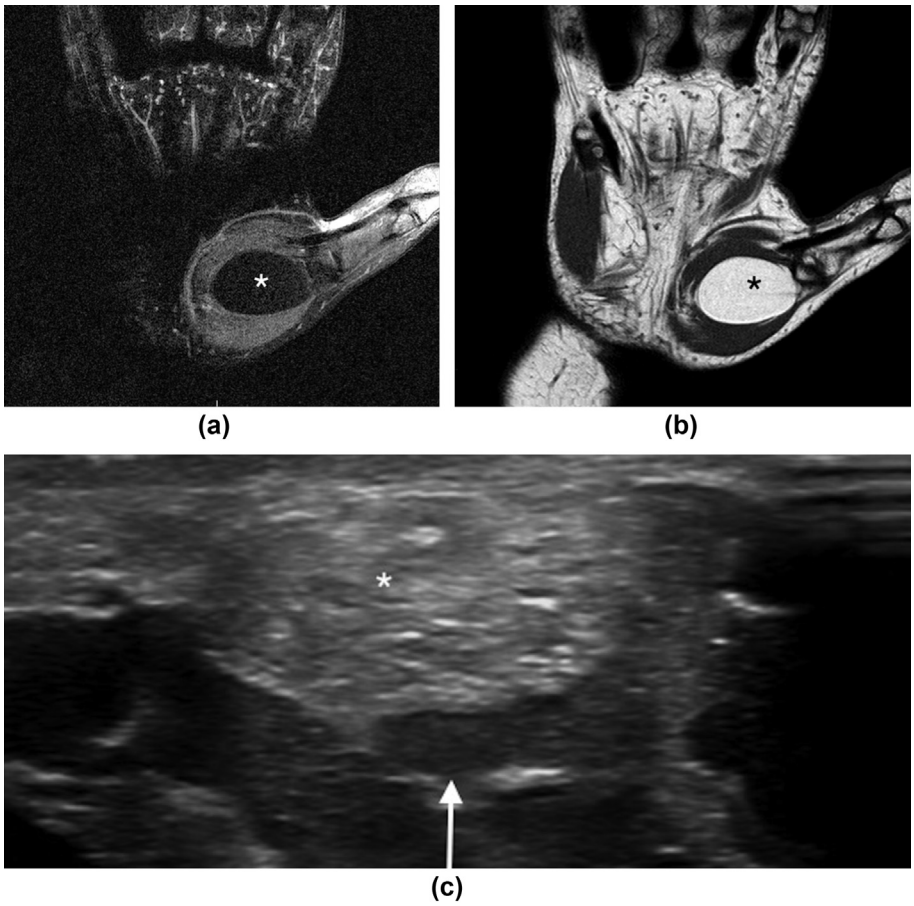


Figure 1 Lipoma. (a) Coronal proton-density-weighted (PDW) mDixon turbo spin echo (TSE; 30 ms echo time [TE], 3,000 ms repetition time [TR]) and (b) T1-weighted TSE (20 ms TE, 520 ms TR) of the left hand showing a well-defined oval lesion (asterisk) in the thenar region with high signal on T1-weighted image and uniform signal loss on PDW FS imaging in keeping with a benign lipoma. (c) Sagittal ultrasound image of the same patient showing a uniform hyper-echogenic well-defined mass superficial to the FPL tendon (arrow), consistent with a lipoma.

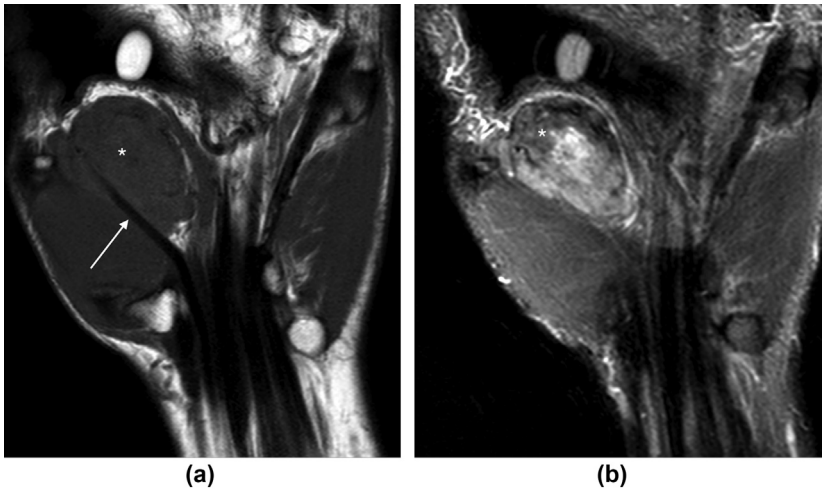


Figure 2 GCT of the tendon sheath. (a) Coronal T1-weighted TSE (20 ms TE, 520 ms TR) and (b) PDW mDixon TSE (30 ms TE, 3,000 ms TR) of the right hand showing a well-defined oval mass in the thenar region (asterisk), inseparable from the FPL tendon (arrow), with uniform intermediate to low signal on T1-weighted image and mixed signal on T2-weighted image; areas of low T2 signal corresponding to haemosiderin deposit. Histology at excision revealed GCT of tendon sheath.

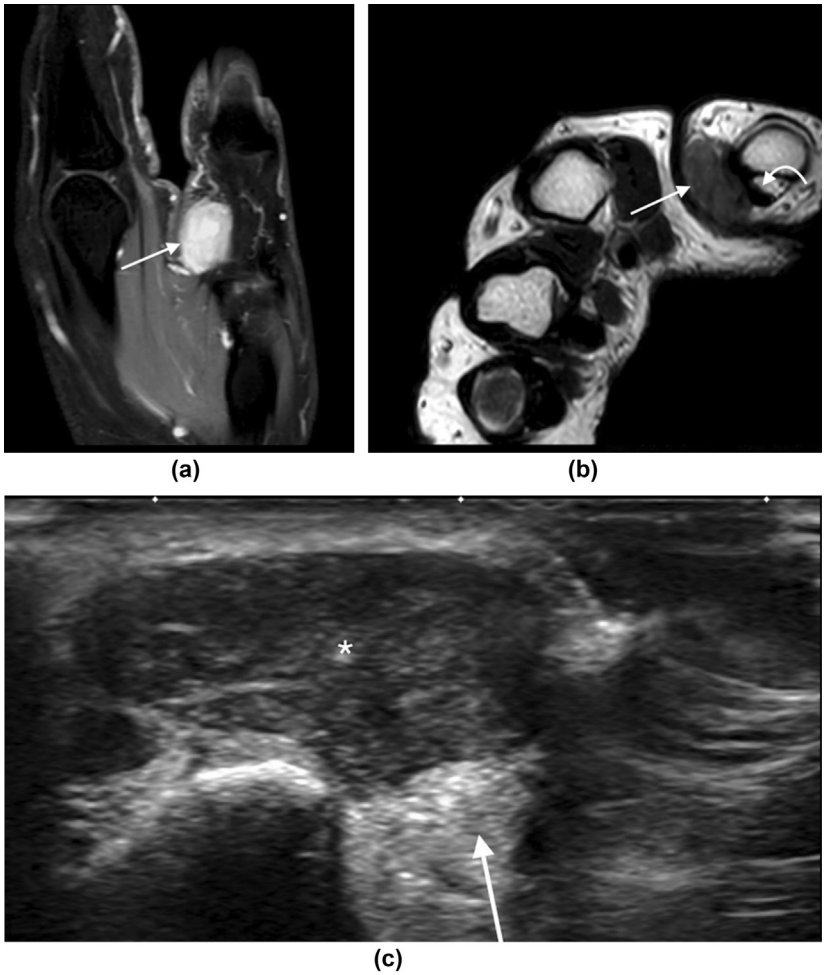


Figure 3 Fibroma of the tendon sheath. (a) Sagittal T2-weighted mDixon TSE (100 ms TE, 1,574 ms TR) and (b) and T1-weighted TSE (20 ms TE, 520 ms TR) images of the left hand, showing a well-defined lesion (arrow), with heterogeneous high signal on T2-weighted images and low to intermediate signal on T1-weighted images, inseparable from the FPL tendon (curved arrow). There was heterogeneous enhancement on fat suppressed post contrast images (not included). There was no "blooming" on GRE sequence. (c) Sagittal ultrasound image of the thenar region of the same patient shows a well-defined hypoechoic, solid lesion (asterisk) closely related to the FPL tendon (arrow). Histology at excision revealed tendon sheath fibroma.

Incomplete fat suppression, internal septa, and contrast enhancement are more likely to be seen in atypical lipomas or liposarcomas and should be reviewed and followed up carefully. Lipomas without atypical features have an extremely low rate of malignant transformation and are often surgically excised for cosmetic reasons[3].

Giant cell tumour of the tendon (GCT) sheath

GCTs of the tendon sheath (Fig 2) are the second commonest soft-tissue tumour of the hand, after ganglions. They are benign tumours mostly affecting middle-aged adults and have a good prognosis but often recur post-excision.[5,6] GCTs can be diffuse or localised; the latter being more common in the hand. The presence of haemosiderin with low T2 signal, secondary to reduction of T2-relaxation time, is considered highly suggestive of GCT of tendon sheath, albeit such low T2 signal is more commonly described in the diffuse types.[7] Both MRI and ultrasound show them as well-defined masses, eccentrically located in association with a tendon.[7] They are typically hypoechoic on ultrasound and hypervascular on Doppler. The lesion appears closely related to a tendon but does not interfere with the movement of the underlying tendon (as they arise from the tendon sheath). They are of low T1 and intermediate to high T2 signal. Most lesions show heterogeneous contrast enhancement. Susceptibility artefacts due to haemosiderin are a helpful discriminating feature from other differentials such as focal nodular synovitis.[7,8] In the thenar region they are typically related to the FPL tendon.

Tendon sheath fibroma

Tendon sheath fibromas (Fig 3) present as slowly growing lesions. They are commoner in men, with upper extremity particularly fingers and hands, being the commonest site. On MRI, they are inseparable from the tendon sheath showing low T1 and T2 signal, attributed to high collagen content of the tumour. More cellular lesions with myxoid matrix show high T2 signal. Variable contrast enhancement has been reported, from none to moderate. Differential includes GCT of the tendon sheath, which shows "blooming artefact" on gradient echo (GRE) images because of their haemosiderin content (a feature not seen in tendon sheath fibroma).[9]

Peripheral nerve sheath tumours

Peripheral nerve sheath tumours are uncommon and consist of schwannomas (Fig 4) and neurofibromas (often difficult to distinguish), affecting branches of the median nerve, muscular, or common palmar digital divisions. On MRI, both are of high T2 signal, low to intermediate T1 signal and demonstrating homogeneous contrast enhancement. MRI may demonstrate a "split-fat sign" with a thin rind of fat surrounding the lesions and triangular polar fat pads.

Schwannomas are well defined, hypoechoic, and solid in appearance, often showing internal vascularity on Doppler and continuity with a peripheral nerve (rat-tail sign); some show cystic change and posterior acoustic enhancement.[10,11] Typically, the parent nerve is eccentric to the mass in schwannoma but central or obliterated by the mass in neurofibromas.[12]

Lipofibromatous hamartoma are rare benign peripheral nerve sheath tumours, which can affect the median nerve (Fig 5), but are more likely to present as lumps in the wrist rather than in the true thenar region.[13]

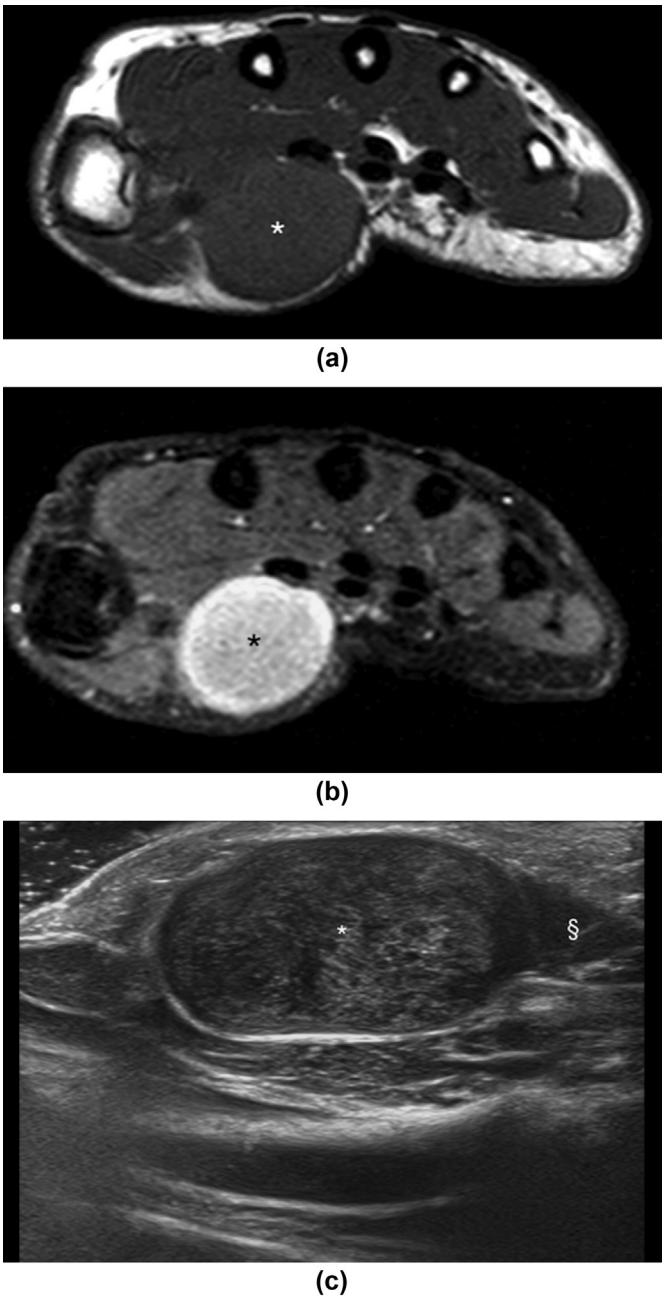


Figure 4 Schwannoma. (a) Axial T1-weighted TSE (18 ms TE, 500 ms TR) and (b) PDW FS (30 ms TE, 3,000 ms TR) MRI images of the left hand showing a well-defined oval lesion (asterisk) in the thenar region with low signal on T1-weighted image and high signal on PD FS image. (c) Sagittal ultrasound image of the thenar region of the same patient showed a well-defined oval solid hypoechoic lesion (asterisk) with split-fat sign and polar caps of fat (§) in keeping with a schwannoma.

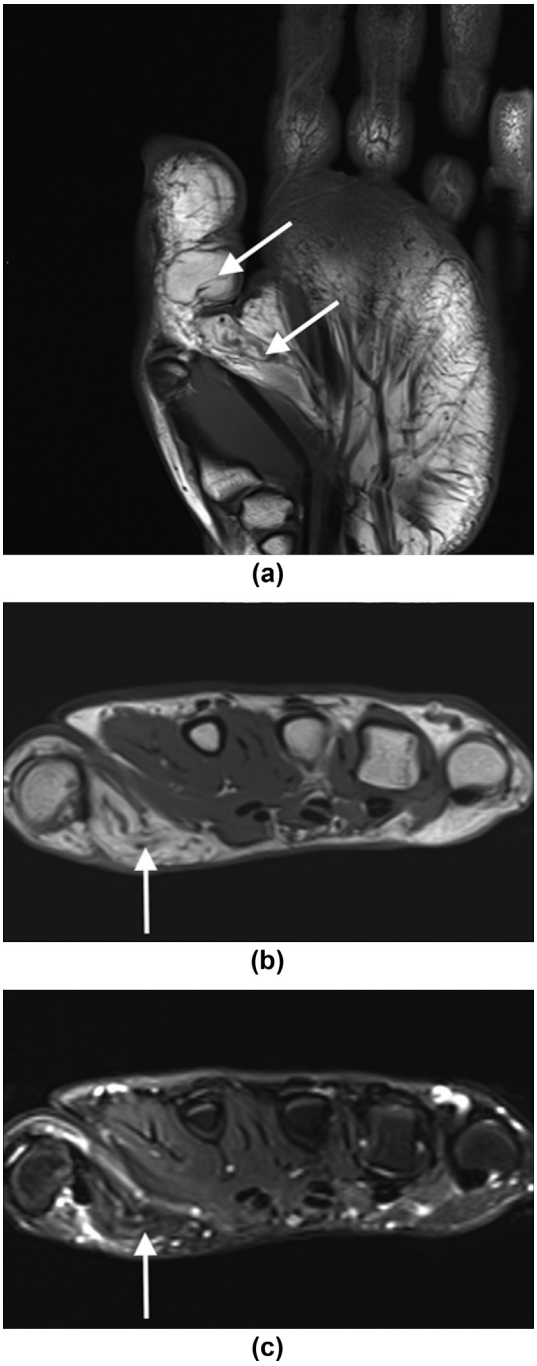


Figure 5 Fibrolipomatous hamartoma. (a) Coronal T1-weighted TSE (18 ms TE, 500 ms TR), (b) axial T1-weighted TSE (18 ms TE, 500 ms TR), and (c) axial PDW FS (30 ms TE, 3,000 ms TR) MRI images of the right hand, showing a predominantly high T1 (fat) signal lobulate lesion (arrows) extending along digital branches of the median nerve, with low signal on PDW FS image, consistent with a fibrolipomatous hamartoma.

Malignant tumours

Sarcoma

These rare tumours can affect any age, gender, or anatomical site.[14] The most common histological subtype is undifferentiated pleomorphic sarcoma.[15] This tumour affects a wide age group (15–80 years) and has a slight male predominance. It has a predilection for the retroperitoneum and lower extremities, and occurrences in the hand are rare.[16] Ultrasonography is a useful first-line investigation to distinguish solid and cystic masses; most sarcomas presenting as a solid hypoechogenic to mixed echogenic lesions with variable vascularity. MRI is the technique of choice for tumour characterisation and accurate local staging. Typical features include a pseudocapsule (compressed tissue surrounding the mass), low T1 signal and heterogeneously high T2 signal with enhancement on contrast-enhanced studies.

It is important to note that soft-tissue sarcomas often are non-specific in appearance on ultrasound at an early stage. It may appear well-defined and avascular, mimicking a benign pathology. Often, duration of lump, rate of change in size or symptoms can prove useful. If there are any suspicious features, such as lobulate margins, mixed echogenicity, calcification, vascularity, or surrounding soft-tissue changes on ultrasound, they should be followed up with contrast-enhanced MRI and reviewed at regional sarcoma centre multidisciplinary meetings regarding biopsy, which is often best performed in regional tumour centres. All indeterminate lesions require imaging and clinical follow-up to ensure benignity of the lesion.

Vascular pathologies

Vascular anomalies

Vascular anomalies are classified into vascular tumours and vascular malformations.[17] The vascular tumours are further subdivided into benign, locally aggressive, and malignant. Soft-tissue haemangiomas are the commonest type of benign vascular tumours and are the fourth commonest hand tumour.[18] The vascular malformations on the other hand are also further subdivided into simple, combined, those that are anomalies of major named individual vessels, those that are associated with other syndromes, and otherwise unclassified anomalies.

The simple vascular malformations are characterised as venous, capillary, lymphatic, arterial, arteriovenous malformations, or fistula based on the predominant vascular channel involved.[19] They can be divided into low-flow (venous, capillary, lymphatic) and high-flow types (arterialised arteriovenous malformation/arteriovenous fistula). Low-flow types are septate lesions with low to intermediate T1 signal and high T2/short tau inversion recovery (STIR) signal; FS T2-weighted/STIR images being by far the best at depicting them. High-flow lesions show serpiginous feeding arteries and draining veins with flow voids on spin echo images[19] (Fig 6). Phleboliths are more common in cavernous/mixed types and appear as areas of low T2 signal and blooming artefact on GRE sequences. On ultrasound, they appear solid, lobulate, hypoechoic to heterogeneous in echogenicity with weak or no flow on Doppler.

Some types of vascular malformations could be associated with systematic dysplasia, such as Maffucci syndrome (soft-tissue haemangiomas and enchondromas),

Klippel–Trénaunay–Weber syndrome (soft-tissue haemangiomas, venous varicosities, and soft-tissue hypertrophy), Parke–Weber syndrome (soft-tissue haemangioma, arteriovenous malformation, and soft-tissue hypertrophy), Bean's syndrome (soft-tissue and bowel haemangiomas) and Kasabach–Merritt syndrome (soft-tissue haemangiomas, haemangioendothelioma, and thrombocytopenia).[20]

Aneurysm and pseudoaneurysm

True aneurysms affecting superficial or deep palmar branches of the radial artery are rare. Post-traumatic pseudoaneurysms occur following penetrating injuries. Rarely, thenar hammer syndrome present as lumps in the thenar region. Thenar hammer syndrome is a rare entity resulting in damage to the distal radial artery from chronic repetitive trauma.[21] On ultrasound, they can show tortuosity, intimal thickening, or stenosis of a distal radial artery branch. Mixed appearances may be seen on Doppler ultrasound and MRI, depending on the degree of thrombus and flow; however, angiography is still considered to be the reference standard imaging technique to make a diagnosis,[21] which may further demonstrate small aneurysms or a corkscrew appearance of the vessel (Fig 7).

Degenerative

Ganglion and synovial cysts

Ganglia and synovial cysts (Figs 8 and 9) are the commonest palpable lesions of the hand, but not the thenar eminence, where soft-tissue tumours are by far the commonest focal masses in our practice. Ganglions are mainly associated with ligamentous injury though degenerative change has also been implicated. These cysts usually affect adults but can be seen in children.[22] Although they mostly arise on the dorsal aspect of the wrist, finger pulleys are the second commonest site after the wrist.[23,24] In the thenar region, these are often related to the radioscaphoid, scapholunate, or scaphotrapeziotrapezoidal (STT) joints. Unruptured ganglions are well-defined, non-compressible, mostly anechoic structures with posterior acoustic enhancement on ultrasound, with occasional peripheral vascular flow on Doppler examination. Sometimes, internal echogenicity and septa are also seen. On MRI, a typical ganglion has low T1 and high T2 signal. To aid surgical planning, the exact extent of the cyst and its relationship to the joint may need to be delineated by contrast-enhanced MRI. Subtle rim enhancement can be seen on post-contrast MRI.[25,26]

Tenosynovitis and tendinopathy

Tenosynovitis (Fig 10) refers to inflammation of the tendon sheath, either secondary to chronic repetitive injury/abnormal use or inflammatory joint disease. It appears as fluid surrounding the tendon, within the tendon sheath, affecting the FPL tendon in the thenar region. Tendinosis/tendinopathy refers to thickening of the tendon with hypoechogenicity and loss of fibrillar pattern on ultrasound. On MRI, tendinosis appears as intermediate T1 and T2 signal, with higher T2 signal more suggestive of a tear.[27] Tenosynovitis appears as low T1 and high T2 signal surrounding the tendon. It is suggested that tenosynovitis of flexor tendons of the hand are more likely to represent rheumatoid arthritis than other inflammatory joint disease.[28] Often there is associated prominent thickening of

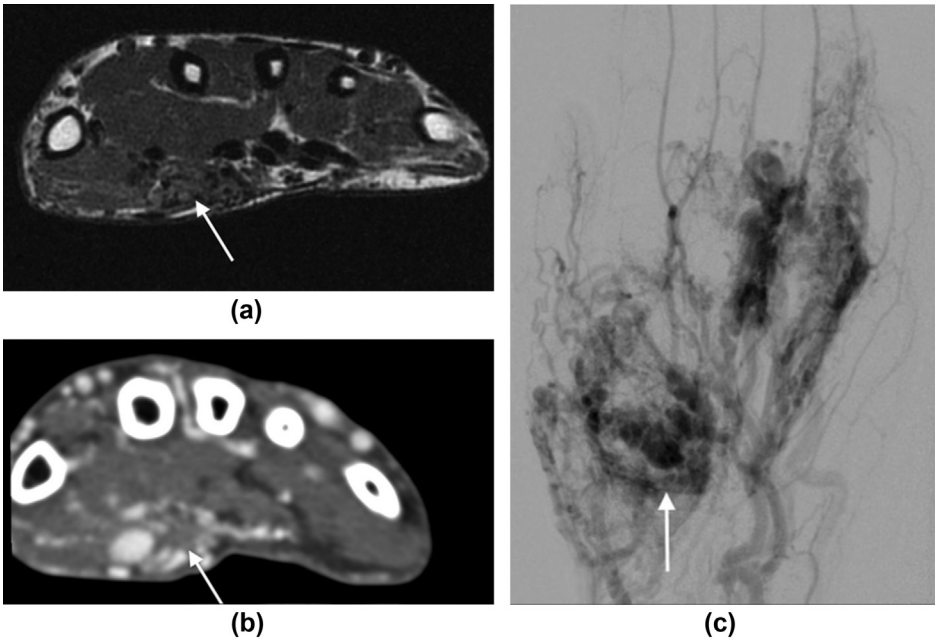


Figure 6 Vascular malformation. (a) Axial T1-weighted TSE (18 ms TE, 500 ms TR), and (b) contrast-enhanced computed tomography (CT) images showing a clump of abnormal blood vessels (arrow) corresponding to a palpable lump in the thenar region, consistent with a benign vascular malformation. (c) Coronal digital subtraction angiogram image of the same patient shows the vascular malformation in the thenar region (arrow). The patient was known to have Klippel–Trénaunay syndrome and multifocal vascular malformations.

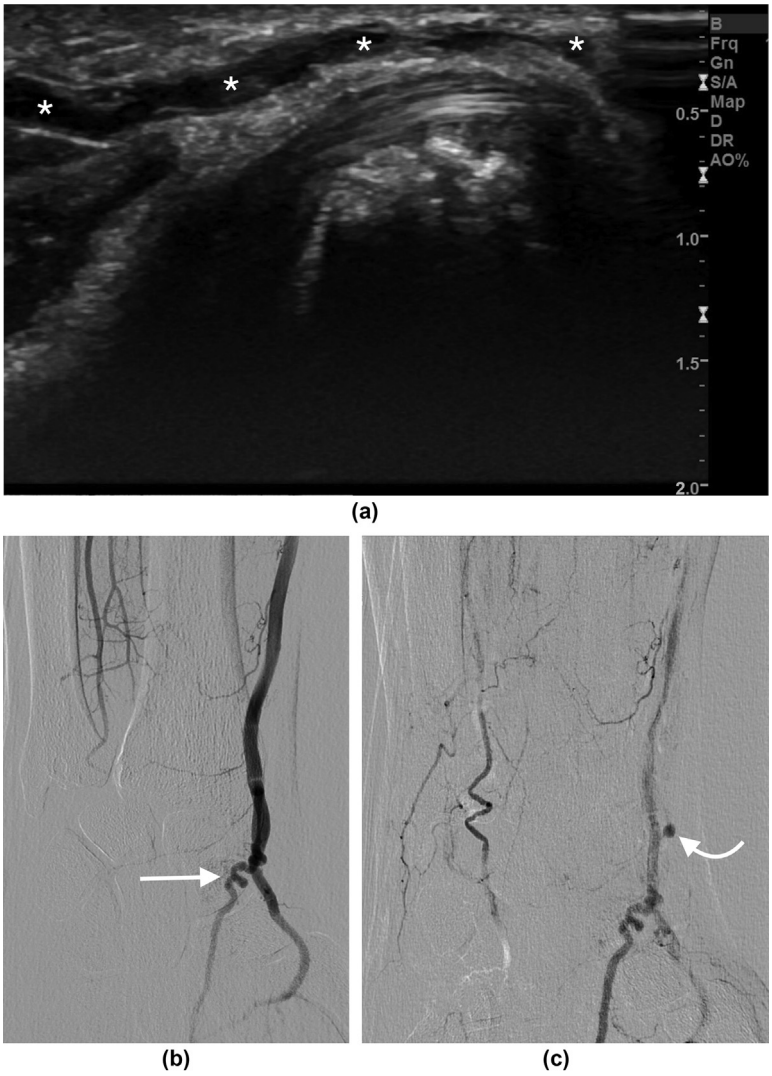


Figure 7 Thenar hammer syndrome. (a) Sagittal ultrasound of a palpable lump in the thenar region of the right hand shows a thick-walled stenotic segment of distal radial artery (asterisk). (b,c) Coronal digital subtraction angiogram images of the same patient shows corkscrew configuration (arrow) of distal radial artery segment and a focal aneurysm (curved arrow) in keeping with thenar hammer syndrome. (Incidentally distal ulnar artery is occluded secondary to previously diagnosed hypothenar hammer syndrome.)

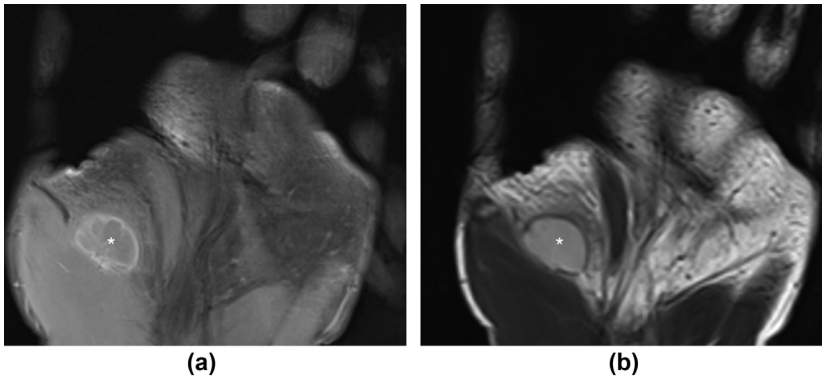


Figure 8 Ganglion and epidermoid cyst. (a) Coronal T1-weighted FS contrast-enhanced (20 ms TE, 636 ms TR), and (b) T2-weighted TSE (120 ms TE, 3,000 ms TR) MRI images, showing a well-defined oval lesion (asterisk) with high signal on T2-weighted image, thin rim and septal enhancement on enhanced T1-weighted FS image (asterisk), corresponding to a palpable lump in the thenar eminence, which would fit with a ganglion.

the A1 or A2 pulley (or an intrinsic ganglion), which can be felt as a lump. In contrast to GCTs, thickening of the pulleys does impede tendon excursion during dynamic examination (Fig 11).

Pulleys are thickened regions in flexor tendons sheaths of the digits. Pulleys in the thumb differ from the digital pulleys. Four morphometric patterns are described consisting of A1 pulley (at the MCPJ), oblique pulley (at proximal half of proximal phalanx), A2 pulley (distal half of proximal phalanx) and a variable pulley (Av) between the A1 and oblique pulleys. Oblique pulley is considered to be most important preventing bowstringing of FPL, while A1 pulley is most commonly implicated in trigger thumb.[29]

Full-thickness tears of the FPL tendon, although uncommon, can also present as a lump in the thenar region. Ultrasound will demonstrate the torn tendon ends and fluid within an empty tendon sheath.

Traumatic

Haematoma

Ecchymosis of the palm should raise the suspicion of a haematoma (Fig 12), in association with history of soft-tissue injury when evaluating a complex thenar mass on imaging. Haematomas consist of blood products at different ages, and therefore, have a protean appearance on imaging. Acute haematomas can appear both hypo- and hyperechoic and over time, become more heterogeneously hypoechoic or anechoic and eventually resolve.[30] MRI is better able to age haematomas. Acute (<7 days) haematomas are typically iso- or hypointense to muscle on T1-and T2-weighted MRI images. Subacute (1 week–3 months) haematomas are usually hyperintense on T1 and T2-weighted images. Chronic haematomas can have a prominent hypointense rim representing a wall of collagenous fibrous tissues and/or haemosiderin.[31] Peripheral enhancement is demonstrated on contrast-enhanced images, while ultrasound shows a complex cystic/missed echogenic mass with peripheral vascularity on Doppler ultrasound.

Foreign body granuloma

Retained foreign body in the soft tissues can cause an inflammatory reaction causing formation of fibrous tissue and granuloma.[32] There can be a delay in diagnosis when the patient forgets the (often minor) injury that caused the skin penetration. What adds to the diagnostic conundrum is the fact that not all foreign bodies associated with the granuloma are radiopaque.[33] Ultrasound is the technique of choice as it capitalises on the wide differences in the acoustic impedance of both radiopaque and radiolucent foreign bodies, such as wood and glass. These are easily recognised as echogenic areas with marked posterior acoustic shadowing.[34] On MRI, the foreign body returns low T1 and T2 signal, appearing as a signal void. The surrounding soft-tissue change depends on the age of the foreign body; in acute presentation inflammatory change is seen as low on T1-weighted and high on T2-weighted fluid sensitive sequences. Chronic granuloma appears as low to intermediate T1 and high to mixed T2 signal, with peripheral low signal fibrous capsule showing enhancement post-contrast.[35]

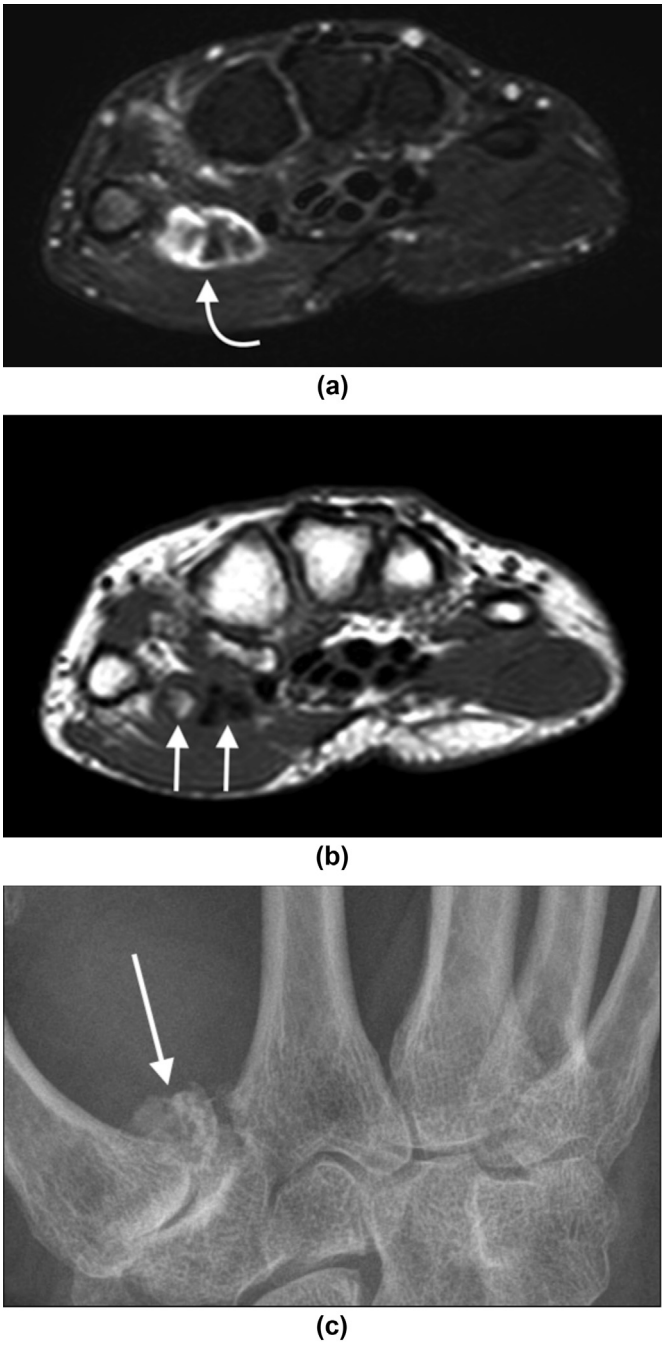


Figure 9 Synovial cyst with loose bodies. (a) Axial PD-weighted FS (30 ms TE, 3,000 ms TR), and (b) T1-weighted TSE (18 ms TE, 500 ms TR) MRI images of the right hand, showing a well-defined low T1 and high PDW FS lesion (curved arrow) with low and high T1 signal loose bodies (straight arrows) on the volar aspect of the first carpometacarpal joint, consistent with a synovial cyst. (c) Dorso-palmar view (DP) radiograph showing osteoarthrosis of the first carpometacarpal joint and associated loose bodies (arrow).

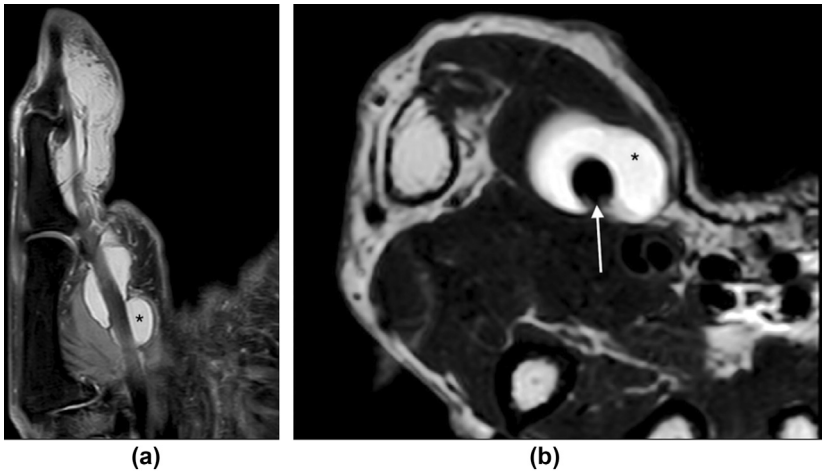


Figure 10 Tenosynovitis. (a) Sagittal and (b) axial T2-weighted mDixon TSE (100 ms TE, 1,574 ms TR) MRI images of the right hand showing loculated fluid (asterisk) in the FPL tendon (arrow) sheath consistent with stenosing tenosynovitis.

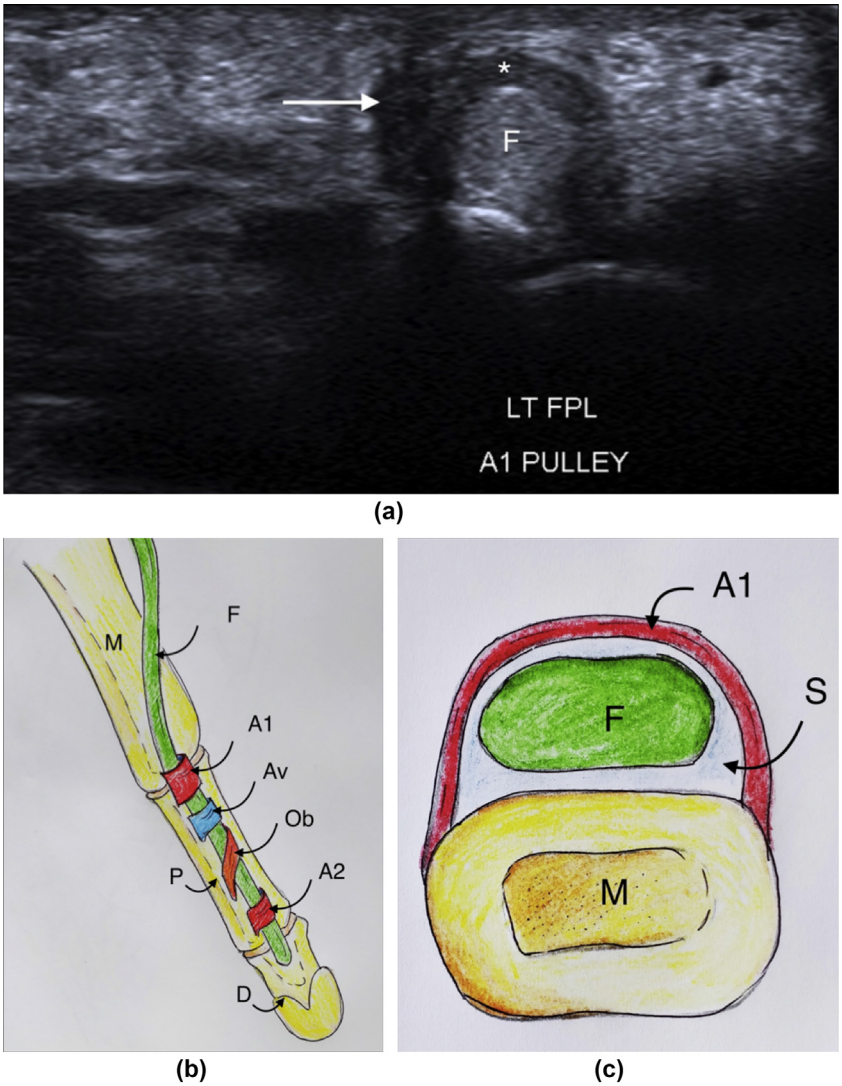
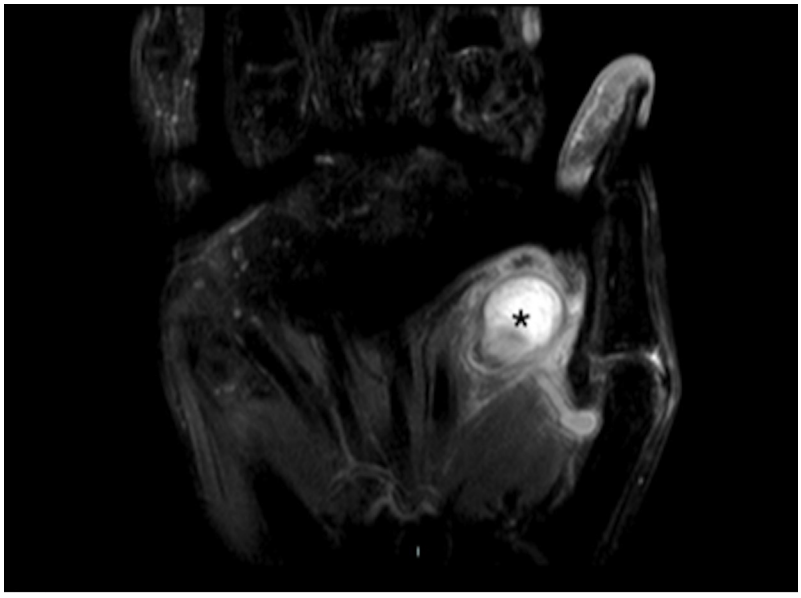


Figure 11 A1 pulley thickening. (a) Axial ultrasound image of the left thenar eminence showing a well-defined non-vascular eccentric hypoechoic thickening of the A1 pulley (asterisk) in a patient with known rheumatoid arthritis, corresponding to a palpable lump; FPL tendon (F) appears mildly thickened with sluggish glide on dynamic scan (not shown) in keeping with mild tendinosis. Schematic long axis (b) and axial (c) images of the finger illustrating the anatomy of the pulley system of the flexor tendons. M, Metacarpal; F, Flexor tendon; A1, A1 pulley; Av, Variable pulley; Ob, Oblique pulley; A2, A2 pulley; P, Proximal phalanx; D, Distal phalanx; S, tendon sheath.



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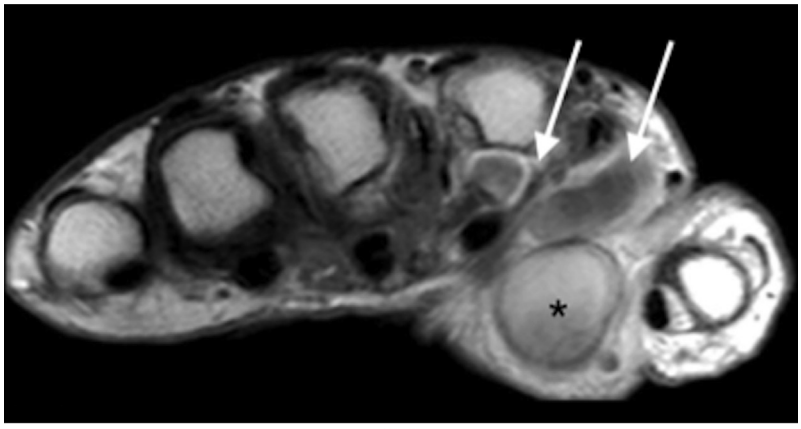

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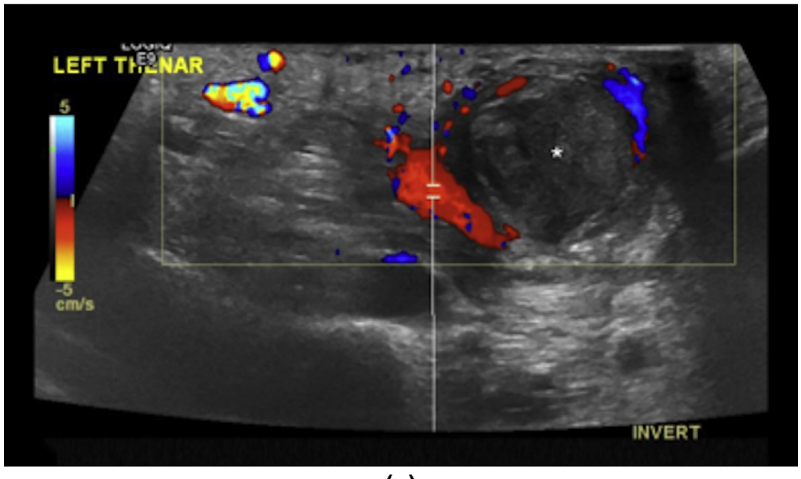

(c)

Figure 12 Haematoma. (a) Coronal T2-weighted mDixon TSE (100 ms TE, 1,574 ms TR) and (b) axial T1-weighted TSE (20 ms TE, 520 ms TR) MRI images of the same patient showing high T2 and high T1 signal centrally, corresponding to the haematoma (asterisk), with surrounding abnormal vascular channels (arrow). (c) Axial ultrasound image of a lump on the thenar region of the left hand showing a well-defined avascular hypoechoic lesion with slow "swirling" of echogenic debris, in keeping with a post-traumatic haematoma. Surrounding abnormal vascular channels are noted with low resistance biphasic flow in a patient with known Klippel–Trénaunay–Weber syndrome.

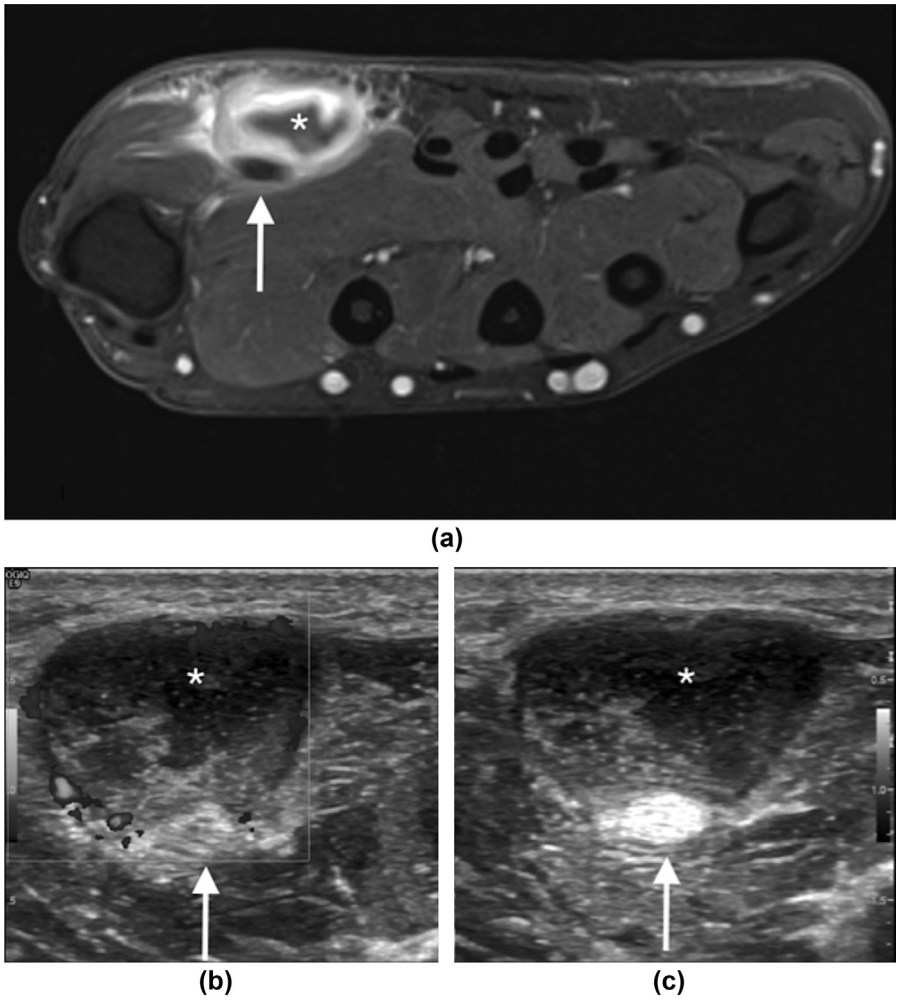

Figure 13 Abscess. (a) T1-weighted post-contrast FS (20 ms TE, 636 ms TR) MRI image and (b,c) axial ultrasound images of the left thenar region shows abnormal thick irregular rim enhancement with central low signal on MRI (asterisk). Corresponding ultrasound image shows a well-defined avascular hypoechoic mass with mild peripheral hypervascularity (asterisk) consistent with an abscess, closely related to an otherwise unremarkable FPL tendon (arrow) in a patient with history of previous penetrating injury.

Epidermoid inclusion cyst

Epidermoid inclusion cysts occur when the epidermal elements implant into the dermal layer as a consequence of previous skin penetration, trauma, or surgery.[36] Typical features include a painless, slowly enlarging superficial lump, similar to ganglion, and other benign soft-tissue tumours. They are most commonly reported in the fingertips, but the thenar region can also be affected. Unruptured epidermoid cysts appear as well-defined lesion with high T2 signal, with low signal internal debris often described. Contrast-enhancced images show thin rim enhancement.

Infection

Abscess

Soft-tissue infection with abscess (Fig 13) formation may present as a soft-tissue mass and imaging has a role in both the diagnosis and management of these conditions.[1] Ultrasonography not only helps to define the extent of the mass, but also can guide aspiration for diagnosis and/or treatment. Tenosynovitis, periostitis, or features indicative of osteomyelitis may be seen on imaging. Often, there is a history of previous penetrating injury. A hypoechoic mass with through transmission is described in simple abscesses, whereas more complex collections show mixed echogenicity with a thick hyperechoic hypervascular rim. A phlegmon is as a solid inflammatory mass with poorly defined margins, mixed echogenicity, and increased vascularity. On MRI, the abscess would show low to intermediate T1 and high T2 signal with an enhancing capsule of variable thickness. Enhancing walls, septa, and associated sinus tracts are best demonstrated on FS contrast-enhanced T1-weighted images.[35]

Inflammatory

Rheumatoid nodule

These are associated with long-standing rheumatoid arthritis, and affect 20–30% of rheumatoid arthritis (RA)

patients. In rare cases, it can precede the articular manifestations of the disease and nodules are usually located at the dorsum of the hand, at sites of pressure or repeated microtrauma.[37] MRI is non-specific, often requiring follow-up and biopsy to confirm. They are T1 iso-to hypointense and T2 hypointense. Enhancement patterns are variable from marked in solid lesions to ring-like in cystic ones.

Tophaceous gout

Tophaceous chronic gout can manifest as a soft-tissue mass with intermediate to low T1 signal, and variable but often heterogeneous low T2 signal intensity.[37] Tophi appear as hyperechoic masses with an anechoic rim on ultrasound, often showing posterior acoustic shadowing.[38] Changes in the underlying joints are non-specific, with ultrasound showing effusion and erosions. Classic signs, such as the "double contour sign", created by the deposition of urate crystals on the superficial layer of hyaline articular cartilage, and "snow storm appearance", created by floating hyperechoic foci (microtophi) in synovitis, have been described but are uncommon at the thumb.

Conclusion

A range of neoplastic, inflammatory, traumatic, and degenerative pathologies may present with a lump in the thenar eminence. Often, a definitive diagnosis can be reached in combination with the history, clinical findings, and imaging features. Ultrasound is usually the first technique used, which helps differentiate solid from cystic and often benign from aggressive lesions, with additional information obtained through dynamic examination. MRI helps in narrowing down the diagnosis and is often required for surgical planning and problem solving. Although most of these lesions can be managed in local hospitals, the aggressive lesions along with the difficult and indeterminate cases should be referred to specialist soft-tissue sarcoma centres for their opinion and/or definitive management.

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Conflict of interest

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