

# Provincial Hand and Wrist Soft Tissue Mass Primary Care Clinical Pathway

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The vast majority of soft tissue masses in the hand and wrist are **benign** and can be diagnosed primarily by history and physical exam. Imaging may be required to confirm a diagnosis or determine the anatomic extent of involvement [13].

## 1. History of Present Illness

- Duration
- Changes in size or shape over time
- Pain, tenderness
- Impact on function

## 2. Physical Exam

- Mass characteristics (e.g., location, size, soft/firm)
- Skin changes (e.g., central pore, colour)
- Mobility (mobile versus fixed)
- Sensation distal to the mass

## 3. Red Flags

**Abscess/infection:**  
Fluctuant mass with or without cellulitis, systemic symptoms

If unsure or if additional support is required, consult specialty advice

ER or hand and wrist surgeon\* via RAAPID

No red flags

Differentiate between simple cystic and solid mass

### Simple cystic mass characteristics:

- Usually near a joint (dorsal wrist most common); with or without associated symptoms
- Slightly mobile, firm, rubbery nodule, attached to the underlying joint capsule or tendon sheath
- No skin changes

If clinical findings are consistent with ganglion, **ultrasound not required**

Uncertainty or Solid Mass

## 4. Investigations (Ultrasound)

- When uncertainty exists, ultrasound can be used to differentiate cystic and solid masses
- An ultrasound should be ordered for all solid masses

Cystic

Yes — Is there Rapid Growth? — No

## Simple Cystic Mass (e.g., Ganglion)

Provide reassurance that 50% resolve spontaneously

Significant Symptoms\*\*

No Significant Symptoms

### Aspiration

Perform 3 aspirations prior to referral

Successful aspiration

Patient should be advised to return if they become symptomatic or the mass enlarges

Three failed aspirations **OR** aspiration deemed not appropriate by radiology (e.g., volar wrist ganglion)

Referral to hand and wrist surgeon\* if nonoperative management not successful, patient has pain, or functional impairment. Order x-ray (hand and/or wrist) of affected joint for patients requiring referral

## Solid Mass

### Suspected Malignant

**Sarcoma:** Rapid growth, painful, fixed, or recurring mass after a previous sarcoma excision

### Urgent MRI

Malignant

Suspected Benign

**High Priority** referral to hand and wrist surgeon

### Suspected Benign

E.g., giant cell tumor, epidermal inclusion cyst, Schwannoma, lipoma, glomus tumor, gout tophus

Significant Symptoms\*\*

No Significant Symptoms

- Refer to hand and wrist surgeon\*
- Order MRI concurrently if not previously done and forward results when available to assist with triage

Patient should be advised to return if they become symptomatic or the mass enlarges

\*hand and wrist surgeon includes plastic and orthopedic surgeons, depending on zone

\*\*Significant symptoms: Severe pain, functional impairment impacting activities of daily living, spontaneous discharge of fluid, significant nail deformity, numbness/tingling.

### An optimal referral letter includes a description of:

- Symptoms
- Treatments trialed and effectiveness (cystic masses)
- Diagnostic Imaging ordered (if applicable)
- Refer to [QuRE Referral Consult Checklist](#)



*This primary care pathway was co-designed provincially by Primary Care Providers, Specialist Physicians (Hand and Wrist specialists including plastic surgeons and orthopedic surgeons), Patient and Family Advisors, and the Provincial Pathways Unit. It is intended to be used in conjunction with specialty advice services, when required, to support care within the medical home.*

## EXPANDED DETAILS

### Pathway Primer

Most soft tissue masses in the hand and wrist are benign. Masses in the hand and wrist can be subdivided into two main groups: Simple cystic masses (i.e., ganglion cysts) and solid masses.

The majority of masses in the hand and wrist are **cystic masses** which are usually easy to identify through history and physical assessment. Imaging is not usually required. If uncertainty exists about whether the mass is cystic or solid, an ultrasound should be ordered as it will help differentiate between the two.

Many types of **solid masses** in the hand and wrist can occur. This clinical pathway highlights the most common solid masses in the hand and wrist and clarifies referral triggers for these types of masses (i.e., significant symptoms, suspected malignancy). If sarcoma is suspected/confirmed urgent follow-up is required.

### 1. History of Present Illness

- Duration: When did they first notice the mass?
- Changes in size or shape over time: Rapid growth is concerning. Sarcoma needs to be considered and investigated urgently.
- Pain, tenderness.
- Impact on function: Does the mass impact the patient's ability to use their hands (e.g., mobility, ROM)? Are there changes in sensation in a pattern consistent with the mass?

### 2. Physical Exam

- Mass characteristics
  - Location: Masses that are located on the dorsal wrist are usually ganglions.
  - Size: There is no cutoff for concerning size for masses in the hand and wrist (this is different from masses found in other parts of the body).
  - Soft/firm: Majority of masses in the hand and wrist are cystic and are easily identifiable as ganglions. A higher proportion of masses in the hand and wrist may feel firm due to the small spaces in which they occur.
- Skin changes:
  - A central pore can be indicative of epidermal inclusion cyst.
  - Colour changes would signify a vascular mass (venous or arteriovenous malformation).
  - Glomus tumors occur under the nail and have a blueish colour. The colour change can be very subtle.
- Mobility (mobile versus fixed)
- Altered sensation in a distribution distal to the mass: May indicate a nerve sheath tumor.

### 3. Red Flags

**Abscess or infection:** Fluctuant mass with or without cellulitis or systemic symptoms (e.g., fever and chills, warmth, redness, swelling). Patients with these symptoms should be referred to ER or hand and wrist surgeon via RAAPID.

See also [Solid Mass: Suspected Malignant](#)

### 4. Investigations (Imaging)

- If history and physical exam findings are consistent with the presentation of a ganglion cyst, no ultrasound is required.
- If uncertainty exists, an ultrasound can be used to differentiate cystic versus solid masses. If mass is cystic, follow the [Simple Cystic Mass pathway branch](#) below. If the mass is solid, follow the [Solid Mass pathway branches](#) below.
- Solid mass, suspected benign with significant symptoms: An MRI can help narrow the differential diagnosis and assist with triage.
- If patient presents with a **rapidly growing mass**, this should flag sarcoma as a risk and the patient should be sent for an URGENT MRI. The MRI can better characterize the mass but final diagnosis may only be ultimately determined based on biopsy or excision (pathology evaluation).
  - For the URGENT referral to radiology for MRI, it may help to:
    - Include “Urgent MRI requested for rapidly growing mass as per Provincial Hand and Wrist Soft Tissue Mass Primary Care Clinical Pathway” on the requisition form.
    - If needed, a phone call to radiology may help facilitate the referral.
- Biopsy is used to confirm diagnosis of solid masses for patients with significant symptoms and suspected malignant masses.

### Simple Cystic Mass (e.g., ganglion)

Ganglion cysts (photos of different types of masses in [appendix A](#)) present as smooth round swellings under the skin and are benign, jelly-like fluid filled (synovial fluid) lesions that arise from the joints or tendon sheaths. Cysts usually develop spontaneously and may persist for months to years. The cyst may change size over time (usually related to activity), but continued growth is uncommon. The exact cause is unknown, but risk factors include female sex, being young to middle aged, history of trauma, joint hypermobility (e.g., Ehlers-Danlos syndrome) and osteoarthritis.

Provide reassurance as these masses are benign, usually cause only mild symptoms (no functional impact), and many resolve without treatment within 1 year [1].

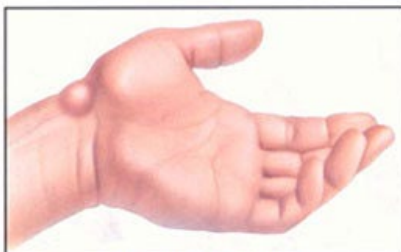
#### Significant symptoms include [1]:

- Severe pain
- Functional impairment impacting activities of daily living
- Spontaneous discharge of fluid
- Significant nail deformity
- Numbness/tingling

**A ganglion cyst can occur...**



...on the **back of the wrist**.



...on the **palm side of the wrist**.



...or at the **base of a finger**.

Image: Veterans Health Library [2]

<p><b>Dorsal wrist ganglion</b> (60-70%)</p>	<p><b>Volar wrist ganglion:</b> Cysts on the palm side of the wrist (13-20%). Aspiration not typically appropriate due to proximity of cyst to the radial artery. Refer directly to surgeon.</p>	<p><b>Volar retinacular ganglion cysts-</b> along the palmar side of the fingers (7-12%). Patients typically present with a firm mass (pea-like) on the palm in the region of the metacarpophalangeal crease [3].</p>
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## Aspiration

If the patient is experiencing significant symptoms, they should receive up to three aspirations. Patients can be referred to radiology for ultrasound guided aspiration or to an experienced practitioner for aspiration without image guidance. Aspiration may reduce the size of the ganglion so that there is no longer a functional impact, or the ganglion may resolve completely. Aspiration cure rates have been shown to range from 15% to 89% [3]. Injection of steroids as an adjunctive measure for the treatment of ganglion cysts has not been shown to decrease rate of recurrence or pain [4]. Complications from aspiration are unlikely but may include reoccurrence of the cyst (most common), infection, bleeding, pain, and scarring.

If the series of aspirations do not relieve the significant symptoms or aspiration cannot be completed, the patient should be referred to a hand and wrist surgeon. Information about treatments trialed and effectiveness should be included in referral.

## Reasons for surgical excision include [1]

- Three aspirations fail to resolve patient symptoms
- There is recurrent spontaneous discharge of fluid or significant nail deformity

Note: Ganglia are not removed for cosmetic reasons

## Special considerations

Consider underlying causes of ganglia. Order x-ray of affected joint (hand and/or wrist) for patients requiring referral as findings (e.g., static widening of the scapholunate interval) may show one of the following conditions which would impact triage.

- Arthritis: Cysts are more likely to be painful
- Scapholunate ligament injury
- Large intraosseous cyst with a soft tissue extension
- Scapholunate advanced collapse (SLAC) arthritis

**Degenerative Mucous Cysts** (photo in [appendix A](#)) are a type of ganglion cysts [1]. These usually occur in the dorsal DIP joint region in the elderly and are usually associated with osteoarthritis. They may cause nail deformity (e.g., longitudinal groove) and clear mucous fluid may drain from the cyst.

**Treatment:** Do not aspirate. Refer to hand and wrist surgeon if symptomatic and patient is interested in surgical options. Order a hand x-ray.

### **Solid Mass: Suspected Malignant**

- Primarily solid (have a solid component). May be heterogenous due to cystic degeneration.
- Rapid growth over a short period of time.
- Deeply fixed to muscle or fascia.
- Prior malignancy (other than basal cell carcinoma).
- Need urgent MRI followed by high priority referral to hand and wrist surgeon.

### **Solid Mass: Suspected Benign**

A variety of benign solid masses can occur in the hand and wrist ([Table 1](#)). There are no conservative management strategies for these masses. If the patient presents with significant symptoms, they should be referred to a hand and wrist surgeon and an MRI should be ordered concurrently.

If the mass does not impede normal functioning, a continuous monitoring approach should be used. Patients should be advised to return if any concerning changes are observed (e.g., growth or they develop significant symptoms).

**Table 1:** Common types of solid soft tissue masses in the hand and wrist (all benign). Images in [Appendix A](#).

Solid Masses of hand and wrist	Common/Uncommon	Considerations
<b>Giant cell tumor</b> of the tendon sheath (Nodular Tenosynovitis) [4] [5]	<ul style="list-style-type: none"> <li>• Second most common soft tissue mass in the hand and wrist</li> <li>• Most common in females and those aged 30-50</li> </ul>	<ul style="list-style-type: none"> <li>• Often multilobulated</li> <li>• Slow growing mass</li> <li>• Usually in the fingers</li> <li>• Firm and not filled with fluid</li> <li>• Tumor may extend into joints and bone cortices, tendon sheaths and neurovascular structures (rarer in hand and wrist)</li> </ul>
<b>Epidermal Inclusion cyst</b> (Sebaceous cyst and epidermal inclusion cyst) [3] [6]	<ul style="list-style-type: none"> <li>• Third most common type of tumor of the hand</li> <li>• Most common in males and those aged 20 to 60</li> </ul>	<ul style="list-style-type: none"> <li>• Growth that occurs beneath the skin</li> <li>• Round or dome shaped and moves easily</li> <li>• May occur after trauma</li> <li>• May be due to a blocked hair follicle</li> <li>• May have a central pore</li> <li>• Generally painless, unless infected</li> </ul>
<b>Schwannoma</b> (Neurilemmoma) [7]	<ul style="list-style-type: none"> <li>• Most common mass of the peripheral nerves</li> </ul>	<ul style="list-style-type: none"> <li>• Originate from Schwann cells on the peripheral nerve sheaths</li> <li>• May be asymptomatic or cause symptoms in the distribution of the nerve involved (e.g., paresthesia, weakness, pain)</li> <li>• Grow slowly and are soft and mobile</li> <li>• Deeper and associated with the nerve so doesn't have atypical surface appearance</li> </ul>
<b>Lipoma</b> (mass of fatty tissue)	<ul style="list-style-type: none"> <li>• Lipomas uncommon in the hand and wrist</li> </ul>	<ul style="list-style-type: none"> <li>• Slowly enlarging, soft, uniform and mobile non tender mass ("doughy" feel)</li> <li>• Yellow to orange in colour</li> </ul>
<b>Glomus tumor</b> [8]	<ul style="list-style-type: none"> <li>• Very rare but debilitating for patients and often missed for many years</li> <li>• Most common in young adults</li> </ul>	<ul style="list-style-type: none"> <li>• Usually a single lesion (red/blue) under the nail or other areas of the hands</li> <li>• Cause paroxysmal pain, which is often precipitated by cold or pressure</li> <li>• X-ray may show bone erosion if the mass is located under the nail</li> </ul>
<b>Gout Tophus</b> [9]	<ul style="list-style-type: none"> <li>• More common in men</li> </ul>	<ul style="list-style-type: none"> <li>• Crystal-induced arthropathies</li> <li>• Arthritis, soft tissue damage, swelling and inflammation</li> <li>• See <a href="#">Primary Care Pathway: Gout</a></li> </ul>

## Advice Options

If this patient needs to be directed to hospital through RAAPID or the ER, call [RAAPID](#) for on-call surgeon or 911.

Non-urgent and urgent specialist advice for wrist concerns (advice provided by orthopedic surgeons) is available in all zones. In addition to where specified in the algorithm, you can request non-urgent advice at any point when uncertain about medications, next steps in treatment, investigations, or resources available. See next page for details.

Zone	Program	Online Request	Phone Number
<b>Urgent Telephone</b>			
All Zones	<a href="#">RAAPID</a> 	N/A	<b>North:</b> 1-800-282-9911 or 780-735-0811 <b>South:</b> 1-800-661-1700 or 403-944-4486
<b>Non-Urgent Electronic - online</b>			
All Zones	<a href="#">Netcare eReferral</a> 		N/A
<b>Non-Urgent Telephone</b>			
Edmonton, North	<a href="#">ConnectMD</a> 	<a href="#">Online Request</a>	1-844-633-2263

## Referral Process

Referral pathways are guidelines to help referring providers know what information, labs and diagnostic imaging are required with their referral to a specialty. These pathways are co-designed with Primary and Specialty Care, AHS Operations, and patients to ensure the right amount of information is included throughout the referral process to triage the patient as quickly as possible.

To ensure referring providers have referral information at their fingertips, referral pathways may link to clinical pathways when available. AHS manages referral pathways and extensive work is ongoing as part of the [Alberta Surgical Initiative](#). If you have questions or want to know more about the referral pathway development process, please email [access.ereferral@ahs.ca](mailto:access.ereferral@ahs.ca).

- **Urgent Referral** – Call surgeon on call via [RAAPID](#) or call 911.
- Follow the [Provincial Plastic Surgery, Adult Referral Pathway](#) or [Provincial Orthopedic & Spine, Adult Referral Pathway](#).
- [Alberta Referral Directory](#) is also a helpful resource for all referral information.



## APPENDIX A (Photo Library)

### 1. Ganglion Cysts



Image (DynaMed): Large ganglion cysts of the dorsal wrist



Image (DynaMed): Ganglion cysts on the volar aspect of the wrist

### 2. Mucous cyst at DIP joint



Image (Manchester Hand Clinic): [Mucous cyst](#)

### 3. Giant cell tumour

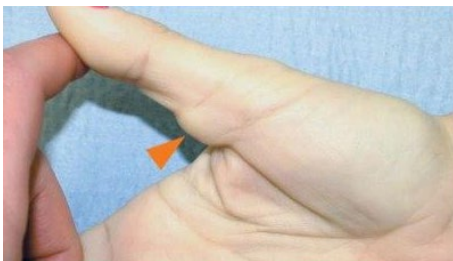


Image (Orthobullets): [Giant Cell Tumor of Tendon Sheath - Hand](#)

### 4. Epidermal inclusion cyst (there can be variability in how these look)



Image (Orthobullets): [Epidermal Inclusion Cyst - Hand](#)



## 5. Gout tophus

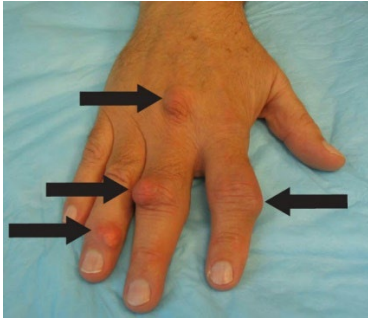
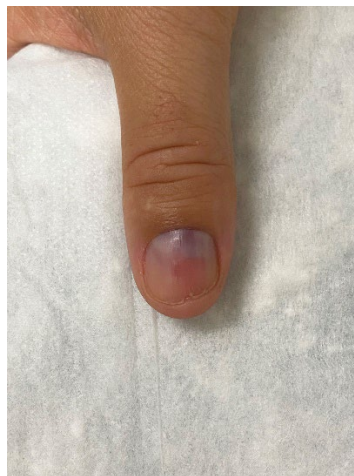


Image (Cleveland Clinic) [9]: Tophi along the second proximal interphalangeal (PIP), third metacarpophalangeal, third PIP, and fourth distal interphalangeal. [Gout and Calcium Pyrophosphate Deposition Disease](#).

## 6. Glomus tumor



Image (Primary Care Dermatology Society): [Glomus tumour](#)



Courtesy of Dr. Hollie Power

## BACKGROUND

### About this pathway

- This pathway was developed in collaboration with hand and wrist surgeons (orthopedic and plastic surgeons), primary care providers, patient and family advisors, and the Provincial Pathways Unit.
- Condition-specific clinical pathways are intended to offer evidence-based guidance to support primary care providers in caring for patients with a range of clinical conditions.

### Authors and conflict of interest declaration

The authors represent a multi-disciplinary team. Names of the content creators and their conflict-of-interest declarations are available on request by emailing [albertapathways@primarycarealberta.ca](mailto:albertapathways@primarycarealberta.ca).

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### Pathway review process, timelines

Primary care pathways undergo scheduled review every three years or earlier if there is a clinically significant change in knowledge or practice. The next scheduled review is **May 2028**. However, we welcome feedback at any time. Please send us your [feedback here](#).

This pathway represents evidence-based best practice but does not override the individual responsibility of healthcare professionals to make decisions appropriate to their patients using their own clinical judgment given their patients' specific clinical conditions, in consultation with patients/alternate decision makers. The pathway is not a substitute for clinical judgment or advice of a qualified healthcare professional. It is expected that all users will seek advice of other appropriately qualified and regulated healthcare providers with any issues transcending their specific knowledge, scope of regulated practice or professional competence.

## PROVIDER RESOURCES

Resource	Link
DynaMed: Ganglion cysts	<a href="#">Ganglion Cysts</a>
Malignant Tumors of Hand and Wrist (2006)	<a href="#">JAAOS - Journal of the American Academy of Orthopaedic Surgeons</a>

## PATIENT RESOURCES

This section is intended to list resources that primary care providers may find useful to share with patients to help support self-management and care in the medical home.

Resource	Link
<a href="#">MyHealth Alberta</a> : Ganglions-condition basics	<a href="#">Ganglions</a>
<a href="#">MyHealth Alberta</a> : Ganglions-care instructions	<a href="#">Ganglions: Care Instructions</a>
<a href="#">MyHealth Alberta</a> : Mucous cyst ganglions	<a href="#">Mucous Cyst Ganglions</a>

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