

## **LABAT-Upper Extremity**

### *Stemmer's Sign*

Examiner assesses the ability to lift the skin on dorsal aspect of the proximal phalanx. It is rated as “no” or “yes”, with “yes” indicating difficulty in lifting skin compared to the unaffected side (Foldi et al, 2003). Each phalanx is assessed, and which phalanx(es) affected are recorded.

### *Obliteration of skin folds*

Obliteration of skin folds is assessed at the dorsal aspect of the proximal interphalangeal (PIP) joint. This is rated as “no” or “yes”, with “yes” indicating a visible loss of skin folds. Each PIP joint is assessed, and which PIP joints affected are recorded.

### *Obscuration of anatomical architecture*

#### Operational definitions for obscuration of anatomical architecture

Anatomical Structure	None	Close Inspection	Readily Apparent
Metacarpal phalangeal (MCP) joint (2-4)	Symmetrical convexity of MCP joints, and symmetrical concavity between 2 <sup>nd</sup> -3 <sup>rd</sup> , 3 <sup>rd</sup> -4 <sup>th</sup> , and 4 <sup>th</sup> -5 <sup>th</sup> MCP joints	Subtle loss of convexity or concavity but still able to visualize with full digit flexion compared to unaffected side; or complete loss of concavity between only 1 MCP joint	Complete loss of concavity between MCP joints; only able to slightly visualize knuckle
Extensor tendons	Symmetrical appearance of extensor tendons at dorsal hand	Extensor tendons not as prominent compared to unaffected side; or unable to visualize only 1 extensor tendon	Unable to visualize tendons with full active digit extension and abduction
Flexor tendons	Symmetrical appearance of flexor tendons at ventral wrist	Flexor tendons not as prominent with active wrist flexion, finger flexion and thumb opposition compared to unaffected side	Unable to visualize with active wrist flexion, finger flexion and thumb opposition compared to unaffected side
Ulnar styloid	Symmetrical appearance of ulnar styloid	Ulnar styloid not as prominent compared to	Unable to visualize ulnar styloid compared to

		unaffected side	unaffected side
Infracondylar recess	Symmetrical concavity of lateral infracondylar recess with elbow extended	Infracondylar recess is less concave compared to unaffected side	Loss of concavity of infracondylar recess
Olecranon process	Symmetrical appearance of olecranon process with elbow flexed	Olecranon process less prominent compared to unaffected side	Unable to visualize olecranon process

### *Anatomical Contour*

Operation definitions for deviation from normal anatomical architecture

Anatomical Region	Normal	Readily apparent	Gross Deviation
Hand	Symmetrical appearance of hand; relatively flat dorsal hand with a smooth transition between the hand and digits	“Hump” on the dorsal aspect of the hand (raised <1cm)	“Hump” on the dorsal aspect of the hand (raised > 1cm)
Wrist	Symmetrical appearance of wrist; relatively flat dorsal and ventral aspects of wrist	“Hump” on the dorsal or ventral aspect of wrist compared to unaffected side	Circle shaped appearance with diameter equal to width of hand; deepened skin folds
Forearm	Symmetrical appearance of forearm; distal forearm tapers at the wrist; forearm circumference should be larger than the wrist	↑ forearm: wrist circumference ratio	↑ forearm: wrist circumference ratio
Upper Arm	Symmetrical appearance of upper arm with arms abducted to	Increased posterior-medial arm convexity (>2.5cm compared	Increased posterior-medial arm convexity (>5cm compared to

	90 degrees and palms forward	to unaffected side) with arms abducted to 90 degrees and palms forward; hanging tissue	unaffected side) with arms abducted to 90 degrees and palms forward; extreme hanging tissue
--	------------------------------	--	---

### *Tissue Texture Assessment*

Soft tissue texture is assessed at the digits, dorsal hand, wrist, forearm, elbow, and upper arm; and rated as “normal”, “spongy”, “firm”, or “hard”.

### *Edema Assessment*

Edema assessment is performed at the following locations: digits, dorsal hand, wrist, forearm, elbow, and upper arm. Edema is rated as “none”, “non-pitting”, or “pitting”. Pitting edema is defined by a visible indentation that remains in the skin after applying gentle pressure, while non-pitting edema is defined as when gentle pressure does not leave a visible indentation in the skin for a few seconds. Pressure is applied by the examiner’s finger or thumb for 5 seconds.

### *Edema Type*

Lymphedema can be characterized by pitting or non-pitting edema with spongy, firm, or hard tissue texture. The type of edema (spongy non-pitting edema; firm pitting edema; hard non-pitting edema etc.) may provide information regarding the severity of lymphedema, and prognosis for conservative management.

Spongy tissue texture with non-pitting edema may indicate lymph fluid stasis has led to fat deposition but not enough interstitial fluid is present to cause the skin to distort with pressure. Spongy, firm or hard tissue texture with pitting edema suggests a significant amount of interstitial fluid is present since fluid can be visually mobilized from one area to another. As tissue fibrosis progresses, the ability to distort the tissue with pressure becomes more difficulty and edema transitions from pitting to non-pitting. This is characteristic of severe and chronic lymphedema, but is a rare presentation for BRCL. Edema type descriptions and proposed scoring can be found below:

### *Edema Type Scoring*

Tissue Texture	Edema	Comment	Score
Normal	No edema	No edema or tissue changes	0
Spongy	Non-pitting edema	Mild edema with no tissue fibrosis	1
Spongy	Pitting edema	Moderate edema with no tissue fibrosis	2

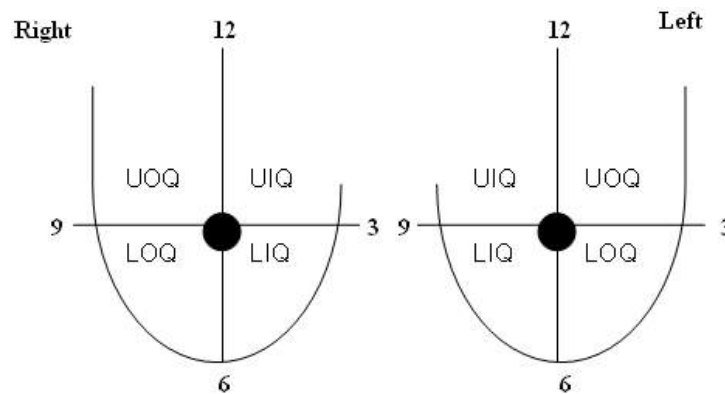
Firm	Pitting edema	Moderate edema with minimal fibrosis	3
Hard	Pitting edema	Moderate edema with moderate fibrosis	4
Firm	Non-pitting edema	Severe edema with moderate tissue fibrosis	5
Hard	Non-pitting edema	Severe edema and severe tissue fibrosis	6

## **LABAT-Breast**

### *Tissue Texture Assessment*

Soft tissue texture is assessed at the posterior torso, lateral torso, breast-upper outer quadrant, breast-upper inner quadrant, breast-lower outer quadrant, and breast lower inner quadrant; and rated as “normal”, “spongy”, “firm”, or “hard”. Refer to Figure 1 for quadrants of breast.

Figure 1



### *Edema Assessment*

Edema assessment is performed at the following locations: posterior torso, lateral torso, breast-upper outer quadrant, breast-upper inner quadrant, breast-lower outer quadrant, and breast lower inner quadrant. Edema is rated as “none”, “non-pitting”, or “pitting”. Pitting edema is defined by a visible indentation that remains in the skin after applying gentle pressure, while non-pitting edema is defined as when gentle pressure does not leave a visible indentation in the skin for a few seconds. Pressure is applied by the examiner’s finger or thumb for 5 seconds.

### *Peau d’orange*

Peau d’orange is a dimpling of the skin, resembling the skin of an orange. The presence of peau d’orange is assessed at the following locations: posterior

torso, lateral torso, breast-upper outer quadrant, breast-upper inner quadrant, breast-lower outer quadrant, and breast lower inner quadrant. Peau d'orange is rated as "no" or "yes", with "yes" indicating peau d'orange is present.