

Hyoid Peak Position Calculation Instructions

Introduction: In this file you will find instructions for measuring hyoid peak. Recent data from research in our lab suggests that measurement of a single point (peak position), relative to a fixed point on the spine (anterior inferior corner of the C4 vertebra), is adequate for capturing variations in hyoid movement during swallowing across different conditions. To do this, follow these instructions.

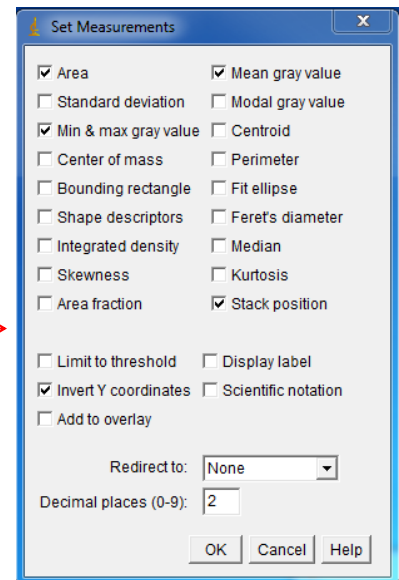
How To Measure Hyoid Peak Position

1. Open ImageJ

(Download from the following website: <http://rsbweb.nih.gov/ij/>)

2. Set Measurements

- Click *Analyze* → *Set Measurements*
 - Only necessary the first time you set up ImageJ on your computer
- Set measurements as per the diagram to the right:
- Click *OK*

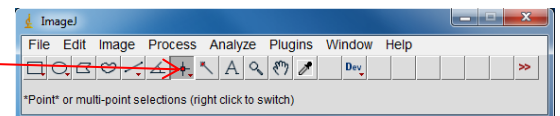


3. Find the hyoid peak frame

- Locate the hyoid peak frame
 - Select the frame where the hyoid is in the most anterior position when it is at its superior peak

4. Take measurements on hyoid peak frame

- Select the *Point* tool
- Locate the C2 vertebrae:
 - Click on the anterior inferior edge of C2 vertebrae
 - Press *Ctrl + M*
- Locate the C4 vertebrae:
 - Click on the anterior inferior edge of C4 vertebrae
 - Press *Ctrl + M*
- Locate the Hyoid:
 - Click on the anterior inferior edge of the hyoid
 - Press *Ctrl + M*



	Area	Mean	Min	Max	X	Y	Slice
1	0	60	60	60	182	94	67
2	0	52	52	52	192	129	67
3	0	80	80	80	156	114	67

Note: The measurements must be taken in the exact order described above.

5. **Collate data**

- Open the *Hyoid Displacement Calculation Sheet*
- In the Results box, select all 3 rows
- Press *Ctrl + C* to copy the data Press *Ctrl + V* to paste the data into the orange rectangle in the Excel worksheet

Step 1: Copy and Paste data from ImageJ into the following table (orange rectangle)

Frame	Measurement	Measurement #	Area	Mean	Min	Max	X	Y	Slice
Peak	C2	1							
	C4	2							
	Hyoid	3							

6. **Review the results**

- The hyoid position will be displayed in the Excel worksheet
- Optional: Fill out the patient information fields

Step 2: Output/Results

Patient Information and VFSS Particulars:

Patient Name: _____
Exam Date: _____
Additional Info: _____

Displacement Results:

Peak Hyoid Position (X): N/A (% C2-C4)
Peak Hyoid Position (Y): N/A (% C2-C4)
Peak Hyoid Position (XY): N/A (% C2-C4)