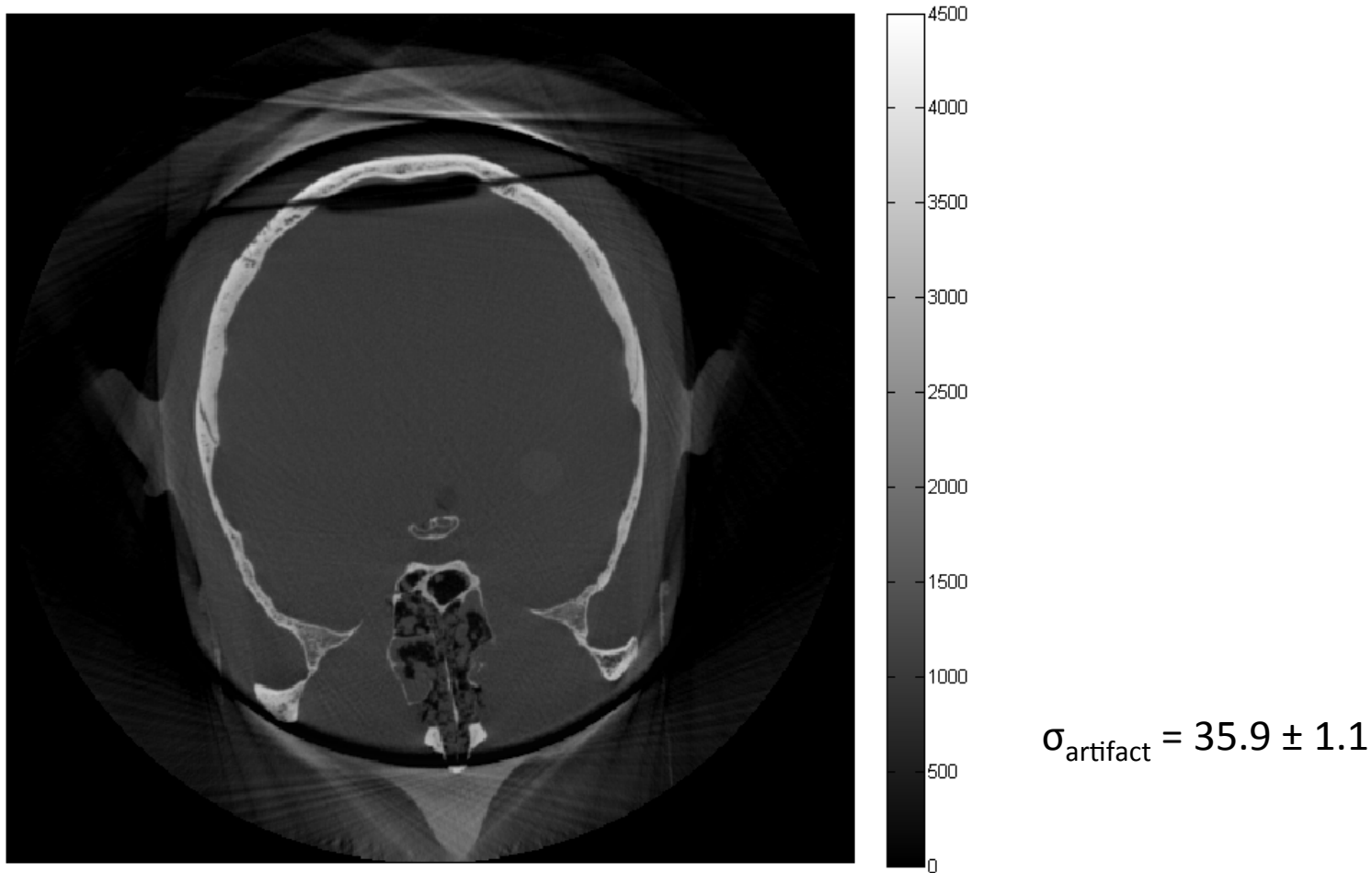
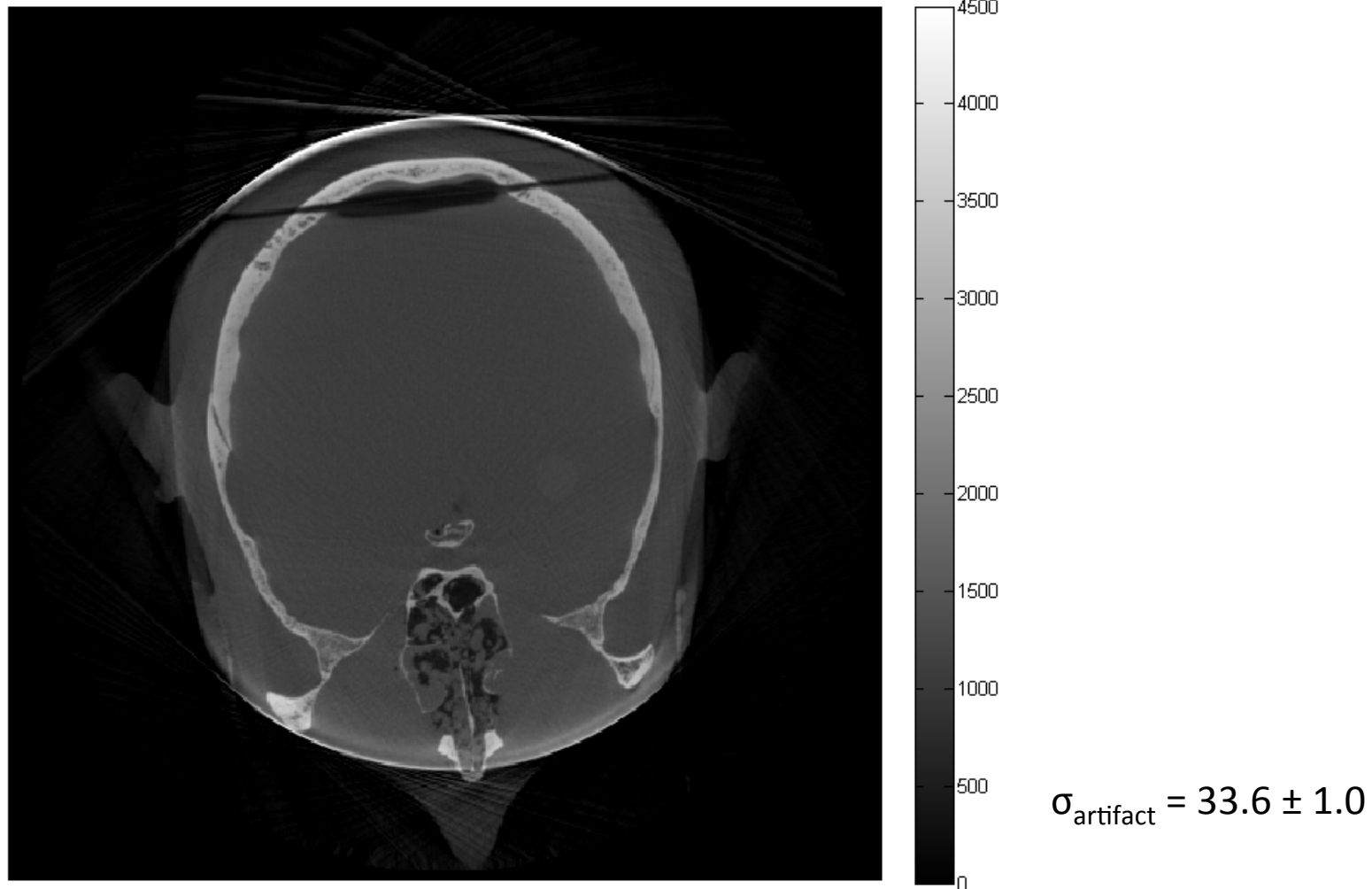


# Metal Spheres Phantom Images Without and With MAR

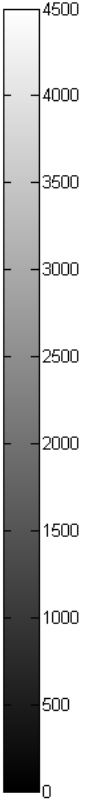
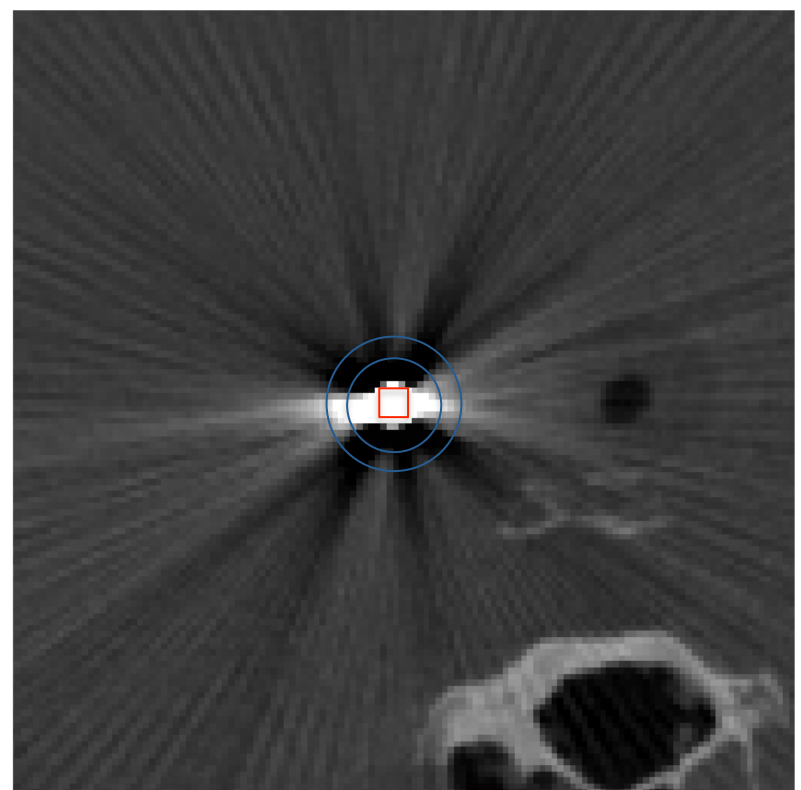
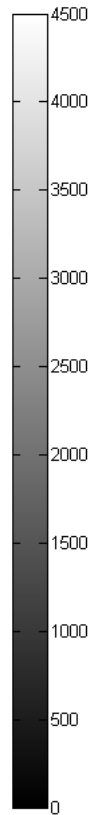
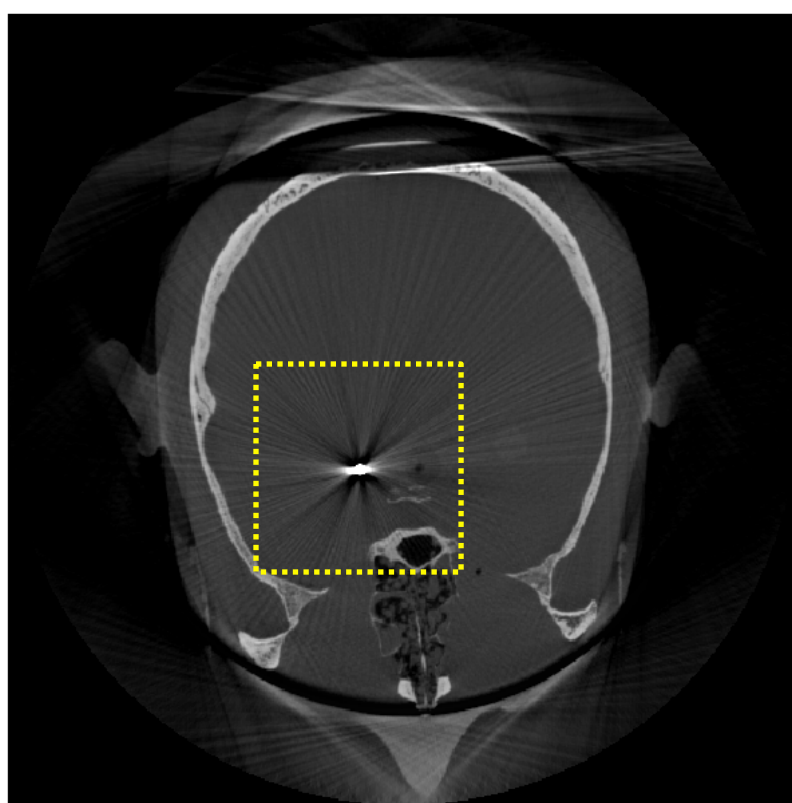
# Control – No metal spheres without MAR



# Control – No metal spheres with MAR



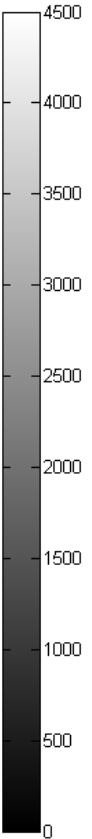
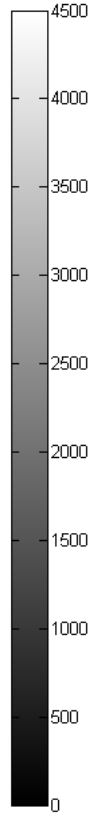
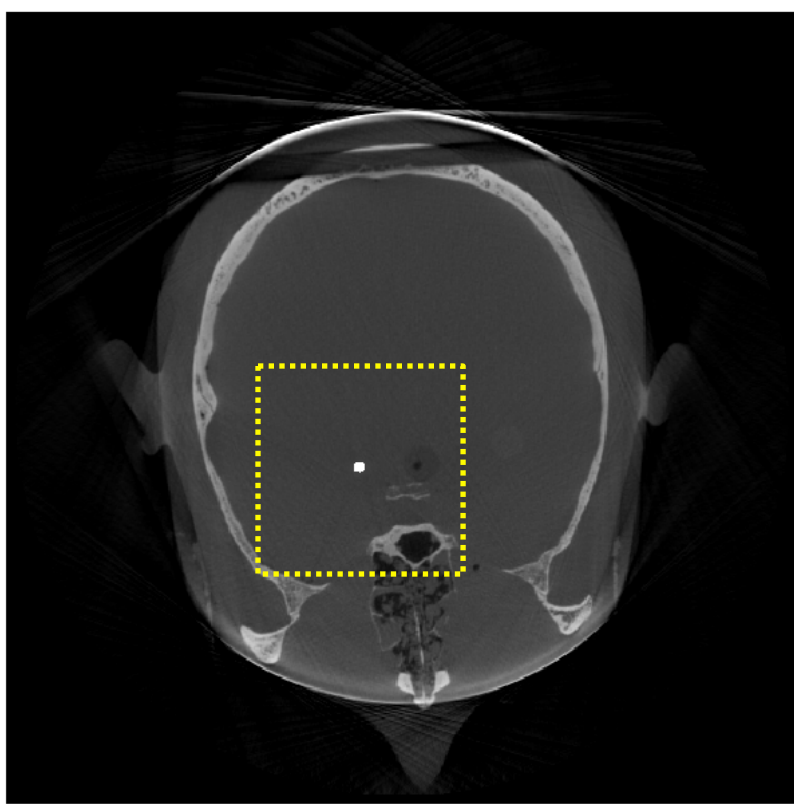
# 3.2mm Steel Without MAR



$$\sigma_{\text{artifact}} = 1278.6 \pm 262.0$$

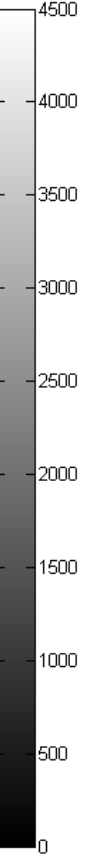
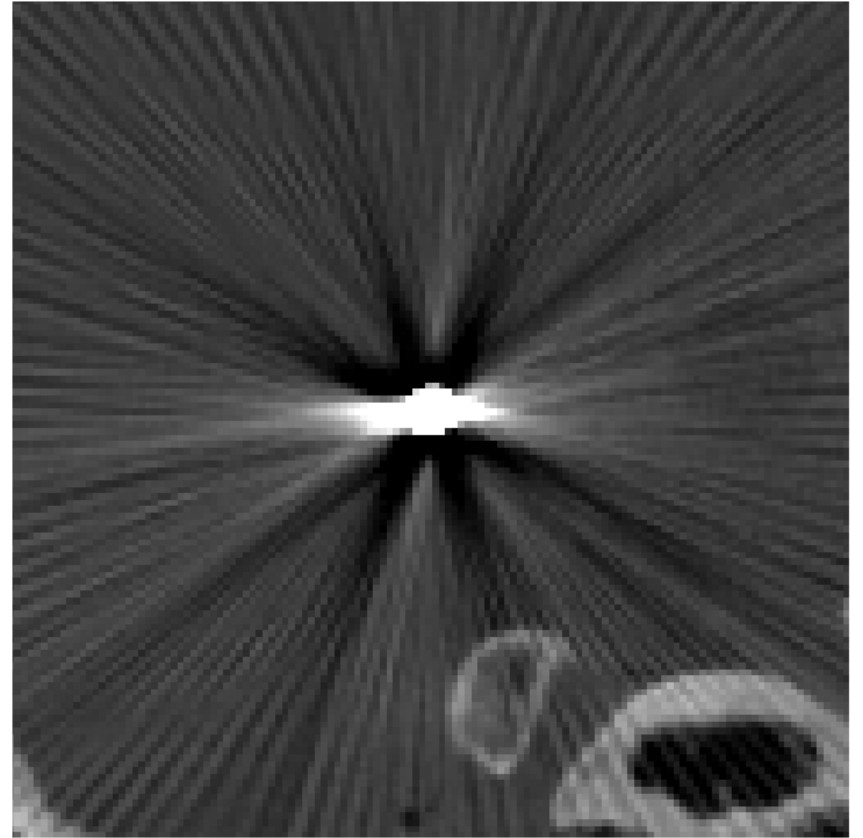
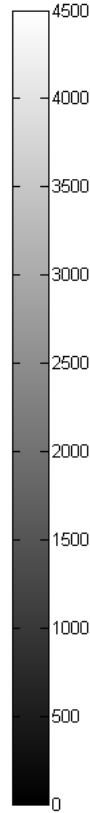
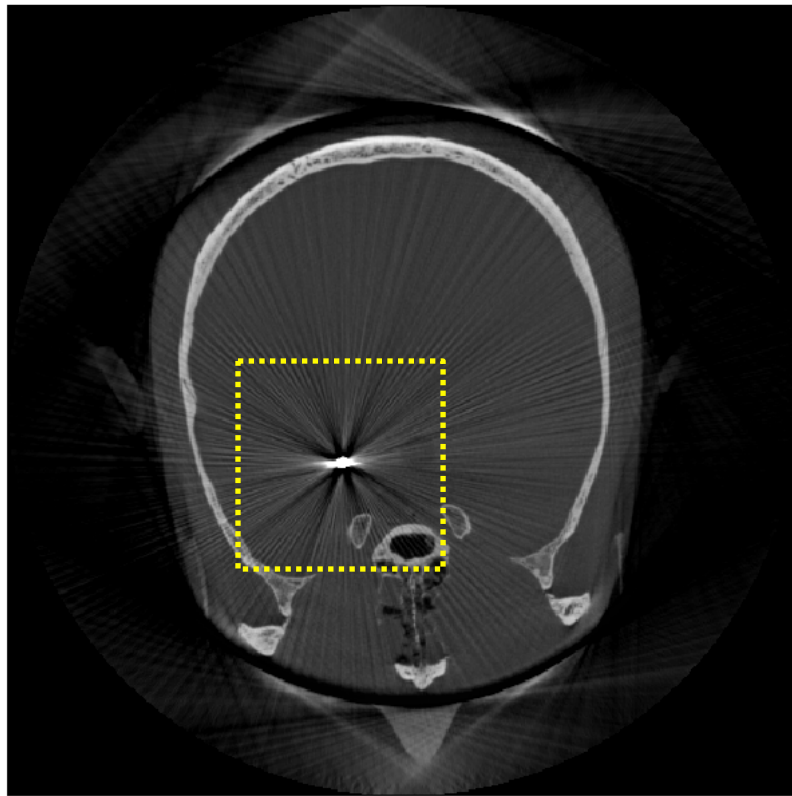


# 3.2mm Steel With MAR



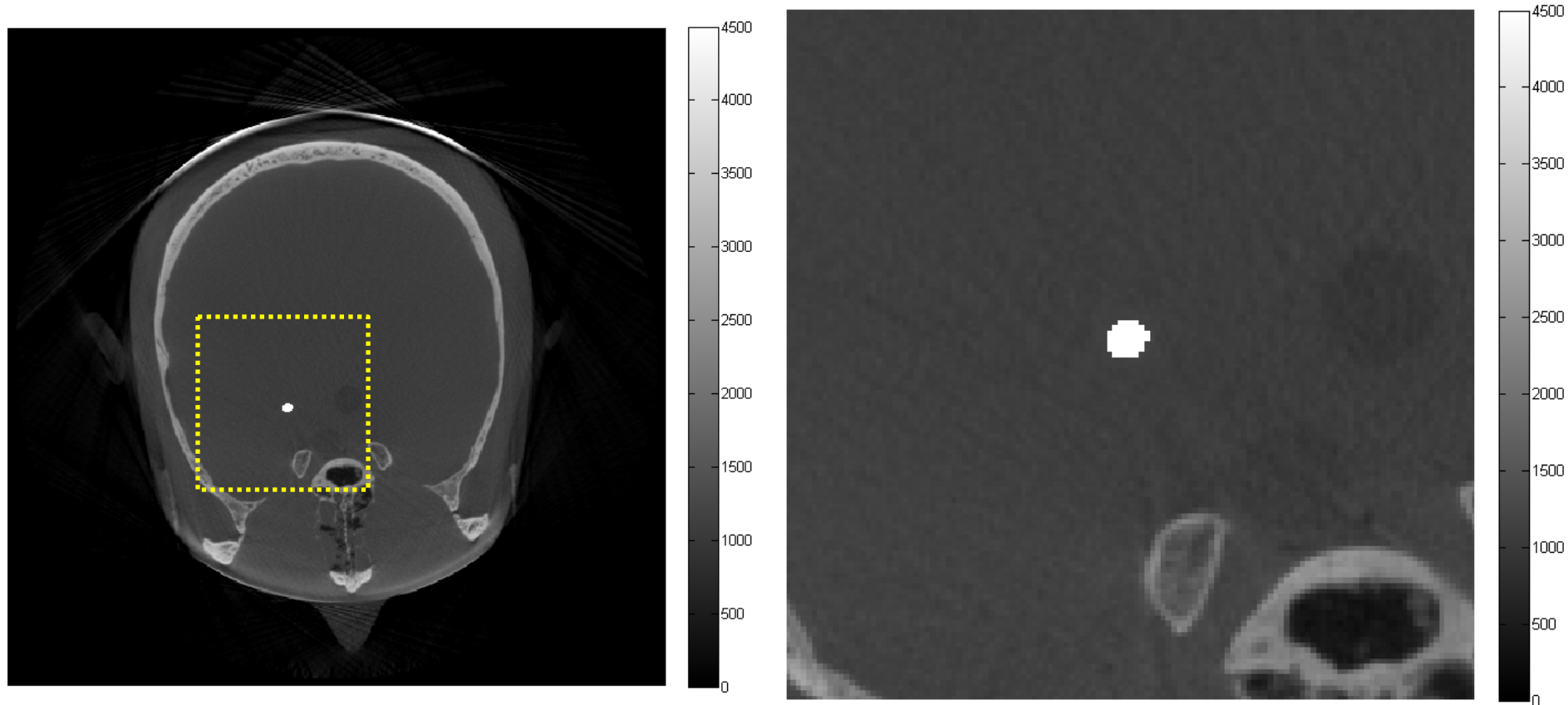
$$\sigma_{\text{artifact}} = 31.7 \pm 2.7$$

# 3.2mm Tungsten Without MAR



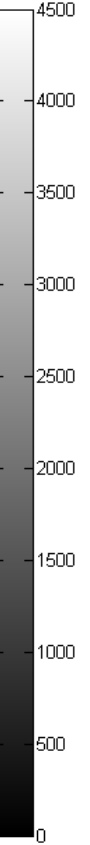
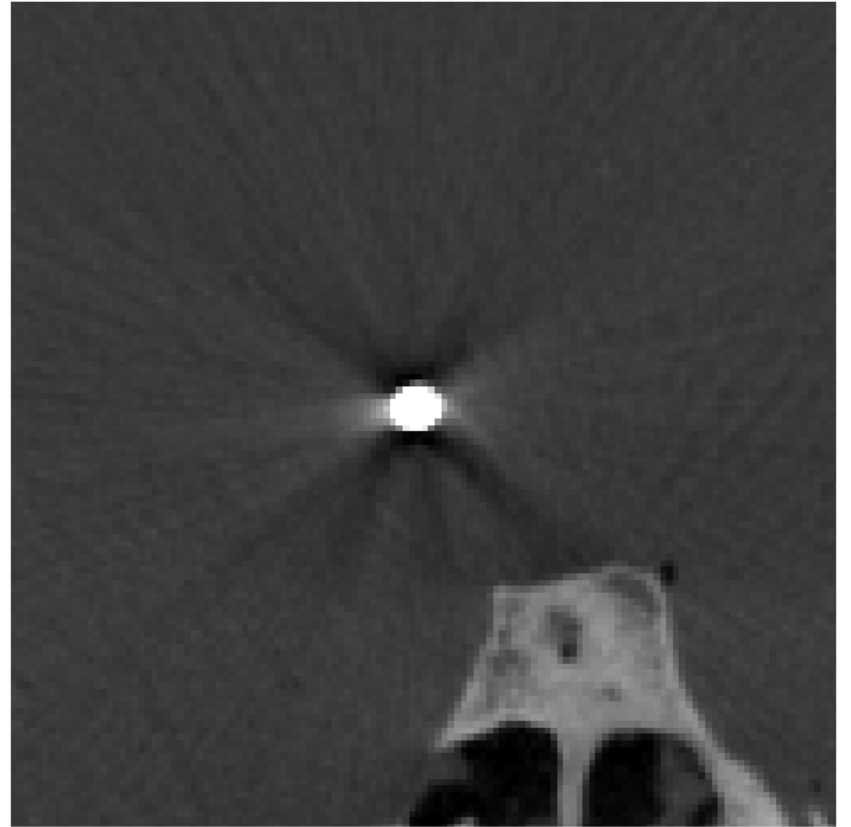
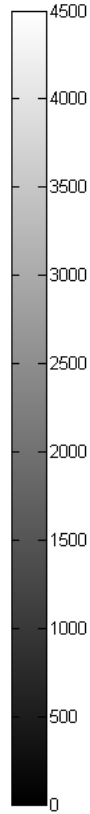
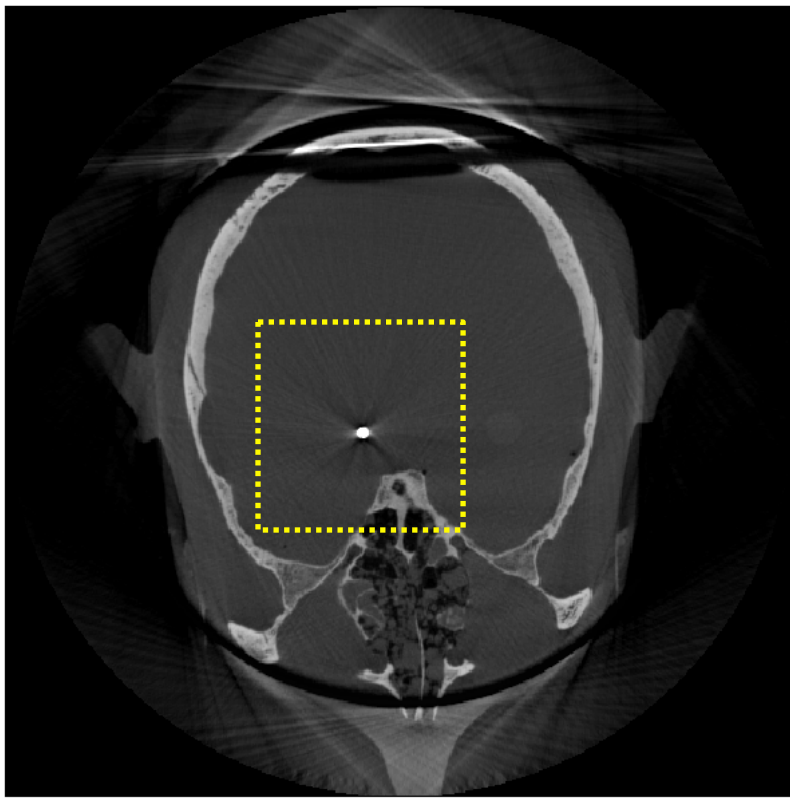
$$\sigma_{\text{artifact}} = 1580.0 \pm 268.0$$

# 3.2mm Tungsten With MAR



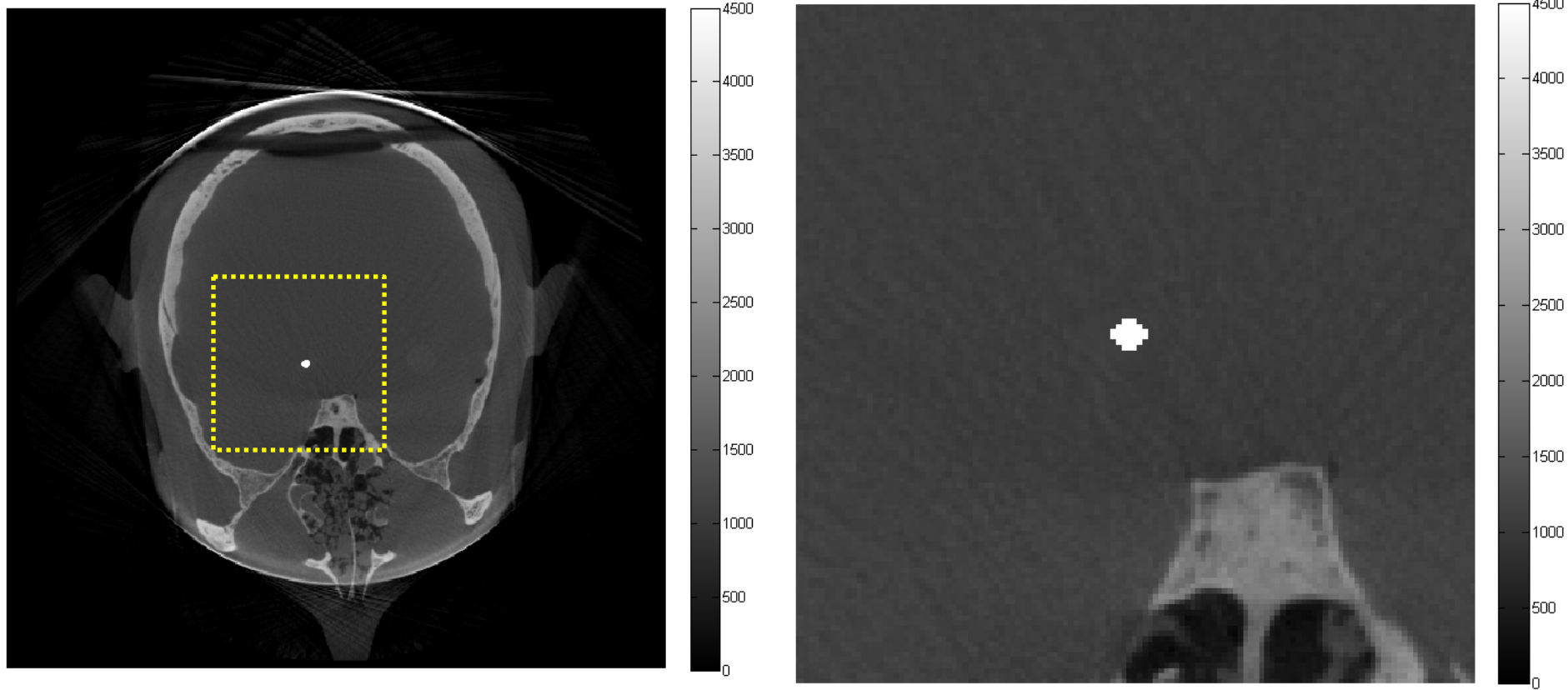
$$\sigma_{\text{artifact}} = 34.4 \pm 1.2$$

# 3.2mm Titanium Without MAR



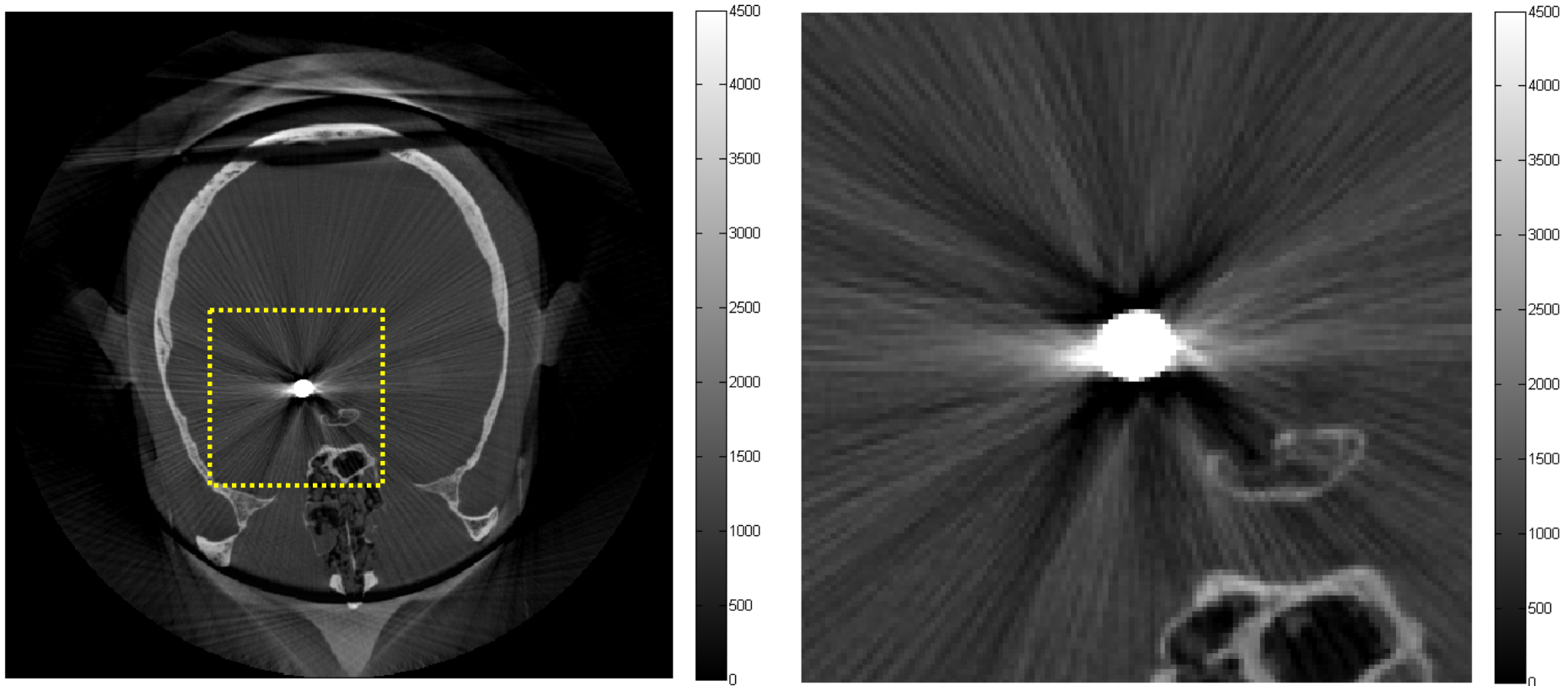
$$\sigma_{\text{artifact}} = 360.8 \pm 65.6$$

# 3.2mm Titanium With MAR



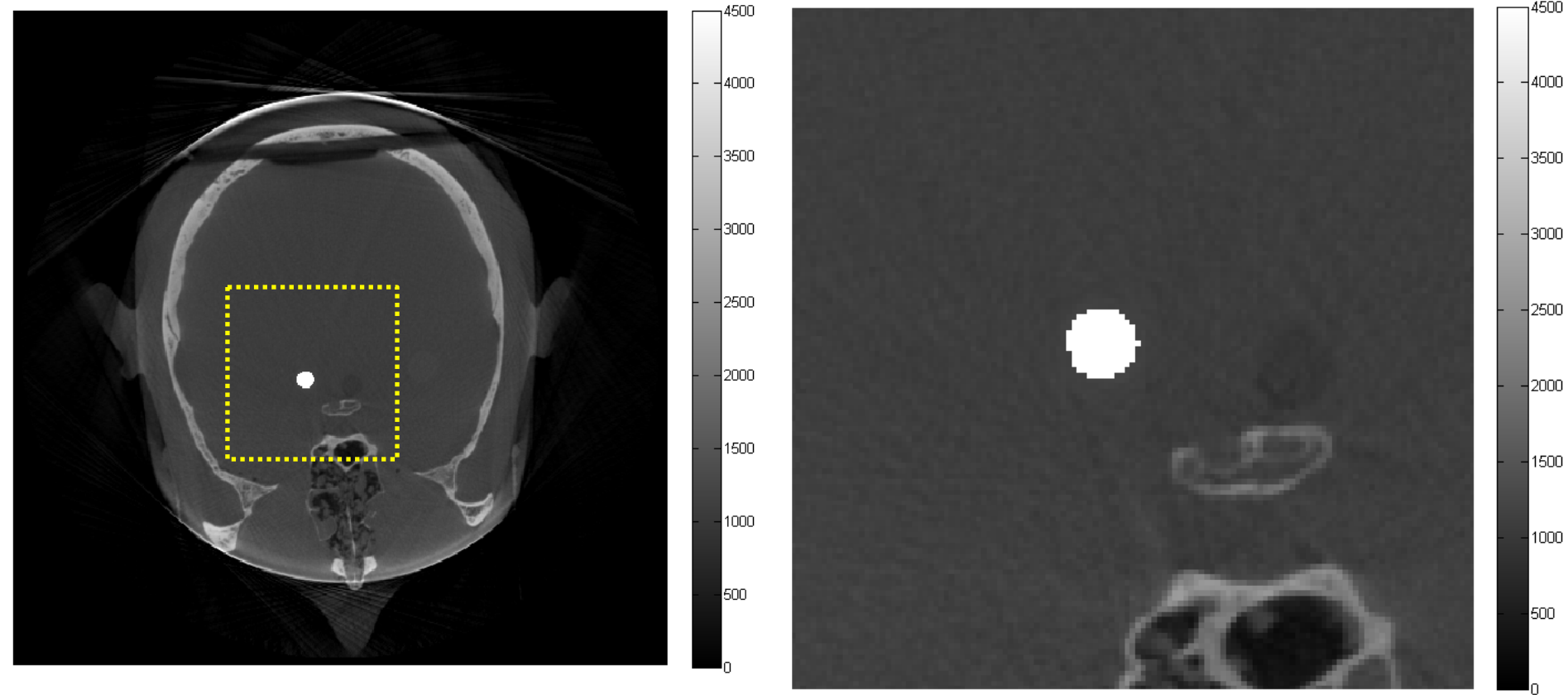
$$\sigma_{\text{artifact}} = 39.1 \pm 1.6$$

# 6.4mm Steel Without MAR



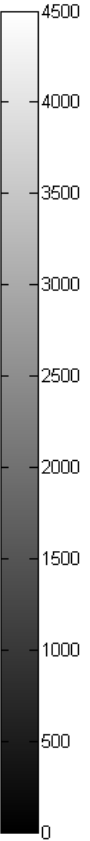
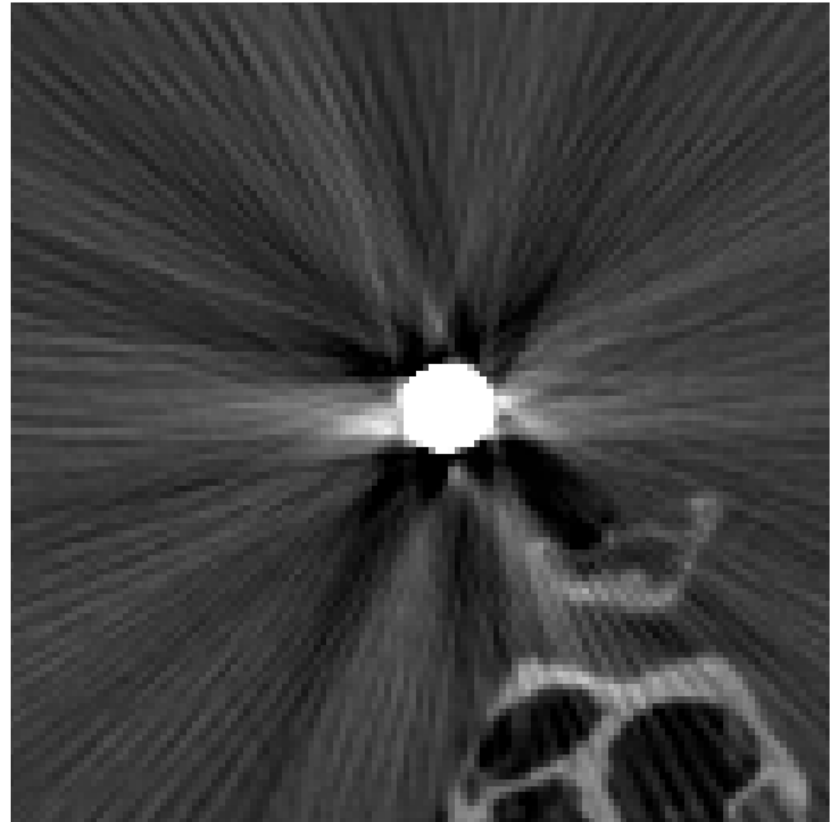
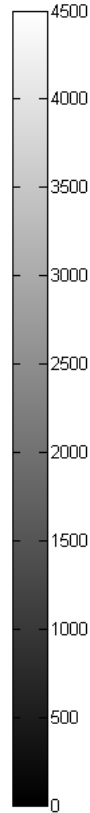
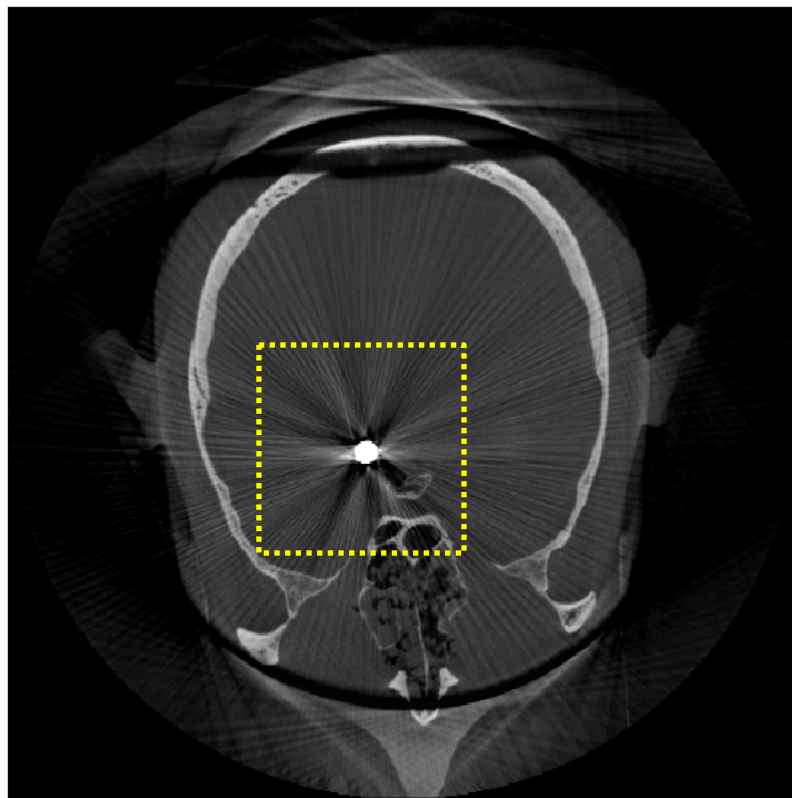
$$\sigma_{\text{artifact}} = 1179.1 \pm 106.9$$

# 6.4mm Steel With MAR



$$\sigma_{\text{artifact}} = 33.4 \pm 1.8$$

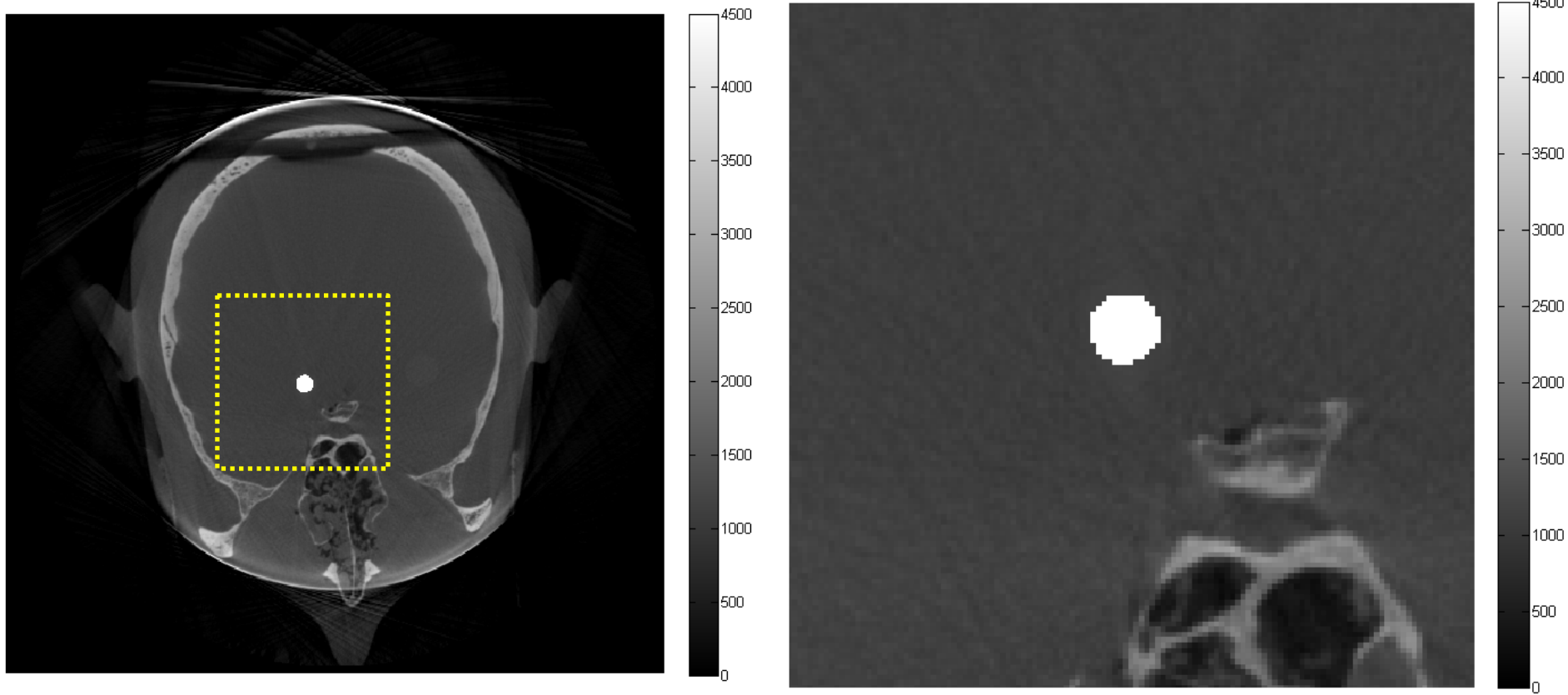
# 6.4mm Tungsten Without MAR



$$\sigma_{\text{artifact}} = 1039.1 \pm 60.5$$

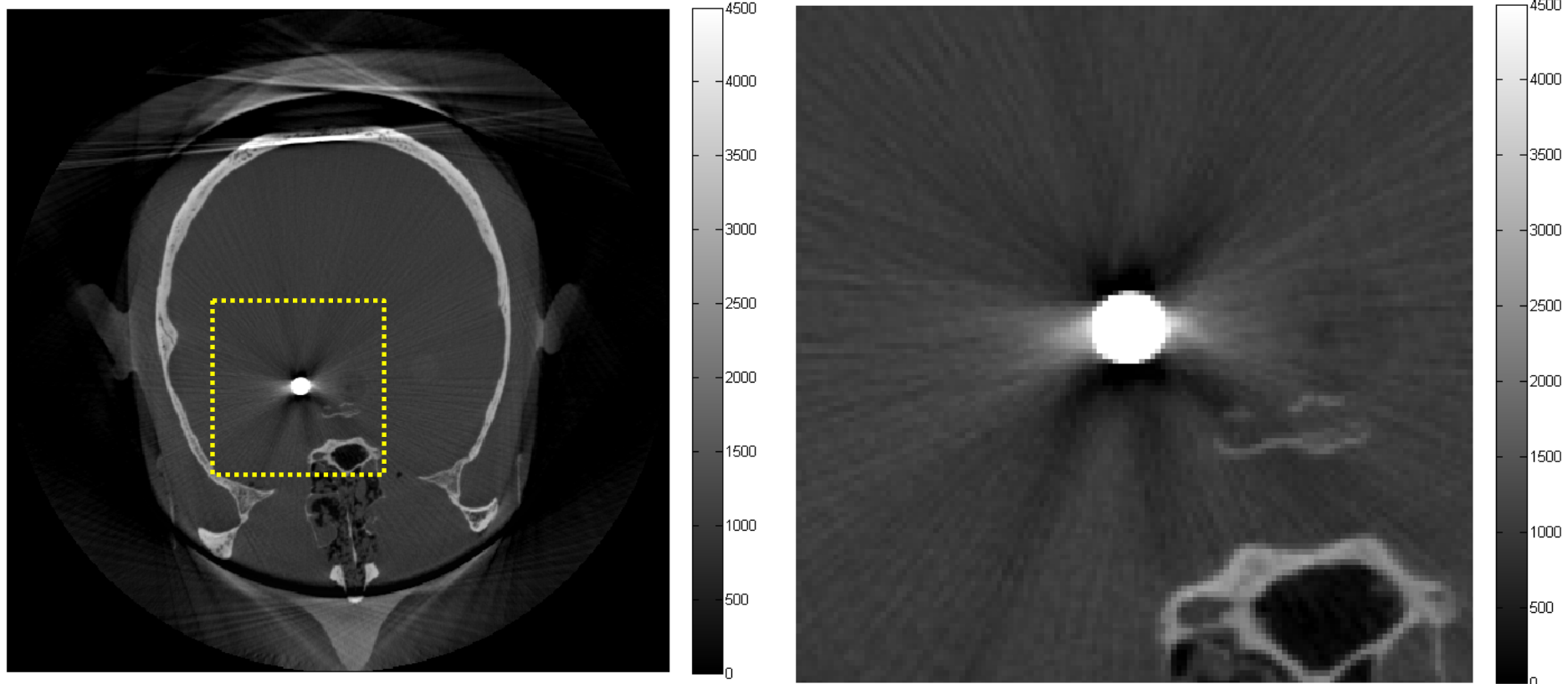


# 6.4mm Tungsten With MAR



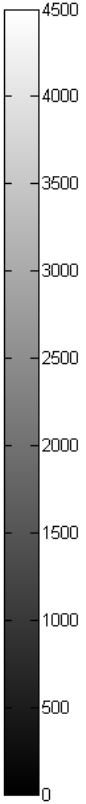
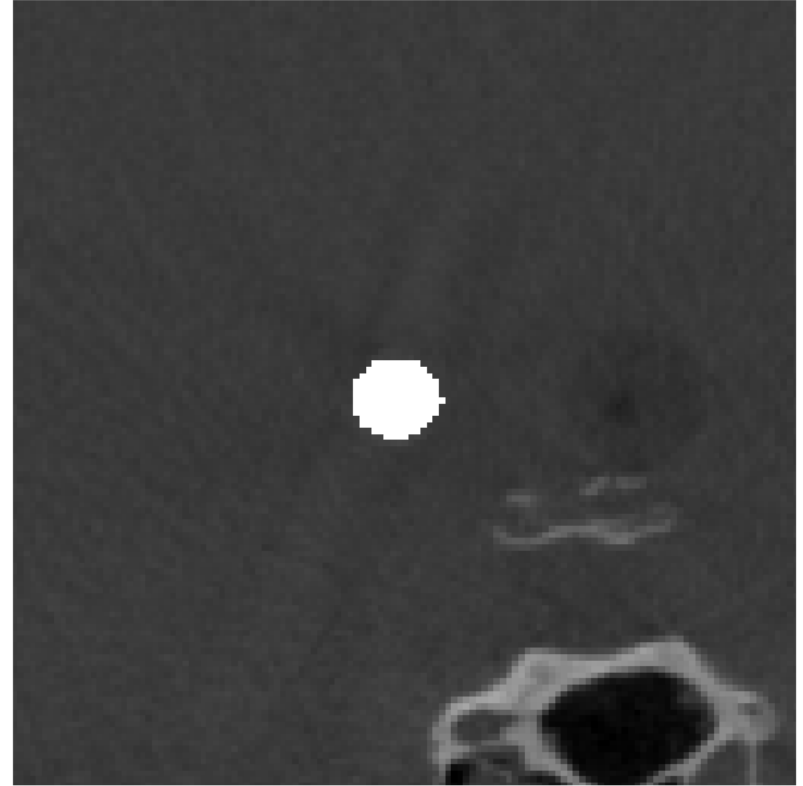
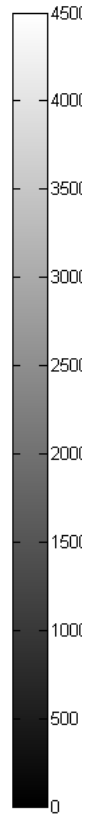
$$\sigma_{\text{artifact}} = 37.8 \pm 2.1$$

# 6.4mm Titanium Without MAR



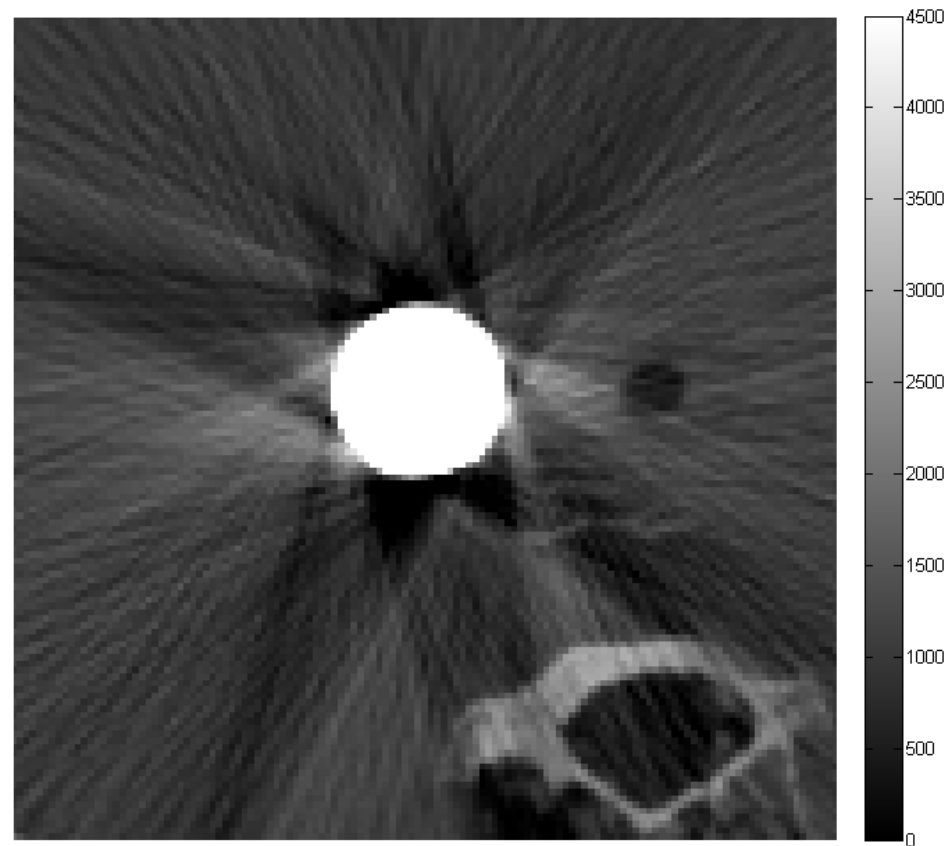
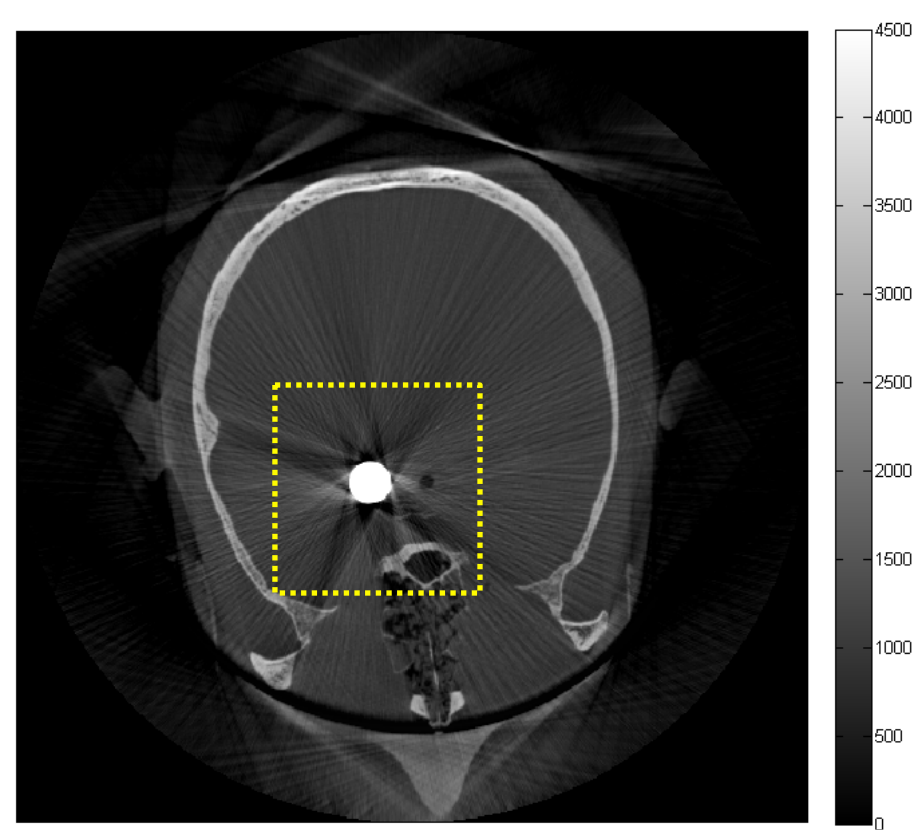
$$\sigma_{\text{artifact}} = 683.5 \pm 97.7$$

# 6.4mm Titanium With MAR



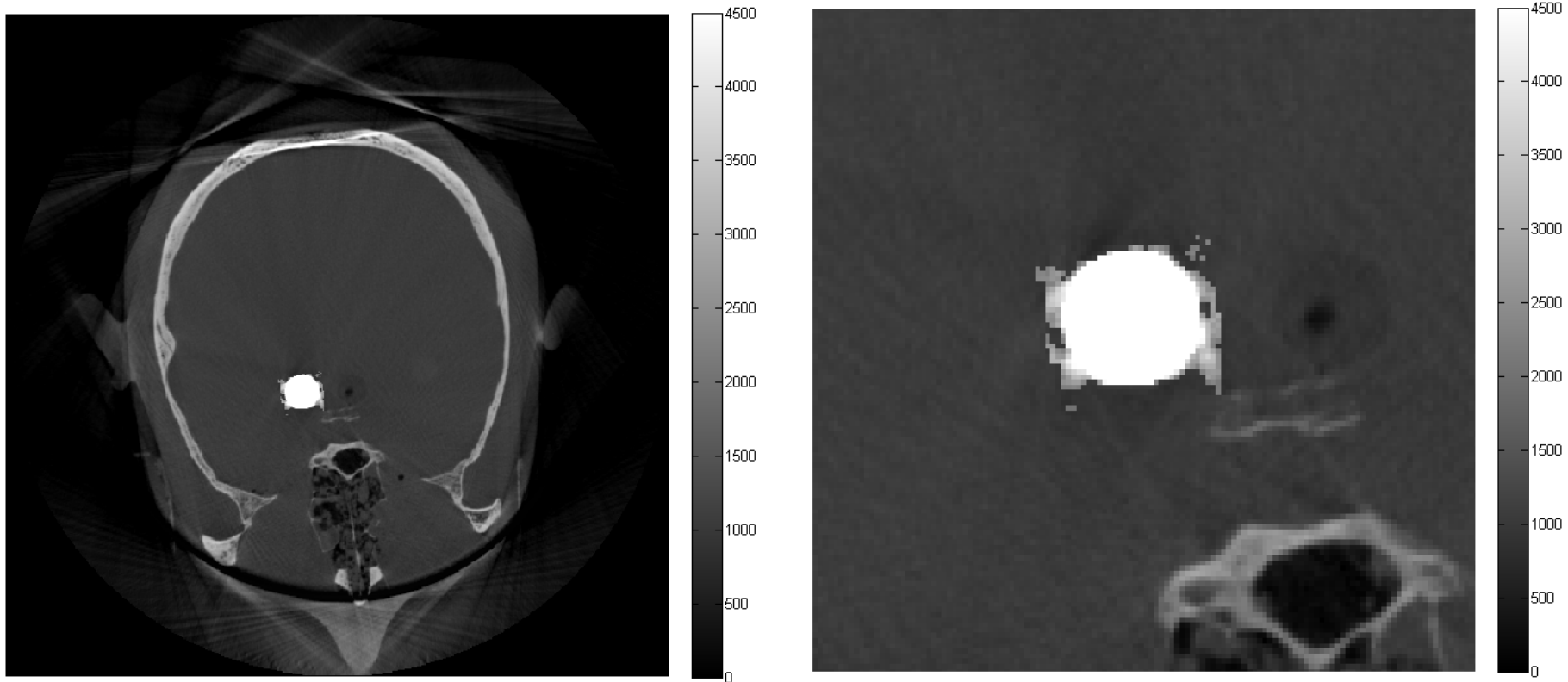
$$\sigma_{\text{artifact}} = 54.2 \pm 9.3$$

# 12.8mm Steel Without MAR



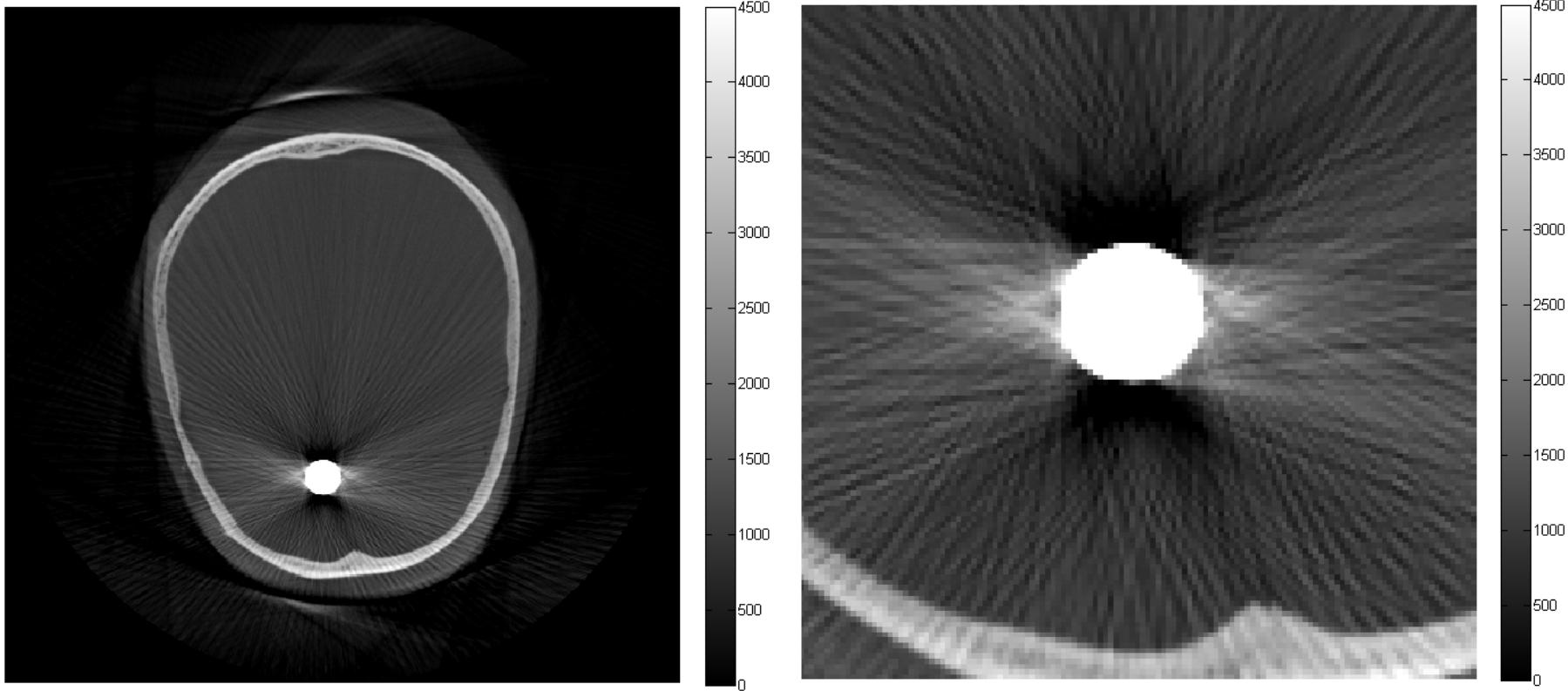
$$\sigma_{\text{artifact}} = 405.1 \pm 24.0$$

# 12.8mm Steel With MAR



$$\sigma_{\text{artifact}} = 53.2 \pm 7.1$$

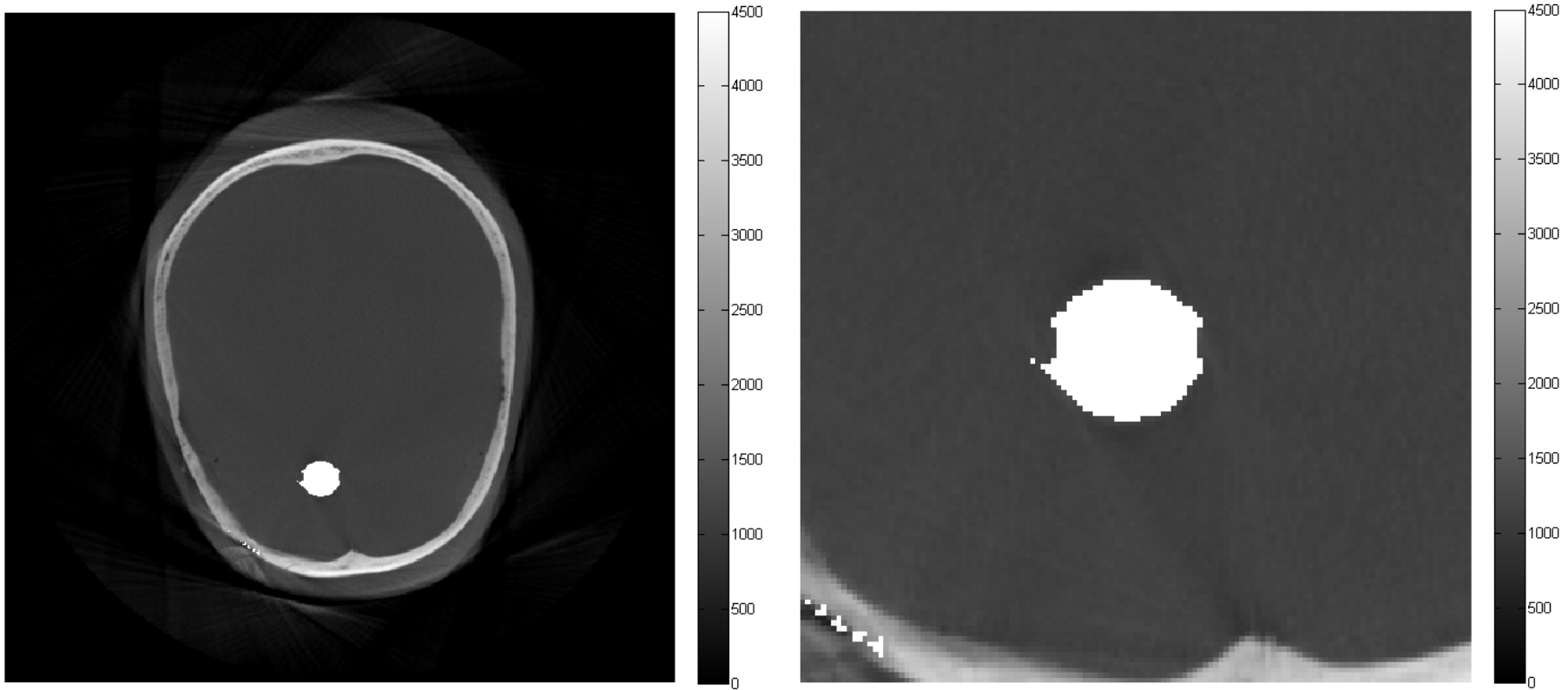
# 12.8mm Tungsten Without MAR\*\*



$$\sigma_{\text{artifact}} = 60.5 \pm 12.4$$

Different position than others (frontal lobe)

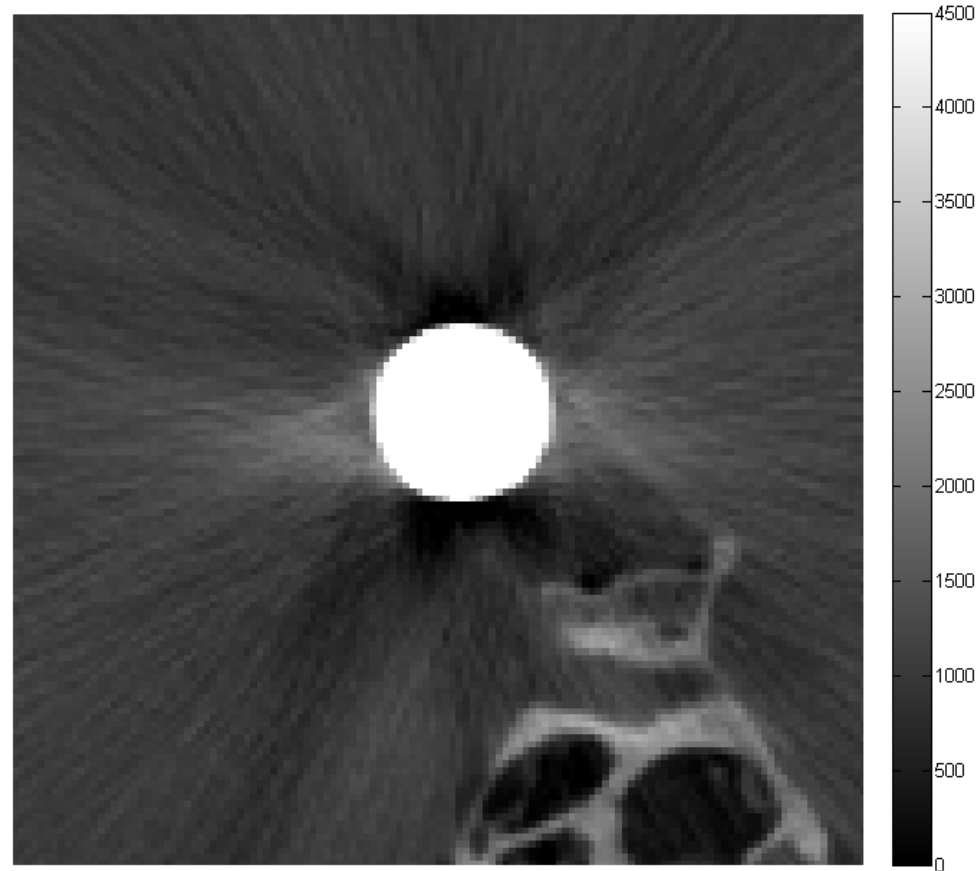
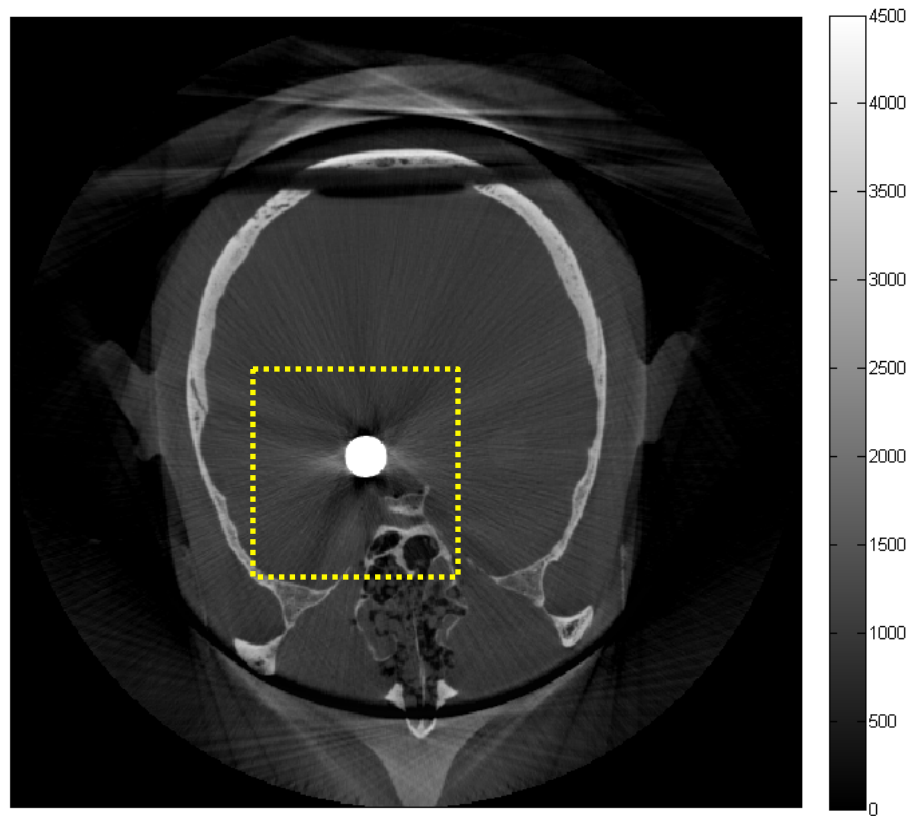
# 12.8mm Tungsten With MAR\*\*



$$\sigma_{\text{artifact}} = 26.0 \pm 1.7$$

Different position than others (frontal lobe)

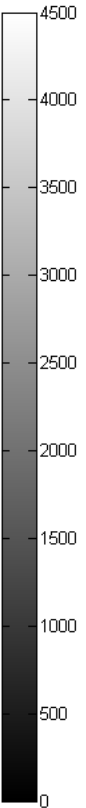
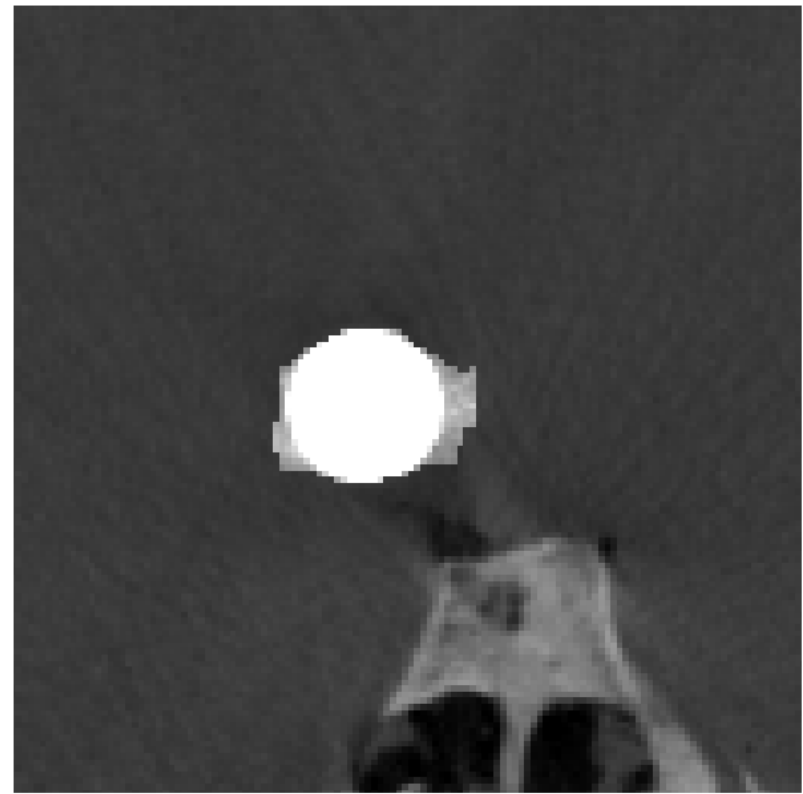
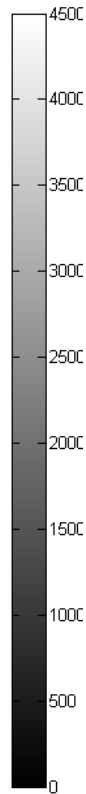
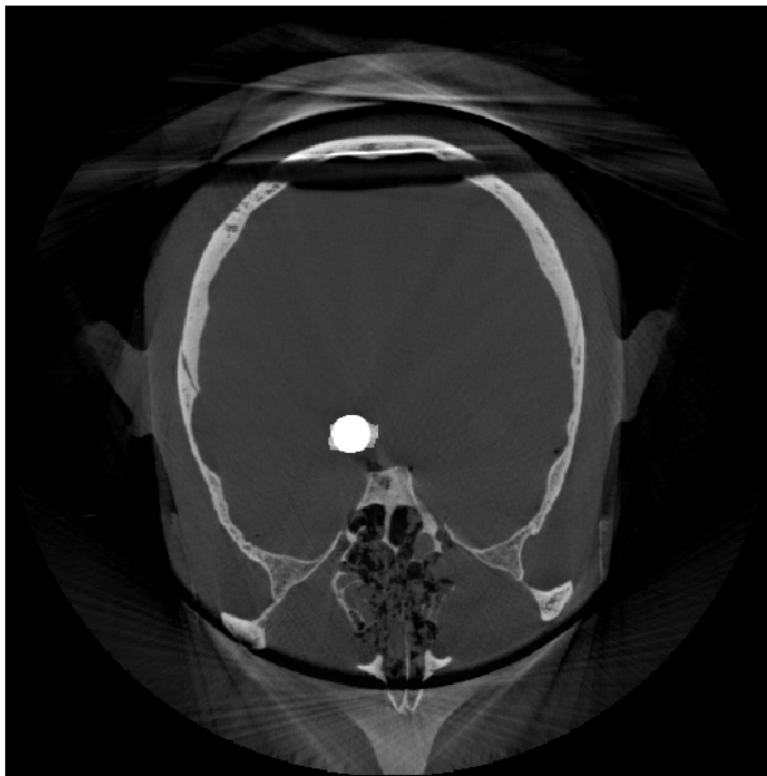
# 12.8mm Titanium Without MAR



$$\sigma_{\text{artifact}} = 298.0 \pm 39.8$$



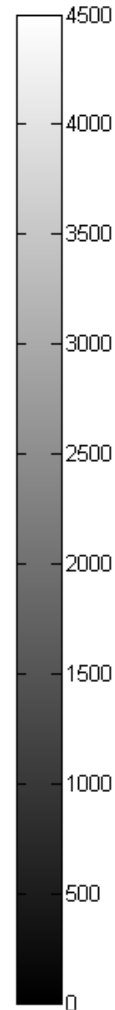
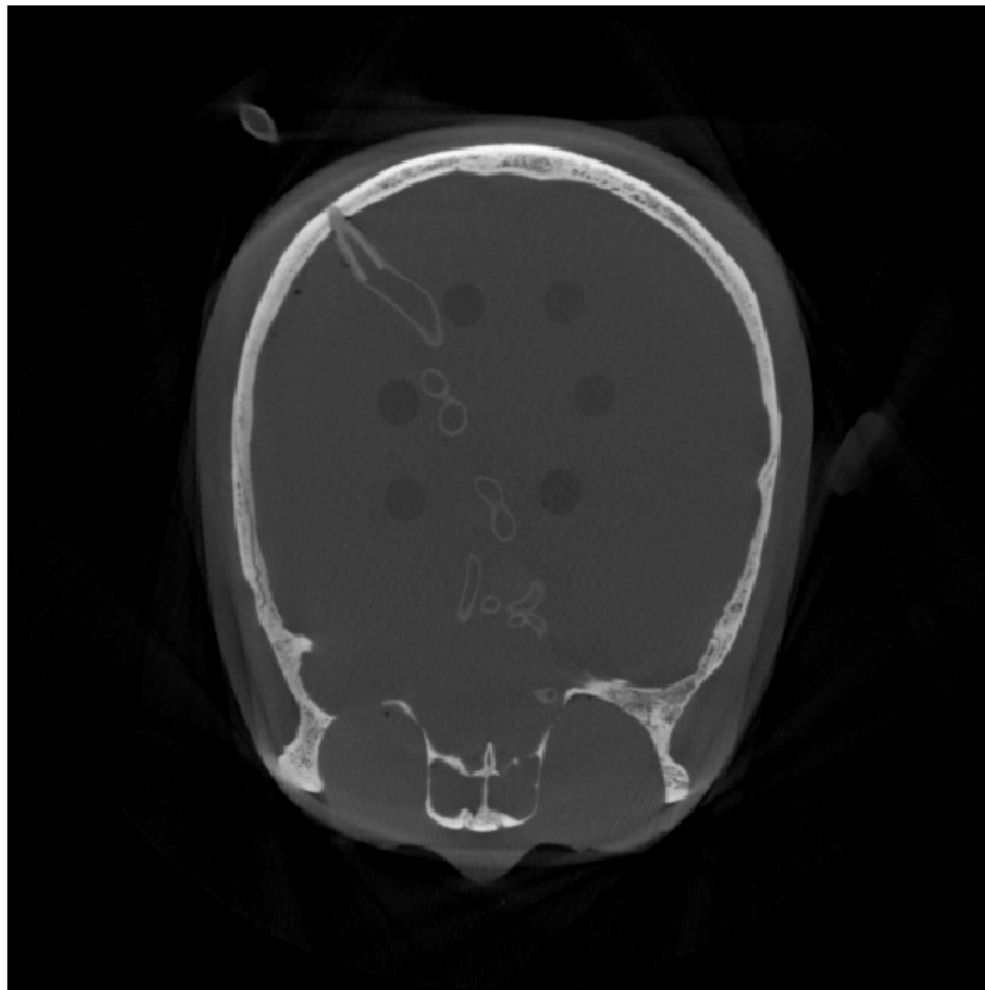
# 12.8mm Titanium With MAR



$$\sigma_{\text{artifact}} = 48.7 \pm 8.0$$

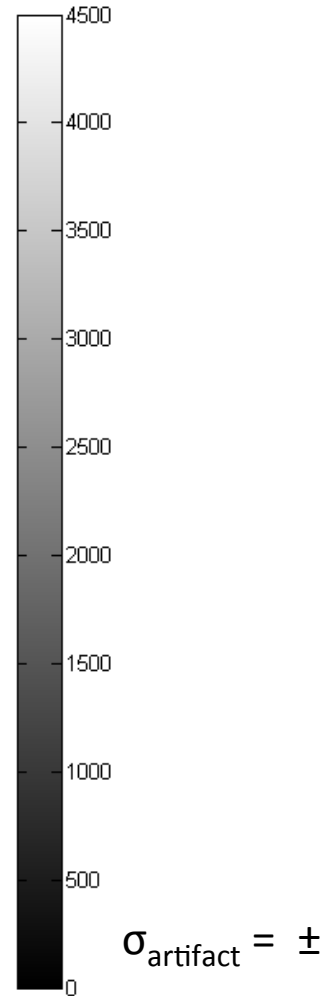
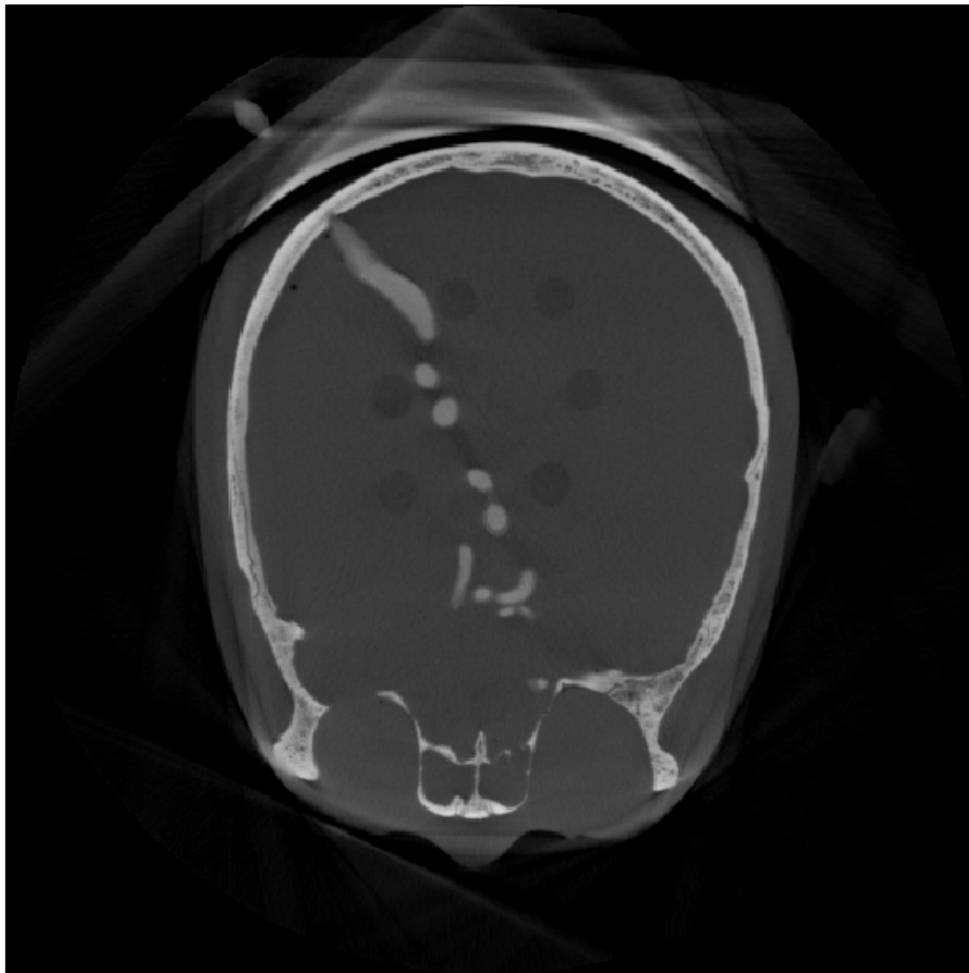
# Coil+stent Phantom Images

# Control With Noncontrast



$$\sigma_{\text{artifact}} = \pm$$

# Control With Contrast



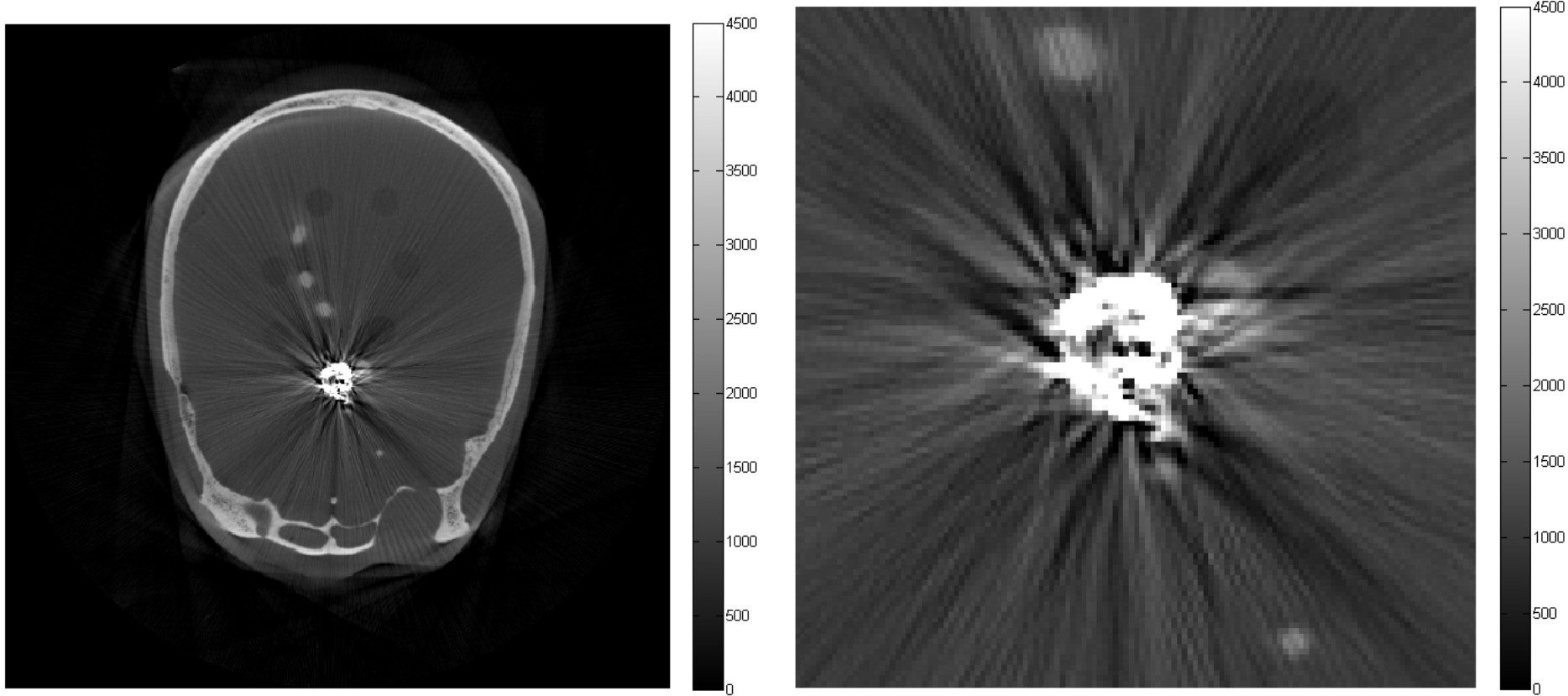
# Stent With Contrast

$$\sigma_{\text{artifact}} = \pm$$

# Stent with Noncontrast

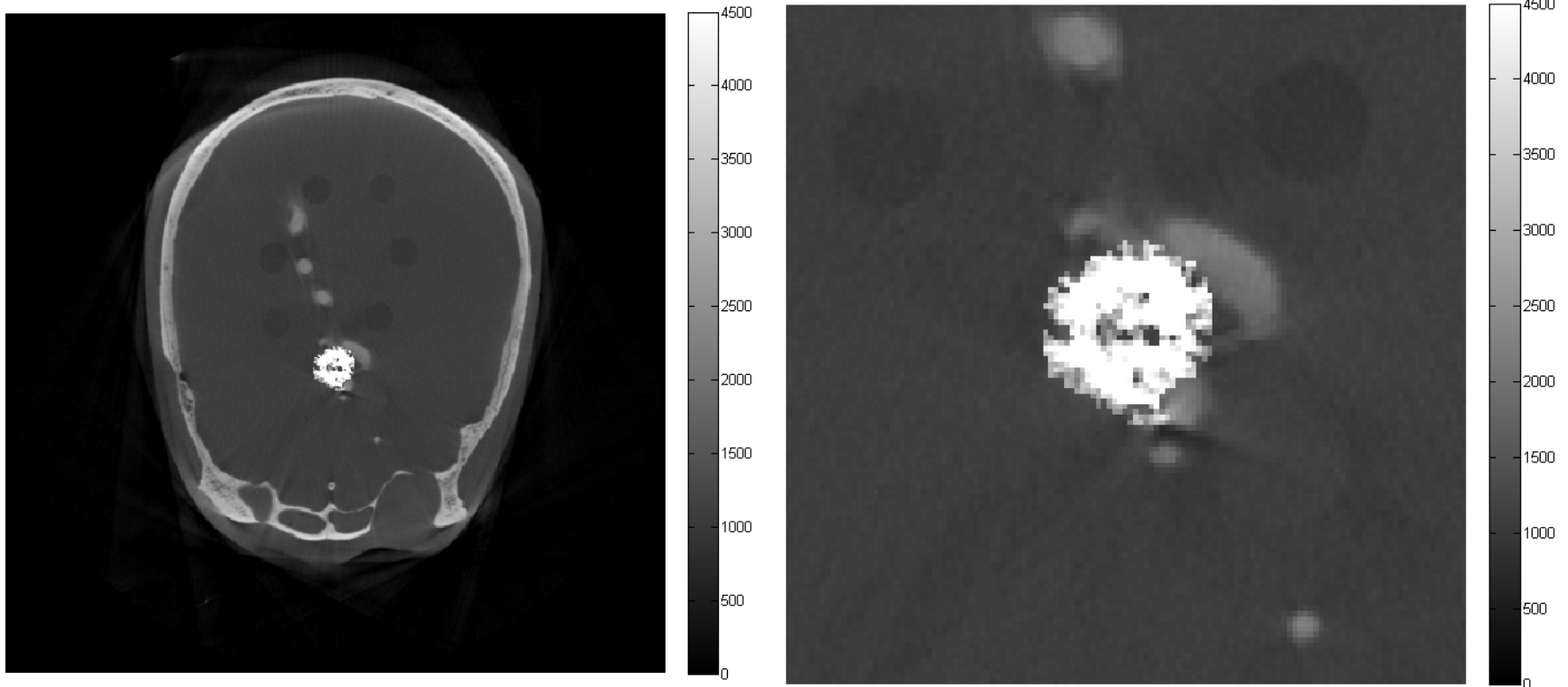
$$\sigma_{\text{artifact}} = \pm$$

# 3 Coils and Stent With Contrast



$$\sigma_{\text{artifact}} = 483.9 \pm 41.9$$

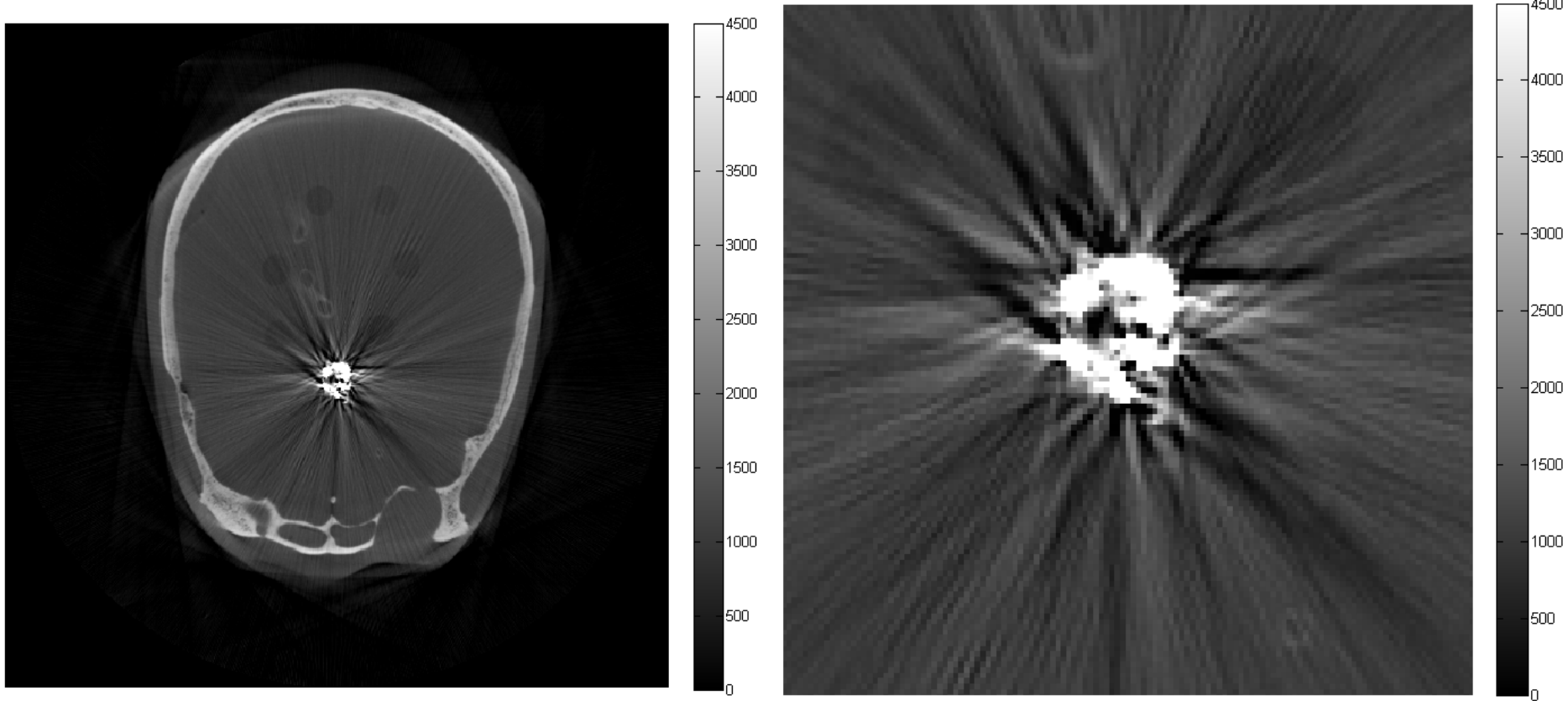
# 3 Coils and Stent With Contrast after MAR



$$\sigma_{\text{artifact}} = 51.6 \pm 2.6$$

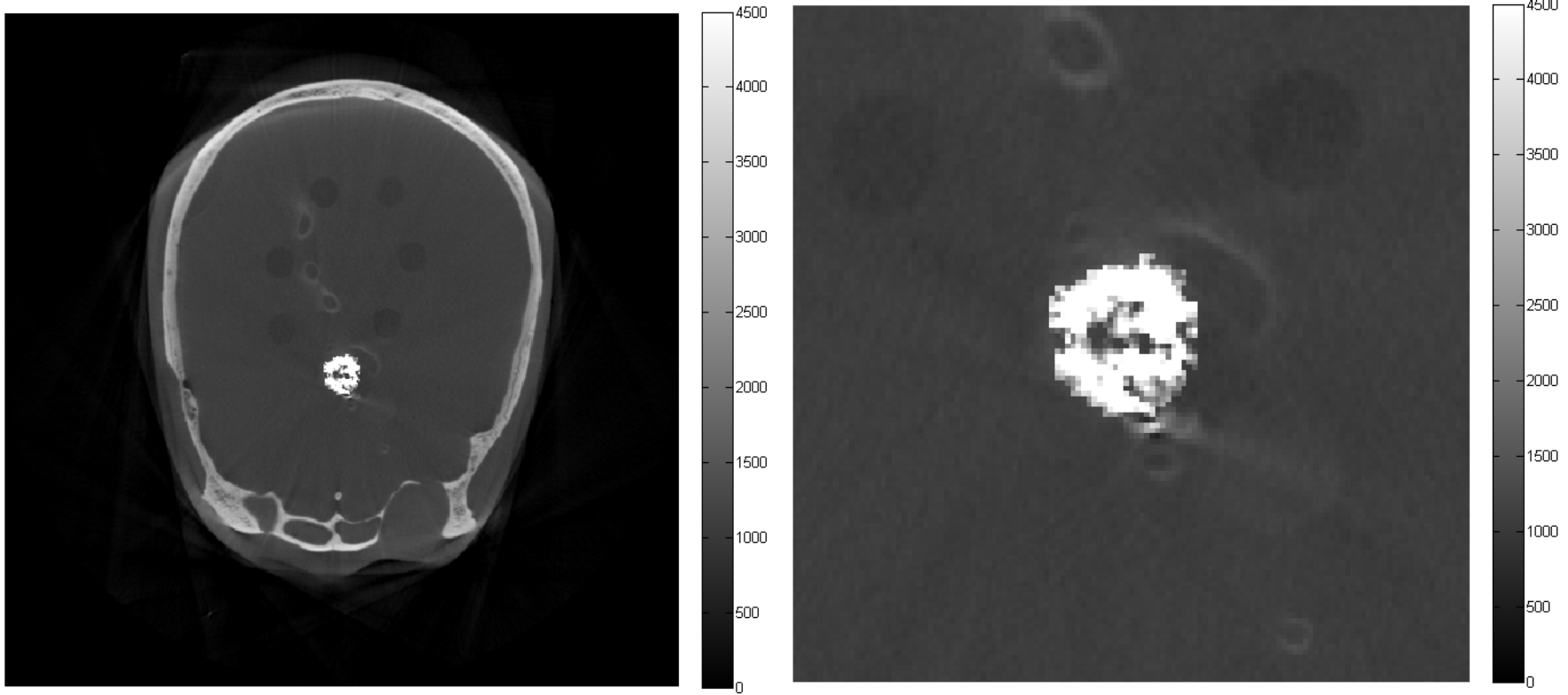


# 3 Coils and Stent With Noncontrast



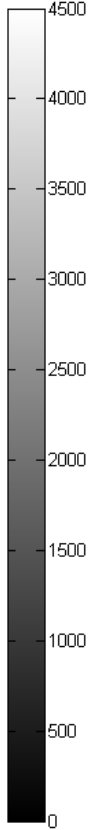
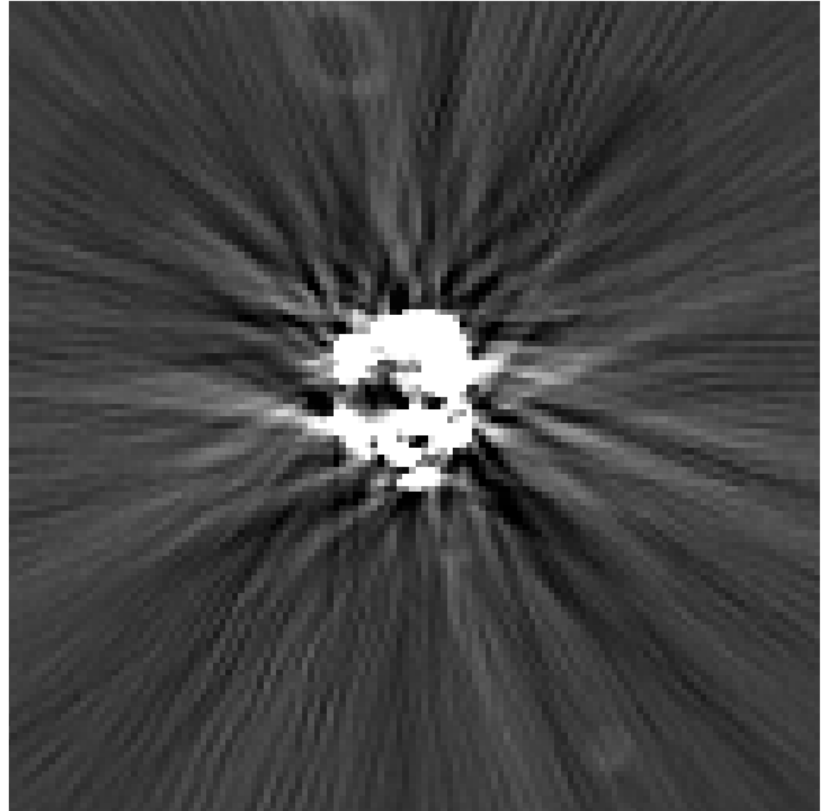
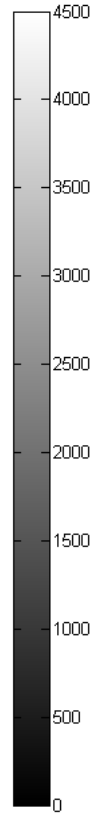
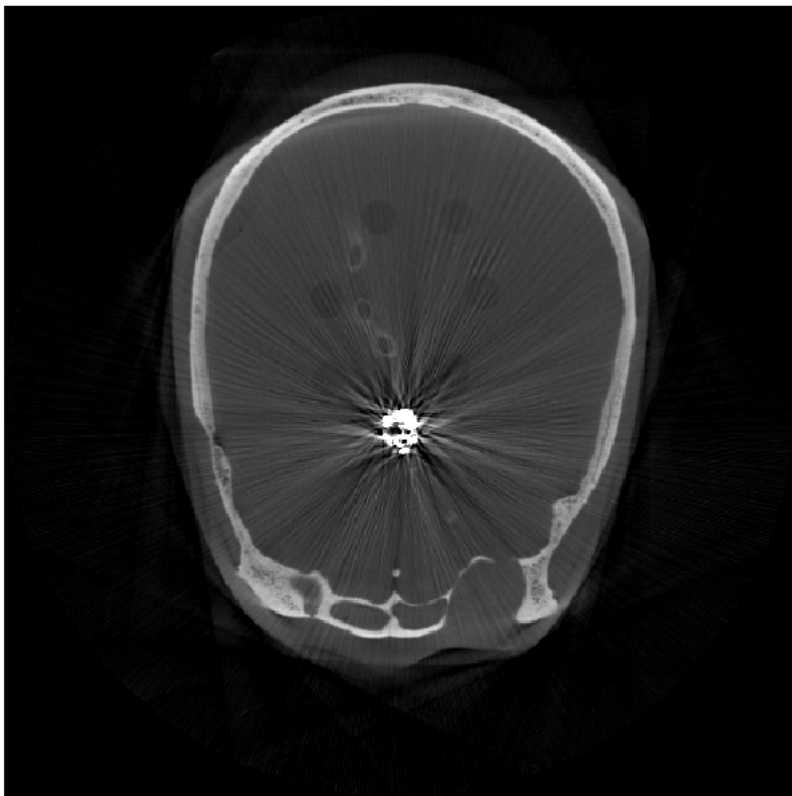
$$\sigma_{\text{artifact}} = 489.3 \pm 53.3$$

# 3 Coils and Stent With Noncontrast after MAR



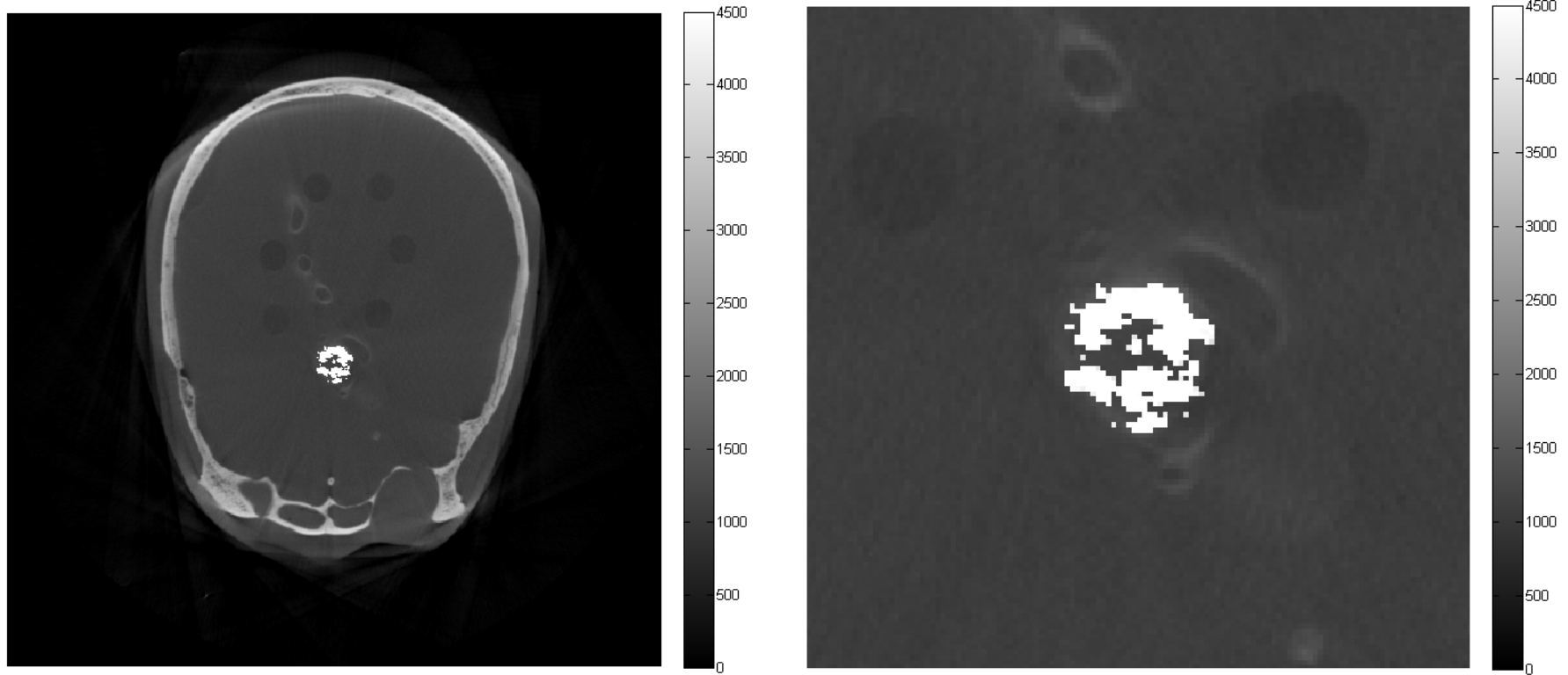
$$\sigma_{\text{artifact}} = 40.7 \pm 2.2$$

# 3 Coils Alone With Noncontrast



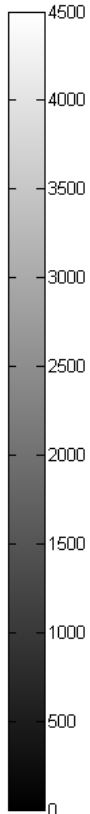
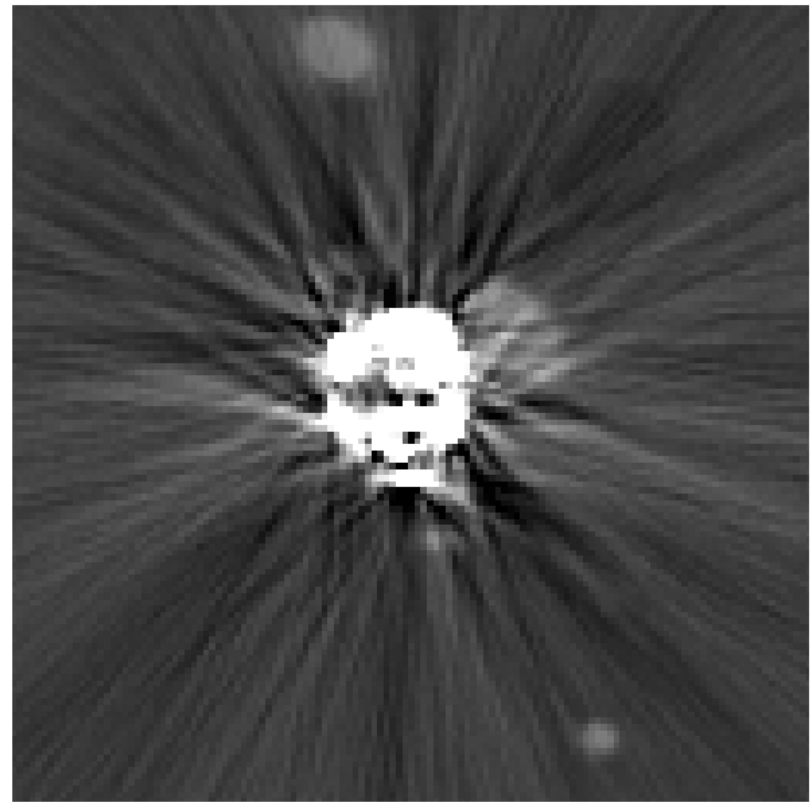
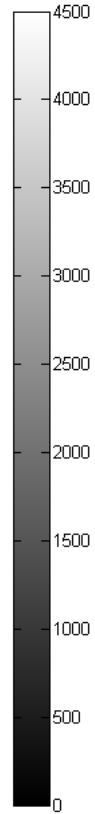
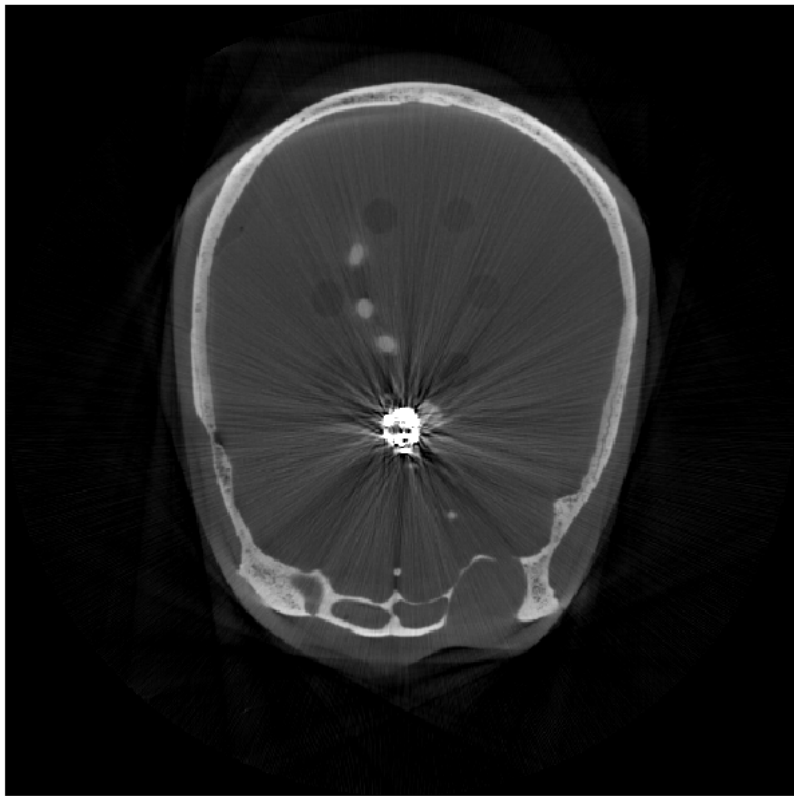
$$\sigma_{\text{artifact}} = 479.9 \pm 39.2$$

# 3 Coils Alone With Noncontrast after MAR



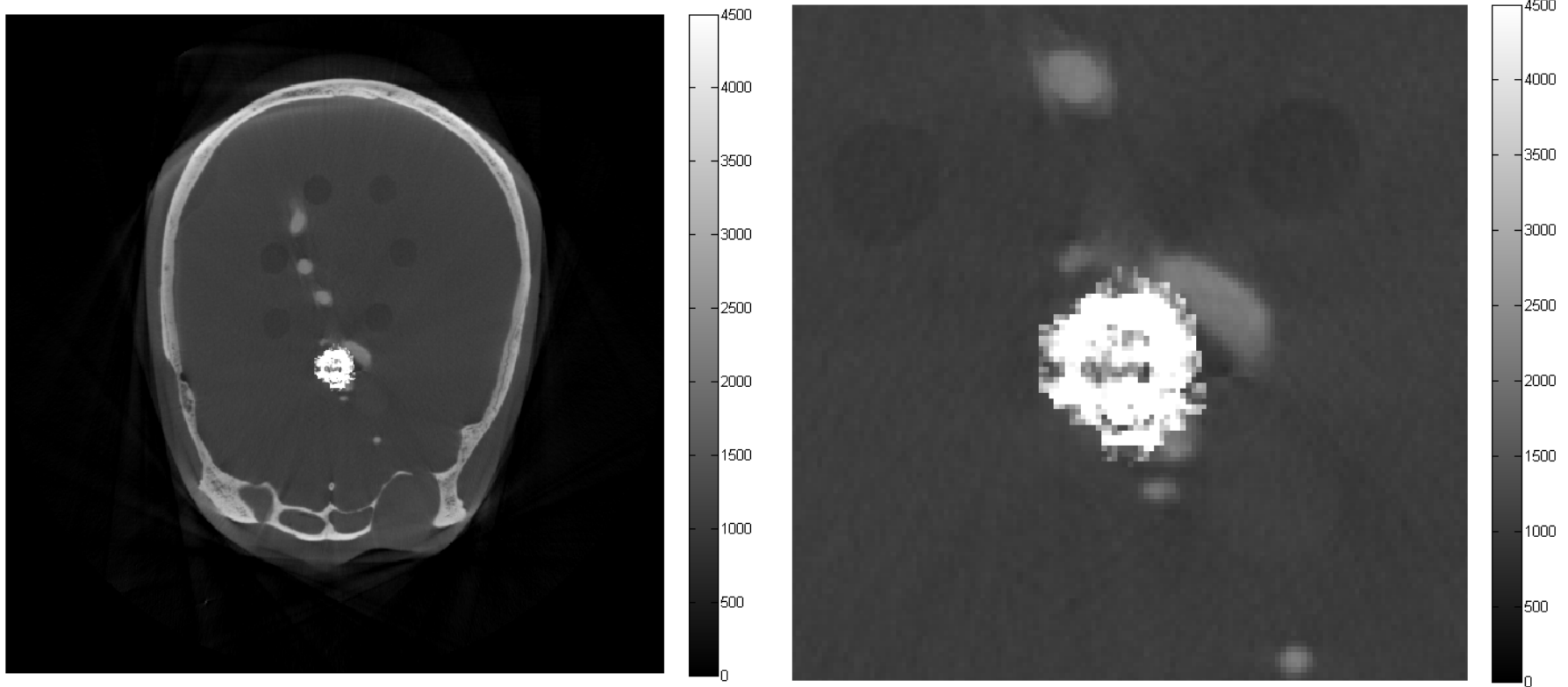
$$\sigma_{\text{artifact}} = 34.5 \pm 3.3$$

# 3 Coils Alone With Contrast



$$\sigma_{\text{artifact}} = 443.3 \pm 46.7$$

# 3 Coils Alone With Contrast after MAR



$$\sigma_{\text{artifact}} = 43.9 \pm 11.7$$