

**This study evaluated ventral gluteal fat thickness (VGT) on adult magnetic resonance imaging of pelvis and correlated it with the subjects' body mass index (BMI), weight, and height to establish evidence-based clinical estimates of individualized needle length and suitability of ventral gluteal site for IM injections” Holliday et al (2016).**

Abstract:

BACKGROUND: With rising prevalence of obesity, increasing number of gluteal injections would be expected to fail in intramuscular (IM) drug delivery.

STUDY QUESTION: This study evaluated ventral gluteal fat thickness (VGT) on adult magnetic resonance imaging of pelvis and correlated it with the subjects' body mass index (BMI), weight, and height to establish evidence-based clinical estimates of individualized needle length and suitability of ventral gluteal site for IM injections.

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DESIGN: Retrospective review.

STUDY DESIGN, MEASURES AND OUTCOMES: Three hundred fifty adult (224 women, 126 men) magnetic resonance imaging scans of pelvis were reviewed to measure the VGT as the distance between the skin and the nearest edge of the gluteus medius muscle at the recommended ventral gluteal injection site. VGT was correlated with BMI, weight, and height by multivariate analysis.

RESULTS: Fifty-three (49 women, 4 men) subjects had VGT greater than 3.3 cm, and 146 (106 women, 40 men) subjects had VGT greater than 2.0 cm. The Pearson correlation coefficient between VGT and BMI was 0.82 for women and 0.81 for men. The difference between the VGT in men and women of comparable BMI was statistically significant ( $P <$

0.001). BMI of 30 in women and 35 in men seem to be upper limits for successful ventral gluteal IM injections with 3.75-cm (1.5-inch) hypodermic needle. The expected failure rate of ventral gluteal IM delivery with the 3.75-cm needle is 71% in women with BMI >30, and 60% in men with BMI >35.

**CONCLUSION:** BMI is reliably predictive of VGT in both men and women for selecting appropriate needle length for IM injections at this site. Standard needles would fail in IM delivery at this site in a considerable proportion of obese adults. Because of high prevalence of obesity in individuals with severe mental illness, our findings could significantly impact acute and maintenance therapy with injectable tranquilizers and antipsychotics.

Reference:

Holliday, R.M., Gupta, V. and Vibhute, P.G. (2016) Body Mass Index: A Reliable Predictor of Subcutaneous Fat Thickness and Needle Length for Ventral Gluteal Intramuscular Injections. American Journal of Therapeutics. August 17th. .

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