

# Gluteal intramuscular injections: Techniques associated with successful octreotide LAR injection

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## Abstract

### Background

Gluteal intramuscular injection remains an important method for delivery of a variety of medications including octreotide LAR. In one study, only 32% of gluteal injections were delivered into the intramuscular space (Chan et al, Eur J Radiol. 2006). We examined nursing factors that are associated with successful gluteal intramuscular injections.

### Methods

Patients receiving intramuscular injection of octreotide LAR at the Gastrointestinal Center, University of Texas M. D. Anderson Cancer center were identified. Nursing interviews were conducted to identify injection technique. Pelvic CTs were reviewed for evaluation of injection success.

### Results

22 Nurses were interviewed. 251 intended intramuscular injections between 12/21/2005 and 6/25/2008 were evaluable by CT. 105 (42%) were associated with subcutaneous nodules indicating subcutaneous placement; 146 (58%) were deemed successful intramuscular injection. Factors associated with successful intramuscular injection included self-reported indicators of experience, landmark based localization of injection site, depth of needle insertion, and use of non-syringe hand.

### Conclusion

A significant number of octreotide LAR injections are not successfully delivered into the intramuscular space. Nursing experience and injection technique were highly associated with successful injection. Nursing education may improve successful intramuscular injection rate.

## Background

Injection related subcutaneous nodules are commonly observed on pelvic CTs among patients receiving octreotide LAR. This suggests many such intended gluteal intramuscular (IM) injections are delivered subcutaneously.

Anecdotal reports from patients included differences in symptoms from month to month which they related to injections technique.

Many nurses expressed discomfort with IM injections due to lack of available information regarding optimal IM injection technique.

Analysis of the injections began in 2006 and is ongoing.

## Objective

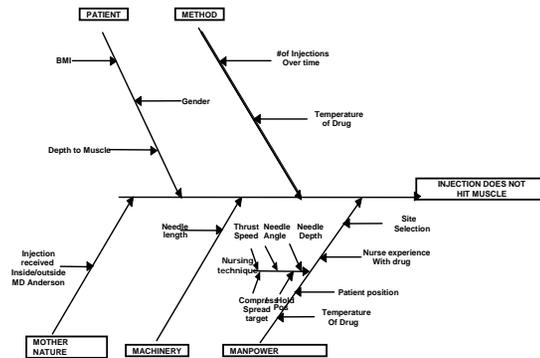
Evaluate gluteal IM injection success rate among patients receiving octreotide LAR

Evaluate nursing related factors associated with successful gluteal IM injection

Develop guidelines to optimize injection outcome

## Methods

- Literature review to determine current best practice recommendations and available information.
- Determine potential factors affecting IM injection success using Ishikawa (fishbone) diagram
- Nursing interviews to determine injection technique.
- Pelvic CTs were reviewed for evaluation of injection success.
- Radio opaque markers were used in conjunction with selected CTs to evaluate injection site selection

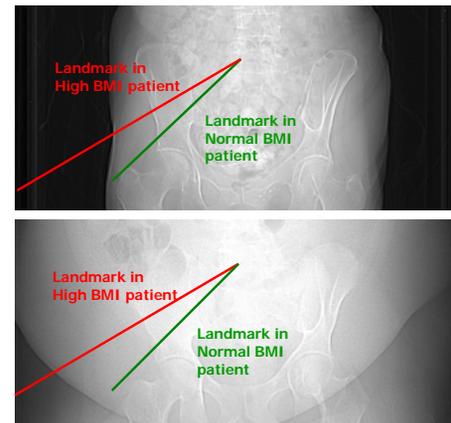


## Results

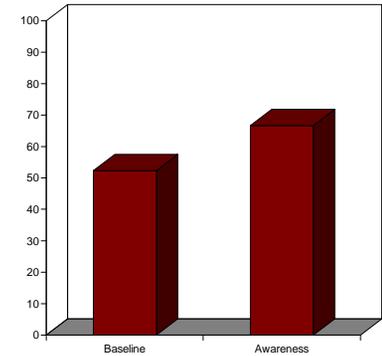
- 22 Nurse interviews demonstrated a variety of injection techniques and comfort levels associated with the gluteal injections of octreotide LAR.
- CT review revealed that out of 251 intended intramuscular injections between 12/21/2005 and 6/25/2008, 105 (42%) were associated with subcutaneous nodules indicating subcutaneous placement; 146 (58%) were deemed successful intramuscular injections.
- Male patients had fewer subcutaneous injection nodules overall than female patients, regardless of nursing injection factors.
- Nursing factors associated with successful intramuscular injection included self-reported indicators of experience, landmark based localization of injection site, depth of needle insertion, and use of non-syringe hand.

Self-reported parameter	Group	IM rate	P
<b>Indicators of experience</b>			
Experience with IM injection	Moderate	44%	0.008
	Very	63%	
Frequency of IM injection	Few per year	29%	0.007
	Monthly	63%	
	Daily/weekly	60%	
Comfort with LAR injection (scale 1 – 10)	1 - 9	40%	<0.001
	10	74%	
<b>Technique</b>			
Injection site selection	Landmark*	71%	<0.001
	Landmark* + other	38%	
	Upper outer quadrant	30%	
	Other	50%	
Depth of needle placement	Full needle length	57%	0.031
	To resistance	20%	
Needle insertion speed	Quick	63%	<0.001
	Slow/steady	31%	
Use of non-syringe hand	Compress tissue	92%	<0.001
	Stabilize tissue	44%	
	Pinch tissue	39%	

Use of landmarks for site localization improved intramuscular injection success rate. Landmark however can be affected by body habitus.



Traditional site location methods may require clarification or adjustment based on population changes and individual patient conditions.



Nursing awareness led to improvements in intramuscular injection success rate (52% vs 67%; P = 0.02).

## Conclusion

A significant number of octreotide LAR injections are not successfully delivered into the intramuscular space. Nursing experience and injection technique were significant factors associated with successful injection.

Nursing education is likely to improve successful intramuscular injection rate. Increased knowledge of bony landmarks and average patient measurements for injection site localization will aid nurses in placing injections intramuscularly as prescribed.

Clarification of injection guidelines for obese or cachectic patients will improve success rate for intramuscular injections.

## Next Steps

Specific recommendations for injection site localization and injection techniques based on findings from our current project.

Evaluate impact of specific education and training.

## References

- Chan, V. O., et al (2006) *European Journal of Radiology* 58: 480-484.
- Zaybak, A., et al (2007) *Journal of Advanced Nursing: Original Research* 58 (6), 552-556