1. Sample Size=150 including **cervical=24, lumbar=125, and hip=1;** the patient with hip was removed from the analysis.

| **Analysis Variable : GY GY** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Category** | **norm** | **N** | **Mean** | **Std Dev** | **Minimum** | **Maximum** |
| **cervical** | **No** | 3 | 1.2725 | 0.3770 | 1.0376 | 1.7074 |
|  | **Yes** | 21 | 3.9756 | 6.7464 | 0.0765 | 25.1323 |
|  | **Overall** | 24 | 3.6377 | 6.3579 | 0.0765 | 25.1323 |
| **lumbar** | **No** | 38 | 3.0183 | 3.6706 | 0.0982 | 14.2805 |
|  | **Yes** | 87 | 5.4926 | 8.5101 | 0.0559 | 49.3834 |
|  | **Overall** | 125 | 4.7404 | 7.4535 | 0.0559 | 49.3834 |

1. Based on Wilcoxon-Mann-Whitney test,
   1. p=0.66, which means there is no significant difference of GY between “Norm” and “Non-Norm” for Type of “cervical”.
   2. p=0.24, which means there is no significant difference of GY between “Norm” and “Non-Norm” for Type of “lumbar”.
2. Based on Pearson correlation, the correlation coefficient between GY and BMI is 0.11(p=0.20), the correlation coefficient between GY and RAD Time is 0.43(p<0.01).

**Conclusion: BMI and Type of Procedure are unrelated to GY; while RAD Time is the only factor which is related to GY.**

1. For the current data set, we have 3 non-normal BMI and 21 normal BMI for cervical (Suppose 1/5 for the ratio of non-norm/norm), and 38 non-normal BMI and 87 normal BMI for lumbar (Suppose 1/2 for the ratio of non-norm/norm). Given the alpha=0.05(type I error rate) and power=0.80:
   1. For the comparison of cervical between norm and non-norm:

The sample size will be: n=53(non-norm) plus n=265 (norm).

If for equal sample size from norm and non-norm, the total sample size will be n=176(88\*2).

* 1. For the comparison of lumbar between norm and non-norm:

The sample size will be: n=108(non-norm) plus n=216 (norm).

If for equal sample size from norm and non-norm, the total sample size will be n=288(144\*2).