5y complications analysis

```
xls_path <- '../../data/ESSG extraction June 2022_1st report 5Y - ONLY DPS.xlsx'
```

Filters

```
# discarded_patients <- readLines('five_years/discarded_patients')

data_set %<>%
  .[, followup_2y :=
      !is.na(`2 YEAR VISIT - Date of visit`) |
      !is.na(`3 YEAR VISIT - Date of visit`)] %>%
  .[, followup_5y :=
      !is.na(`5 YEAR VISIT - Date of visit`) |
      !is.na(`6 YEAR VISIT - Date of visit`)]
```

```
# data_set %<>%
#   .[followup_2y==TRUE] %>%
#   .[`st1. Date of Stage` %>% as.Date() < as.Date('2016-6-1')]
```

Total Patients for the analysis: 575

Only Major Complications

All complications

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	-0.007	0.118	-0.059	0.953
Age	0.006	0.001	4.880	0.000
GenderMale	-0.028	0.052	-0.543	0.587
Prior_Spine_SurgeryYes	0.043	0.046	0.938	0.349
ASA_classification	0.044	0.036	1.231	0.219
BMI_First_Visit	-0.001	0.005	-0.279	0.781
SiteBOR Op	-0.101	0.056	-1.809	0.071
SiteIST Op	0.159	0.211	0.752	0.452
SiteMAD Op	-0.223	0.068	-3.277	0.001
SiteZUR Op	-0.119	0.053	-2.255	0.024
`5y_vs_2y_effect`	-0.002	0.207	-0.008	0.993
Age:`5y_vs_2y_effect`	-0.002	0.002	-1.079	0.281
GenderMale:`5y_vs_2y_effect`	0.074	0.089	0.824	0.410
Prior_Spine_SurgeryYes:`5y_vs_2y_effect`	-0.129	0.077	-1.667	0.096
ASA_classification:`5y_vs_2y_effect`	-0.009	0.067	-0.133	0.894
BMI_First_Visit:`5y_vs_2y_effect`	-0.002	0.008	-0.264	0.792
SiteBOR Op:`5y_vs_2y_effect`	0.112	0.100	1.127	0.260

```
SiteIST Op:'5y_vs_2y_effect'                                  0.244      0.365   0.668    0.505
SiteMAD Op:'5y_vs_2y_effect'                                  0.217      0.113   1.922    0.055
SiteZUR Op:'5y_vs_2y_effect'                                  0.086      0.092   0.931    0.352


                                                 Estimate Std. Error t value
(Intercept)                                         0.057      0.133   0.431
Age                                                 0.004      0.001   3.375
GenderMale                                         -0.018      0.047  -0.395
Prior_Spine_SurgeryYes                             -0.013      0.040  -0.335
ASA_classification                                  0.028      0.032   0.866
BMI_First_Visit                                    -0.004      0.004  -0.917
SiteBOR Op                                         -0.085      0.049  -1.750
SiteIST Op                                          0.316      0.191   1.655
SiteMAD Op                                         -0.146      0.057  -2.563
SiteZUR Op                                         -0.090      0.048  -1.885
Global_Tilt                                         0.004      0.001   2.515
Static_Major_curve_Cobb_angle                       0.001      0.001   0.501
'5y_vs_2y_effect'                                   0.005      0.105   0.051
Global_Tilt:'5y_vs_2y_effect'                      -0.004      0.002  -1.931
Static_Major_curve_Cobb_angle:'5y_vs_2y_effect'    -0.001      0.002  -0.610
                                                 Pr(>|t|)
(Intercept)                                         0.667
Age                                                 0.001
GenderMale                                          0.693
Prior_Spine_SurgeryYes                              0.738
ASA_classification                                  0.387
BMI_First_Visit                                     0.360
SiteBOR Op                                          0.081
SiteIST Op                                          0.099
SiteMAD Op                                          0.011
SiteZUR Op                                          0.060
Global_Tilt                                         0.012
Static_Major_curve_Cobb_angle                       0.617
'5y_vs_2y_effect'                                   0.960
Global_Tilt:'5y_vs_2y_effect'                       0.054
Static_Major_curve_Cobb_angle:'5y_vs_2y_effect'     0.542
```

Impact of complications on followup

Only considering those with 2 FU

```
Call:
glm(formula = followup_5y ~ ., data = .)

Deviance Residuals:
    Min       1Q   Median       3Q      Max
-0.7410  -0.4808   0.2756   0.4595   0.7579

Coefficients:
                         Estimate Std. Error t value Pr(>|t|)
(Intercept)            -0.0901330  0.4223102  -0.213   0.8311
Age                     0.0039862  0.0020162   1.977   0.0488 *
```

```
GenderMale                            0.0600092  0.0730176   0.822   0.4117
'Prior Spine Surgery'Yes              0.0231657  0.0620543   0.373   0.7091
'ASA classification'                 -0.1070041  0.0483492  -2.213   0.0275 *
'BMI_First Visit'                     0.0005533  0.0065324   0.085   0.9325
SiteBOR Op                           -0.0919261  0.0745252  -1.233   0.2182
SiteIST Op                            0.0557332  0.3635355   0.153   0.8782
SiteMAD Op                            0.1014502  0.0889755   1.140   0.2550
SiteZUR Op                            0.0141384  0.0752264   0.188   0.8510
'Global Tilt'                         0.0004024  0.0019712   0.204   0.8384
'Static Major curve Cobb angle'       0.0015720  0.0014070   1.117   0.2646
'2Y. ODI - Score (%)'                 0.0028554  0.0031606   0.903   0.3669
'2Y. SRS22 - SRS Subtotal score'      0.0263567  0.0954132   0.276   0.7825
'2Y. SF36 - MCS'                      0.0038730  0.0037303   1.038   0.2999
'2Y. SF36 - PCS'                      0.0028088  0.0055013   0.511   0.6100
complication_before_2yYes             0.0962820  0.0620054   1.553   0.1214
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for gaussian family taken to be 0.2475167)

    Null deviance: 93.637  on 374  degrees of freedom
Residual deviance: 88.611  on 358  degrees of freedom
  (59 observations deleted due to missingness)
AIC: 559.2

Number of Fisher Scoring iterations: 2
```

Complication Types

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	-0.268	0.062	-4.335	0.000
Age	0.001	0.001	1.439	0.151
GenderMale	-0.007	0.027	-0.243	0.808
Prior_Spine_SurgeryYes	0.022	0.024	0.903	0.367
ASA_classification	0.047	0.019	2.504	0.013
BMI_First_Visit	0.009	0.003	3.644	0.000
SiteBOR Op	-0.030	0.029	-1.017	0.310
SiteIST Op	-0.106	0.110	-0.961	0.337
SiteMAD Op	-0.041	0.036	-1.143	0.254
SiteZUR Op	-0.067	0.028	-2.425	0.016
'5y_vs_2y_effect'	0.253	0.109	2.330	0.020
Age:'5y_vs_2y_effect'	-0.001	0.001	-0.432	0.666
GenderMale:'5y_vs_2y_effect'	0.033	0.047	0.695	0.487
Prior_Spine_SurgeryYes:'5y_vs_2y_effect'	-0.036	0.040	-0.893	0.372
ASA_classification:'5y_vs_2y_effect'	-0.052	0.035	-1.466	0.143
BMI_First_Visit:'5y_vs_2y_effect'	-0.008	0.004	-1.923	0.055
SiteBOR Op:'5y_vs_2y_effect'	0.011	0.052	0.215	0.830
SiteIST Op:'5y_vs_2y_effect'	0.105	0.191	0.548	0.584
SiteMAD Op:'5y_vs_2y_effect'	0.031	0.059	0.527	0.598
SiteZUR Op:'5y_vs_2y_effect'	0.046	0.048	0.959	0.338

	Estimate	Std. Error	t value
(Intercept)	-0.119	0.068	-1.742

	Estimate	Std. Error	t value
Age	0.001	0.001	1.231
GenderMale	-0.002	0.024	-0.094
Prior_Spine_SurgeryYes	0.004	0.021	0.215
ASA_classification	0.020	0.016	1.244
BMI_First_Visit	0.006	0.002	2.810
SiteBOR Op	-0.033	0.025	-1.303
SiteIST Op	-0.070	0.098	-0.707
SiteMAD Op	-0.026	0.029	-0.902
SiteZUR Op	-0.052	0.024	-2.130
Global_Tilt	0.001	0.001	0.932
Static_Major_curve_Cobb_angle	-0.001	0.001	-1.536
`5y_vs_2y_effect`	-0.055	0.054	-1.013
Global_Tilt:`5y_vs_2y_effect`	-0.002	0.001	-1.589
Static_Major_curve_Cobb_angle:`5y_vs_2y_effect`	0.001	0.001	0.869

	Pr(>|t|)
(Intercept)	0.082
Age	0.219
GenderMale	0.925
Prior_Spine_SurgeryYes	0.830
ASA_classification	0.214
BMI_First_Visit	0.005
SiteBOR Op	0.193
SiteIST Op	0.480
SiteMAD Op	0.367
SiteZUR Op	0.034
Global_Tilt	0.351
Static_Major_curve_Cobb_angle	0.125
`5y_vs_2y_effect`	0.311
Global_Tilt:`5y_vs_2y_effect`	0.113
Static_Major_curve_Cobb_angle:`5y_vs_2y_effect`	0.385

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	-0.090	0.083	-1.077	0.282
Age	0.002	0.001	2.587	0.010
GenderMale	-0.032	0.037	-0.873	0.383
Prior_Spine_SurgeryYes	0.029	0.033	0.894	0.372
ASA_classification	-0.001	0.025	-0.049	0.961
BMI_First_Visit	0.003	0.003	0.748	0.455
SiteBOR Op	0.044	0.039	1.114	0.266
SiteIST Op	-0.086	0.149	-0.576	0.565
SiteMAD Op	-0.006	0.048	-0.125	0.901
SiteZUR Op	-0.038	0.037	-1.034	0.302
`5y_vs_2y_effect`	0.011	0.147	0.074	0.941
Age:`5y_vs_2y_effect`	-0.001	0.002	-0.318	0.750
GenderMale:`5y_vs_2y_effect`	0.057	0.063	0.905	0.366
Prior_Spine_SurgeryYes:`5y_vs_2y_effect`	-0.048	0.055	-0.882	0.378
ASA_classification:`5y_vs_2y_effect`	0.051	0.047	1.083	0.279
BMI_First_Visit:`5y_vs_2y_effect`	-0.003	0.006	-0.564	0.573
SiteBOR Op:`5y_vs_2y_effect`	-0.001	0.070	-0.018	0.986
SiteIST Op:`5y_vs_2y_effect`	0.502	0.258	1.946	0.052
SiteMAD Op:`5y_vs_2y_effect`	0.020	0.080	0.249	0.804
SiteZUR Op:`5y_vs_2y_effect`	-0.012	0.065	-0.187	0.852

	Estimate	Std. Error	t value

```
(Intercept)                                        -0.127    0.096  -1.326
Age                                                 0.002    0.001   2.460
GenderMale                                         -0.018    0.034  -0.533
Prior_Spine_SurgeryYes                              0.018    0.029   0.623
ASA_classification                                  0.012    0.023   0.498
BMI_First_Visit                                     0.002    0.003   0.609
SiteBOR Op                                          0.028    0.035   0.806
SiteIST Op                                          0.100    0.138   0.728
SiteMAD Op                                         -0.004    0.041  -0.093
SiteZUR Op                                         -0.050    0.034  -1.458
Global_Tilt                                         0.000    0.001   0.295
Static_Major_curve_Cobb_angle                       0.001    0.001   0.858
`5y_vs_2y_effect`                                  -0.033    0.076  -0.441
Global_Tilt:`5y_vs_2y_effect`                       0.001    0.002   0.712
Static_Major_curve_Cobb_angle:`5y_vs_2y_effect`     0.000    0.001   0.020
                                                  Pr(>|t|)
(Intercept)                                         0.185
Age                                                 0.014
GenderMale                                          0.594
Prior_Spine_SurgeryYes                              0.534
ASA_classification                                  0.619
BMI_First_Visit                                     0.543
SiteBOR Op                                          0.420
SiteIST Op                                          0.467
SiteMAD Op                                          0.926
SiteZUR Op                                          0.145
Global_Tilt                                         0.768
Static_Major_curve_Cobb_angle                       0.391
`5y_vs_2y_effect`                                   0.660
Global_Tilt:`5y_vs_2y_effect`                       0.477
Static_Major_curve_Cobb_angle:`5y_vs_2y_effect`     0.984


                                                 Estimate Std. Error t value Pr(>|t|)
(Intercept)                                        -0.082    0.033  -2.492    0.013
Age                                                 0.000    0.000  -0.266    0.790
GenderMale                                         -0.003    0.015  -0.181    0.856
Prior_Spine_SurgeryYes                              0.021    0.013   1.586    0.113
ASA_classification                                  0.021    0.010   2.047    0.041
BMI_First_Visit                                     0.003    0.001   2.313    0.021
SiteBOR Op                                         -0.005    0.016  -0.316    0.752
SiteIST Op                                         -0.049    0.059  -0.839    0.402
SiteMAD Op                                         -0.034    0.019  -1.794    0.073
SiteZUR Op                                         -0.035    0.015  -2.402    0.017
`5y_vs_2y_effect`                                   0.082    0.058   1.419    0.156
Age:`5y_vs_2y_effect`                               0.000    0.001   0.144    0.885
GenderMale:`5y_vs_2y_effect`                        0.003    0.025   0.106    0.916
Prior_Spine_SurgeryYes:`5y_vs_2y_effect`           -0.021    0.022  -0.950    0.342
ASA_classification:`5y_vs_2y_effect`               -0.021    0.019  -1.094    0.274
BMI_First_Visit:`5y_vs_2y_effect`                  -0.003    0.002  -1.313    0.190
SiteBOR Op:`5y_vs_2y_effect`                        0.005    0.028   0.177    0.860
SiteIST Op:`5y_vs_2y_effect`                        0.049    0.102   0.485    0.628
SiteMAD Op:`5y_vs_2y_effect`                        0.034    0.032   1.081    0.280
SiteZUR Op:`5y_vs_2y_effect`                        0.035    0.026   1.372    0.171
```

5

	Estimate	Std. Error	t value
(Intercept)	-0.074	0.034	-2.167
Age	0.000	0.000	0.930
GenderMale	-0.001	0.012	-0.087
Prior_Spine_SurgeryYes	0.013	0.010	1.246
ASA_classification	0.009	0.008	1.091
BMI_First_Visit	0.001	0.001	0.968
SiteBOR Op	0.002	0.013	0.133
SiteIST Op	-0.014	0.049	-0.295
SiteMAD Op	-0.017	0.015	-1.190
SiteZUR Op	-0.016	0.012	-1.292
Global_Tilt	0.000	0.000	0.363
Static_Major_curve_Cobb_angle	0.001	0.000	2.464
`5y_vs_2y_effect`	0.023	0.027	0.854
Global_Tilt:`5y_vs_2y_effect`	-0.001	0.001	-1.139
Static_Major_curve_Cobb_angle:`5y_vs_2y_effect`	-0.001	0.000	-1.223

	Pr(>|t|)
(Intercept)	0.031
Age	0.353
GenderMale	0.931
Prior_Spine_SurgeryYes	0.213
ASA_classification	0.276
BMI_First_Visit	0.333
SiteBOR Op	0.894
SiteIST Op	0.768
SiteMAD Op	0.234
SiteZUR Op	0.197
Global_Tilt	0.717
Static_Major_curve_Cobb_angle	0.014
`5y_vs_2y_effect`	0.394
Global_Tilt:`5y_vs_2y_effect`	0.255
Static_Major_curve_Cobb_angle:`5y_vs_2y_effect`	0.222

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	-0.004	0.041	-0.102	0.919
Age	0.000	0.000	-0.041	0.967
GenderMale	0.014	0.018	0.804	0.422
Prior_Spine_SurgeryYes	0.030	0.016	1.888	0.059
ASA_classification	0.038	0.012	3.086	0.002
BMI_First_Visit	-0.001	0.002	-0.674	0.500
SiteBOR Op	-0.021	0.019	-1.081	0.280
SiteIST Op	0.171	0.073	2.353	0.019
SiteMAD Op	-0.056	0.023	-2.379	0.018
SiteZUR Op	-0.046	0.018	-2.505	0.012
`5y_vs_2y_effect`	0.004	0.072	0.058	0.954
Age:`5y_vs_2y_effect`	0.000	0.001	0.022	0.982
GenderMale:`5y_vs_2y_effect`	-0.014	0.031	-0.469	0.639
Prior_Spine_SurgeryYes:`5y_vs_2y_effect`	-0.030	0.027	-1.131	0.258
ASA_classification:`5y_vs_2y_effect`	-0.038	0.023	-1.650	0.100
BMI_First_Visit:`5y_vs_2y_effect`	0.001	0.003	0.383	0.702
SiteBOR Op:`5y_vs_2y_effect`	0.021	0.034	0.605	0.546
SiteIST Op:`5y_vs_2y_effect`	-0.171	0.126	-1.360	0.174
SiteMAD Op:`5y_vs_2y_effect`	0.056	0.039	1.432	0.153
SiteZUR Op:`5y_vs_2y_effect`	0.046	0.032	1.431	0.153

	Estimate	Std. Error	t value
(Intercept)	0.012	0.046	0.262
Age	0.000	0.000	-0.218
GenderMale	0.009	0.016	0.547
Prior_Spine_SurgeryYes	0.019	0.014	1.376
ASA_classification	0.028	0.011	2.505
BMI_First_Visit	-0.002	0.001	-1.225
SiteBOR Op	-0.015	0.017	-0.910
SiteIST Op	0.150	0.066	2.278
SiteMAD Op	-0.039	0.020	-1.968
SiteZUR Op	-0.032	0.016	-1.929
Global_Tilt	0.001	0.001	1.327
Static_Major_curve_Cobb_angle	0.000	0.000	0.470
`5y_vs_2y_effect`	-0.002	0.036	-0.062
Global_Tilt:`5y_vs_2y_effect`	-0.001	0.001	-1.383
Static_Major_curve_Cobb_angle:`5y_vs_2y_effect`	0.000	0.001	-0.036

	Pr(>|t|)
(Intercept)	0.793
Age	0.828
GenderMale	0.585
Prior_Spine_SurgeryYes	0.169
ASA_classification	0.013
BMI_First_Visit	0.221
SiteBOR Op	0.363
SiteIST Op	0.023
SiteMAD Op	0.050
SiteZUR Op	0.054
Global_Tilt	0.185
Static_Major_curve_Cobb_angle	0.639
`5y_vs_2y_effect`	0.951
Global_Tilt:`5y_vs_2y_effect`	0.167
Static_Major_curve_Cobb_angle:`5y_vs_2y_effect`	0.972

Reinterventions

	Estimate	Std. Error	t value	Pr(>|t|)
(Intercept)	0.649	0.336	1.933	0.054
Age	0.003	0.004	0.697	0.486
GenderMale	-0.017	0.130	-0.128	0.899
Prior_Spine_SurgeryYes	0.133	0.097	1.379	0.168
ASA_classification	-0.009	0.097	-0.095	0.924
BMI_First_Visit	0.024	0.010	2.350	0.019
SiteBOR Op	0.003	0.138	0.021	0.983
SiteIST Op	-0.676	0.497	-1.360	0.174
SiteMAD Op	0.029	0.218	0.133	0.894
SiteZUR Op	-0.158	0.124	-1.275	0.203
`5y_vs_2y_effect`	-0.686	0.357	-1.919	0.055
Age:`5y_vs_2y_effect`	0.001	0.004	0.141	0.888
GenderMale:`5y_vs_2y_effect`	-0.020	0.141	-0.145	0.885
Prior_Spine_SurgeryYes:`5y_vs_2y_effect`	-0.156	0.108	-1.443	0.149
ASA_classification:`5y_vs_2y_effect`	-0.008	0.104	-0.073	0.942
BMI_First_Visit:`5y_vs_2y_effect`	-0.022	0.011	-1.930	0.054
SiteBOR Op:`5y_vs_2y_effect`	-0.031	0.148	-0.211	0.833

```
SiteIST Op:`5y_vs_2y_effect`                         0.782    0.545   1.435    0.152
SiteMAD Op:`5y_vs_2y_effect`                        -0.049    0.230  -0.214    0.831
SiteZUR Op:`5y_vs_2y_effect`                         0.110    0.136   0.811    0.418


                                                   Estimate Std. Error t value
(Intercept)                                           1.314    0.217   6.050
Age                                                   0.003    0.002   1.697
GenderMale                                           -0.018    0.056  -0.327
Prior_Spine_SurgeryYes                                0.006    0.047   0.135
ASA_classification                                   -0.006    0.038  -0.165
BMI_First_Visit                                       0.008    0.005   1.531
SiteBOR Op                                           -0.048    0.056  -0.857
SiteIST Op                                           -0.052    0.232  -0.223
SiteMAD Op                                           -0.041    0.074  -0.555
SiteZUR Op                                           -0.095    0.056  -1.688
Global_Tilt                                          -0.001    0.003  -0.230
Static_Major_curve_Cobb_angle                        -0.003    0.002  -1.486
`5y_vs_2y_effect`                                    -1.458    0.172  -8.493
Global_Tilt:`5y_vs_2y_effect`                         0.000    0.004   0.098
Static_Major_curve_Cobb_angle:`5y_vs_2y_effect`      0.004    0.003   1.401
                                                   Pr(>|t|)
(Intercept)                                           0.000
Age                                                   0.090
GenderMale                                            0.744
Prior_Spine_SurgeryYes                                0.893
ASA_classification                                    0.869
BMI_First_Visit                                       0.126
SiteBOR Op                                            0.392
SiteIST Op                                            0.824
SiteMAD Op                                            0.579
SiteZUR Op                                            0.092
Global_Tilt                                           0.818
Static_Major_curve_Cobb_angle                        0.138
`5y_vs_2y_effect`                                     0.000
Global_Tilt:`5y_vs_2y_effect`                         0.922
Static_Major_curve_Cobb_angle:`5y_vs_2y_effect`      0.162
```