

## 5y complications analysis

```
xls_path <- '../..data/ESSG extraction June 2022_2nd 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')]
```

### Only Major Complications

### All complications

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	0.006	0.162	0.038	0.970
Age	0.005	0.002	2.584	0.010
GenderMale	-0.089	0.064	-1.381	0.168
Prior_Spine_SurgeryYes	0.121	0.060	2.037	0.042
ASA_classification	0.065	0.051	1.274	0.203
BMI_First_Visit	0.000	0.006	0.038	0.969
SiteBOR Op	-0.052	0.078	-0.658	0.511
SiteIST Op	0.064	0.218	0.293	0.770
SiteMAD Op	-0.224	0.086	-2.620	0.009
SiteZUR Op	-0.151	0.071	-2.118	0.035
'5y_vs_2y_effect'	-0.001	0.252	-0.003	0.997
Age:'5y_vs_2y_effect'	-0.001	0.003	-0.400	0.689
GenderMale:'5y_vs_2y_effect'	0.114	0.102	1.112	0.267
Prior_Spine_SurgeryYes:'5y_vs_2y_effect'	-0.196	0.090	-2.170	0.031
ASA_classification:'5y_vs_2y_effect'	-0.036	0.081	-0.438	0.662
BMI_First_Visit:'5y_vs_2y_effect'	-0.004	0.010	-0.390	0.697
SiteBOR Op:'5y_vs_2y_effect'	0.090	0.119	0.754	0.451
SiteIST Op:'5y_vs_2y_effect'	0.332	0.374	0.887	0.375
SiteMAD Op:'5y_vs_2y_effect'	0.240	0.132	1.815	0.070
SiteZUR Op:'5y_vs_2y_effect'	0.149	0.110	1.357	0.175

	Estimate	Std. Error	t value
(Intercept)	0.112	0.173	0.643
Age	0.003	0.002	1.719
GenderMale	-0.070	0.056	-1.261
Prior_Spine_SurgeryYes	0.027	0.049	0.547
ASA_classification	0.043	0.042	1.044
BMI_First_Visit	-0.005	0.005	-1.001
SiteBOR Op	-0.054	0.064	-0.839
SiteIST Op	0.252	0.199	1.270
SiteMAD Op	-0.146	0.070	-2.084
SiteZUR Op	-0.099	0.061	-1.609
Global_Tilt	0.005	0.002	2.693
Static_Major_curve_Cobb_angle	0.001	0.001	0.636
'5y_vs_2y_effect'	0.071	0.123	0.574
Global_Tilt:'5y_vs_2y_effect'	-0.006	0.003	-2.185
Static_Major_curve_Cobb_angle:'5y_vs_2y_effect'	-0.002	0.002	-1.000

  

	Pr(> t )
(Intercept)	0.521
Age	0.086
GenderMale	0.208
Prior_Spine_SurgeryYes	0.584
ASA_classification	0.297
BMI_First_Visit	0.317
SiteBOR Op	0.402
SiteIST Op	0.205
SiteMAD Op	0.038
SiteZUR Op	0.108
Global_Tilt	0.007
Static_Major_curve_Cobb_angle	0.525
'5y_vs_2y_effect'	0.566
Global_Tilt:'5y_vs_2y_effect'	0.029
Static_Major_curve_Cobb_angle:'5y_vs_2y_effect'	0.318

## Impact of complications on followup

Only considering those with 2 FU

Call:

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

Deviance Residuals:

Min	1Q	Median	3Q	Max
-0.92034	0.02901	0.17878	0.26275	0.49454

Coefficients:

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-0.2520853	0.4776308	-0.528	0.598
Age	0.0012736	0.0023417	0.544	0.587
GenderMale	-0.0767906	0.0762530	-1.007	0.315
'Prior Spine Surgery'Yes	0.0048998	0.0678965	0.072	0.943
'ASA_classification'	-0.0478559	0.0595508	-0.804	0.423
'BMI_First_Visit'	0.0073982	0.0074921	0.987	0.325

SiteBOR Op	0.0237477	0.0877742	0.271	0.787
SiteIST Op	-0.1490563	0.3191654	-0.467	0.641
SiteMAD Op	-0.0185115	0.0961495	-0.193	0.848
SiteZUR Op	-0.0044669	0.0894944	-0.050	0.960
'Global Tilt'	-0.0007668	0.0022193	-0.346	0.730
'Static Major curve Cobb angle'	0.0017146	0.0016064	1.067	0.287
'2Y. ODI - Score (%)'	0.0042094	0.0035697	1.179	0.240
'2Y. SRS22 - SRS Subtotal score'	0.0086696	0.1119342	0.077	0.938
'2Y. SF36 - MCS'	0.0075066	0.0042381	1.771	0.078
'2Y. SF36 - PCS'	0.0076481	0.0062663	1.221	0.224
complication_before_2yYes	-0.0074039	0.0664393	-0.111	0.911

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Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

(Dispersion parameter for gaussian family taken to be 0.1820845)

Null deviance: 40.571 on 225 degrees of freedom  
Residual deviance: 38.056 on 209 degrees of freedom  
(34 observations deleted due to missingness)  
AIC: 274.74

Number of Fisher Scoring iterations: 2

## Complication Types

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-0.267	0.076	-3.517	0.000
Age	0.001	0.001	1.216	0.225
GenderMale	-0.010	0.030	-0.324	0.746
Prior_Spine_SurgeryYes	0.066	0.028	2.356	0.019
ASA_classification	0.047	0.024	1.980	0.048
BMI_First_Visit	0.008	0.003	2.665	0.008
SiteBOR Op	-0.030	0.037	-0.807	0.420
SiteIST Op	-0.129	0.102	-1.260	0.208
SiteMAD Op	-0.006	0.040	-0.158	0.874
SiteZUR Op	-0.069	0.033	-2.067	0.039
'5y_vs_2y_effect'	0.267	0.118	2.265	0.024
Age:'5y_vs_2y_effect'	-0.001	0.001	-0.785	0.433
GenderMale:'5y_vs_2y_effect'	0.010	0.048	0.205	0.838
Prior_Spine_SurgeryYes:'5y_vs_2y_effect'	-0.066	0.042	-1.554	0.121
ASA_classification:'5y_vs_2y_effect'	-0.047	0.038	-1.243	0.214
BMI_First_Visit:'5y_vs_2y_effect'	-0.008	0.005	-1.720	0.086
SiteBOR Op:'5y_vs_2y_effect'	0.030	0.056	0.529	0.597
SiteIST Op:'5y_vs_2y_effect'	0.129	0.175	0.733	0.464
SiteMAD Op:'5y_vs_2y_effect'	0.006	0.062	0.102	0.918
SiteZUR Op:'5y_vs_2y_effect'	0.069	0.051	1.340	0.181

	Estimate	Std. Error	t value
(Intercept)	-0.094	0.081	-1.165
Age	0.001	0.001	0.906
GenderMale	-0.022	0.026	-0.850
Prior_Spine_SurgeryYes	0.032	0.023	1.411
ASA_classification	0.020	0.019	1.023

BMI_First_Visit	0.005	0.003	1.903
SiteBOR Op	-0.027	0.030	-0.899
SiteIST Op	-0.080	0.093	-0.862
SiteMAD Op	-0.007	0.033	-0.214
SiteZUR Op	-0.045	0.029	-1.561
Global_Tilt	0.001	0.001	0.867
Static_Major_curve_Cobb_angle	-0.001	0.001	-1.251
'5y_vs_2y_effect'	-0.075	0.057	-1.303
Global_Tilt:'5y_vs_2y_effect'	-0.002	0.001	-1.376
Static_Major_curve_Cobb_angle:'5y_vs_2y_effect'	0.001	0.001	1.099

Pr(>|t|)

(Intercept)	0.245
Age	0.366
GenderMale	0.396
Prior_Spine_SurgeryYes	0.159
ASA_classification	0.307
BMI_First_Visit	0.058
SiteBOR Op	0.369
SiteIST Op	0.389
SiteMAD Op	0.831
SiteZUR Op	0.119
Global_Tilt	0.386
Static_Major_curve_Cobb_angle	0.212
'5y_vs_2y_effect'	0.193
Global_Tilt:'5y_vs_2y_effect'	0.170
Static_Major_curve_Cobb_angle:'5y_vs_2y_effect'	0.272

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-0.159	0.116	-1.372	0.171
Age	0.003	0.001	2.239	0.026
GenderMale	-0.101	0.046	-2.194	0.029
Prior_Spine_SurgeryYes	0.020	0.043	0.463	0.644
ASA_classification	-0.021	0.036	-0.585	0.559
BMI_First_Visit	0.006	0.005	1.331	0.184
SiteBOR Op	0.074	0.056	1.331	0.184
SiteIST Op	-0.062	0.155	-0.399	0.690
SiteMAD Op	0.027	0.061	0.443	0.658
SiteZUR Op	-0.052	0.051	-1.029	0.304
'5y_vs_2y_effect'	0.050	0.179	0.279	0.781
Age:'5y_vs_2y_effect'	-0.001	0.002	-0.450	0.653
GenderMale:'5y_vs_2y_effect'	0.134	0.073	1.846	0.066
Prior_Spine_SurgeryYes:'5y_vs_2y_effect'	-0.035	0.064	-0.549	0.583
ASA_classification:'5y_vs_2y_effect'	0.063	0.058	1.092	0.275
BMI_First_Visit:'5y_vs_2y_effect'	-0.006	0.007	-0.800	0.424
SiteBOR Op:'5y_vs_2y_effect'	-0.017	0.085	-0.204	0.839
SiteIST Op:'5y_vs_2y_effect'	0.479	0.267	1.794	0.074
SiteMAD Op:'5y_vs_2y_effect'	0.006	0.094	0.066	0.947
SiteZUR Op:'5y_vs_2y_effect'	0.012	0.078	0.157	0.875

	Estimate	Std. Error	t value
(Intercept)	-0.261	0.127	-2.058
Age	0.003	0.001	2.543
GenderMale	-0.046	0.041	-1.128
Prior_Spine_SurgeryYes	0.015	0.036	0.407

ASA_classification	0.002	0.030	0.066
BMI_First_Visit	0.004	0.004	1.098
SiteBOR Op	0.050	0.047	1.062
SiteIST Op	0.120	0.145	0.825
SiteMAD Op	0.023	0.051	0.446
SiteZUR Op	-0.053	0.045	-1.186
Global_Tilt	0.000	0.001	0.221
Static_Major_curve_Cobb_angle	0.002	0.001	1.634
'5y_vs_2y_effect'	0.045	0.090	0.501
Global_Tilt:'5y_vs_2y_effect'	0.001	0.002	0.307
Static_Major_curve_Cobb_angle:'5y_vs_2y_effect'	-0.001	0.001	-0.947

Pr(>|t|)

(Intercept)	0.040
Age	0.011
GenderMale	0.260
Prior_Spine_SurgeryYes	0.684
ASA_classification	0.947
BMI_First_Visit	0.273
SiteBOR Op	0.289
SiteIST Op	0.410
SiteMAD Op	0.656
SiteZUR Op	0.236
Global_Tilt	0.825
Static_Major_curve_Cobb_angle	0.103
'5y_vs_2y_effect'	0.616
Global_Tilt:'5y_vs_2y_effect'	0.759
Static_Major_curve_Cobb_angle:'5y_vs_2y_effect'	0.344

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-0.113	0.043	-2.608	0.009
Age	0.000	0.000	-0.561	0.575
GenderMale	-0.012	0.017	-0.685	0.494
Prior_Spine_SurgeryYes	0.028	0.016	1.730	0.084
ASA_classification	0.022	0.014	1.634	0.103
BMI_First_Visit	0.005	0.002	2.936	0.004
SiteBOR Op	-0.020	0.021	-0.955	0.340
SiteIST Op	-0.067	0.058	-1.154	0.249
SiteMAD Op	-0.046	0.023	-1.996	0.047
SiteZUR Op	-0.050	0.019	-2.637	0.009
'5y_vs_2y_effect'	0.113	0.067	1.679	0.094
Age:'5y_vs_2y_effect'	0.000	0.001	0.362	0.718
GenderMale:'5y_vs_2y_effect'	0.012	0.027	0.432	0.666
Prior_Spine_SurgeryYes:'5y_vs_2y_effect'	-0.028	0.024	-1.141	0.255
ASA_classification:'5y_vs_2y_effect'	-0.022	0.022	-1.026	0.305
BMI_First_Visit:'5y_vs_2y_effect'	-0.005	0.003	-1.894	0.059
SiteBOR Op:'5y_vs_2y_effect'	0.020	0.032	0.626	0.532
SiteIST Op:'5y_vs_2y_effect'	0.067	0.100	0.672	0.502
SiteMAD Op:'5y_vs_2y_effect'	0.046	0.035	1.293	0.197
SiteZUR Op:'5y_vs_2y_effect'	0.050	0.029	1.709	0.088

	Estimate	Std. Error	t value
(Intercept)	-0.062	0.040	-1.545
Age	0.001	0.000	1.596
GenderMale	-0.009	0.013	-0.692

Prior_Spine_SurgeryYes	0.018	0.011	1.621
ASA_classification	0.003	0.010	0.328
BMI_First_Visit	0.001	0.001	1.176
SiteBOR Op	-0.004	0.015	-0.298
SiteIST Op	-0.018	0.046	-0.396
SiteMAD Op	-0.022	0.016	-1.345
SiteZUR Op	-0.022	0.014	-1.588
Global_Tilt	-0.001	0.000	-1.746
Static_Major_curve_Cobb_angle	0.001	0.000	2.040
'5y_vs_2y_effect'	-0.001	0.028	-0.039
Global_Tilt:'5y_vs_2y_effect'	0.000	0.001	0.302
Static_Major_curve_Cobb_angle:'5y_vs_2y_effect'	0.000	0.000	-1.051

Pr(>|t|)

(Intercept)	0.123
Age	0.111
GenderMale	0.489
Prior_Spine_SurgeryYes	0.106
ASA_classification	0.743
BMI_First_Visit	0.240
SiteBOR Op	0.766
SiteIST Op	0.692
SiteMAD Op	0.179
SiteZUR Op	0.113
Global_Tilt	0.082
Static_Major_curve_Cobb_angle	0.042
'5y_vs_2y_effect'	0.969
Global_Tilt:'5y_vs_2y_effect'	0.762
Static_Major_curve_Cobb_angle:'5y_vs_2y_effect'	0.294

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	-0.048	0.049	-0.972	0.332
Age	-0.001	0.001	-2.657	0.008
GenderMale	0.026	0.020	1.305	0.193
Prior_Spine_SurgeryYes	0.049	0.018	2.690	0.007
ASA_classification	0.056	0.015	3.640	0.000
BMI_First_Visit	0.002	0.002	0.838	0.403
SiteBOR Op	0.000	0.024	-0.017	0.987
SiteIST Op	0.151	0.066	2.287	0.023
SiteMAD Op	-0.047	0.026	-1.788	0.074
SiteZUR Op	-0.038	0.022	-1.777	0.076
'5y_vs_2y_effect'	0.048	0.076	0.626	0.532
Age:'5y_vs_2y_effect'	0.001	0.001	1.714	0.087
GenderMale:'5y_vs_2y_effect'	-0.026	0.031	-0.824	0.410
Prior_Spine_SurgeryYes:'5y_vs_2y_effect'	-0.049	0.027	-1.774	0.077
ASA_classification:'5y_vs_2y_effect'	-0.056	0.025	-2.286	0.023
BMI_First_Visit:'5y_vs_2y_effect'	-0.002	0.003	-0.540	0.589
SiteBOR Op:'5y_vs_2y_effect'	0.000	0.036	0.011	0.991
SiteIST Op:'5y_vs_2y_effect'	-0.151	0.114	-1.331	0.184
SiteMAD Op:'5y_vs_2y_effect'	0.047	0.040	1.158	0.247
SiteZUR Op:'5y_vs_2y_effect'	0.038	0.033	1.152	0.250

	Estimate	Std. Error	t value
(Intercept)	0.010	0.052	0.185
Age	0.000	0.001	-0.958

GenderMale	0.015	0.017	0.906
Prior_Spine_SurgeryYes	0.030	0.015	2.051
ASA_classification	0.032	0.012	2.620
BMI_First_Visit	0.000	0.002	0.117
SiteBOR Op	-0.001	0.019	-0.035
SiteIST Op	0.149	0.059	2.530
SiteMAD Op	-0.035	0.021	-1.695
SiteZUR Op	-0.030	0.018	-1.638
Global_Tilt	-0.001	0.001	-1.452
Static_Major_curve_Cobb_angle	0.000	0.000	0.104
'5y_vs_2y_effect'	-0.045	0.037	-1.229
Global_Tilt:'5y_vs_2y_effect'	0.000	0.001	0.476
Static_Major_curve_Cobb_angle:'5y_vs_2y_effect'	0.000	0.001	0.250
	Pr(> t )		
(Intercept)	0.853		
Age	0.338		
GenderMale	0.365		
Prior_Spine_SurgeryYes	0.041		
ASA_classification	0.009		
BMI_First_Visit	0.907		
SiteBOR Op	0.972		
SiteIST Op	0.012		
SiteMAD Op	0.091		
SiteZUR Op	0.102		
Global_Tilt	0.147		
Static_Major_curve_Cobb_angle	0.917		
'5y_vs_2y_effect'	0.220		
Global_Tilt:'5y_vs_2y_effect'	0.634		
Static_Major_curve_Cobb_angle:'5y_vs_2y_effect'	0.803		

## Reinterventions

	Estimate	Std. Error	t value	Pr(> t )
(Intercept)	0.243	0.519	0.468	0.640
Age	0.011	0.006	1.719	0.087
GenderMale	-0.219	0.202	-1.087	0.278
Prior_Spine_SurgeryYes	0.056	0.146	0.385	0.700
ASA_classification	-0.080	0.144	-0.552	0.581
BMI_First_Visit	0.027	0.014	1.885	0.060
SiteBOR Op	-0.120	0.191	-0.626	0.532
SiteIST Op	0.180	0.283	0.635	0.526
SiteMAD Op	0.050	0.282	0.176	0.860
SiteZUR Op	-0.131	0.192	-0.683	0.495
'5y_vs_2y_effect'	-0.416	0.560	-0.743	0.458
Age:'5y_vs_2y_effect'	-0.007	0.007	-1.055	0.292
GenderMale:'5y_vs_2y_effect'	0.132	0.218	0.603	0.547
Prior_Spine_SurgeryYes:'5y_vs_2y_effect'	-0.057	0.166	-0.342	0.733
ASA_classification:'5y_vs_2y_effect'	0.071	0.159	0.447	0.655
BMI_First_Visit:'5y_vs_2y_effect'	-0.022	0.017	-1.327	0.185
SiteBOR Op:'5y_vs_2y_effect'	0.198	0.217	0.916	0.360
SiteMAD Op:'5y_vs_2y_effect'	0.001	0.303	0.002	0.998
SiteZUR Op:'5y_vs_2y_effect'	0.194	0.213	0.911	0.363

	Estimate	Std. Error	t value
(Intercept)	1.477	0.327	4.516
Age	0.004	0.003	1.457
GenderMale	-0.096	0.088	-1.093
Prior_Spine_SurgeryYes	0.011	0.075	0.150
ASA_classification	-0.025	0.064	-0.394
BMI_First_Visit	0.016	0.008	1.932
SiteBOR Op	0.024	0.099	0.240
SiteIST Op	0.238	0.334	0.711
SiteMAD Op	0.032	0.110	0.290
SiteZUR Op	0.005	0.095	0.048
Global_Tilt	-0.009	0.005	-1.974
Static_Major_curve_Cobb_angle	-0.007	0.003	-2.093
'5y_vs_2y_effect'	-1.890	0.238	-7.932
Global_Tilt:'5y_vs_2y_effect'	0.010	0.005	1.938
Static_Major_curve_Cobb_angle:'5y_vs_2y_effect'	0.007	0.004	1.951

  

	Pr(> t )
(Intercept)	0.000
Age	0.146
GenderMale	0.275
Prior_Spine_SurgeryYes	0.881
ASA_classification	0.694
BMI_First_Visit	0.054
SiteBOR Op	0.810
SiteIST Op	0.477
SiteMAD Op	0.772
SiteZUR Op	0.961
Global_Tilt	0.049
Static_Major_curve_Cobb_angle	0.037
'5y_vs_2y_effect'	0.000
Global_Tilt:'5y_vs_2y_effect'	0.054
Static_Major_curve_Cobb_angle:'5y_vs_2y_effect'	0.052