HYPOTHESIS/AIMS OF STUDY: 3%-10% of patients undergoing robotic radical prostatectomy (RRP) have a tendency to urinary incontinence1. The PFM provides a contribution to the stability and stiffness of the spine2 and to the control of the sacroiliac joints3,4. There are now numerous evidences of PFM dysfunction in patients with SUI5,6 and are also discovering coordination alterations between PFM and abdominal muscles in this patients.

Since, as we have seen, the functional activity of the PFM is closely related to the lumbar-pelvic control and the sacroiliac active joint stabilization mechanisms; our aim is to investigate whether there are common biomechanical postural abnormalities of the pelvic girdle in patients with SUI underwent RRP. This data, along with subsequent studies, allows us to identify the individuals most likely will move into SUI after RRP.

MATERIALS AND METHODS: From January to October 2015 62 subjects, who underwent Nerve Sparing robot assisted Radical Prostatectomy7, in the last two years, at the General Hospital “F. Miulli”, were assessed. The sample was subjected to the questionnaire ICIQ short form8, 24-hours pad test and an array of postural and biomechanical assessment tests.

- Assessment of “form closure” and “force closure”: Palpation of the Long Dorsal Sacral Ligament14 – Observational assessment of the Lombo-Sacral angle15 – Activation of the transversus abdominis muscles and multifidus16.
- Test of strength evaluation (P) of the PFM Scale modified by the operator by means of Oxford (MOS)17

DISCUSSION: Biomechanical tests showed statistically significant differences between incontinent (SUI) and non-incontinent subjects. By examining the One Leg Standing test we can see a p value <0.0001. This statistically significant difference suggests that individuals with SUI are using an incorrect load transfer strategy through the sacroiliac joints. All subjects who tested positive for ASRL test (n=11) were incontinent. We observed that subjects with SUI presented a lumbo-pelvic motor control deficit. Out of 21 subjects who tested positive for Patrick’s Faber test 18 were incontinent and 3 non-incontinent: this is indicative of a mobility problem of the sacroiliac and/or coxofemoral joints1. There is a significant correlation between the test and SUI (p <0.0001).

Out of 24 subjects who tested positive to the palpation of the long dorsal sacral ligament 20 were incontinent and 4 non-incontinent. Tension of the long dorsal ligament increases with the sacroiliac joint dysfunction11. In our study all subjects who tested positive to this test also resulted to be positive to the observational test of the L5-S1 angle, showing a significant correlation (p <0.0001). This data, together with p <0.0001 value for the correlation between LLB test and SUI, prompts us to say that the verticalization of the sacrum could favor the onset of SUI.

There is a statistically significant difference between incontinent and non-incontinent subjects for muscular tests (Test Multifidus - p <0.001; TRA test - p <0.0001). These results suggest that the TRA muscles, multifidus and PFM work synergically and therefore should be considered as a group. We found also a statistically significant correlation between the strength of PFM and SUI (p<0.0001).

CONCLUSION: The study results show the association between SUI after RRP and some biomechanical and postural patterns. We have founded a lumbar sacral and pelvic motor control deficit and consequently the incorrect load transfer mode through the sacroiliac joints. We have also recorded the hypofunction of TRA muscles, multifidus and PFM. This suggests that in the onset of the SUI, dysfunctions of the pelvic girdle plays an important role. Also we can say that all the components of the pelvic girdle perform their functions in synergy, as a single functional system: if a single unit is insufficient the entire system suffers. There is also a significant correlation between the weakness of the PFM and SUI onset. However, we believe that the study population is numerically too low to draw any meaningful conclusions and that some of the tests used do not enjoy a good reliability intra and inter operator. The evaluation of a larger number of cases will provide more evidence, and possibly define whether these postural abnormalities and pelvic girdle dysfunctions may be predictive for SUI.

REFERENCES