

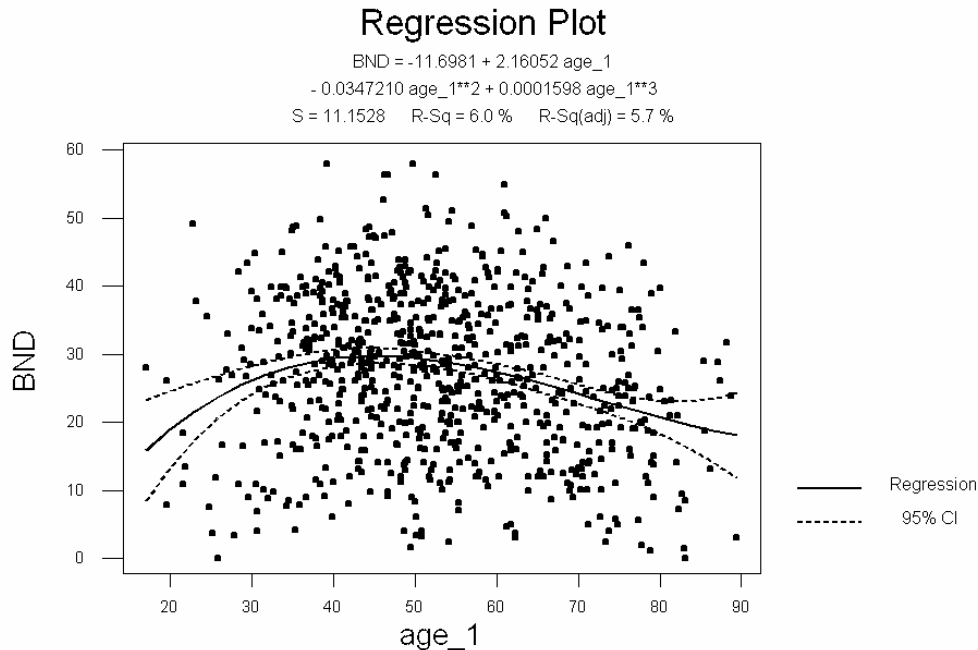
## DOES BLADDER NECK MOBILITY INCREASE WITH AGE?

### Hypothesis / aims of study

Age is said to be a risk factor for pelvic organ prolapse and surgery for incontinence and prolapse (1). When a patient appears with a symptomatic prolapse, it is generally assumed that this condition has developed (or at least worsened) recently. However, the author and others have recently been able to show that significant pelvic organ descent in young nulliparous women is not uncommon (2). Furthermore, it seems that childbirth is the one major environmental determinant of pelvic organ descent, and childbirth tends to occur relatively early in a woman's life. These findings raise the question as to whether age is indeed an important determinant of pelvic organ prolapse. In this retrospective analysis which includes previously published data, the author attempted to test for an association between age and bladder mobility on Valsalva.

### **Study design, materials and methods**

Over a period of 6 years, 790 women without previous anti- incontinence or prolapse surgery presented with pelvic floor dysfunction and were seen by the author at tertiary Urogynaecological clinics. All underwent a standardized interview and translabial ultrasound, supine and after bladder emptying. Bladder neck descent, maximal cystocele descent and urethral rotation were defined on maximal Valsalva manoeuvre (best of at least 3 attempts), relative to the inferoposterior margin of the symphysis pubis. These parameters were correlated with patient age. This parameter and all measures of pelvic organ descent were normally distributed.



**Figure:** Fitted Line plot of age versus BND (bladder neck descent) in 790 women without previous anti- incontinence or prolapse surgery. A cubic regression provided the best fit (R-Square = 6%). CI= Confidence Interval.

### **Results**

Overall, there was a weak negative correlation between bladder neck descent on Valsalva and age ( $r = -0.153$ ,  $p < 0.001$ ), and this correlation was also found for proximal urethral rotation ( $r = -0.1$ ,  $p < 0.001$ ), but not for cystocele descent. The figure shows a fitted line plot

after cubic regression, demonstrating that average bladder neck mobility rises to about the age of 40, remains static between 40 and 50, and falls from that age onwards.

When the population was stratified for parity, correlations between age and bladder neck descent were absent in nulliparous women (n= 107) and weakly but statistically significantly negative (Pearson's  $r = -0.213$ ,  $p < 0.001$ ) in the parous (n= 683). The same was true for rotation of the proximal urethra, although the correlations were even weaker (Pearson's  $r = -0.11$ ,  $p = 0.005$  in parous women). The strength of this negative association was similar for all degrees of parity. Cystocele descent did not correlate with age in either group.

### **Interpretation of results**

This study demonstrates a complex relationship between bladder neck descent and age in a large group of women presenting for urodynamic evaluation. From about 50 years of age onwards the curve shows a clearly negative slope. This finding appears counterintuitive at first but may be explained by increasing stiffness of pelvic connective tissue, a manifestation of ageing that has been documented for vaginal connective tissue in vitro (3) as for connective tissue in skin and elsewhere.

Several factors may have confounded these findings, such as varying Valsalva pressures (likely to decrease with age) and levator coactivation (less likely in the elderly). Furthermore, this is not a cross-sectional study as it presents data on symptomatic women only, and it is not longitudinal either. Despite these shortcomings, our findings allow the conclusion that descent of the bladder neck is at least as likely to improve over time as it is to worsen after the age of 40, at least in women who have not undergone anti-incontinence or prolapse surgery. The differences observed in the age/descent relationship between parous and nulliparous women are difficult to explain. As childbirth has been associated with traumatic pelvic floor injury, one might expect a progressive deterioration of organ support postpartum, contrary to findings demonstrated here.

Finally, it is intriguing that the fitted line plot shown above seems to follow a similar course as that observed for the incidence of stress incontinence versus age, i.e., an increase throughout the reproductive years, with a subsequent slow decrease after the age or menopause.

### **Concluding message**

This study found a weak negative correlation between age and measures of bladder neck mobility on Valsalva in women above 50 years of age. This may be explained by increased tissue stiffness after menopause.

### **References**

- 1 American Journal of Obstetrics & Gynecology 2002; **186**: 712-6.
- 2 Neurourol Urodyn 2003; **22**: 420-1.
- 3 Int.Urogynecol.J. **13**, 76-79. 2002.