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PELVIC FLOOR MUSCLE ASSESSMENT BY ANAL EXAMINATION: COMPARISON OF A DIGITAL AND A MANOMETRIC TECHNIQUE.

Hypothesis / aims of study

The modified Oxford scale (MOS) has been described for vaginal assessment of the pelvic floor muscles (PFM) and has shown a strong correlation with manometric assessment (1). It has also been used for anal assessment (2,3). No studies have been found that evaluate digital anal assessment using the MOS in comparison with manometry. The aim of this study was to determine if there was any relationship of the MOS for men and women, when compared with a standard of reference.

Study design, materials and methods

The study was a prospective, correlational, within-subject design, with ethical committee approval. Two different test procedures were used for each subject; both procedures were carried out at the same visit. The test procedures were:

- Digital anal assessment
- Manometric anal assessment

The order of the test procedures was randomised. The subject lay supine on the couch, with feet flat, knees and hips flexed and hips abducted.

Digital anal assessment

The researcher assessed the strength of the contraction of anal sphincter according to the MOS (Table 1); this was repeated three times, with ten seconds rest between each contraction. The median score of the three squeezes was taken for analysis.

Grading	Muscle response
0 = Nil	No discernible muscle contraction
1 = Flicker	A flicker or pulsation is felt around the examining finger
2 = Weak	An increase in tension is felt, without any discernible lift
3 = Moderate	Muscle tension is further enhanced and characterised by lifting of the muscle
4 = Good	Increased tension and a good contraction are present which are capable of elevating the muscle against resistance
5 = Strong	Strong resistance can be applied to the elevation of the muscle: the examining finger is squeezed and drawn into the anal canal

Table 1 The Modified Oxford Scale. (1)

Anal probe

The manometric readings were made using an air-filled pressure probe, a manometer and an electronic biofeedback system. The probe was placed and held within the anal canal.

Manometric muscle assessment

After a minimum of 10 seconds rest, a baseline reading of resting pressure was recorded by the research assistant. The subject contracted the anal sphincter three times, with ten seconds rest between each contraction. The research assistant recorded the three sets of measurements. The mean of the three squeeze scores was taken for analysis.

Results

70 subjects were assessed (females, n = 57). The median of the three digital scores was considered (range = 0-5, median = 2.00, SD = 1.13) and compared with the mean of the three manometric squeeze scores (range = 6.46 – 200.00 cmH_2O, mean = 86.12, SD = 42). Spearman's bivariate, two-tailed, ranked correlation coefficient (r_s) was used for analysis.

There was a low, positive correlation between the median of the digital scores and the mean of the manometric pressures ($r_s = 0.330$, $p = 0.005$).

Interpretation of results

Several factors were identified which could affect the low positive correlation seen in this study.

The data was considered by body mass index (BMI). When the data of those subjects of ideal weight (19-25 Kg/m^2) was analysed separately, the correlation of digital and manometric scores was moderate (r_s 0.573, $p = < 0.001$). Theories postulated for this improved correlation were that obesity could have a detrimental effect on the quality of muscle function, or that there are technical issues for manometric assessment of obese subjects.

In this study, baseline manometric anal resting tone was recorded, but not used in the correlational analysis, since the purpose of the MOS was to evaluate vaginal squeeze pressure only and resting tone was not taken into account. However, the involuntary internal anal sphincter component, which makes a large contribution to the resting tone, is outwith the subject's conscious control. It could be argued that the MOS was unhelpful here, where zero indicated no muscle contraction. In individuals with anal hyper or hypotonicity, the increment of squeeze could be difficult to determine with digital assessment.

The probe design was such that it required circumferential pressure to allow recording of squeeze increment; in addition, its design and position in the anal canal made it impossible to measure the distal 10mm of the sphincter. These issues could have affected the recording of pressures in subjects with an asymmetrical or a short anal canal.

Concluding message

Clinicians need a reliable method of assessing the PFM by anal examination. The use of the MOS for anal examination is called into question and further work is needed on its use in this anatomical area. A new scale should be devised to assess anal resting tone, separately from squeeze increment. Technical issues with this probe design threw doubt on its reliability in clinical use.

References

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