

EVALUATION OF PELVIC FLOOR MUSCLES IN PRIMIPAROUS AND MULTIPAROUS WOMEN

Hypothesis / aims of study :

Evaluate whether a caesarian birth prevents muscular dysfunction in the pelvic floor.

Study design, materials and methods

Written informed consent was obtained from all pregnant in the study. Both subjective and objective evaluations were carried out in primiparous and multiparous women. The evaluation was carried out in multiparous women (with up to two Cesarean deliveries) who were between 24 and 32 weeks gestation. Multiparous women who had undergone vaginal delivery were excluded from the study. Subjects were placed in lithotomy position and asked to do three quick, strong and isolated contractions, and three contractions sustained for the maximum possible time. The interval between contractions was 30 seconds, and participants had 120 seconds to rest between each evaluation. Pelvic floor (PF) function was subjectively assessed by digital palpation or what acronym stands for (AFA). Contractions were later classified based on muscle response against examiner's fingers according to a newly proposed classification system (table 1). To carry out objective evaluations, perineometry and electromyography were employed. During perineometry, the probe was covered by a non-lubricated condom using a hydrosoluble gel as a lubricant, and was introduced into the vaginal introitus and inflated with air until reaching the vaginal wall as reported by the pregnant. For electromyographic evaluation, the Miotec electromyograph, Miotool model, and Miograph 2.0 software was used. The probe was introduced into the vaginal introitus using hydrosoluble gel as lubricant. Surface electrodes were fixed to the thigh adductors in order to simultaneously record the activity of the accessory muscles during contraction of PF muscles, and another electrode was applied for reference on the anterior superior iliac crest. Muscle activity at rest (baseline) was observed for a period of 30 seconds. The resulting data was processed in root mean square (RMS) with a band-pass filter of 25-500Hz and all values were recorded in μV .

Table 1: Pelvic Floor proposed classification system

| FUNCTION | GRADE | Contraction perineal |
|--------------|--------|---|
| NOT PRESENT | () 0 | No perineal contraction |
| VERY ALTERED | () 1 | weak contraction of perineal fast and slow fibers |
| ALTERED | () 2 | moderate contraction of perineal fast and slow fibers |
| ALTERED | () 2a | moderate contraction of fast fibers and weak contraction of slow fibers |
| ALTERED | () 2b | moderate contraction of fast fibers and strong to slow fibers |
| ALTERED | () 2c | weak contraction of fast fibers and moderate contraction of slow fibers |
| ALTERED | () 2d | strong contraction of fast fibers and moderate contraction of slow fibers |
| NORMAL | () 3 | normal contraction of perineal fast and slow fibers |

Results

Seventeen pregnant women were allocated into two groups: G1 consisting of eight primiparous woman, and G2 including nine multiparous women. Median age was 26 and 29 years in G1 and G2, respectively. BMI was 28.06 Kg/m² in G1 and 34.48 Kg/m² in G2, respectively, classified as overweight and obese according to Atalah (1997). Differences in age and BMI were not statistically significant. Median gestational age significantly differed between G1 (29 weeks) and G2 (26 weeks) ($p=0.046$). AFA results showed that, in G1, 50% of subjects were classified as grade 3, 25% as grade 2 and 25% as grade 1, whereas in G2, 44.5% were grade 3, 22.2% were grade 2 and 2d and 11.1% were grade 1. Comparison of the proportional distribution of AFA between groups revealed no statistically significant difference. Table 2 shows perineometric medians in mmHg for fast contractions (FC) and sustained contractions (SC).

Table 2: Medians of fast and sustained contractions measured by perinometry

| Perineometry | Primiparous women(n=8) | Multiparous women(n=9) | p-value |
|------------------------|------------------------|------------------------|---------|
| Fast Contractions | 7.85 | 7.44 | 0.541 |
| Sustained Contractions | 8.25 | 7.43 | 0.673 |

EMG findings are shown in Table 3. Group medians were compared by the Mann-Whitney test.

Table 3: Electromyographic findings, maximum amplitude median (μV) during PF Fast and Sustained Contractions.

| Electromyography | Primiparous women(n=8) | Multiparous women(n=9) | p-value |
|------------------------|------------------------|------------------------|---------|
| Fast Contractions | 57.95 | 78.76 | 0.541 |
| Sustained Contractions | 55.03 | 64.50 | 0.815 |

Interpretation of results

According to Scheer et al. (2007), pelvic organ support significantly weakens after the first vaginal delivery, but not during gestation. Baessler and Schuessler (2003) reported in a literature review that the strength of these muscles remains unchanged in women undergoing Cesarean sections.

Concluding message

There was no significant difference in PFM function as measured by digital palpation, perineometry and electromyograph between primiparous and multiparous women undergoing Cesarean delivery.

References

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2. Baessler K, Schuessler B. Childbirth-induced trauma to the urethral continence mechanism: review and recommendations. Urology. 2003;62:39-44.
3. Scheer I, Thakar R, Sultan AH, Jones PW. Does pregnancy and delivery affect pelvic organ support? Pregnancy and prolapse assesment PAPA study. In:37th Annual Meeting of the International Continence Society homepage on the Internet; 2007 aug 20-24; Rotherdan. Bristol:ICS;2007 cited 2008 nov 11. Avaliable from: <https://www.icsoffice.org/publications/2007/pdf/0094.pdf>

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| What were the subjects in the study? | HUMAN |
| Was this study approved by an ethics committee? | Yes |
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| Was the Declaration of Helsinki followed? | Yes |
| Was informed consent obtained from the patients? | Yes |