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FAECAL CONTINENCE AND PUDENDAL NERVE FUNCTION IN OLDER WOMEN – DOES VAGINAL DELIVERY OR AGE HAVE THE GREATEST IMPACT?

Hypothesis / aims of study

Childbirth is the principal aetiological factor for faecal incontinence (FI). Our aim was to determine the incremental effects of time and mode of delivery on anal physiology parameters and faecal continence.

Study design, materials and methods

Three cohorts of women who had undergone primiparous forceps delivery (FD) at the National Maternity Hospital 10 (1993), 20 (1983) and 30 (1973) years previously were identified from hospital records. Continence was assessed using a scoring questionnaire, anal manometry, endoanal ultrasound, standardised pudendal nerve evaluation and quantitative electromyographic (EMG) assessment of the external anal sphincter. The results were compared with age- and era-matched controls that had undergone spontaneous first vaginal delivery (SVD), to discriminate between age and mode of vaginal delivery as aetiological factors. To evaluate the differential impacts of age and mode of delivery, an additional cohort of women who had undergone prelabour caesarean sections for their first delivery 10, 20 or 30 years ago and who had never delivered vaginally were assessed.

Results

A total of 74 women who had delivered their first baby in 1973, 1983 and 1993 were investigated. 33 had undergone forceps delivery, 33 had unassisted vaginal deliveries and 8 had undergone prelabour caesarean sections only. The results are tabulated in Table 1.

Mean and median continence scores are low, although increasing continence scores were found to be significantly associated with post-menopausal status (p=0.006). Median anal canal squeeze (84mmHg) pressures were significantly higher (p=0.02) in the 1993 cohort when compared with those who delivered 20 and 30 years ago (58mmHg).

Anal sphincter EMG showed increased mean amplitude of motor unit action potentials, specifically in those 10 (723µV) and 20 (670µV) years since first delivery, consistent with progressive recovery and reinnervation rather than neuropathy. Pudendal nerve conduction studies showed a statistically significant increase associated with postmenopausal status.

No significant differences in continence scores, manometry pressures or neurological findings were observed between FD and SVD groups or indeed between those who had ever had a vaginal delivery and those who had undergone caesarean sections only.

Endoanal ultrasound revealed external anal sphincter defects in 59% following forceps delivery compared with 46% following SVD. These proportions were unaffected by time or subsequent parity.

Interpretation of results

These results are reassuring, indicating that most women do not experience significant long-term deterioration in faecal continence after childbirth, even if they have undergone forceps delivery or have anal sphincter scarring.

Nonetheless, although mean and median continence scores did not indicate significantly impaired continence, continence scores ranged from 0-15, indicating that some women in the community with significantly impaired continence do not seek medical attention. This reluctance to admit to symptoms that are perceived as embarrassing confirms previous epidemiological findings [1].

While manometry pressures in the 1973 and 1983 cohorts were statistically significantly lower than those of the 1993 cohort it is notable that median manometry pressures in these two ‘older’ cohorts were still within normal limits. The reduced pressures, therefore, appear to reflect an age and menopause related effect rather than overt pathology.

The results of pudendal nerve evaluation are interesting. Motor unit morphology does appear to be affected by age with increasing amplitudes being more likely in the younger population. This may represent progressive recovery (reinnervation) from obstetric injury, which ceases with the menopause – evidenced by the fall off of median values in the older population. The

percentage of motor units recruited during voluntary effort is also lower in the postmenopausal population, although median values, again, are within normal limits. Pudendal nerve conduction was evaluated using clitoral anal reflex assessment. Both sensory threshold and waveform latency were statistically significantly increased in postmenopausal women. Although this did not correlate with incontinence symptoms it may represent a physiological effect of childbirth and advancing years rather than a frankly pathological finding.
Notwithstanding the fact that only a small caesarean section population was evaluated, it was very interesting to find that abdominal delivery does not always protect the pelvic floor from the effects of ageing. Evaluation of a much larger cohort of women who have never delivered vaginally is our priority at this juncture.

Concluding message

It appears to be advancing age, rather than obstetric risk factors, that has the greatest impact on the pudendal nerve and faecal continence mechanism. Furthermore, caesarean section does not appear to protect women from all the effects of advancing age on the pelvic floor, and women who have never delivered vaginally are certainly not immune from developing pelvic floor symptoms over time.

Table 1
(*statistically significantly associated with postmenopausal status)

	Units	Accepted normal	1973 (n=24)	1983 (n=29)	1993 (n=21)
Age (range)	Years	N/A	56.2 (50-64)	48.9 (41-63)	41.6 (45-51)
Mode of Delivery Forceps SVD LSCS	N/A	N/A	 10 13 1	 12 12 5	 8 11 2
*Continence score - mean Median (Range)	0-20		1.1 0.5 (0-6)	1.83 0 (0-15)	0.19 0 (0-3)
*Squeeze pressure	mmHg	>60	62.5	54	84
*Motor Unit Recruitment (EMG)	%	70-100%	70	73.7	82.5
*Motor Unit Amplitude (EMG)	μV	200-600	460	670	723
*Sensory threshold (nerve conduction)	mAmps	<5.2	7.6	6.1	5.3
*Latency (nerve conduction)	mSec	<35	39.9	37.3	34.6

References

1. Faecal incontinence: the unvoiced symptom. Lancet 1982;I:1349-51

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