Obstetric Anal Sphincter Injury

Prospective Evaluation of Incidence


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PURPOSE: An obstetrically damaged anal sphincter is the principal cause of the development of fecal incontinence in otherwise healthy females. Reports suggest that such damage complicates as many as 35 percent of primiparous vaginal deliveries, with 13 percent of first-time mothers becoming symptomatic. In maternity units delivering 3,000 patients annually, it would follow that 390 symptomatic patients would develop new symptoms each year. This incidence of dysfunction does not reflect current clinical practice. We have investigated this discrepancy to establish the actual incidence of anal sphincter trauma associated with childbirth. METHODS: During a six-week period, 159 females (105 primiparous and 54 para-I) were prospectively assessed postnatally using a standardized symptom questionnaire, endoanal ultrasound, and anal manometry. This group constituted 84 percent of all eligible deliveries occurring in the unit during the study period. RESULTS: One patient developed fecal urgency after this delivery; there were no reports of fecal incontinence. Anal sphincter injuries were identified ultrasonically in 6.8 percent of primiparous patients, 12.2 percent of para-I patients having vaginal deliveries, and 83 percent of patients having forceps deliveries overall. Manometric data provided confirmatory evidence, with significantly reduced maximum squeeze pressures in patients with a disrupted anal sphincter (P < 0.0005). CONCLUSIONS: A symptom questionnaire is inadequate to identify anal sphincter injuries. The incidence of sphincter injury in relation to vaginal delivery has been overestimated in previous published work. This study demonstrates that the true incidence is 8.7 percent overall and that symptoms of sphincter dysfunction are uncommon—this is in keeping with current clinical practice. [Key words: Anal physiology; Vaginal delivery; Incontinence; Endosonography]


Obstetric anal sphincter injury is the principal causative factor in the development of fecal incontinence in otherwise healthy females.1 The incidence increases with further deliveries, as a result of prior injuries to the sphincter complex that are compounded.2-4 Third-degree tears are associated with less than 3 percent of normal vertex deliveries5 but are more common in relation to instrument delivery.6 It has been suggested that damage to the anal sphincter musculature may occur in the absence of either a clinically obvious tear or symptoms, with one recent study estimating that such occult trauma complicates up to 35 percent of primiparous normal vaginal deliveries.7 In the same study, 13 percent of the primiparous group developed symptoms of anal sphincter dysfunction after parturition. By extrapolation, a typical maternity unit delivering 3,700 patients annually would therefore expect to identify more than 1,000 patients with anal sphincter injuries and more than 400 patients with fecal urgency or incontinence or both after vaginal delivery every year. This is in marked contrast to what is seen clinically, particularly when the referral rate for repair of obstetrically damaged anal sphincters is considered.8-10

PATIENTS AND METHODS

This study prospectively assessed the real incidence of anal sphincter injury after childbirth in a consecutive group of primiparous and para-I patients. The latter group were chosen to assess the effect of a single subsequent delivery on the pelvic floor, thus avoiding the compounding effect that multiple previous deliveries may have. For clarity, “primiparous” and “para-I” in this article refer to each subject’s parity before this delivery (at the time of completion of the initial questionnaire). The study was approved by the local ethical committee.

Except for parity, the only criterion for inclusion was willingness to take part. After consent all participants were seen and evaluated by the same investigator, thus minimizing any interobserver variation in
the assessment. Because the study was based in a maternity unit, tools of investigation had to be acceptable to the patients, quick to perform, and also have a place in any obstetric clinic or postnatal ward. We used a standardized questionnaire, endoanal ultrasound scanning, and a hand-held manometer. All investigations were performed in the left lateral position. For each participant all labor and delivery data were recorded after the assessment, thus ensuring an unbiased assessment and interpretation of the findings.

Pelvic Floor Dysfunction Questionnaire

(Table 1)

The questionnaire used a standardized format to assess the patients' antenatal anorectal function. It was then repeated at one month postnatally as part of the routine postnatal check-up by community midwives.

Endoanal Ultrasound

Endoanal ultrasound is a validated technique that is highly accurate for the detection of abnormalities in anal sphincter morphology.11–13 A spinning 10-mHz scanner probe is contained in a 1.7-cm diameter sonolucent plastic cone, producing a 360° view of the sphincter (Brüel and Kjær Ltd., Nacrum, Denmark). This apparatus gives high-resolution images in terms of delineation of the various sphincter components and any of its defects. In addition to being easy to use, it causes minimal discomfort and is therefore suitable for assessing patients in the early postnatal period. Serial pictures were acquired at 2 to 3 cm, 1 to 2 cm, and 0 to 1 cm from the anal verge. Appearances were graded as “normal” or “disrupted” if there was a defect present at any level in either of the two sphincter components. All images were stored as hard copy and later validated by two independent observers experienced in the interpretation of endoanal ultrasound scans.

Anal Canal Manometry

A portable manometer fitted with a single-channel microtransducer (Gaeltec Ltd., Dunvegan, Scotland) 2 mm in diameter was used to define maximum resting and maximum squeeze pressures in the anal canal. This equipment is similar to standard anorectal physiology laboratory equipment for basic manometric measurements in our laboratory.7,14,15 Measurements were taken at 2 to 3 cm, 1 to 2 cm, and 0 to 1 cm from the anal verge using a standard stationary pull-through method and a maximum value derived.

RESULTS

One hundred fifty-nine consecutive patients were examined during the course of the study. Of these, 105 were primiparous, and 54 were para-I. They represented 84 percent of all eligible patients delivering at the unit within the study period. All were assessed within five days of delivery, the majority within seventy-two hours. Median age was 25 (range, 15–43) years. None were diabetic or known to have neurologic or previous anorectal problems. There were 120 vaginal births, of which 114 were normal vertex deliveries (NVD) and 6 were by forceps. All forceps deliveries were accompanied by a posterolateral episiotomy. Thirty-nine patients required a cesarean section. No third-degree tears occurred in the study group.

Data were analyzed statistically, where appropriate, using nonparametric tests (Mann-Whitney UTest) for continuous variables. A P value of less than 0.05 was taken to be significant.

Primiparous Group (n = 105)

There were 73 normal vaginal deliveries in the primiparous group. Five patients required forceps, five had an emergency cesarean section (EMCS), and there were 22 planned cesarean sections (ELCS).

Symptomatic Questionnaire (Table 1). None of the primiparous group had any symptoms of anal sphincter dysfunction before delivery. At one month post-