

# The importance of pubic pain following childbirth: a clinical and ultrasonographic study of diastasis of the pubic symphysis

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## SUMMARY

This study aimed to investigate the diagnosis and consequences of pubic symphysis diastasis postpartum, in particular the use of ultrasonography to measure interpubic gap. It was a prospective follow-up study, which included an ultrasonographic comparison between symptomatic mothers and controls, set in Morriston Hospital, Swansea. Nine women presenting with unusual pubic pain post-partum were included: there were no exclusion criteria. Forty-two controls were also studied: the only exclusion criterion was unusual pubic pain. Interpubic gap was measured with ultrasonography. Follow up was undertaken for a median of 37 months (range 2-57). An abnormal interpubic gap was found in all symptomatic women. The incidence of diastasis was found to be at least one in 800 deliveries and significant long-term disability was found in three women. Diastasis is commoner than generally acknowledged and its consequences may be severe. Interpubic gap confirms diagnosis but does not appear to predict outcome. Ultrasonography aids diagnosis and follow up.

## INTRODUCTION

During childbirth changes occur in ligaments and joints under hormonal and mechanical influences. Post mortem studies<sup>1</sup> have shown features of mechanical damage in all women delivered vaginally of a baby over 2.3 kg. In some, sufficient separation of the pubic symphysis causes the clinical problem of diastasis of the pubic symphysis.

Little data are available concerning the long-term consequences of diastasis, although they are generally felt to be minimal<sup>2</sup>. Studies in the developing world indicate that long-term problems can occur in about 3% of patients undergoing surgical symphysiotomy—an alternative to Caesarian section<sup>3</sup>.

This study aimed to investigate the diagnosis and consequences of diastasis of the pubic symphysis following childbirth, in particular the use of ultrasonography to measure interpubic distance. We have previously reported the ultrasound test and interim results<sup>4</sup>.

## MATERIALS AND METHODS

Over 21 months (from August 1987), nine women were referred to the authors, at Morriston Hospital, with unusual pubic pain postpartum. Exacerbation by weight bearing and severity, were the unusual characteristics. Plain radiology was

used to measure interpubic gap in the first two patients. Computerized tomography (CT) scanning was also undertaken in these two patients to look at the sacro-iliac joints. No abnormality was found in these joints and as there was no clinical evidence of sacro-iliac problems no further CT scanning was done. Subsequent patients underwent ultrasonographic assessment alone. This hospital undertook 7350 births during this time. These women were followed up prospectively.

Practical considerations dictated the follow up intervals. Some of the patients refused regular ultrasound scans during follow up.

During the same period 42 controls underwent ultrasonographic examination, for the purposes of this study, within 2 days of normal delivery. None of these controls had any of the features of pain outlined above.

Ultrasonography was undertaken with a 7.5 MHz linear array transducer, by one radiologist (LM). Interpubic distance was measured with electronic callipers. Such an examination is quick and causes only minimal discomfort. The diagnosis of diastasis was made when the interpubic gap was 10 mm or more at the narrowest point<sup>5</sup>, either on ultrasonography and plain radiography. Non-parametric statistical analysis was used<sup>6</sup>.

## RESULTS

The median interpubic gap was 20.0 mm (range 10.0-35.0) for the seven symptomatic women in whom ultrasound measurement was made. It was 4.8 mm (interquartile range 4.3-5.1) for the controls. There was no overlap between

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these groups, and the difference was statistically significant (Mann-Whitney U test, 95% confidence interval of the difference 7.9–19.7 mm,  $P < 0.001$ ). In the two symptomatic cases in whom ultrasonographic measurements were not made, a diastasis was confirmed by plain radiography. The symptomatic group was followed up for a median of 37 months (range 2–57; see Table 1).

No women complained of prepartum pain. All complained of pain immediately postpartum, except in one woman in whom the pain was initially masked by epidural analgesia. When the analgesia had worn off pain was felt. A consistent feature of the pain was its exacerbation by weight bearing. There was symphyseal tenderness and a palpable interpubic gap. The diagnosis was made within 24 h of delivery, in all cases. Treatment was by bedrest and physiotherapy supervised mobilization. In two of the symptomatic women long-term follow up was not possible as they moved away from the area.

**DISCUSSION**

The incidence of diastasis was found to be 0.12% (about 1/800; 95% confidence interval 0.04–0.21). This is similar to other reports, for instance 0.15% (95% confidence interval 0.06–0.23) from nine cases<sup>7</sup> and 0.17% (95%

confidence interval 0.07–0.26) from 11 cases<sup>8</sup>. Others feel the incidence to be much lower<sup>9</sup>, although underdiagnosis probably occurs<sup>8</sup>. All estimates are, of course, probably underestimates.

The results for the normal controls may indicate that the upper limit of normal should be revised down. The only data that we have found in the English speaking literature, using Medline computer searching, are those of Hagen<sup>5</sup>. He has suggested the 10 mm upper limit of normal that has been used in the present study.

Severity and relation to weight bearing, of postpartum suprapubic pain, allow identification of patients with diastasis. Ultrasonography provides a simple means of measuring interpubic gap, without exposure to ionizing radiation. Plain radiography adds little to management.

Measurement of interpubic gap confirms the diagnosis, but does not appear to predict outcome. In the present series the only patient in whom the measured gap did not return towards normal, was the one in whom disability was the worst. Failure of reduction of interpubic gap may thus be more useful clinically, than degree of separation at presentation.

Further evidence for this, is that the three women with the greatest fall in interpubic gap between presentation and

Table 1 Summary of results of women complaining of pubic pain

Case	Parity	Weight (kg)	Labour (h)	Interpubic gap* (mm)		Problems at last follow up (time post partum)
				Presentation <sup>†</sup>	Follow up <sup>‡</sup>	
1	2	2.36 } 1.90 } Twins	Normal (11)	—	12 (2 months)	Low back pain (2 months)
2	1	4.25	Normal (13.5)	—	10 (17 months)	None (57 months)
3	1	2.92	Normal (3)	20	2 (5 months)	None (5 months)
4	2	3.80	Normal (8)	20	8 (5 weeks)	Pubic pain, low back pain and dyspareunia (47 months)
5	1	4.03	Abnormal (18)	35	15 (33 months)	None (40 months)
6	2	4.20	Abnormal (9.5)	10	4 (26 months)	Pubic pain and dyspareunia (37 months)
7	1	3.37	Normal (9.9)	25	8 (25 months)	None (36 months)
8	1	3.40	Normal (6.5)	15	6 (46 months)	Pubic pain, dyspareunia and severe disability (57 months)
9	1	3.40	Normal (6.5)	12	12 (8 months)	In wheelchair—severe disability (36 months)

\*As measured by ultrasonography

<sup>†</sup>Within 24 h of delivery

<sup>‡</sup>Last follow-up ultrasonographic measurement

last follow-up scan, were all asymptomatic at last follow up. These interpretations must be guarded, especially in view of the difference in follow-up times.

With conservative management, all women improved symptomatically within the first few weeks. Nevertheless, five patients admitted symptoms at last follow up. These five included three of the seven women followed up for over 3 years, one of whom was wheelchair bound. Others have reported the use of internal fixation<sup>7</sup> and such surgery is being considered for Cases 8 and 9.

The long-term consequences of pubic symphysis diastasis may be severe. Underdiagnosis may be reduced by greater awareness by attending staff. We feel that orthopaedic follow up should be undertaken. Ultrasonography is a useful diagnostic aid, although the relation between degree of separation and outcome needs elucidation.

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