

Can we improve on the diagnosis of third degree tears?

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Abstract

Objectives: To assess if the clinical diagnosis of third degree tears could be improved by increased vigilance in perineal assessment. **Study design:** A prospective observational study of all nulliparous vaginal deliveries sustaining perineal trauma (483) over a 6-month period at Queen Charlotte's Hospital. **Results:** A total of 121 women were independently assessed and compared to a control group (362). Both groups were similar for gestation at delivery, mode of onset of labour, analgesia used, duration of labour, mode of delivery, birthweight and head circumference. The overall rate of detected third degree tears increased from 2.5 (rate for 6 months prior to the study) to 9.3% during the study, $P < 0.001$. There were significantly more third degree tears detected in the assessed group compared to the control group (14.9% versus 7.5%), $P = 0.01$. **Conclusions:** With increased vigilance, it is possible to improve on the clinical diagnosis of third degree tears. This study highlights the need for improvements in training of midwives and trainee doctors in perineal anatomy and recognition of severe trauma. Improvements in diagnosis allow appropriate repair which may lead to improvements in long-term outcome. © 2002 Elsevier Science Ireland Ltd. All rights reserved.

Keywords: Diagnosis; Perineal trauma; Third degree tears

1. Introduction

Obstetric trauma is one of the most common causes of faecal incontinence. Both direct mechanical injury to the anal sphincter and progressive denervation of the muscles caused by pudendal nerve damage are believed to be responsible for this. The reported incidence of clinically apparent third degree tears varies up to 3.3% [1], however, it has been shown that a third of primiparous women have a sphincter defect on anal endosonography 6 weeks postpartum [2]. This discrepancy in the incidence of mechanical injury diagnosed clinically compared to sonographically may be due to missed clinical diagnosis of third degree tears or possibly due to blunt trauma to the sphincter without damage to other perineal muscles which would effectively make clinical diagnosis impossible.

This study aimed to establish if, with increased vigilance, it was possible to improve on the clinical diagnosis of a third degree tears, and therefore, allow appropriate primary surgical repair. It has been shown that the risk of sphincter damage is greatest during the first vaginal delivery [2] and,

therefore, only women undergoing their first vaginal delivery were included.

2. Methods

All women having their first vaginal delivery and sustaining perineal trauma at Queen Charlotte's Hospital from 12 August 1999 to 12 February 2000 were studied. A non-randomly selected subgroup of these women had an independent medical assessment of their perineum prior to suturing (this included all women having a vaginal delivery during office hours). This created two groups to be compared; those who had an additional assessment (the assessed group) and those managed routinely (the control group).

The assessed group were initially assessed by the midwife or doctor performing the delivery and then by a single independent assessor (clinical research fellow). Perineal trauma was categorised as first degree tears (involving vaginal epithelium only), second degree tears (involving the perineal body, but not the anal sphincter), third degree tears (involving the external +/- internal anal sphincter), fourth degree tears (involving the anal sphincter and anal epithelium) or episiotomy (if this extended to include the anal sphincter it

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was re-categorised as a third degree tear). Our unit practices mediolateral as opposed to midline episiotomy. Identified third or fourth degree tears were reviewed by the labour ward specialist registrar and then repaired in accordance with the labour ward guidelines.

Labour and delivery details were collected for all cases. The control group were identified from the delivery register and their details, including degree of perineal trauma, obtained from the labour ward database.

Statistical analysis included χ^2 -test with Yate's correction to compare proportions in the two groups, this was substituted with the Fisher's exact test for small sample sizes. The unpaired *t*-test was used for normally distributed continuous variables and the Mann–Whitney *U*-test was used for non-normally distributed continuous variables.

3. Results

Of 622 women undergoing their first vaginal delivery during the study period 483 women sustained perineal trauma, all were nulliparous except for three women who had one previous delivery by caesarean section. A total of 121 women were assessed by the independent assessor (assessed group) and 362 were not independently assessed (control group).

Both groups were similar for average gestation at onset of labour, method of onset of labour, type of analgesia used, length of first and second stage, mode of delivery, and neonatal factors—birthweight and head circumference (see Table 1). Table 2 demonstrates the rates of perineal trauma in each group. Analysis to calculate the standardised residuals to detect where the greatest difference lies suggests more second/third degree tears and less episiotomies in the assessed group.

In total, there were 43 third degree tears and 2 fourth degree tears (both fourth degree tears were in the control group, but are included with third degree tears for analysis). Cases of detected third degree tears were reviewed by the labour ward specialist registrar who agreed with the diagnosis in all cases. The overall rate of third degree tears for all of these 483 women was 9.3% compared with 2.5% in a similar group of women in the 6 months prior to the study and 4.6% in the 6 months following the study. There were significantly more third degree tears in the assessed group, 18 (14.9%) compared to 27 (7.5%) in the control group ($P = 0.01$). This was despite similar modes of delivery, although due to small numbers within each subgroup, this was underpowered to show statistical significance, however, the rate of third degree tears in those assessed was twice that in the control group for each mode of delivery (see Table 3).

In the assessed group, only 11 out of the 121 women (9.1%) had been diagnosed by the individual performing the delivery suggesting that nearly 40% of the total diagnosed third degree tears in the assessed group ($n = 18$) would have been missed. In those cases of third degree tears originally

Table 1
Characteristics of labour and delivery

	Assessed (%)	Control (%)	P-value
Mean gestation at onset of labour (weeks)	39.5	39.6	NS
Onset of labour (%)			
Induced	26 (21)	107 (30)	
Spontaneous	95 (79)	255 (70)	NS
Type of analgesia (%)			
Nil	3 (2.4)	13 (3.6)	NS
Entonox	23 (19)	71 (19.6)	
Pethidine	1 (0.8)	1 (0.3)	
Pudendal	1 (0.8)	3 (0.9)	
CSE	93 (77)	274 (75.7)	
Mean duration of first stage (min) (S.D.)	495 (201)	491 (281)	NS
Mean duration of second stage (min) (S.D.)	103 (56)	102 (62)	NS
Mode of delivery (%)			
SVD	72 (60)	205 (57)	NS
Ventouse	35 (29)	86 (24)	
St. forceps	10 (8)	52 (14)	
Rot. Forceps	4 (3)	16 (4.5)	
Breech	0	3 (0.5)	
Mean birthweight (kg)	3.32	3.33	NS
Mean head circumference (cm)	34.5	34.6	NS

CSE: combined spinal epidural; st. forceps: straight forceps; SVD: spontaneous vaginal delivery; rot. forceps: rotational forceps.

Table 2
Rates of perineal trauma

	Assessed (%)	Control (%)	P-value
First degree	18 (15)	58 (16)	<0.0001
Second degree	48 (40)	90 (25)	
Third/fourth degree	18 (15)	27 (7.5)	
Episiotomy	35 (30)	187 (51.5)	

missed in the assessed group, once the diagnosis was made there was no disagreement with the midwife or doctor who had performed the delivery and initial assessment.

Overall third degree tears occurred more often with instrumental deliveries and most often with forceps delivery. The 3.2% of SVD, 14.9% of ventouse deliveries and 22% of

Table 3
Rates of third degree tears for each mode of delivery

	Assessed (%)	Control (%)	P-value
SVD	4 (5.7)	5 (2.4)	0.17
Ventouse	8 (22.9)	10 (11.6)	0.10
St. forceps	4 (40)	10 (19.2)	0.09
Rot. forceps	2 (50)	2 (12.5)	0.16
Total	18 (14.9)	27 (7.5)	0.01

SVD: spontaneous vaginal delivery; st. forceps: straight forceps; rot. forceps: rotational forceps.

all forceps deliveries sustained third degree tears ($P \leq 0.0001$).

4. Discussion

In our unit, we were able to improve the clinical diagnosis of third degree tears by increased vigilance. The incidence of third degree tears in the control group trebled compared to the 6 months prior to the study (7.5% versus 2.5%), although both groups were managed routinely and this is likely to be due to the Hawthorne effect with increased awareness of labour ward staff of the importance of perineal assessment whilst the study was in progress. This increased awareness was partially sustained in the 6 months following the study (rate of third degree tears 4.6%). In addition, we were able to show that the involvement of an individual assessor of registrar grade was able to further improve the diagnosis to a rate of 14.9%. It was not possible to remain blinded to the intended outcome of this study, however, the labour ward specialist registrar reviewed and was involved in the repair of all third degree tears and this helped to prevent bias.

It is not obvious why there were less episiotomies in the assessed group. A proportion of this can be explained as 11 episiotomies in this group had extended to include the anal sphincter, and therefore, were re-categorised as third degree tears. This accounts for some of the difference, however, it may also be that due to the reduced frequency of episiotomies women were at increased risk of third degree tears. The evidence that relates episiotomy to severe perineal trauma is contradictory [3,4], but in our study over half of the cases of third degree tears in the assessed group resulted from extended episiotomies, and therefore, the increased rate of severe trauma in this group is unlikely to be due to a lower episiotomy rate.

Like other studies [4,5], we have shown that instrumental delivery was associated with increased risk of injury to the anal sphincter, occurring more often with forceps delivery than ventouse delivery.

Our study has only assessed the incidence of severe perineal trauma and has not looked at the outcome for these women. Sultan et al. [4] have shown that despite accurate diagnosis and subsequent primary sphincter repair half of such women will still experience symptoms of anal incontinence, and therefore, more accurate diagnosis may not result in improved

outcome. However, the reported incidence of symptoms of some form of anal incontinence to some degree in all women following their first vaginal delivery is as high as 25% [5] and, therefore, it may be that in the subgroup of women with undiagnosed (and, therefore, inadequately repaired) third degree tears the true incidence of symptoms is greater. The recognition of severe perineal trauma will enable appropriate repair and counselling and the opportunity to offer closer postnatal follow up care. It is well recognised that there is considerable under reporting of anal incontinence [4] and it is possible that the above measures may help women feel more comfortable in reporting symptoms.

Nearly 40% of all third degree tears in the assessed group had been missed by the midwife or doctor responsible for initial perineal assessment. This supports the finding of Sultan et al. [6] in their audit of midwives and trainee doctors suggesting a deficiency and dissatisfaction in training in perineal anatomy and repair.

We suggest that with increased vigilance it is possible to improve on the clinical diagnosis of anal sphincter disruption. This lends support to the concept that we need to improve the training of midwives and trainee doctors in perineal anatomy and recognition of severe perineal trauma. Further, larger studies are required to assess whether improving the diagnosis of third degree tears can lead to improved surgical repair and follow up such that we are able to improve the overall symptomatic outcome for women.

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