

# Practices Regarding Diagnosis and Management of Third and Fourth Degree Perineal Tears

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## Abstract

**Objective:** To review our practice of diagnosing and managing third and fourth degree perineal tears.

**Methods:** Retrospective case series conducted by reviewing medical records of all women having singleton, full term vaginal delivery at Aga Khan University Hospital, Karachi from November 1990 to October 2005.

**Results:** The frequency of obstetric anal sphincter injury (OASI) in our department was 0.5% (135) out of a total of 26,844 vaginal deliveries. Seventy five percent were nulliparous (102). Forceps delivery was performed in 86 patients out of 135 (63.7%). In only 28 patients (20.7%), the diagnostic criterion for classification of third degree tears was used. For the repair of third degree tear end-to-end method was performed on 97 (71.9%) patients. Twenty nine women had subsequent uncomplicated vaginal deliveries. None of these patients were subjected to endo-anal ultrasonography and/or anal manometry. The documented evidence regarding planning of future delivery was found in only 4 cases.

**Conclusions:** The frequency of distribution of third and fourth degree perineal tear in our study was 0.5% which is significantly lower than clinically suspected or recognized. Our study shows that 75.5% patients were nulliparous and the use of forceps for delivery was 63.7% among more than 50% of these patients. This indicates that forceps delivery if possible should be avoided or substituted with vacuum delivery which has a lower incidence of OASI. Most of the management was according to international accepted standards except that 72.3% were stitched under local analgesia (JPMA 58:244;2008).

## Introduction

Anal sphincter rupture is reported in about 2.5% of vaginal deliveries in centres that practice mediolateral episiotomies<sup>1</sup> and 11% in centers that practice midline episiotomy<sup>2</sup>. Around 3-10% of women after childbirth suffer from faecal incontinence<sup>3</sup> and this high figure is because of occult anal sphincter injury that has been missed or it has been wrongly classified as a second degree tear.

Women are biologically more vulnerable to sustain perineal injuries as they have low maximum resting anal pressure, low voluntary contraction pressure and more perineal descent on straining as compared to men. Increasing age leads to perineal descent at rest, decreased pudendal nerve conduction, a fall in resting anal pressure and decreased anorectal sensory function while parity only leads to lower anal squeeze pressure.<sup>4</sup> The female perineal body is a mass of interlocking muscular, facial and fibrous components lying between the vagina and anorectum. The perineal body is also an integral attachment point for components of the urinary and faecal continence mechanism, which may be damaged during childbirth.

Obstetric anal sphincter trauma is the most common cause of faecal incontinence and can have devastating effects on quality of life. Repair of injuries to the perineal body caused by spontaneous tears or episiotomy are topics

too often neglected in medical education.<sup>5</sup> There was statistically significant variation seen among UK consultants regarding their practice of managing perineal tears<sup>6</sup> in spite of the Royal College of Obstetricians and Gynecologists issuing guidelines in 2000 regarding the methods and materials used in perineal repair.<sup>7</sup> These guidelines had a significant impact on the outcome following 3rd or 4th degree perineal tears.

There is no study stating the incidence and/or the outcome of perineal trauma among our population and since there are racial differences in the distribution of elastin and collagen fibres of pelvic tissues, our results can be expected to be different from the Caucasian population. We reviewed our medical records from November 1990 to October 2005 to look into our practices of diagnosing and managing third and fourth degree perineal tears.

## Methods

This study was a retrospective case series conducted by reviewing medical records of all women having singleton, alive, full term delivery at Aga Khan University Hospital, Karachi from November 1990 to October 2005. We have a system of computerized database ICD (9th Edition 2006 USA) international coding for vaginal births are 73.59 73.6, 72.71, 72.21 and 3rd and 4th degree perineal tears ICD - 9 - CM (664.21 and 664.30 respectively). We

defined third degree as disruption of anal sphincter muscles and this was further subdivided as grade 3a i.e. <50% thickness of external sphincter torn, grade 3b as >50% thickness of external sphincter torn, and grade 3c when internal sphincter was also torn. Fourth degree tear was defined as a 3rd degree tear with disruption of the anal mucosa. A manual search of medical records was also done to validate the ICD code search. We reviewed the different definitions used by consultants for labeling the case as having grade 3 a, b, or c degrees. We also reviewed the methods of repairing the perineal tears. The data collected was coded computed and analyzed by SPSS (version 13.0).

## Results

During the period November 1990 to October 2005 there were 26,844 women who gave vaginal birth to singleton full term live babies which included 3087 (11.49%) forceps deliveries. Only 135 (0.50%) medical records showed cases labeled as 3rd or 4th degree perineal tears. Table 1 shows the details of ante partum risk factors. The majority of women were nulliparous (75.5%) and 10.4% had gestational diabetes. Induction of labour was

**Table 1. Ante partum Risk factors (n=135).**

Age (years)	26.34	(18-39)
Parity (Nulliparous)	102	(75.5%)
Induction of labour	55	(41.4%)
GDM/DM	14	(10.4)
Previous pelvic surgery	26	(19.25)

\* Values in parenthesis are given as median (range) or percent

**Table 2. Intrapartum details of women with perineal tears (n=135).**

<b>Type of delivery</b>		
SVD with episiotomy	33	(24.4%)
SVD without episiotomy	11	(8.1%)
Vacuum	5	(3.7%)
Forceps	86	(63.7%)
<b>Station for instrumental deliveries</b>		
Ischial spine and 1 cm below	35	
2 cms below spine	56	
<b>Delivered by</b>		
Resident	48	(34.6%)
Consultant	87	(63.9%)
<b>Type of episiotomy</b>		
Mediolateral	118	(87.40%)
Midline	6	(4.4%)
<b>Intrapartum analgesics</b>		
Epidural	30	(22.4%)
Birth weight	3.2 Kg	(range 2 Kg - 4.8 Kg)

\* Values in parenthesis are given as median (range) or percent.

**Table 3. Diagnostic and operative details (n=135).**

Fourth degree tears	=14	
Diagnostic criteria used for 3rd degree tear classification = 28		
	3a = 25	
	3b = 2	
	3c = 1	
Not used	93	
Type suture material used		
Chromic	16	(11.9%)
Vicryl	119	(88.1%)
Technique of sphincter repair		
Overlapping	7	(5.2%)
End to end	97	(71.9%)
Not documented	31	(23%)
*IDC passed	37	(27.4%)
Not passed	98	(72.6%)
Antibiotics used	90	(66.7%)
Not used	45	(33.3%)
Postoperative follow up regarding incontinence and planning next delivery		
Documented	4	(3%)
Not documented	131	(97%)

\*Indwelling catheter

performed in 41.4% of cases. The history of previous pelvic surgery including difficult instrumental delivery and previous bad perineal tears and episiotomy were found in 19.25%. Table 2 shows the details of features of second stage of labour. The women delivered by forceps were 86 (63.7%) and these were conducted at station 2 cm below ischial spine and by consultants, Forty eight (34.65%) deliveries conducted by residents were supervised by consultants.

Table3 shows diagnostic and operative details. Diagnostic criterion for classification of third degree tear was used in only 28 (20.7%) cases. Majority of cases were repaired by end to end method (71.9%) and with Vicryl suture (88.1%) under local analgesia and in the labour room. Antibiotics were given to 90 (66.75%) and only 37 (27.45%) cases were catheterized. Twenty nine women had subsequent uncomplicated vaginal deliveries while the documented evidence regarding planning of future delivery was found in only 4 cases.

## Discussion

The frequency of third and fourth degree tears in our study is 0.5% over a 15 year period. Although the literature gives an incidence ranging from 0.6%-2.5%<sup>8,9</sup> our low incidence may be due to under-reporting of cases and missed diagnosis of 3a grade of 3rd degree tear which is

wrongly labeled as 2nd degree tear. Since the introduction of endoanal ultrasound, occult damage to the anal sphincter has been reported in prospective studies as up to 36% of women after vaginal delivery.<sup>10</sup> There is substantial literature addressing the role of various risk factors in the causation of third and fourth degree perineal tears. The important risks factors appear to be instrumental deliveries, use of midline episiotomy, nulliparity, short perineal body, Asian race, occipito-posterior position and foetal macrosomia.<sup>11</sup> In our study large majorities were nulliparous (75.5%) and the median birth weight was 3.2 kg. Williams et al reported that 80% patients having third degree tears were nulliparous.<sup>12</sup>

The risk of an anal sphincter rupture at delivery increases five to seven fold when there has been a similar rupture at a previous delivery.<sup>13</sup> In a recent study by Dandolu et al<sup>14</sup> it was found that women with prior fourth degree tear had a much higher rate of recurrence than those with prior third degree laceration (7.73% versus 4.69%) and the rate for recurrent laceration was significantly lower than the rate for initial laceration. Forceps delivery with episiotomy had the highest risk for recurrent laceration (17.7%, odds ratio 3.6, 95% confidence interval {CI} 2.6-5.1). In contrast, we had only 26 cases (19.25% versus 80.75 %) with history of previous pelvic surgery and this included 10 cases of previous perineal tears with forceps and 16 of extended episiotomy. It appears that use of instrumentation with episiotomy is destructive to the perineum, irrespective of whether there was prior severe perineal laceration or not.

The two modifiable factors are use of episiotomy and instrumental delivery. Our data shows that 24.4% received episiotomy and out of instrumental deliveries, forceps use was very high (63.7%). In another study by Christianson et al, delivery with forceps (51.6%) was associated with a 10- fold increased risk of perineal injury compared to non-instrumental deliveries.<sup>15</sup> The association was similar after adjustment for age, race, parity, mode of delivery episiotomy, duration of labour, birth weight and oxytocin use (OR, 11.9; 95%CI, 4.7-30.4).

The classification of perineal tears used in our study is given by Sultan<sup>16</sup> and is included in a guideline produced by the Royal College of Obstetrician and Gynaecologists.<sup>17</sup> We found the use of this classification in only 20.7% of cases. Since increasing severity of initial injury is associated with a poorer outcome and hence there is a need for a classification that is consistent and universally accepted so that clinicians can identify the full extent of injury and perform an appropriate repair.

In our study majority of surgeons (71.9%) used end to end technique for repair of obstetric anal sphincter injury

(OASI) and used delayed absorbable Polyglactin (vicryl) suture (88.1%) under local analgesia xylocaine (72.6%) in the labour room (85.9%). In a randomized controlled trial, comparing end-to-end and overlap techniques, no significant difference in continence symptoms, anorectal manometry or ultrasound appearance of the sphincter was identified at 3 months follow up.<sup>18</sup> In a protocol for principles and technique of primary sphincter repair, it is recommended that repair should be performed after adequate exposure under General or regional anaesthesia (spinal, epidural, caudal) and in the operation room.<sup>19</sup> Use of PDS 3-0 polydioxalone is preferred for sphincter muscle repair. Foleys catheters for 24 hours, Broad spectrum antibiotic for a week and a stool softener for 2 weeks are recommended.<sup>19</sup>

Unfortunately we could only find documented follow-up for 4 patients with regard to outcome of repair, anal incontinence and planning of next delivery. The medical records showed that out of these 135 cases, twenty patients had a spontaneous vaginal delivery in the subsequent pregnancy with no tear and nine patients were delivered by LSCS for other obstetric indications.

There is very limited data in the literature regarding the best mode of subsequent delivery after anal sphincter laceration. The mean prevalence of anal incontinence reported is 37%<sup>20</sup> however; frank faecal incontinence affects 9% (range 2-23%). Using anal endography, persistent anal sphincter defects following repair were identified in 40-91% of women patients.<sup>21</sup>

Although the exact incidence of faecal incontinence is unknown, it is common, especially in older individuals and in women.<sup>22,23</sup> The causes of faecal incontinence are multifactorial, obstetric trauma being one of the common ones. Anal incontinence may present many years after delivery and can worsen with time. The two factors implicated in the development of faecal incontinence after vaginal child birth include pudendal neuropathy and structural damage to the anal sphincter.

In order to counsel women with previous perineal tears appropriately, it is useful to have a symptom questionnaire together with anorectal manometry and trans-anal ultrasound.<sup>21</sup> Current evidence suggests that long-term reduction in anal sphincter function after injury is further aggravated by subsequent deliveries.<sup>24</sup> Recommendations in regard to mode of subsequent delivery for women with OASI (obstetric anal sphincter injury) must be influenced by patients' own wishes. The risk for complications associated with elective Caesarean section is low and must be weighed against the risk for aggravated incontinence in this particular group of women.

## Recommendations

All women who sustain a third or fourth degree tear should be assessed by a senior obstetrician six to eight weeks after delivery. Ideally all women should undergo anorectal investigations (endosonography and manometry) at follow up. To protect the perineum and anal sphincter, it may be wise to substitute vacuum for forceps whenever possible and avoid episiotomy in women with prior anal sphincter laceration. Adopting uniform definitions for perineal and anal sphincter injuries during childbirth will avoid under-reporting of true obstetric anal sphincter injury and will be useful for documentation in future audits and in case of litigation. All women with history of second degree lacerations should be questioned with regard to faecal incontinence at their postnatal visits and those that admit to faecal incontinence should be followed up for longer intervals so that occult injuries and under reported cases can be discovered and appropriate investigations and future mode of delivery can be planned.

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