

INCIDENCE OF THIRD AND FOURTH DEGREE OBSTETRIC TEARS: IMPACT OF A LEARNING PROGRAM ON DIAGNOSIS AND MODE OF DELIVERY.

Hypothesis / aims of study

Third and fourth degree obstetric anal sphincter tears are a complication of delivery with an incidence of 1-3% of all vaginal deliveries according to literature reviews.

High-order tears (third and fourth degree) represent the first well-known cause of anal incontinence in healthy women during the puerperium. Anal sphincter injury is associated with significant morbidity and has an important emotional impact on women who suffer from it. A high number of these injuries can remain occult if they are not diagnosed during the delivery. The correct training of all professionals attending on the labor ward enables better diagnosis and reparation of intra-delivery tears and it may decrease associated morbidity.

In 2007, a specific program was started in our Department aimed at improving the diagnosis, management and subsequent follow-up of anal sphincter tears. As a result, some actions have been carried out: the implementation of a specific diagnosis and management protocol, the start-up of a perineal clinic to inform and follow up on affected patients, specific clinical sessions and theoretical/practical suturing and knot-tying workshops on animal model for all people involved in obstetric attention.

The aim of this study was to evaluate the annual incidence of high-order tears during the last 4 years. We looked to analyze changes in incidence before and after the implementation of a training program. We also intended to assess the possible impact of that program on obstetrical attention in our Department.

Study design, materials and methods

We performed prospective analysis on the annual incidence of third and fourth degree obstetric anal sphincter tears during the period: 1 January 2006 - 31 December 2009.

We included 4526 single cephalic vaginal deliveries that took place in our Department during that period. In order to explain the observed results, we also analyzed the different modes of vaginal delivery, their annual variations and the incidence of high-order tears for each one.

Results

A total of 97 third and fourth degree perineal tears were found in a total of 4526 single cephalic vaginal deliveries, involving an overall incidence of 2.12% for that period (see Table 1, distribution per year).

Afterwards, we analyzed the incidence of third and fourth degree perineal tears for each different mode of vaginal delivery (Table 2). Spontaneous vaginal delivery had the lowest incidence (1.1%). Instrumental vaginal delivery increased that incidence: in vacuum extraction incidence was intermediate (2.7%); in Forceps it was 4.5% and in Thierry's spatulas, 4.9%. The risk of suffering a perineal tear varied according to the mode of delivery (Table 3). Therefore, compared to spontaneous vaginal delivery, performing forceps-assisted delivery multiplied the perineal tear risk by 4.26 ($p < 0.001$), Thierry's spatulas delivery by 4.61 ($p < 0.001$) and vacuum extraction delivery by 2.53 ($p > 0.05$).

There were no significant changes in the rate of the different operative vaginal deliveries from the 2006 to 2008 period. However, we observed a change in 2009 compared to previous years: vacuum extraction significantly increased by 3.5 and Thierry's spatulas decreased by 1.36 (Table 4).

Interpretation of results

We observed some significant and apparently contradictory changes: the incidence of high-order tears rose in the first year after the program's implementation (2008), but it decreased the following year (2009).

We did not find significant changes in obstetric attention in 2008 compared to the 2006-2007 period. We attributed the increase in incidence of high-order tears to better diagnosis, probably due to the improvement of the professionals' competence as a consequence of the learning program.

The decrease in incidence of third and fourth degree perineal tears in 2009 compared to 2008 seems to be conditioned by a change in obstetric attention. We found a significant increase in vacuum extractions (6.66% vs. 1.88%) and a significant decrease in Thierry's spatulas (13.39% vs. 18.21%).

As confirmed in the literature, in this study the risk of complex perineal tear varied according to the mode of delivery. In 2009 there was a clear trend to choose vacuum extraction over spatulas to assist delivery, with the aim to prevent perineal trauma.

Concluding message

The incidence of third and fourth degree perineal tears in our Department is within the range published in literature reviews. In this study, spatula-assisted delivery has the highest incidence of third or fourth degree tears amongst operative deliveries (4.9%).

The variation of third and fourth degree perineal tears observed between 2007 and 2008 is held on the implementation of a specific program to improve diagnose and management competence of the professionals involved.

Moreover, the program made a change in obstetric attention and introduced the need to take care of women's pelvic floor during delivery.

Year	Deliveries	High-order tears	Incidence
2006	896	12	1.3%

2007	1064	19	1.7%
2008	1274	42	3.2%
2009	1292	24	1.8%
2006-2009	4526	97	2.1%

Table 1. Annual incidence of high-order tears

	Non high-order tear	High-order tear	
Spontaneous	3076 (98.9%)	33 (1.1%)	3109
Vacuum	145 (97.3%)	4 (2.7%)	149
Forceps	528 (95.5%)	25 (4.5%)	553
Thierry's Spatulas	680 (95.1%)	35 (4.9%)	715
Total	4429 (97.9%)	97 (2.1%)	4526

Table 2. Incidence of high-order tears depending on mode of delivery.

	Relative Risk	Confidence Interval
Vacuum	2.53	0.908-7.046
Forceps	4.26	2.553-7.105
Thierry's Spatulas	4.61	2.887-7.368

Table 3. Relative risk of a high-order tear: instrumental compared to spontaneous delivery

	2006	2007	2008	2009	
Spontaneous	597 (66.63%)	730 (68.61%)	890 (69.86%)	892 (69.04%)	
Vacuum	15 (1.67%)	24 (2.25%)	24 (1.88%)	86 (6.66%)	
Forceps	150 (16.74%)	134 (12.59%)	128 (10.05%)	141 (10.91%)	
Thierry's Spatulas	134 (14.95%)	176 (16.54%)	232 (18.21%)	173 (13.39%)	
	896	1064	1274	1292	4526

Table 4. Rate per year of the different modes of delivery.

Specify source of funding or grant	None
Is this a clinical trial?	No
What were the subjects in the study?	HUMAN
Was this study approved by an ethics committee?	Yes
Specify Name of Ethics Committee	Comitè d'Ètica d'Investigació Clínica (CEIC) de la Fundació de Gestió Sanitària de l'Hospital de la Santa Creu i Sant Pau
Was the Declaration of Helsinki followed?	Yes
Was informed consent obtained from the patients?	Yes