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## Original article

# Practical issues in the management of third and fourth degree tears to minimise the incidence of faecal incontinence

Marina Folch,<sup>a,\*</sup> David Parés,<sup>b</sup> Maite Castillo,<sup>a</sup> and Ramon Carreras<sup>a</sup>

<sup>a</sup>Servicio de Ginecología y Obstetricia, Hospital del Mar, Barcelona, Spain

<sup>b</sup>Unidad del Suelo Pélvico, Servicio de Cirugía General y Digestiva, Hospital del Mar, Barcelona, Spain

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## A B S T R A C T

Faecal incontinence is underestimated in most epidemiological studies, probably because women may feel unable to discuss the symptoms they experience and avoid seeking medical advice. The most common cause of faecal incontinence in healthy women is an injury during a vaginal delivery. In this article we review the classification and terminology, as well as the risk factors, for third and fourth degree perineal tears. We also comment on the different suture techniques, the follow-up of women who sustain third and fourth degree tears and the advice given to those women regarding future pregnancies and mode of delivery. We highlight the importance of the endoanal ultrasound on the diagnosis of occult anal sphincter injury.

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## Aspectos prácticos en el manejo de las lesiones obstétricas perineales de tercer y cuarto grado para minimizar el riesgo de incontinencia fecal

## R E S U M E N

La incontinencia fecal es una condición subestimada en los estudios epidemiológicos debido a que muchas mujeres no acuden al médico a pesar de padecerla. La causa más frecuente de incontinencia fecal en las mujeres sanas es el traumatismo de etiología obstétrica. En este artículo se revisa la clasificación y la terminología, así como los factores de riesgo predisponentes a presentar una lesión obstétrica perineal de tercer y cuarto grado. También se repasan las diferentes técnicas de sutura y el seguimiento óptimo ulterior de las mujeres que sufren desgarros perineales, así como la conducta a seguir en las futuras gestaciones. Se recalca la importancia de la ecografía endoanal en el diagnóstico correcto de lesiones ocultas perineales de etiología obstétrica.

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\*Author for correspondence.

E-mail address: Mfolch@imas.imim.es (M. Folch).

## Introduction

Faecal incontinence is defined as the involuntary loss of faeces or flatulence.<sup>1</sup> Unfortunately, this condition is underestimated in epidemiological studies because many women do not visit the doctor even though they suffer from this condition.<sup>2</sup> The emotional, psychological and social problems caused by faecal incontinence can be devastating and debilitating.<sup>3</sup> The most frequent cause of faecal incontinence in healthy women is traumatism of obstetric aetiology, and the risk of presenting with a lesion in the internal anal sphincter (IAS) or external anal sphincter (EAS) in a vaginal delivery is 1%.<sup>4</sup>

Up to two thirds of women who are diagnosed with a lesion or third-degree perineal strain during delivery later present with faecal incontinence.<sup>2,5-13</sup> Additionally, if we study patients with faecal incontinence during the post-partum period or those who are seen due to late onset of faecal incontinence, incidence of anal sphincter lesions is higher, with 90% of lesions detected in EAS and 65% in IAS.<sup>14,15</sup>

It is well known that when there is more information and greater awareness of the possibility of injuring the perineum during childbirth, there is an increase in lesion detection in the anal sphincter complex, especially when lesions are diagnosed or surgically repaired by specialists in obstetrics and gynaecology or also by specialists in general and digestive surgery. Recently, the Royal College of Obstetricians and Gynaecologists (RCOG) published a clinical guide which provides data for regular treatment of these lesions, and it analyzes scientific data published until now.<sup>16</sup>

The objective of this special article is to provide an update in diagnosis, management and treatment of obstetric anal sphincter lesions through systematic review of the literature with the aim of improving knowledge about the different specialties involved.

## Classification and terminology

We recommend that the nomenclature proposed in this clinical guide be used for describing any type of obstetric lesion of the anal sphincter. The classification described by Sultan in Table 1 has been adopted by the International

Consultation on Incontinence and the RCOG.<sup>17,18</sup> If there is any doubt over the degree of perineal strain detected medically, it is considered more suitable to classify it as a higher degree than a lower one.

Therefore, following the given classification, anal sphincter lesions include third and fourth-degree perineal strains. A third-degree perineal strain is defined as a partial or total strain of one of the two anal sphincter muscles, the EAS and IAS. A fourth-degree perineal strain is defined as a strain of the anal sphincter muscles with a strain of the anal mucosa.

Even though classically it was not sufficiently insisted upon, IAS has an important role in maintaining faecal continence.<sup>19</sup> Additionally, prevalence of faecal incontinence increases if the strain affects the EAS and IAS, compared to those which only affect the EAS.<sup>19,20</sup> In conclusion, inclusion of the IAS strain in classification of perineal strains would allow for future distinction between incontinence related to an injury of the IAS or EAS. However, in acute obstetric traumatism cases it is not always possible to identify the IAS, while the degree of EAS lesion (if it is greater or less than 50% of the thickness) should always be able to be detected.

If the strain only affects the anal mucosa without a sphincter lesion, it should be documented in a separate category and also taken into account that if this type of strain goes unnoticed in monitoring, it may be the cause of a rectovaginal fistula.

## Prevention of obstetric lesions of the anal sphincter

In various retrospective studies, risk factors have been identified for third-degree perineal lesions.<sup>21</sup> If the risk of an anal sphincter lesion is considered to be 1% of vaginal deliveries, the factors represented in Table 2 correspond to an increased risk of these lesions.<sup>16,22</sup>

Classically, it is documented that third and fourth-degree perineal lesions have an incidence which ranges between 0.6% and 9% of vaginal deliveries where mediolateral episiotomy is practiced.<sup>23</sup> However, in various prospective studies done by endoanal ultrasound, ultrasound alterations of the anatomy of the anal sphincter have been identified in up to 36% of women after vaginal delivery.<sup>24-26</sup>

**Table 1 – Classification of obstetric sphincter lesions<sup>16</sup>**

Degree	Anatomical lesion
First-degree	Only a lesion of the perineal skin
Second-degree	Lesion of the perineal muscles not affecting the anal sphincter
Third-degree	Perineal lesion which affects the external anal sphincter (EAS)
Degree 3a	Strain less than 50% of the thickness of the EAS
Degree 3b	Strain more than 50% of the thickness of the EAS
Degree 3c	Strain of the EAS and the internal anal sphincter (IAS)
Fourth degree	Perineal lesion which affects the EAS and IAS, as well as the anal epithelium

**Table 2 – Risk factors in third-degree obstetric perineal lesions<sup>16,22</sup>**

Risk factors	Risk of sphincter lesion, %
Operative delivery	7
Nulliparity	4
Duration the second stage of delivery >1 h	4
Dystocia of shoulders	4
Average episiotomy	3
Persistent sacral variety	3
Weight of neonatal at birth >4 kg	2
Induction of delivery	2
Use of epidural	2

The risk of a third-degree perineal strain decreases if the angle of the episiotomy increases. In a prospective case-control study, a 50% relative reduction of risk of a third-degree strain was observed for every 6° that the incision angle of the episiotomy moved away from the middle line.<sup>27</sup>

In 2006, a group of experts from the National Institute of Health of the United Kingdom concluded that there was little scientific evidence to justify the preventive role of undergoing an elective c-section, and that currently there are not sufficient data to assert that undergoing this may reduce the incidence of alterations of the pelvic floor.<sup>28</sup> It is good to remember that even though a c-section could decrease alterations of the pelvic floor, other risks and benefits of an elective c-section would need to be contrasted with this method.<sup>29</sup>

### Identification of obstetric lesions of the anal sphincter

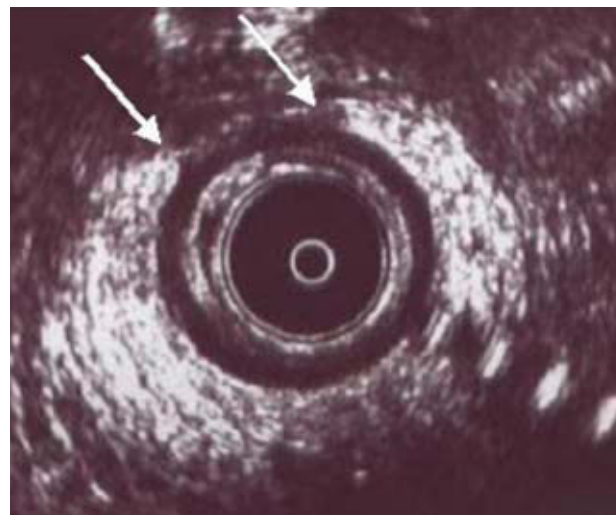
After an operative delivery, all women with or without an apparent perineal lesion should be examined during the follow-up by a specialist in obstetrics and gynaecology with training in the recognition and treatment of these lesions.

The endoanal ultrasound is the most used imaging technique for defining the anatomy of the sphincter complex during monitoring after delivery when there is an identified or high suspicion lesion. An EAS lesion results in substitution of the injured muscle for muscular fibres with granulated and fibrotic tissue.<sup>30</sup> This appears on the endoanal ultrasound as a hypoechoic area (Figures 1 and 2). It should be taken into account that the normal shape of the female EAS, which forms an incomplete ring in the anterior wall of the upper third of the anal canal, can be confused as being a defect in the ultrasound.

An observational study demonstrated that an increased observation of perineal lesions after delivery may double the incidence of detection.<sup>31</sup> In another study in which there was an endoanal ultrasound in immediate post-partum, it was observed that the incidence of detection of an anal sphincter lesion was not significantly higher if a physical exam was only carried out.<sup>32</sup> For the moment, using endoanal ultrasound



**Figure 1 – Normal endoanal ultrasound image.**



**Figure 2 – Endoanal ultrasound image with an obstetric lesion of the external anal sphincter (between the arrows).**

to detect anal sphincter lesions in immediate postpartum should be reserved for research purposes, given the difficulty of accessing personnel with training in endoanal ultrasound in delivery room use.

Occult lesions of the anal sphincter, i.e. those not detected during delivery but during follow-up, can be shown by endoanal ultrasound and are a cause of part of the postpartum faecal incontinences.<sup>33</sup> Incidence of these types of lesions has not been established conclusively. European studies record anal sphincter lesions in postpartum ultrasounds between 9% and 38% after vaginal delivery.<sup>34,35</sup> In a multi-centre study in the United States, EAS lesions are observed in 31% of women after vaginal delivery and in 28% after a c-section without labor.<sup>36</sup> The finding that EAS occult lesions in more than a fourth of women who had c-sections without going into labour indicates that findings from the endoanal ultrasounds are unspecific or that some lesions occur with no relationship to the delivery. There is therefore a controversy over the actual incidence of occult sphincter lesions and their clinical significance.<sup>16</sup>

The moment the postpartum endoanal ultrasound is carried out may also influence results. Immediate endoanal ultrasound, which theoretically can identify lesions which have occurred unnoticed from a clinical perspective, has its limitations, because interpretation of the endoanal ultrasound may be limited due to oedema, haemorrhaging and lacerations of the genital area.<sup>37</sup>

Another type of monitoring can be a later endoanal ultrasound, both for patients with risk factors for a lesion and for studies, to detect old lesions which occurred unnoticed, assess results of a suture and to plan the management of a future delivery.

### Suturing techniques

When a perineal lesion is detected, suturing has to take place in the operating room, because this will allow for aseptic

conditions, adequate instrument use, correct illumination and occasionally, a trained assistant. Regional and general anaesthesia will allow for relaxation of the anal sphincter complex, a technique which is essential for recovering extreme strain segments pulled away from the anal sphincter and to be able to bring them together without tension.<sup>38</sup>

For the EAS suture, an overlapping technique or direct approximation technique may be used. It is recommended to do the IAS suture, separate from the EAS, by using interrupted or individual sutures.

In a systematic literature review studying the influence of the suture method of third-degree strains, three studies were examined which included 279 women.<sup>39</sup> This review showed that there were not significant differences regarding perineal pain, dyspareunia, and faecal incontinence and flatulence between the two techniques at 12 months, but there was a lower incidence of emergency and faecal incontinence in the group who received the overlapping technique. Neither there were statistically significant differences shown in the quality of life of the women treated by each technique. The authors concluded that the limited data showed that an overlapping suture showed less faecal emergency and anal incontinence than the approximation suture. Nonetheless, it is important to stress that in none of the three studies was the surgeon's experience taken into account, and because of this, it would not be correct to recommend one type of suture technique over the other.<sup>40</sup>

Subsequently, another randomized study was published with 41 women with third and fourth-degree strains who received an approximation or overlapping suture and monitored for 3 months.<sup>41</sup> There were not significant differences between the two groups, both in faecal incontinence symptoms and in transperineal ultrasound findings.

Finally, another randomized study was published on secondary repair, and 24 women were assigned to approximation or overlapping sutures.<sup>42</sup> At 26 months of monitoring, there were not significant differences in anal continence. Nevertheless, other studies have evaluated secondary repair of the sphincter due to anal incontinence done by colorectal surgeons, and these showed a significant increase of the incidence of continence with the overlapping technique.<sup>43,44</sup>

There are no systematic reviews for evaluating the best suture material for EAS or IAS. Nonetheless, we know that PDS 3-0 and Vicryl 2-0 monofilament threads cause less local irritations for the patients. The only randomized study which compares PDS and Vicryl did not demonstrate significant differences in morbidity with respect to faecal incontinence, perineal pain or suture migration in 12 months of follow-up.<sup>40</sup> From a technical point of view, it is recommended to bury surgical knots below superficial perineal muscles to avoid migration of the knots toward the skin.

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## Surgical competence

Whenever possible, the most desirable situation would be for the anal sphincter suture to be carried out by professionals with adequate training. Indeed, structured training of suture

techniques of the anal sphincter is being recommended in the obstetrics training program and maybe in the future they will also carry out information campaigns for specialists in surgery.

Anal sphincter suturing by experts may contribute to decreasing morbidity, particularly subsequent faecal incontinence. A survey of specialists and doctors during an obstetrics training period in the United Kingdom highlighted the deficiency and little satisfaction of their training in managing third-degree strains.<sup>45</sup> Training may improve with the implementation of surgical skills workshops, which use animal models and audiovisual material. Reports on the effect of practice workshops on sutures for third and fourth-degree strains show a significant improvement in recognizing anatomical structures which make up the perineum and in identifying anal sphincter lesions after attending practice workshops.<sup>46</sup>

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## Monitoring

In a systematic review on antibiotic prophylaxis in fourth-degree perineal strain cases which compared antibiotic prophylaxis with a placebo or no antibiotic, no randomized studies were found.<sup>47</sup> In consideration this and while awaiting better scientific evidence, the intraoperative and postoperative use of broad-spectrum antibiotics is recommended, because in the case of an infection developing, a complete dehiscence of the wound could occur with consequent anal incontinence or formation of a fistula.<sup>38</sup>

No systematic reviews were identified which evaluated the use of laxatives after intervention, but they are recommended during the postoperative period, because compact faeces could damage the suture.<sup>38</sup> A good alternative could be using a lactulose stool softener and a methylcellulose type thickening agent for 10 days after the suture.

The implementation of protocols in each hospital regarding the use of antibiotics, laxatives, examination and monitoring of women who have received an anal sphincter suture would be highly desirable. This monitoring should be offered to all women who have received a suture for a perineal lesion, such as physical therapy and pelvic floor exercises for 6–12 weeks, and follow-up reviews by a specialist in gynaecology and obstetrics.

If a woman is suffering from faecal incontinence at the time of review at 6–12 weeks, she should be sent to a colorectal surgeon so that they may assess the need for carrying out a complete study, an endoanal ultrasound and/or an anorectal manometry if considered necessary. There are no data in the literature which indicate the best follow-up method after re-constructing of the anal sphincter.

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## Prognosis

There are case-control studies<sup>12,48-53</sup> and retrospective studies<sup>20,25,54-58</sup> which have analyzed the result of sutures based on symptoms and results of anal sphincter examinations. All studies communicate aspects of EAS

sutures, but only a few mention the IAS sutures.<sup>8,38</sup> The first studies describe faecal incontinence in 20%–67% of women with a suture for a third-degree perineal strain; flatulence in 59% of cases, escape of liquid or solid faeces in 11%, and faecal emergency in 26% of these women.<sup>16</sup>

In one study, a significant increase was seen of faecal incontinence symptoms after four years of follow-up (17%–42%).<sup>59</sup> Comparison of results from different studies is difficult, because they do not use the same questionnaires for assessing anal incontinence. However, since year 2000, various randomized studies have been carried out which compare EAS suturing techniques by overlapping or approximation, and low incidences of anal incontinence have been described for the two techniques,<sup>8,40,41,60</sup> with 60%–87% of women asymptomatic at 12 months.<sup>40,60,61</sup>

Nonetheless, the studies which have used the endoanal ultrasound as part of the monitoring show persistent defects in 54%–88% of women after an initial suture of a third-degree strain.<sup>25,54,55</sup> More recently different randomized studies describe less prevalence of residual defects (between 19% and 36%), which is probably a result of advances in the prevention of these lesions.<sup>8,41,60</sup> Currently, clinical significance remains uncertain as to the asymptomatic defects shown by the ultrasound.

### Future deliveries

The women who suffer from an obstetric strain of the anal sphincter should be informed of the risk of developing faecal incontinence or the worsening of already existent symptoms with subsequent vaginal deliveries.<sup>16</sup> Nonetheless, there is no evidence for recommending prophylactic episiotomy in future pregnancies, ie, the systematic use of an episiotomy on women who have suffered from an obstetric strain of the anal sphincter in a previous delivery does not protect them from another third or fourth-degree strain occurring.

There is the recommendation that women who have an obstetric sphincter lesion who are diagnosed by endoanal ultrasound or anorectal manometry and are symptomatic should have the option to undergo an elective c-section in their next gestation.<sup>62</sup>

No systematic reviews or randomized studies were found which suggested the better delivery method after an obstetric strain of the anal sphincter. Four studies examined the risks of a vaginal delivery after a third-degree strain and described that between 17% and 24% of women have worsening symptoms after a second vaginal delivery.<sup>54,57,63,64</sup> The women who suffer from an obstetric strain of the anal sphincter and those with a second suture should be receptive to an elective c-section in the next pregnancy, but there are no conclusive studies on this. This aspect should be assessed in the future through the design of controlled studies.

When a third or fourth-degree strain is sutured, it is essential that the affected anatomical structures, the technique and material used are clearly documented. The woman should be informed (even by written report) of the seriousness of her lesion and her benefit for doing follow-up. In recent years, there has been an increase of lawsuits

related to obstetric lesions of the anal sphincter. The majority are due to the absence of diagnosis after delivery with consequent faecal incontinence or rectovaginal fistula. A strain occurring is not considered as negligence, but to not recognize it, and therefore not suture it, would be.<sup>17</sup> Providing clear documentation and information for women is very important.

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