# Counseling after perineal laceration: does it improve functional outcome?

**Authors:** Ashley Vasseur[1], Karine Lepigeon[1], David Baud[1], Antje Horsch[1,2], Sylvain Meyer[1], Yvan Vial[1], Chahin Achtari[1]*

[1] Department Woman-Mother-Child, Lausanne University Hospital, Lausanne, Switzerland

[2] Institute of Higher Education in Healthcare Research (IUFRS), University of Lausanne, Switzerland

***Corresponding author**:
Dr Chahin Achtari
Avenue Pierre Decker 2
1011 Lausanne, Switzerland
Phone: +41 021 314 32 37
Fax : +41 021 314 55 69
Email: Chahin.Achtari@chuv.ch

**Conflicts of interest**: None

**Authors' contribution**:

Ashley Vasseur: data collection, redaction of the manuscript, manuscript submission

Yvan Vial: critical revision of the manuscript

Karine Lepigeon: statistical analysis

David Baud: critical revision of the manuscript

Antje Horsch: redaction of the manuscript and critical review

Sylvain Meyer: critical revision of the manuscript

Chahin Achtari: Promoter and supervisor of the study

Abstract words count: 252

Manuscript words count: 3158

**Abstract**

Introduction: Since 2006, the Lausanne University Hospital (CHUV) offers a 12-week post-partum perineum consultation for patients with third/fourth-degree tears, providing advice for future deliveries. This study consisted of a retrospective follow-up of these patients, focused on subsequent deliveries and current urinary and anorectal incontinence symptoms.

Method: Patients meeting eligibility criteria were invited to complete a questionnaire on their deliveries, along with validated questionnaires grading urinary (UDI-6 and IIQ-7) and anorectal (Wexner-Vaizey score) incontinence.

Results: 62% of third/fourth-degree tears occurred following operative vaginal deliveries. Of 160 participants, 45.6% did not redeliver, 5.6% of whom felt traumatized by their first delivery and reluctant to have other children. 33.2% had a second vaginal delivery, 19.4% had a cesarean section (CS) and 1.2% had both vaginal and CS deliveries. 28% of the CS were not medically indicated. Recurrence rate of third/fourth-degree tears for subsequent vaginal deliveries was 3.6%.

Most patients were mildly or not affected by incontinence symptoms. Symptomatic patients reported urinary incontinence during physical activity and gas leakages. 50-60% saw no change of symptoms since the consultation, 30-40% reported partial or complete recovery. Patients redelivering by CS reported significantly less urinary incontinence ($p=0.046$), and less anorectal incontinence ($p=0.069$).

Conclusion: Anal sphincter laceration is associated with urinary and anorectal incontinence, but symptoms improve or disappear in most cases and are globally not invalidating. Perineal physiotherapy seems to contribute to this positive evolution. Fertility rate among these patients is unaffected, but CS rate is higher than average. Further consideration of sexual and emotional sequelae could improve our current service.

**Key words**: Anal sphincter laceration, incontinence, risk, recurrence

**Brief summary**: Our service offers a consultation for patients with third/fourth-degree tears. This study consists in a follow-up of these patients, their subsequent deliveries and urinary/anal incontinence symptoms.

**Introduction**: Vaginal delivery can damage pelvic structures and amount to urinary and/or anorectal incontinence. It can also cause sexual dysfunction and sometimes psychological trauma. Third and fourth-degree lacerations are particularly susceptible to causing these various problems (1–5). Their clinical incidence is reported to be between 0.5 and 3.5% in Europe (6). Such tears mostly affect patients delivering their first baby (7,8) and constitute the first cause of fecal incontinence for women (6,9).

Since 2006, the Lausanne University Hospital (CHUV) offers a 12-week post-partum perineum consultation for patients with third and fourth-degree tears. Based on symptoms reported, sphincter tonus and endo-anal ultrasound imaging, advice for future deliveries is given by the uro-gynecologist. CS is namely encouraged for patients with persistent symptoms and significant sphincter defects defined as a defect of 25% or more of the circumference. The consultant can also prescribe physiotherapy for pelvic floor reeducation. Usually 9 sessions are prescribed including biofeedback. Other pelvic floor exercises or massage of the scar if painful may be added by the physiotherapist. Surgical correction is proposed when considered necessary. Recommendations are based on published studies such as (10), and (9).

Over the past 10 years, the consultation was attended by 546 patients. This study consisted of contacting these patients in order to gather information on subsequent deliveries and current urinary/anorectal incontinence symptoms. The aim of the study was to evaluate the quality of advice given to the patients and the adhesion of patients to the given advice on suggested mode of delivery. This in turn would help to improve the service for such patients in the future.

**Patients and Methods**: Patients from the consultation were considered eligible for this study if they had sustained a third- or fourth-degree sphincter laceration during their first vaginal delivery of a singleton baby with cephalic presentation. Those with a significant language barrier (who spoke neither French, English nor Spanish), inflammatory bowel disease or urinary/anorectal surgery were excluded.

Consultation reports and index delivery case notes were analyzed to obtain the following obstetric and maternal data:

- Degree of tear
- Presence of commonly accepted risk factors for sphincter laceration: instrumental delivery, posterior presentation or fetal birth weight >4kg.
- Patients' symptoms and complaints at the consultation
- Whether or not perineal physiotherapy was prescribed
- Mode of delivery recommended for future deliveries

At the request of the regional ethics commission (CER-VD), patients were first contacted by telephone to present the study, ensure eligibility criteria were met, solicit their participation and obtain their oral consent. Patients who did so received a global questionnaire on their deliveries, along with validated questionnaires grading urinary (UDI-6 and IIQ-7) (11) and anorectal (Wexner-Vaizey score) (12,13) incontinence. These documents were available in English, French and Spanish, and were sent by email or by post with a pre-stamped envelope according to expressed preferences. Patients were equally invited to share their experiences and give feedback on the consultation or study if desirous to do so. No financial reward or compensation was offered for patients' participation.

Data were collected from November 2015 to July 2016. For patients who had redelivered since the consultation, medical notes of subsequent deliveries were analyzed. Descriptive and comparative statistical data analyses were achieved using STATA ($14^{th}$ version). All tests were two-sided and a p-value inferior to 0.05 was considered statistically significant.

This project was validated by the regional research ethics commission (ethics approval number 275/15).

**Results**:

Participation: Out of 546 patients who attended the consultation between 2006 and 2015, 369 (67%) filled the inclusion criteria and were contacted by telephone. 160/369 (43%) volunteered to complete the questionnaires. Global information and obstetric data relating to the index delivery of these patients are shown in Table 1. Worth noting is that 62% of these third/fourth-degree tears occurred following operative vaginal deliveries. The average time for the sample group between the consultation and this study was of 5.25 +/- 2.56 years. Among those who did not participate, 25 declined during the telephone call and 54 did not send back the questionnaires. The rest were lost to follow-up.

Among the 160 participants, 5 were pregnant when completing the questionnaires and delivered while the study was still in progress. Pregnancy being a potential confounding factor for this study, these 5 patients were not included in data analyses related to urinary/anorectal incontinence.

Patients' symptoms and complaints at the consultation: At 12 weeks post-partum on average, 26% (41/160) reported urinary incontinence and 38% (61/160) reported anorectal incontinence. Among these, 11% (18/160) suffered of both simultaneously. 35% (56/160) complained of pelvic pain. Consultation notes also highlight the impact of index delivery on sexuality: while 15% (24/160) had resumed and were satisfied with their sexual activity, 48% (77/160) had not resumed, 16% (12/77) of which expressed fear of dyspareunia. 24% (38/160) reported painful intercourse and 7% (10/160) complained of reduced quality of intercourse.

Consultation's recommendations: 86% (138/160) of patients were prescribed perineal physiotherapy with biofeedback, 84% (116/138) of which attended the sessions. The remaining 14% (22/160) did not complete any physiotherapy, but information regarding its prescription was lacking in the consultation report.

Concerning recommendations for future deliveries, 62% (99/160) of patients had no contraindications for a second vaginal birth and 14% (22/160) were advised to deliver by CS, either because of persistent symptoms (2/22), a persistent anal sphincter defect of ≥25% of the circumference (9/22) or

both (10/22). One patient was advised to deliver by CS after an exceptional recovery of both symptoms and anatomical defects. Reevaluation was recommended for 13% (21/160) to assess evolution of symptoms and to determine recommended mode of delivery. Information was lacking in the remaining 11% (18/160) of consultation reports.

Subsequent deliveries: deliveries of participants subsequent to the consultation are presented in Figure 1. Of those who did not redeliver, 9 (12.3% of the 73 who did not re-deliver and 5.6% of the 160 participants) expressed feeling psychologically traumatized by their first delivery and reluctant to have other children.

Counting these and all previous births (15 CS previous to index delivery, 160 index deliveries, and 95 subsequent deliveries including 1 twin pregnancy), this amounts to 270 births for 160 patients, constituting an average of 1.69 +/- 0.64 children per participant.

Mode of delivery chosen by patients as opposed to recommendations found in consultation reports are shown in Figure 2. The latter also indicates whether CS were medically indicated, chosen by the patient ("preference") or whether the indication is unknown, according to participants' responses. Ultimately, 6.2% (10/160) chose to deliver by CS despite the absence of contraindication for a vaginal birth, and 2% (3/160) preferred a natural delivery to the recommended CS. Of these 3 patients, none experienced repeated sphincter laceration. However, 2 of the patients in need of reevaluation opted for a vaginal birth and both incurred fourth-degree lacerations (versus third-degree tears for their previous delivery). These 2/58 subsequent vaginal deliveries represent a 3.6% sphincter injury recurrence rate.

Looking more closely at the subsequent vaginal deliveries, one finds a decrease of risk factors compared to index deliveries. These results are shown in Table 2. Worth noting however is that presentation was unknown for 26% (15/58); therefore, results for this particular risk factor are difficult to interpret. There was also a decreased need for mediolateral episiotomy, performed in 41% (24/58) of subsequent deliveries versus 70% index deliveries in this study.

Current symptoms and evolution: 24% (37/155) reported complete absence of urinary incontinence (UDI-6 total = 0 and IIQ-7 total = 0), nearly two-thirds (24/37) of which were already asymptomatic at

the consultation. While 76% (118/155) did report symptoms of urinary incontinence (UDI-6 total ≠ 0), impact of these symptoms on quality of life (based on the IIQ-7 total) was relatively small (see Figure 3). Urinary incontinence during physical activity was the most frequent complaint and was reported by 55% (85/155) of participants. When asked to describe the evolution of their urinary symptoms since the consultation, 38% (59/155) reported partial or complete recovery (positive), 49% (76/155) reported no change (stable) and 12% (18/155) reported worsened symptoms (negative). Patients who had not completed physiotherapy had significantly less urinary incontinence symptoms (average of UDI-6/IIQ-7 indicator of 6.84 versus 13, $p = 0.003$). Evolution of these symptoms based on completion of physiotherapy is shown in Figure 4.

Likewise, considering symptoms of anorectal incontinence, 34% (53/155) were completely asymptomatic (Wexner-Vaizey total = 0). 59% (91/155) presented incontinence for gas, 20% (31/155) for liquid stool and 8% (13/155) for solid stool. When asked to describe the evolution of their anorectal incontinence symptoms since the consultation, 32% (48/155) reported partial or complete recovery (positive), 55% (85/155) reported no change (stable) and 11% (17/155) reported worsened symptoms (negative). Patients who had not completed physiotherapy had significantly less anorectal incontinence symptoms (average of Wexner-Vaizey total of 1.8 versus 3.3, $p = 0.03$). Evolution of these symptoms based on completion of physiotherapy is shown in Figure 4.

Several factors such as BMI, tear degree (third versus fourth), CS previous to index, redelivery since index delivery and number of years since last delivery showed no significant impact on severity or evolution of incontinence symptoms. However, differences were found between patients who redelivered by CS or vaginally; patients with CS reported significantly less urinary incontinence (average of UDI-6/IIQ-7 indicator of 9.9 versus 15.6, $p = 0.046$) and somewhat less anorectal incontinence (average of Wexner-Vaizey total of 2.5 versus 4.2, $p = 0.069$). It is also worth noting that patients who followed consultation recommendations for mode of delivery showed significantly less anorectal incontinence (average of Wexner-Vaizey total of 2.69 versus 10.5, $p = 0.0019$), with very little impact on urinary incontinence (average of UDI-6/IIQ-7 indicator of 12.2 versus 10.8, $p = 0.826$)

**Discussion**:

This study confirms that anal sphincter laceration during delivery is susceptible to negative physical and emotional sequelae for patients. This can be observed through current symptoms as reflected by the incontinence questionnaires, or complaints of pelvic pain and sexual dysfunction found in consultation reports. Also striking is that 5.6% of patients report no longer wanting to have children due to psychological trauma. It is worth noting, however, that in spite of these challenges, patients in our group did not have fewer children on average than the rest of the Swiss population. Indeed, fertility rate in this study was of 1.69 children per woman, which was higher than the fertility rates of 1.54 and 1.51 children per woman reported by the Swiss Federal Statistical Office for 2015 and 2016 respectively (14). However, elective CS rate (38%, or 36/95 redeliveries) for these patients was slightly greater than those documented in our institution (34%) (15) and the Swiss population (32%) (16) in 2015. This result aligns with those of other studies reporting unaffected fertility rate but increased elective CS rates among patients with sphincter lacerations (17) probably related to a higher pelvic floor dysfunction rate as demonstrated earlier in our population (1).

While several studies guide our consultation practice and recommendations, it is currently impossible to predict with accuracy which patients will suffer repeated tears or persistent symptoms with subsequent deliveries. Studies show that 5 elective CS are necessary to prevent 1 recurrence (18) and 2.3 elective CS to prevent 1 case of irreversible anorectal incontinence (19). This margin of uncertainty can be appreciated in our study with 3 patients who delivered vaginally without complication despite consultation advice to opt for CS, as well as 2 patients who suffered a second tear. Worth mentioning, however, is that this recurrence of 3.6% is very close to the average rate of sphincter tears found in Europe (6). This confirms that incidence of 3$^{rd}$ and 4$^{th}$ degree tear recurrence is similar to the risk for nulliparous patients, as has been described in previous scientific literature (20).

Statistical analyses for this study show that patients who redelivered once by CS suffer significantly less from urinary incontinence and somewhat less from anorectal incontinence than patients who redelivered once vaginally. This difference of impact between urinary and anorectal function can be explained by the fact that CS generally involve lesser stress for perineal tissues than vaginal birth (and

212 therefore protect against urinary incontinence), but can still cause indirect damage to the pudendal
213 nerve and amount to anorectal incontinence despite an anatomically intact sphincter (19,21). Equally
214 worth noting is that 32% (9/28) of these CS were without medical indication. It is difficult to predict
215 whether vaginal delivery for these patients would have caused symptoms and thus alter results.

216 Analyses also suggest that patients who followed consultation recommendations for mode of delivery
217 were significantly less symptomatic than patients who did not. However, for this particular test, only 2
218 patients had not followed the advice (versus 66 who had). But globally speaking, most patients who
219 come to the consultation follow recommendations (84-85% for both physiotherapy and mode of
220 delivery in subsequent births), with overall positive results. While the sample size of patients who did
221 not follow recommendations is too small to offer conclusive quantitative evidence, this result offers a
222 good indicator of the consultation's positive impact.

223 Perhaps conflicting are results indicating that patients who did not complete pelvic floor physiotherapy
224 were significantly less symptomatic than patients who did do physiotherapy. However, most patients
225 who did not complete physiotherapy were not symptomatic at the consultation and thus saw no change
226 of their symptoms. On the other hand, patients who completed physiotherapy were more symptomatic
227 at the consultation, with 35-40% observing a positive evolution of their symptoms. We conclude that
228 physiotherapy has a positive impact, albeit many patients have residual symptoms.

229 Looking at patients' feedback, it becomes apparent that certain needs are not yet met by our current
230 service. Simple solutions would include improved patient education during pregnancy on delivery
231 risks and potential post-partum symptoms, creating a consultation offering psychological support and
232 training doctors to inform patients of the possibility to consult with a sexologist. Finally, discussion or
233 self-help groups for these patients may be helpful. One example is the recently founded association
234 "(Re)naissances" (ReBirth in English) that is based in Lausanne.

235

Concerning the method, participation rate was inferior to 50% (43%) which is a limitation of this study. However, similar studies (1) including postal questionnaires in our institution reached similar participation rate (36%) despite efforts made to recall patients. Contributing to this perhaps is that no reward or compensation of any type was offered to motivate patients' involvement. Other limitations of this study include its retrospective nature, absence of control patients, lack of data on type of sphincter repair (overlapping vs end to end), as well as its unexplored aspect of sexuality. Use of validated questionnaires to evaluate urinary and anorectal incontinence, as well as the possibility for patients to share personal experiences and give additional feedback are regarded as strengths for this study.

Looking at factors considered as a risk for sphincter tear, it must be noted that previous CS was not included, as its impact is debated in various studies. Those considering CS as a risk mainly attribute risk to fetal weight responsible for the CS (6). Another study also underlines that tear risk related to previous CS depends on CS circumstances (21); elective or early CS constitute a lesser stress for pelvic structures than CS performed late in labor. Contributing to our decision was the fact that there were only 15 patients with a previous CS in this study, and circumstances related to these deliveries were unknown. Likewise, mediolateral episiotomy was not included as a risk factor since the exact angle of the episiotomy (45-60° or >60°) performed for these patients was unknown.

**Conclusion**: This study confirms the positive impact of a post-partum perineal consultation. It confirms the association between anal sphincter laceration with urinary and anorectal incontinence symptoms. However, these symptoms lessen or disappear in most instances and are globally not invalidating for the patients. In our group, consultation recommendations (whether for physiotherapy or mode of subsequent delivery) were followed by 85% of patients, and perineal physiotherapy seemingly contributed to this positive outcome. To better appreciate the impact and value of our consultation, a multicenter study monitoring evolution of patients with third- or fourth-degree tears based on counseling and follow-up would be of great value. The latter should ideally consider not only symptoms of incontinence, but also sexual function. Equally worth noting is the potentially significant

emotional impact of vaginal deliveries with third- and fourth-degree tears. Improved patient education during pregnancy and increased psychological support could help improve our current service.

**Acknowledgements**: Our thanks to Sarah Guidon for collecting the questionnaires and delivery medical notes.

**Funding**: None

## References


1. Baud D, Meyer S, Vial Y, Hohlfeld P, Achtari C. Pelvic floor dysfunction 6 years post-anal sphincter tear at the time of vaginal delivery. Int Urogynecology J. 2011 Sep;22(9):1127–34.

2. Samarasekera DN, Bekhit MT, Wright Y, Lowndes RH, Stanley KP, Preston JP, et al. Long-term anal continence and quality of life following postpartum anal sphincter injury. Colorectal Dis Off J Assoc Coloproctology G B Irel. 2008 Oct;10(8):793–9.

3. Outcomes from medium term follow-up of patients with third and fourth degree perineal tears: Journal of Obstetrics and Gynaecology: Vol 30, No 6 [Internet]. [cited 2017 Jun 21]. Available from: http://www.tandfonline.com/doi/full/10.3109/01443615.2010.494205

4. Priddis H, Schmied V, Dahlen H. Women's experiences following severe perineal trauma: a qualitative study. BMC Womens Health. 2014 Feb 21;14:32.

5. Williams A, Lavender T, Richmond DH, Tincello DG. Women's Experiences After a Third-Degree Obstetric Anal Sphincter Tear: A Qualitative Study. Birth. 2005 Jun 1;32(2):129–36.

6. Hehir MP, Fitzpatrick M, Cassidy M, Murphy M, O'Herlihy C. Are women having a vaginal birth after a previous caesarean delivery at increased risk of anal sphincter injury? BJOG Int J Obstet Gynaecol. 2014 Nov;121(12):1515–20.

7. Jha S, Parker V. Risk factors for recurrent obstetric anal sphincter injury (rOASI): a systematic review and meta-analysis. Int Urogynecology J. 2016 Jun;27(6):849–57.

8. Lowder JL, Burrows LJ, Krohn MA, Weber AM. Risk factors for primary and subsequent anal sphincter lacerations: a comparison of cohorts by parity and prior mode of delivery. Am J Obstet Gynecol. 2007 Apr;196(4):344.e1-5.

9. Harvey M-A, Pierce M, Alter J-EW, Chou Q, Diamond P, Epp A, et al. Obstetrical Anal Sphincter Injuries (OASIS): Prevention, Recognition, and Repair. J Obstet Gynaecol Can JOGC J Obstet Gynecol Can JOGC. 2015 Dec;37(12):1131–48.

10. Fynes M, Donnelly V, Behan M, O'Connell PR, O'Herlihy C. Effect of second vaginal delivery on anorectal physiology and faecal continence: a prospective study. Lancet Lond Engl. 1999 Sep 18;354(9183):983–6.

11. Uebersax JS, Wyman JF, Shumaker SA, McClish DK, Fantl JA. Short forms to assess life quality and symptom distress for urinary incontinence in women: the Incontinence Impact Questionnaire and the Urogenital Distress Inventory. Continence Program for Women Research Group. Neurourol Urodyn. 1995;14(2):131–9.

12. Jorge JM, Wexner SD. Etiology and management of fecal incontinence. Dis Colon Rectum. 1993 Jan;36(1):77–97.

13. Vaizey CJ, Carapeti E, Cahill JA, Kamm MA. Prospective comparison of faecal incontinence grading systems. Gut. 1999 Jan;44(1):77–80.

14. Naissances et décès [Internet]. [cited 2016 Nov 19]. Available from: https://www.bfs.admin.ch/bfs/fr/home/statistiques/population/naissances-deces.html

15. Netgen. Risques à long terme de l'accouchement par césarienne [Internet]. Revue Médicale Suisse. [cited 2016 Nov 22]. Available from: http://www.revmed.ch/RMS/2009/RMS-222/Risques-a-long-terme-de-l-accouchement-par-cesarienne

16. Office fédéral de la santé publique - Accouchement par césarienne en Suisse [Internet]. [cited 2016 Nov 22]. Available from: http://www.bag.admin.ch/themen/medizin/13641/15309/index.html?lang=fr

17. Baghestan E, Irgens LM, Børdahl PE, Rasmussen S. Risk of recurrence and subsequent delivery after obstetric anal sphincter injuries. BJOG Int J Obstet Gynaecol. 2012 Jan;119(1):62–9.

18. Minaglia SM, Kimata C, Soules KA, Pappas T, Oyama IA. Defining an at-risk population for obstetric anal sphincter laceration. Am J Obstet Gynecol. 2009 Nov;201(5):526.e1-6.

19. McKenna DS, Ester JB, Fischer JR. Elective cesarean delivery for women with a previous anal sphincter rupture. Am J Obstet Gynecol. 2003 Nov;189(5):1251–6.

20. Boggs EW, Berger H, Urquia M, McDermott CD. Recurrence of obstetric third-degree and fourth-degree anal sphincter injuries. Obstet Gynecol. 2014 Dec;124(6):1128–34.

21. Fynes M, Donnelly VS, O'Connell PR, O'Herlihy C. Cesarean delivery and anal sphincter injury. Obstet Gynecol. 1998 Oct;92(4 Pt 1):496–500.