

Original scientific article / Izvirni znanstveni članek

## Perineal trauma during vaginal birth in Slovenia: analysis of national data for the period from 2013 to 2015

Poškodbe presredka pri vaginalnem porodu v Sloveniji: analiza nacionalnih podatkov za obdobje od 2013 do 2015

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**Key words:** perineum; trauma; tears; childbirth; incidence

**Ključne besede:** presredek; poškodbe; raztrganine; porod; pojavnost

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### ABSTRACT

**Introduction:** The aim of this retrospective study was to examine the rates of perineal tears during childbirth in Slovenian maternity hospitals in the period from 2013 to 2015.

**Methods:** A causal non-experimental method of quantitative empirical approach was conducted. Data were pooled from the Slovenian National Perinatal Information System and analysed for the period of 2013 to 2015. Data analysis was performed with the use of frequency distribution of attributive variables and the basic descriptive statistics of numerical variables.

**Results:** The incidence of perineal trauma during childbirth in all the 14 maternity hospitals varies from the "perineum without injury" to the "fourth degree perineal tear". Overall, 26.1 % of women sustained a first degree perineal tear, whereas 4.8 % of women had a second degree perineal tear. Severe perineal trauma included 0.8 % of third degree tears and 0.1 % of fourth degree tears.

**Discussion and conclusion:** Perineal trauma varies between Slovenian maternity hospitals. Women who have sustained tears that cut into their bowels may face serious health problems and should be given relevant advice regarding the state of their pelvic floor after childbirth. It is of great importance to appropriately recognise the severity of the perineal trauma. Moreover, health professionals should be familiar with the perineal trauma classification and the factors that may cause the perineum to tear during childbirth.

### IZVLEČEK

**Uvod:** Namen te retrospektivne raziskave je bil proučiti pojavnost poškodb presredka pri vaginalnem porodu v slovenskih porodnišnicah v obdobju od 2013 do 2015.

**Metode:** Uporabljena je bila kavzalno neeksperimentalna metoda kvantitativnega empiričnega pristopa. Vsi podatki so bili pridobljeni iz nacionalnega perinatalnega informacijskega sistema in analizirani za obdobje med letoma 2013 in 2015. Podatki so bili analizirani s pomočjo frekvenčne distribucije atributivnih spremenljivk ter osnovne deskriptivne statistike numeričnih spremenljivk.

**Rezultati:** Pogostost poškodb presredka pri vaginalnem porodu v vseh 14 slovenskih porodnišnicah se razteza od stanja brez kakršnekoli poškodbe presredka do četrte stopnje poškodbe presredka. Ženske so najpogosteje utrpeli raztrganino presredka prve stopnje (26,1 %), medtem ko je 4,8 % žensk utrpelo raztrganino presredka druge stopnje. Hujše poškodbe presredka so bile prisotne v 0,8 % pri raztrganini presredka tretje stopnje in v 0,1 % pri raztrganini presredka četrte stopnje.

**Diskusija in zaključek:** Število poškodb presredka med porodom je glede na posamezne porodnišnice v Sloveniji še vedno precej različno. Ženske, ki utrpijo hujše poškodbe presredka, kamor uvrščamo raztrganine, ki segajo v črevesje, se lahko soočajo z resnimi zdravstvenimi težavami in potrebujejo ustrezno svetovanje glede stanja medeničnega dna po porodu. Obenem je za zdravstvene delavce posebej pomembno, da so večji klasifikacije porodnih poškodb ter hkrati dobro poznajo faktorje, ki lahko vplivajo na raztrganine presredka med porodom.

## Introduction

Perineal trauma has been an important research topic for decades, as it is estimated that approximately 85 % of women who give birth vaginally, experience some degree of perineal trauma (Brandie & MacKenzie, 2009). This can involve a certain degree of perineal tear, episiotomy or, in some cases, both (Royal College of Midwives, 2012). The Royal College of Obstetricians and Gynaecologists (RCOG) (2015) designed a perineal trauma classification that is widely used in various countries, including Slovenia. The classification divides perineal tears into four levels that are presented in Table 1.

**Table 1:** *Classification of perineal trauma (RCOG, 2015, p. 5–6)*

**Tabela 1:** *Klasifikacija porodnih poškodb (RCOG, 2015, p. 5–6)*

<i>Degree of perineal tear / Stopnja porodne poškodbe</i>	<i>Injury to perineal structures / Poškodbe perinealnega tkiva</i>
First-degree tear	Injury to the skin and/or vaginal mucosa.
Second-degree tear	Injury that includes perineal muscles without the anal sphincter.
Third-degree tear	Injury involving anal sphincter complex and is further divided: 3a: less than 50 % of external sphincter torn; 3b: more than 50 % of external sphincter torn; 3c: internal anal sphincter torn.
Fourth-degree tear	Injury involving the anal sphincter and anal epithelium.

First and second degree perineal tears are considered to be the most frequent perineal tears during vaginal birth (Selo-Ojeme, et al., 2015). According to the European perinatal health report (EPHR) (Euro-Peristat, 2010) the percentage of women who experienced first- or second-degree tear in 2010, ranged from 4 % in Finland to up to 58 % in Iceland. Severe perineal trauma (also known as obstetric anal sphincter injury – OASI) involves third and fourth-degree tears and is less common (Dahlen, et al., 2015; RCOG, 2015). The EPHR (2010) reported that the numbers of third- and fourth-degree perineal tears varied from 0.1 % in Poland and Romania to 4 % in Denmark, Iceland and the Netherlands. However, the incidence of perineal trauma in individual countries ranges. For example, in the United Kingdom severe perineal trauma ranged from 0–8 % (Thiagamorthy, et al., 2014), while in Slovenia, severe perineal trauma was indicated in 0.29 % of women in the period from 2007 to 2011 (Verdenik, et al., 2013).

Perineal trauma can affect women's health - both physically and psychologically (Kalichman, 2008). The most common symptom related to childbirth trauma is perineal pain (Selo-Ojeme, et al., 2015). Other problems include the occurrence of dyspareunia (Mazza, 2011), affected sleep pattern, slower wound healing process and infection (Boyles, 2006), as well as fatigue and depression (Albers & Borders, 2007). Severe perineal trauma may also result in urinary and faecal incontinence (Boyles, et al., 2009; Baghestan, et al., 2010; Minini, et al., 2010). The latter can cause a range of symptoms that can lead to serious hygienic, social and psychological issues of

women (Society of Obstetricians and Gynaecologists of Canada [SOGC], 2015).

Several risk factors for perineal trauma have been identified in the literature. These can be attributed to the woman, foetus or the labour process (SOGC, 2015). Risk factors that are attributed to women are the nutritional status and related body mass index (Thakar & Sultan, 2010), lack of physical activity (Voldner, et al., 2009), age (Angioli, et al., 2000; Dahlen, et al., 2015), ethnicity (Dahlen, et al., 2007), length of perineum (Dua, et al., 2009), previous perineal injuries (Thakar & Sultan, 2010) and primiparity (Groutz, et al., 2011; Dahlen, et al., 2015). Factors attributed to the foetus are birthweight of more than 4000 g, large head

circumference, postmaturity and malpresentations (Goldberg, et al., 2003; Groutz, et al., 2011). Other factors include birth positions leading to an increased risk for perineal trauma, operative vaginal deliveries, median episiotomy, epidural analgesia, and a prolonged second stage of labour (SOGC, 2015).

### *Aims and objectives*

The main aim of the study was to examine the differences between the rates of perineal tears during childbirth in all the 14 Slovenian maternity hospitals. The objective was to outline the incidence of perineal trauma in the period of three years (2013–2015) in various maternity hospitals in Slovenia. The majority of Slovenian women give birth in one of the fourteen maternity hospitals. The main research question was how common is perineal trauma among women giving birth in Slovenian maternity hospitals.

## Methods

In this retrospective study, a causal non-experimental method of quantitative empirical research was conducted. National data were pooled from the Slovenian National Perinatal Information System (NPIS).

### *Description of the research sample*

The sample included data from all the 14 Slovenian maternity hospitals in the period of three years (from

2013 to 2015). Two of the maternity hospitals (Ljubljana and Maribor) provide healthcare on a tertiary level, while others are secondary level maternity hospitals. The numbers for 20,489 births were pooled out only for primiparous women who had a vaginal birth at term (37 0/7 to 42 0/7 weeks of gestation), without obstetric intervention, such as vacuum extraction or forceps delivery. The sample included all the 14 maternity hospitals in Slovenia (Brežice, Celje, Izola, Jesenice, Kranj, Ljubljana, Maribor, Murska Sobota, Nova Gorica, Novo mesto, Postojna, Ptuj, Slovenj Gradec, Trbovlje).

### *Description of the research instrument*

The data regarding the incidence of different degrees of perineal trauma sustained during childbirth was pooled from the Slovenian national Perinatal Information System database that includes information regarding perinatal outcomes for each individual maternity hospital in Slovenia. The database, which was established in 1986, collects the data of women during childbirth, characteristics of childbirth and their newborns. According to the National Institute of Public Health Slovenia (2017) the Perinatal Information System database collects the data for all live births, regardless of their birth weight, and stillborns with the birth weight of 500 grams and more, or gestational age of 22 weeks and more. The data is collected in the database from the records that were carefully completed by the healthcare professionals in all maternity hospitals across Slovenia.

### *Description of the research procedure and data analysis*

Perinatal results have been analysed in terms of the level of trauma of the perineum during childbirth. The results were compared between the 14 maternity hospitals in Slovenia. Data analysis was performed with the use of frequency distribution of attributive variables and the basic descriptive statistics of numerical variables (ranks with categories of maternity hospitals). Data have been processed with the SPSS ver. 20.0 (SPSS Inc., Chicago, IL, USA). The data were compiled according to the relevant professional and scientific literature from the field of perineal trauma during childbirth. Objectiveness was assured by means of a standardised instructions for all maternity hospitals before conducting the research. Validity was increased by conducting expert examination of the perinatal data and results. Experts familiar with the theoretical background of the study and the methodological approaches evaluated the explicitness, distinctiveness and exhaustiveness of the developed categories and questions in the research instrument, as suggested by Polit & Beck (2004).

## **Results**

The research data about the level of trauma to the perineum during childbirth in all the 14 maternity hospitals in Slovenia are presented in Table 2.

The data show that the incidence of trauma to the perineum during childbirth in all the 14 maternity hospitals varied from the "perineum without injury" to the "fourth degree perineal rupture". There were 53.9–89.8 % of women that did not sustain perineal lacerations. The rate of first degree perineal tear was between 7.9 % and 35.9 %, with the average being as high as 26.1 %. The percentages of second degree tear ranged from 1.7 % to 13.2 %. The average rate of second degree perineal tear was 4.8 %. The lowest range of third degree tears was 0.1 %, whereas the highest 1.8 %, with the average range was 0.8 %. Eight maternity hospitals did not report on any fourth degree perineal tears. In the remaining six maternity hospitals the fourth degree perineal tears ranged from 0.1 % to 0.3 %. The average rate of all the maternity hospitals regarding the fourth degree perineal tear was 0.1 %.

## **Discussion**

The results of this study show that the incidence of perineal trauma varies among the 14 Slovenian maternity hospitals. Differences between the maternity hospitals have been noticed in the frequency distribution of data. However, it should be acknowledged that the differences were not calculated with statistical tests.

As expected, the first degree perineal tear was the most common perineal tear that occurred in 26.1 % of all primiparous women who had a vaginal birth at term between 2013 and 2015. Two maternity hospitals reported that their rates of a first degree tear were below 10 %. Four maternity hospitals outlined their rates to be between 10–20 %, whereas occurrence of first degree perineal tears in three maternity hospitals was between 20 % to 30 %. In five maternity hospitals the rates of first degree tear exceeded 30 %. When looking at second degree perineal tears, eight maternity hospitals reported rates of 1–5 %. There were five maternity hospitals where the percentage of second degree perineal tear was between 5–10 %. Only one maternity hospital reported the occurrence of second degree perineal tear in more than 10 %.

When comparing the rates of severe perineal tears, the majority of perineal tears were third degree (0.8 %). More precisely, in eight maternity hospitals, the rates of third degree tears were between 0.2 % and 0.5 %. Four maternity hospitals reported rates between the range of 0.6 % to 1 %, while the rates were above 1 % in two maternity hospitals. The occurrence of fourth degree perineal tears was low in all maternity hospitals and did not exceed 0.3 %. This is in line with the data reported in *Perinatologia Slovenica II* (2013), where the rates of third and fourth degree tears in 2011 were 0.32 %, which included all the maternity

**Table 2:** *Perineal tears during childbirth in Slovenian maternity hospitals (primiparous women with vaginal birth at term, without obstetric intervention), period 2013–2015***Tabela 2:** *Število, odstotek in stopnja poškodb presredka med porodom v slovenskih porodnišnicah (vaginalni porodi ob terminu poroda brez intervencij), obdobje 2013–2015*

Maternity hospital / Porodnišnica		Perineal trauma during childbirth (rate of rupture) / Poškodbe presredka med porodom (stopnja raztrganine)					Total / Skupaj
		without	first	second	third	fourth	
Brežice	<i>n</i>	325	131	15	4	0	475
	%	68.4	27.6	3.2	0.8	0.0	100.0
Celje	<i>n</i>	1485	472	42	8	0	2007
	%	74	21.3	2.1	0.4	0.0	100.0
Jesenice	<i>n</i>	476	274	116	16	0	882
	%	53.9	31.1	13.2	1.8	0.0	100.0
Izola	<i>n</i>	499	182	27	1	0	709
	%	70.4	25.7	3.8	0.1	0.0	100.0
Kranj	<i>n</i>	1001	480	81	12	0	1574
	%	63.6	30.5	5.1	0.8	0.0	100.0
Ljubljana	<i>n</i>	3375	2111	308	85	2	5881
	%	57.5	35.9	5.2	1.4	0.0	100.0
Maribor	<i>n</i>	2332	744	162	16	6	2332
	%	60.2	31.9	6.9	0.7	0.3	100.0
Murska Sobota	<i>n</i>	857	185	28	2	1	1073
	%	79.9	17.2	2.6	0.2	0.1	100.0
Nova Gorica (Šempeter)	<i>n</i>	444	105	14	3	1	567
	%	78.3	18.5	2.5	0.5	0.2	100.0
Novo mesto	<i>n</i>	1034	157	37	7	1	1236
	%	83.6	12.7	3.0	0.6	0.1	100.0
Postojna	<i>n</i>	1338	155	26	8	0	1527
	%	87.6	10.2	1.7	0.5	0.0	100.0
Ptuj	<i>n</i>	811	71	17	3	1	903
	%	89.8	7.9	1.9	0.3	0.1	100.0
Slovenj Gradec	<i>n</i>	383	292	89	2	0	895
	%	57.3	32.6	9.9	0.2	0.0	100.0
Trbovlje	<i>n</i>	360	41	25	2	0	428
	%	84.1	9.6	5.8	0.5	0.0	100.0
Total / Skupaj		13966	5355	987	169	12	20489
		68.2	26.1	4.8	0.8	0.1	100.0

Legend / Legenda: *n* – number / število; % – percentage / odstotek

hospitals. Although half of the fourth degree perineal tears occurred in one maternity hospital, it should be acknowledged that this is the second largest maternity hospital in Slovenia, which provides care on a tertiary level. According to the EPHR (2010) severe perineal tears (third and fourth degree) were above 3 % in Switzerland, Iceland, United Kingdom (only England and Scotland), Sweden, The Netherlands and Denmark. Countries with the lowest incidence of third and fourth degree lacerations, where severe perineal tears did not exceed 1 %, were Cyprus, Poland, Portugal, Romania and Slovenia (EPHR, 2010). The data presented in this study show that the rates of severe perineal tears in Slovenian maternity hospitals from 2013 to 2015 do not exceed 1 %. Low numbers of severe perineal tears among women giving birth in Slovenian maternity

hospitals are an important factor contributing to the quality of women's lives in the postpartum period.

It should be outlined that women who have sustained severe perineal trauma and have problems with anal incontinence, often feel socially stigmatised (Andrews, et al., 2006) and embarrassed to report about their intimate problems (SOGC, 2015). Therefore, they should be offered suitable advice with regard to the state of their perineum and possible accompanying symptoms. This is an important aspect of the postpartum care in the maternity hospital and should not be underestimated in the community care. As the common symptom of the perineal trauma is pain (Selo-Ojeme, et al., 2015), it has to be acknowledged that options for pain relief in the postpartum period are limited for women who are breastfeeding their

newborns (Steen & Roberts, 2011). Drusany Starič and colleagues (2017) outlined that women with risk factors for obstetric anal sphincter injuries require special attention during birth in order to help prevent the perineal trauma.

However, Smith and colleagues (2013) state that severe perineal trauma is often not appropriately recognised and therefore, goes underreported. In Slovenia, approximately 1–2 % of obstetric anal sphincter injuries are recognized at birth (Jakopič & Lukanović, 2009). In their research, Jakopič and colleagues (2009) examined 26 women after childbirth with the anal ultrasound and found that 46 % of women had an anal sphincter injury. Although their study included a small study sample, it is clear that a good cooperation of a multidisciplinary team with extensive knowledge on perineal trauma classification is required to appropriately address the degree and severity of perineal trauma during childbirth (Dahlen, et al., 2015). Midwives and other healthcare professionals should be familiar with the factors that have an effect on perineal trauma, as they can lower the incidence of the perineal trauma. Training in perineal trauma classification on a regular basis is recommended for healthcare professionals who accompany women during childbirth.

Differences in the frequency of perineal trauma could be attributed to: important epidemiological factors, differences in the data recording or differences of the clinical practice, such as the use of different perineal management techniques, birthing pool, digital perineal stretching during the second stage of labour, birth positions of the woman, and the level of the maternity hospital (secondary or tertiary) (Smith, et al., 2013). As the authors of this study did not have access and control over data recording, this could also have had an impact on the analysed data.

One advantage of this study is the large data sample including reported numbers for all fourteen maternity hospitals in Slovenia in the three-year period from 2013 to 2015. However, the authors are aware of the study's limitations. As the data were pooled from the national database, it was not possible to analyse women's characteristics such as age and body mass index from individual maternity hospital. The limitation of this study might also be the potential inconsistency in record-keeping across the period of three years and among healthcare professionals. Due to this, the authors of this study could not control the quality of the data.

A further analysis of the reasons for the reported changes in perineal trauma could be further analysed with multivariate analysis by considering important risk factors for perineal trauma, such as the mother's body mass index (BMI), fetal head circumference, birth weight and the length of labour. We recommend that an observational study that would research different approaches in the management of the perineum

during the second stage of labour is conducted. Further research outlining the rates of episiotomies in maternity hospitals is recommended on a regular basis.

## Conclusion

This study has revealed the incidence of perineal trauma during childbirth in all the fourteen Slovenian maternity hospitals. The percentage of perineal tears in primiparous women who had a vaginal birth at term (37/0–42/0 weeks of gestation) without obstetric intervention, varies between individual maternity hospitals. Although the average occurrence of perineal tears remains low, there is always room to optimise clinical practice by being familiar with the perineal management techniques and the use of different birth positions, and provide continuous professional development to the healthcare professionals who accompany women during labour and childbirth.

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## Conflict of interest / Nasprotje interesov

The authors declare that no conflicts of interest exist. / Avtorji izjavljajo, da ni nasprotja interesov.

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## Ethical approval / Etika raziskovanja

The analysed data were unidentified. The study was conducted in accordance with the Helsinki-Tokyo Declaration (World Medical Association, 2013) and the Code of Ethics for Midwives of Slovenia (2014). / Podatki analizirani v raziskavi so bili deidentificirani. Raziskava je bila pripravljena v skladu z načeli Helsinško-Tokijske deklaracije (World Medical Association, 2013) in Kodeksa etike za babice Slovenije (2014).

## Author contributions / Prispevek avtorjev

PP, AJD, APM and IV designed the study, data analysis and interpretation was performed by AJD and IV. PP, AJD and TSZ conducted the manuscript draft, whereas critical revision of the manuscript was performed by AJD and APM. Final approval of the manuscript was given by PP and AJD. / PP, AJD,

APM in IV so načrtovali raziskavo, analiza podatkov je bila opravljena s strani AJD in IV. PP, AJD in TSZ so pripravili osnutek prispevka raziskave, medtem ko sta AJD in APM kritično pregledali prispevek. Končni prispevek je bil pregledan s strani PP in AJD.

## Literature

Albers, L.L. & Borders, N., 2007. Minimizing genital tract trauma and related pain following spontaneous vaginal birth. *Journal of Midwifery and Women's Health*, 52(3), pp. 246–253. <https://doi.org/10.1016/j.jmwh.2006.12.008>  
PMid:17467591

Andrews, V., Sultan, A., Thakar, R. & Jones, P.W., 2006. Occult anal sphincter injuries: myth or reality. *International Journal of Obstetrics and Gynaecology*, 113(2), pp. 195–200. <https://doi.org/10.1111/j.1471-0528.2006.00799.x>  
PMid:16411998

Angioli, R., Gómez-Marín, O., Cantuaria, G. & O'Sullivan, M.J., 2000. Severe perineal lacerations during vaginal delivery: the University of Miami experience. *American Journal of Obstetrics and Gynecology*, 182(5), pp. 1083–1085. <https://doi.org/10.1067/mob.2000.105403>  
PMid:10819834

Baghestan, E., Irgens, L.M., Bordahl, P.E. & Rasmussen, S., 2010. Trends in risk factors for obstetric anal sphincter injuries in Norway. *Obstetrics and Gynecology*, 116(1), pp. 25–33. <https://doi.org/10.1097/AOG.0b013e3181e2f50b>  
PMid:20567164

Boyle, M., 2006. *Wound healing in midwifery*. Abingdon: Radcliffe, pp. 27–115.  
PMid:16113513

Boyles, S.H., Li, H., Mori, T., Osterweil, P. & Guise, J.M., 2009. Effect of mode of delivery on the incidence of urinary incontinence in primiparous women. *Obstetrics and Gynecology*, 113(1), pp. 134–141. <https://doi.org/10.1097/AOG.0b013e318191bb37>  
PMid:19104369

Brandie, K. & MacKenzie, A., 2009. Perineal trauma following vaginal delivery. *Journal of the Association of Chartered Physiotherapists in Women's Health*, 105, pp. 40–55.

Dahlen, H.G., Priddis, H. & Thornton, C., 2015. Severe perineal trauma is rising, but let us not overreact. *Midwifery*, 31(1), pp. 1–8. <https://doi.org/10.1016/j.midw.2014.09.004>  
PMid:25440297

Dahlen, H.G., Ryan, M., Homer, C.S. & Cooke, M., 2007. An Australian prospective cohort study of risk factors for severe perineal trauma during childbirth. *Midwifery*, 23(2), pp. 196–203. <https://doi.org/10.1016/j.midw.2006.04.004>  
PMid:17125892

Drusany Starič, K., Bukovec, P., Jakopič, K., Zdravevski, E., Trajković, V. & Lukanović, A., 2017. Can we predict obstetric anal sphincter injury. *European Journal of Obstetrics & Gynecology and Reproductive Biology*, 210, pp. 196–200. <https://doi.org/10.1016/j.ejogrb.2016.12.029>  
PMid:28061422

Dua, A., Whitworth, M., Dugdale, A. & Hill, S., 2009. Perineal length: norms in gravid women in the first stage of labour. *International Urogynecology Journal*, 20(11), pp. 1361–1364. <https://doi.org/10.1007/s00192-009-0959-x>  
PMid:19649551

Euro-Peristat, 2010. *European perinatal health report: health and care of pregnant women and babies in Europe in 2010*. Available at: [http://www.europeristat.com/images/doc/EPHR2010\\_w\\_disclaimer.pdf](http://www.europeristat.com/images/doc/EPHR2010_w_disclaimer.pdf) [10. 10. 2016].

Goldberg, J., Hyslop, T., Tolosa, J.E. & Sultana, C., 2003. Racial differences in severe perineal lacerations after vaginal delivery. *American Journal of Obstetrics and Gynecology*, 188(4), pp. 1063–1067. <https://doi.org/10.1067/mob.2003.251>  
PMid:12712111

Groutz, A., Hasson, J., Wengier, A., Gold, R., Skornick-Rapaport, A., Lessing, J.B., et al., 2011. *American Journal of Obstetrics and Gynecology*, 204(4), pp. 1–4. <https://doi.org/10.1016/j.ajog.2010.11.019>  
PMid: 21183150

Jakopič, K. & Lukanović, A., 2009. Poškodbe analnega sfinktra ob porodu. *Zdravniški Vestnik*, 78(Suppl I), pp. I298–I300.

Jakopič, K., Lukanović, A. & Gruden, A., 2009. Prikrite poškodbe analnega sfinktra v porodnišnici Ljubljana – incidence in dejavniki tveganja. *Zdravniški Vestnik*, 78(Suppl I), pp. I301–I303.

Kalichman, L., 2008. Perineal massage to prevent perineal trauma in childbirth. *Israel Medical Association Journal*, 10(7), pp. 531–533.

*Kodeks etike za babice Slovenije*, 2014. Ljubljana: Zbornica zdravstvene in babiške nege Slovenije – Zveza strokovnih društev medicinskih sester, babic in zdravstvenih tehnikov Slovenije.

Mazza, D., 2011. *Women's health in general practice*. 2nd ed. Chatswood: Elsevier Australia, pp. 150–270.

Minini, G., Zanelli, S., Inselvini, P., Caria, M., Grosso, S. & Quaresmini, D., 2010. Mechanisms of pelvic floor trauma during vaginal delivery. In: G.A. Santoro, A.P. Wiczorek & C.I. Bartram, eds. *Pelvic Floor Disorders: imaging and multidisciplinary approach to management*. Milano: Springer Italia, pp. 137–141. [https://doi.org/10.1007/978-88-470-1542-5\\_16](https://doi.org/10.1007/978-88-470-1542-5_16)

Polit, D.F. & Beck, C.T., 2004. *Nursing research: principles and methods*. Philadelphia: Lippincott Williams and Wilkins, pp. 315–441.

Royal College of Midwives [RCM], 2012. *Evidence based guidelines for midwifery-led care in labour: care of the perineum*. London: RCM, pp. 2–9.

Royal College of Obstetricians and Gynaecologists [RCOG], 2015. *The management of third- and fourth-degree perineal tears: green-top guideline no. 29*. Liverpool: RCOG, pp. 2–15.

Selo-Ojeme, D., Pathak, S. & Joshi, V., 2015. The knowledge, practice and opinion of midwives' in the UK on their training in obstetric perineal repair. *Archives of Gynecology and Obstetrics*, 291(6), pp. 1265–1270.

<https://doi.org/10.1007/s00404-014-3574-0>

PMid:25501836

Smith, L.A., Price, N., Simonite, V. & Burns, E.E., 2013. Incidence of and risk factors for perineal trauma: a prospective observational study. *BMC Pregnancy and Childbirth*, 13, pp. 59.

<https://doi.org/10.1186/1471-2393-13-59>

PMid:23497085; PMCid:PMC3599825

Society of Obstetricians and Gynaecologists of Canada [SOGC], 2015. Clinical practical guideline no. 330: obstetrical anal sphincter injuries (OASIS): prevention, recognition, and repair. *Journal of Obstetrics and Gynaecology Canada*, 37(12), pp. 1131–1148.

Steen, M. & Roberts, T., 2011. The consequences of pregnancy and birth for the pelvic floor. *British Journal of Midwifery*, 19(11), pp. 692–698.

<https://doi.org/10.12968/bjom.2011.19.11.692>

Thakar, R. & Sultan, A.H., 2010. Prevention of perineal trauma. In: G.A. Santoro, A.P. Wiczorek & C.I. Bartram, eds. *Pelvic floor disorders: imaging and multidisciplinary approach to management*. Milano: Springer Italia, pp. 155–162.

[https://doi.org/10.1007/978-88-470-1542-5\\_18](https://doi.org/10.1007/978-88-470-1542-5_18)

Thiagamoorthy, G., Johnson, A., Thakar, R. & Sultan, A.H., 2014. National survey of perineal trauma and its subsequent management in the United Kingdom. *International Urogynecology Journal*, 25(12), pp. 1621–1627.

<https://doi.org/10.1007/s00192-014-2406-x>

PMid:24832856

Verdenik, I., Novak Antolič & Ž., Zupan, J., eds., 2013. *Perinatologia Slovenica II: Slovenski perinatalni rezultati za obdobje 2002–11*. Ljubljana: Združenje za perinatalno medicine SZD in Ginekološka klinika, UKC Ljubljana.

Voldner, N., Frøslie, K.F., Haakstad, L.A., Bo, K. & Henriksen, T., 2009. Birth complications, overweight, and physical inactivity. *Acta Obstetrica et Gynecologica Scandinavica*, 88(5), pp. 550–555.

<https://doi.org/10.1080/00016340902818162>

PMid:19277916

World Medical Association, 2013. World Medical Association Declaration of Helsinki: ethical principles for medical research involving human subjects. *Journal of the American Medical Association*, 310(20), pp. 2191–2194.

<https://doi.org/10.1001/jama.2013.281053>

PMid:24141714

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