

The impact of national guidelines on EBM implementation in clinical practice: a comparison between the practices in two countries

J. Zahumensky¹, P. Psenkova¹, P. Janku², P. Ventruba²

¹2nd Department of Obstetrics and Gynecology, University Hospital Bratislava and Comenius University, Bratislava (Slovak Republic)

²Department of Obstetrics and Gynaecology, Brno University Hospital and Masaryk University Medical School, Brno (Czech Republic)

Summary

Objective: To determine if the application of guidelines for obstetrical anal sphincter injuries (OASIS) management adopted by professional society in a country improves healthcare compared to a country where the guidelines are not adopted. **Materials and Methods:** In 2008 and 2016, a questionnaire was sent to every maternity ward in the Czech and Slovak Republics. In 2011, the guidelines for OASIS management were published in the Czech Republic. The authors compared the changes in the management of OASIS in both countries and evaluated the effect of the guidelines on healthcare improvement. **Results:** In 2008, the current Royal College of Obstetricians and Gynaecologists (RCOG) classification of OASIS was not used by any hospital in both countries. In 2016, the classification was used by 48.8% of hospitals in the Czech Republic and by 11.5% of hospitals in the Slovak Republic. The percentage of hospitals in the Czech Republic which used antibiotic prophylaxis while treating OASIS increased from 87.3% in 2008 to 100% in 2016. In the Slovak Republic, the percentage decreased from 85.7% to 73.1%. Active follow-up increased in the Czech Republic from 40% to 70.8%. In the Slovak Republic, it increased from 33.3% to 38.5%. In 2008, the management according to EBM was not performed by any of centres participating in the survey. In 2016, this percentage increased to 34.1% in the Czech Republic and to 3.8% in the Slovak Republic. **Conclusion:** The introduction of guidelines improved healthcare more significantly compared to the country where guidelines are not yet adopted.

Key words: Guideline adherence; Obstetrical anal sphincter injuries; OASIS management; EBM.

Introduction

Obstetrical anal sphincter injuries (OASIS) are the main risk factor of anal incontinence in young women [1]. Women with acquired anal incontinence after giving birth often suffer from severe psychosocial morbidity. A permanent feeling of impurity can lead to loss of dignity, feeling of isolation, changes in everyday habits, and feelings of fear and anxiety. Some women may feel mutilated and handicapped in their role of partner and mother [2]. Among other things, the occurrence of symptoms of anal incontinence depends on the quality of care [3]. This is the main reason why professional societies tend to accept guidelines for the management of OASIS [4, 5] and why workshops on the improvement of precise diagnostics and treatment of these injuries are organised in many countries [6, 7].

In addition, the adherence of centres to the guidelines on the management of anal sphincter injuries is equally important. A high degree of compliance with the guidelines improves the prognosis of patients [8]. In 2008, the present authors carried out a survey regarding the classification and management of extensive obstetric injuries in the Czech and Slovak Republics [9]. Neither of these two countries had published guidelines related to this issue at that time. The guidelines of the Czech Gynaecological and Obstetrical Society were published in 2011, but the Slovak Society

of Gynaecology and Obstetrics has not accepted the guidelines as of now. Czech guidelines were published in the official nationwide journal, which is available to all members of the society. In addition, professional lectures and workshops were organised [10]. In order to evaluate the management of anal sphincter injuries after publication of the guidelines, the present authors conducted the survey once again. The aim of this study was to compare the changes in procedures in different centres in the Czech and Slovak Republics.

Materials and Methods

There were 101 maternity wards in the Czech Republic and 51 maternity wards in Slovakia in 2008. In 2016, the number decreased to 92 in the Czech Republic, while in Slovakia it remained the same. The same questionnaire was sent in 2008 and 2016. Each questionnaire contained ten questions concerning classification, repair, and follow-up of women with obstetric anal sphincter injuries or anal sphincter injuries involving the rectal mucosa. The questionnaire was anonymous, and every centre was instructed to specify their institutional status: university hospital or general hospital. The results of both surveys were statistically evaluated and both countries were compared.

Revised manuscript accepted for publication March 27, 2018

Table 1. — *Distribution of maternity hospitals in the Czech and Slovak Republics.*

	Czech Republic				Slovak Republic			
	2008		2016		2008		2016	
Total	101	55 (54%)	91	41 (45%)	51	21 (41%)	51	26 (51%)
Of which university hospitals	9	8 (89%)	9	9 (100%)	6	5 (83%)	6	5 (83%)

Table 2. — *Classification of perineal body injuries in the medical records.*

Classification in medical records	Czech Republic				Slovak Republic			
	2008 (n=55)		2016 (n=41)		2008 (n=21)		2016 (n=26)	
Classification of perineal body injuries with partial rupture of musculus sphincter ani in the medical records (3a or 3b)								
Grade 2	18	32.7 %	1	2.4 %	4	19.0 %	9	34.6 %
Grade 3	2	3.6 %	1	2.4 %	2	9.5 %	0	0
Grade 3 incomplete	24	43.6%	5	12.2 %	5	23.8 %	5	19.2 %
Grade 3a, 3b	4	7.2 %	33	80.5 %	2	9.5 %	6	23.1 %
Others	7	12.7 %	1	2.4 %	8	38.1 %	6	23.1 %
Classification of perineal body injuries with complete rupture of musculus sphincter ani without rectal wall lesion in the medical records (3c)								
Grade 2	1	1.8 %	1	2.4 %	2	9.5 %	0	0
Grade 3	4	7.3 %	1	2.4 %	1	4.8 %	6	23.1 %
Grade 3 incomplete	24	43.6 %	3	7.3 %	3	14.3 %	6	23.1 %
Grade 3 complete	9	16.4 %	3	7.3 %	4	19.0 %	0	0
Grade 3a, 3b	6	10.9 %	13	31.7 %	2	9.5 %	5	19.2 %
Grade 3c	0	0	20	48.8 %	0	0	3	11.5 %
Others	11	20.0 %	0	0	9	42.9 %	6	23.1 %
Classification of perineal body injury with complete rupture of musculus sphincter ani with rectal wall lesion in the medical records (4)								
Grade 3	1	1.8 %	1	2.4 %	2	4.8 %	2	7.7 %
Grade 3 complete	24	40.0 %	5	12.2 %	7	33.3 %	6	23.1 %
Grade 3b	4	7.3 %	2	4.9 %	3	14.3%	2	7.7 %
Grade 3c	0	0	1	2.4 %	0	0	0	0
Grade 4	15	27.3 %	32	78.5 %	2	4.8 %	10	38.5 %
Others	11	20.0 %	0	0	7	33.3 %	6	23.1 %

Results

In 2008, 55 (54%) maternity wards in the Czech Republic and 21 (41%) maternity wards in the Slovak Republic responded to the questionnaire. In 2016, 41 (44%) Czech and 26 (51%) Slovak maternity wards responded to the questionnaire (Table 1).

Three specific examples of obstetric injuries were used in the questionnaire according to the recommended classification. Table 2 contains the answers to the following questions: How do you classify the injury to the perineal body with partial rupture of the musculus sphincter ani in your medical records? How do you classify the injury of the perineal body with complete rupture of the musculus sphincter ani without rectal wall lesion in your medical records? How do you classify the injury of the perineal body with complete rupture of the musculus sphincter ani with rectal wall lesion in your medical records?

The recommended Royal College of Obstetricians and Gynaecologists (RCOG) classification was not used correctly by any of the Czech or Slovak centres in 2008. However, in 2016, the classification was correctly used by 20 (48.8%) Czech and three (11.5%) Slovak centres. Univer-

sity hospitals used the correct classification more often than general hospitals (seven out of nine centres in the Czech Republic and two out of six centres in the Slovak Republic).

Table 3 contains the answers to the following questions: Who treats OASIS in your hospital? What kind of suture material do you use in the treatment of rupture of the musculus sphincter ani in your hospital? What type of antibiotics do you use as prophylaxis for treatment of OASIS?

In 2008, antibiotic prophylaxis was used by 48 (87.3%) centres in the Czech Republic. However, in 2016, every Czech centre participating in the survey used antibiotic prophylaxis. In 2008, antibiotic prophylaxis was used by 18 (85.7%) Slovak centres. However, in 2016, 19 (73.1%) Slovak centres used antibiotic prophylaxis. In the Czech Republic, stool softeners or laxatives were administered after the treatment by 23 (41.8%) centres in 2008 and by 30 (73.2%) centres in 2016. In the Slovak republic, stool softeners or laxatives were administered after the treatment by seven (33.3%) centres in 2008 and by ten (40.0%) centres in 2016.

In the Czech Republic, active follow-up after discharge

Table 3. — Questions made to the study subjects.

Questions	Czech Republic		Slovak Republic	
	2008 (n=55)	2016 (n=41)	2008 (n=21)	2016 (n=26)
Who treats severe obstetric injuries?				
Junior obstetrician on duty	4 7.3%	1 2.4%	0	0
Senior obstetrician on duty	50 90.1%	38 92.7%	21 100%	23 88.5%
Invited colorectal surgeon on duty	1 1.8%	2 4.9%	0	3 11.5%
What kind of suture material do you use for treating injuries of musculus sphincter ani?				
Mid-term absorbable material	45 81.8%	40 97.6%	18 85.7%	20 76.9%
Quick resorbable material	7 12.7%	1 2.4%	1 4.8%	5 19.2%
Invited colorectal surgeon on duty	3 5.5%	0	2 9.5%	1 3.8%
What kind of antibiotics do you use for prophylaxis for treatment of injuries if musculus sphincter ani?				
Ampicillin or first generation cephalosporin	14 29.2%	10 24.4%	4 22.2%	3 15.8%
Second generation cephalosporin	2 4.2%	8 19.5%	2 11.1%	4 21.0%
Co-amoxiclav or third generation cephalosporin	17 35.4%	13 31.7%	6 33.3%	5 26.3
Metronidazole	4 8.3%	1 2.4%	0	0
Ampicillin or first generation cephalosporin with metronidazole	3 6.2%	5 12.2%	3 16.7%	1 5.3%
Co-amoxiclav or third generation cephalosporin with metronidazole	8 16.7%	3 7.3%	1 5.6%	5 26.3%
Second generation cephalosporin with metronidazole	0	0 0	1 5.6%	1 5.3%
Clindamycin	0	1 2.4%	1 5.6%	0

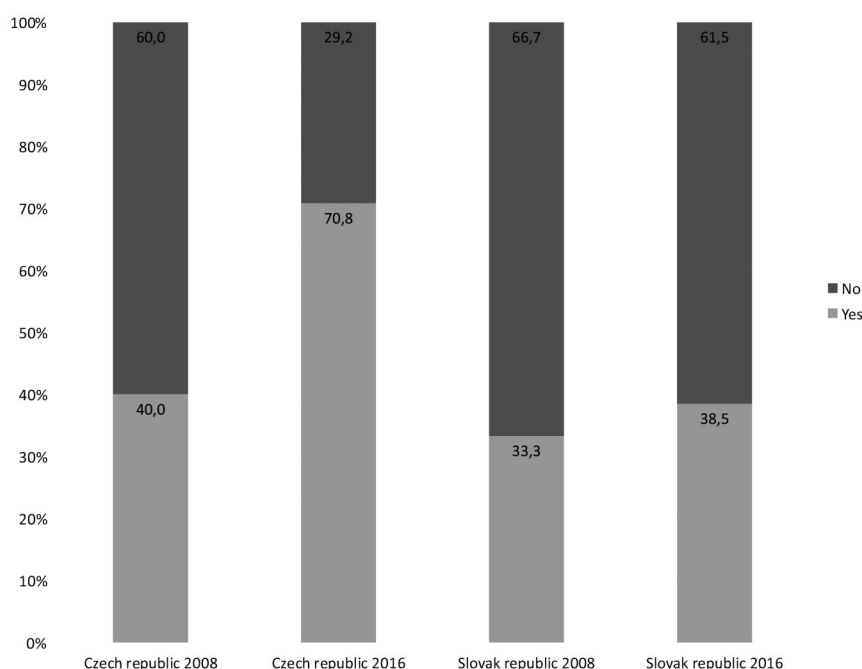


Figure 1. — Recommendation for follow-up after discharge

from hospital was performed by 22 (40.0%) centres in 2008 and by 29 (70.8%) centres in 2016. In the Slovak Republic, active follow-up after discharge from hospital was performed by seven (33.3%) centres in 2008 and by ten (38.5%) centres in 2016 (Figure 1).

In 2008, none of the centres participating in the survey followed the recommended guidelines. In 2016, however, 14 (34.1%) Czech centres followed the recommended classification and management according to the guidelines published in the Czech Republic. These 14 Czech centres included six (out of nine) university hospitals and eight (out of 32) general hospitals. In Slovakia, only one university hospital followed the recommended guidelines.

Discussion

In the Czech Republic, the process of rationalisation of obstetrics is in progress. The obstetrics departments which are reporting less than one labour per day on average are being closed. Between 2008 and 2016, the ten smallest Czech obstetrics departments were closed. On the contrary, only one obstetrics department was closed, while one private obstetrics department was opened in Slovakia during the same period of time.

In published articles, the questionnaire response rate fluctuates between 29–86% [11, 12]. In the present survey, the questionnaire response rate was between 41–54%. The

present authors achieved a higher response rate from university hospitals. A similar survey carried out in the UK showing a response rate of 44.6% [13].

Using correct classification of obstetric injuries is important for adequate statistic evaluation. Also, the frequency of recognized and treated severe injuries is assumed to be an important quality indicator of the obstetric care provided [14]. Introduction and application of standardised classification leads to improved diagnosis and subsequent proper management of patients [15]. The recommended 4-grade classification is accepted as the most efficient in the incorporation of anatomic relations, enabling appropriate repair and standardised care [4]. Long-lasting consequences on patients and their health-related quality of life are also influenced by the severity of the musculus sphincter ani injuries, which were not evaluated by older classifications [16]. In the Czech Republic, the percentage of centres using the classification correctly increased to 48.8%. In Slovakia, the percentage is only 11.5%. University hospitals showed a higher level of adherence to the recommended classification. In 2012, 57.1% of centres in the UK used the classification correctly [17].

Healing and consequences of obstetric anal sphincter injuries depend directly on the quality of care [18]. Junior obstetricians and residents show inadequate erudition and insufficient level of skills in performing the surgery [19]. The limited experience of healthcare personnel is also a risk factor of failure of primary repair [20]. A consultant was present in maternity hospitals in Glasgow in 58% of cases, but 95% of treatments were conducted by a physician who attended the relevant training course [21]. In the Czech Republic, obstetric injuries of Grades 3 and 4 were managed by an older consultant in 90.1% of cases in 2008 and in 92.7% of cases in 2016. In the Slovak Republic, obstetric injuries of Grade 3 and 4 were managed by an older consultant in all cases in 2008 and in 88.5% of cases in 2016. The collaboration with a surgeon is not required by the guidelines. In the Czech Republic, the surgeon was invited in 1.8% of cases in 2008 and in 4.9% of cases in 2016. In the Slovak Republic, the surgeon was invited in 11.5% of cases in 2016. The treatment of severe obstetric injuries by an experienced obstetrician without the presence of a colorectal surgeon equally indicates good long-term results [22].

In the Czech Republic guidelines, slowly absorbable suture is preferred in the treatment of musculus sphincter ani externus injuries. There is no experience in using monofilament absorbable suture materials in the treatment of obstetric injuries in both countries and therefore, braided vicryl is recommended. In the Czech Republic, vicryl was used in 81.8% of centres in 2008 and in 97.6% of centres in 2016. In the Slovak Republic, vicryl was used in 85.7% of centres in 2008 and in 76.9% of centres in 2016. In the UK, vicryl is used by 6.7% of obstetricians and recommended polydioxanone suture (PDS) is used by 76.9% of

obstetricians [13].

A significant increase in the number of centres using antibiotic prophylaxis was observed in the Czech Republic. In 2008, antibiotic prophylaxis was used by 87.3% of Czech centres. However, in 2016, all Czech centres participating in the survey used the prophylaxis. On the contrary, a decrease in the administration of antibiotic prophylaxis was observed in Slovakia, from 85.7% to 73.1%. In the UK, antibiotic prophylaxis is administered routinely by 98.1% of centres [13]. In Glasgow, only 59% of patients with OASIS received intraoperative administration of antibiotics before personnel participated in courses regarding the treatment of severe obstetric injuries. After attending the aforementioned courses, the percentage of patients who received the prophylaxis increased to 91% [21]. A great disunity is observed in the choice of antibiotic type. Only one multi-centre randomized controlled trial (RCT), which confirmed a decrease in postoperative complications after administration of single-dose second-generation cephalosporin against placebo, was published [23]. Based on the experience of colorectal surgeons, some centres prefer different types of schemes, most often the combination of broad spectrum antibiotics with metronidazole [24, 25].

An increase in the administration of stool softeners was also recorded (from 41.8% to 73.2% in the Czech Republic and from 33.3% to 38.4% in Slovakia). Although the positive effect of laxatives has not been studied by any randomized clinical trial, it can be predicted that the passage of a hard bolus of stool may disrupt the repair. Therefore, most surgical textbooks and experts recommend the use of laxatives. The administration of laxatives and stool softeners was confirmed by 78–100% of specialists [13, 21, 24].

In the Czech Republic, active follow-up after discharge from hospital in women suffering from OASIS was carried out by 40.0% of centres in 2008 and 70.8% of centres in 2016. In Slovakia, it was carried out by 33.3% of centres in 2008 and 38.5% of centres in 2016. Active follow-up is also recommended by professional societies [5]. In Glasgow, 99% of patients suffering from OASIS were invited for a follow-up with an obstetrician and 17% of patients were sent to a colorectal surgeon [21]. In the UK, 97% of centres perform active surveillance of patients with OASIS of which one-third has a special perineal unit [13].

Conclusion

The prognosis of patients suffering from OASIS depends on correct diagnosis, classification, and treatment. In the Czech Republic, the guidelines were followed by 34.1% of centres of which a higher percentage was represented by university hospitals. Slovak doctors often visit Czech scientific events; nevertheless, only one Slovak university hospital followed the guidelines (3.8%). It can be assumed that accepting the guidelines, its publication in a nationwide medical journal, and organizing of lectures and work-

shops may significantly improve the quality of hospital care. A greater influence can be expected in university hospitals. This work offers a unique information as it compares the changes in the management of anal sphincter injuries in two different countries after the introduction of guidelines by the professional society in only one of them. By this approach, the present authors eliminated the impact of other factors, such as attending workshops in other countries and acceptance of Evidence Based Medicine (EBM) facts by various centres, regardless of the opinion of professional societies.

Acknowledgements

The authors wish to thank all participating heads of departments.

References

- [1] Halle T.K., Salvesen K.Å., Volløyhaug I.: "Obstetric anal sphincter injury and incontinence 15-23 years after vaginal delivery". *Acta Obstet. Gynecol. Scand.*, 2016, 95, 941.
- [2] Keighley M.R.B., Perston Y., Bradshaw E., Hayes J., Keighley D.M., Webb S.: "The social, psychological, emotional morbidity and adjustment techniques for women with anal incontinence following Obstetric Anal Sphincter Injury: use of a word picture to identify a hidden syndrome". *BMC Pregnancy Childbirth*, 2016, 16, 275.
- [3] Starck M., Bohe M., Valentin L.: "The extent of endosonographic anal sphincter defects after primary repair of obstetric sphincter tears increases over time and is related to anal incontinence". *Ultrasound Obstet Gynecol.*, 2006, 27, 188.
- [4] Fernando R., Williams A., Adams E.: "The Management of Third- and Fourth-Degree Perineal Tears". *Royal College Obstet., Gynaecol.*, 2007, 29, 1. Available at: <https://www.rcog.org.uk/globalassets/documents/guidelines/gtg-29.pdf>
- [5] "Practice Bulletin No. 165 Summary". *Obstet. Gynecol.*, 2016, 128, 226.
- [6] Krissi H., Aviram A., Hirsch L., Ashwal E., Eitan R., Peled Y.: "Structured hands-on workshop decreases the over-detection rate of obstetrical anal sphincter injuries". *Int. J. Colorectal. Dis.*, 2016, 31, 45.
- [7] Illston J.D., Ballard A.C., Ellington D.R., Richter H.E.: "Modified Beef Tongue Model for Fourth-Degree Laceration Repair Simulation". *Obstet. Gynecol.*, 2017, 129, 491.
- [8] Komajda M., Cowie M.R., Tavazzi L., Ponikowski P., Anker S.D., Filippatos G.S., QUALIFY Investigators: "Physicians' guideline adherence is associated with better prognosis in outpatients with heart failure with reduced ejection fraction: the QUALIFY international registry". *Eur. J. Heart Fail.*, 2017, 19, 1414.
- [9] Zahumensky J., Menzlova E., Korbel M., Zmrhalova B., Vasicka I., Sottner O.: "Classification and management of extensive obstetric perineal injuries in the Czech and Slovak Republics". *Int. J. Gynecol. Obstet.*, 2010, 110, 252.
- [10] Zahumensky J., Kalis V.: "Péče o ženy se závažným porodním poraněním hráze - doporučený postup". *Ceska Gynekol.*, 2013, 78, 61.
- [11] Kaufner L., Ghantus K., Henkelmann A., Friedrichs U., Weizsäcker K., Schiemann A., et al.: "Haemostatic management in postpartum haemorrhage: Nationwide survey in Germany". *Anaesthetist*, 2017, 66, 491.
- [12] Wong W.C.W., Jiang S., Ong J., Peng M., Wan E., Zhu Z., et al.: "Availability and use of primary care facilities in China: a nationwide representative survey". *Lancet (London, England)*, 2016, S18.
- [13] Ismail S.I.M.F.: "The management of obstetric anal sphincter injuries (OASIS): A national postal questionnaire survey in hospitals in the UK". *J. Obstet. Gynaecol. (Lahore)*, 2015, 35, 229.
- [14] Pennycuff J.F., Northington G.M., Loucks T., Suci G., Karp D.R.: "Obstetric Anal Sphincter Injury as a Quality Metric". *Obstet. Gynecol.*, 2016, 127, 496.
- [15] Gurol-Urganci I., Cromwell D.A., Edozien L.C., Mahmood T.A., Adams E.J., Richmond D.H., et al.: "Third- and fourth-degree perineal tears among primiparous women in England between 2000 and 2012: Time trends and risk factors". *BJOG*, 2013, 120, 1516.
- [16] Roos A-M., Thakar R., Sultan A.H.: "Outcome of primary repair of obstetric anal sphincter injuries (OASIS): does the grade of tear matter?" *Ultrasound Obstet. Gynecol.*, 2010, 36, 368.
- [17] Thiagamorthy G., Johnson A., Thakar R., Sultan A.H.: "National survey of perineal trauma and its subsequent management in the United Kingdom". *Int. Urogynecol. J.*, 2014, 25, 1621.
- [18] Cerro C.R., Franco E.M., Santoro G.A., Palau M.J., Wiczorek P., Espuña-Pons M.: "Residual defects after repair of obstetric anal sphincter injuries and pelvic floor muscle strength are related to anal incontinence symptoms". *Int. Urogynecol. J.*, 2017, 28, 455.
- [19] Uppal S., Harmanli O., Rowland J., Hernandez E., Dandolu V.: "Resident competency in obstetric anal sphincter laceration repair". *Obstet. Gynecol.*, 2010, 115, 305.
- [20] Kirss J., Pinta T., Böckelman C., Victorzon M.: "Factors predicting a failed primary repair of obstetric anal sphincter injury". *Acta Obstet. Gynecol. Scand.*, 2016, 95, 1063.
- [21] Panigrahy R., Welsh J., MacKenzie F., Owen P.: "A complete audit cycle of management of third/fourth degree perineal tears". *J. Obstet. Gynaecol.*, 2008, 28, 305.
- [22] Salim R., Peretz H., Molnar R., Braverman M., Hatokay A., Shalev E.: "Long-term outcome of obstetric anal sphincter injury repaired by experienced obstetricians". *Int. J. Gynecol. Obstet.*, 2014, 126, 130.
- [23] Buppasiri P., Lumbiganon P., Thinkhamrop J., Thinkhamrop B.: "Antibiotic prophylaxis for third- and fourth-degree perineal tear during vaginal birth". *Cochrane Database Syst Rev.*, 2010, 11, CD005125.
- [24] Fernando R.J., Sultan A.H., Radley S., Jones P.W., Johanson R.B.: "Management of obstetric anal sphincter injury: a systematic review & national practice survey". *BMC Health Serv Res.*, 2002, 2, 9.
- [25] Farrell S.A., Gilmour D., Turnbull G.K., Schmidt M.H., Baskett T.F., Flowerdew G., et al.: "Overlapping Compared With End-to-End Repair of Third- and Fourth-Degree Obstetric Anal Sphincter Tears". *Obstet. Gynecol.*, 2010, 116, 16.

Corresponding Author:

P. PSENKOVA, M.D.

2nd Department of Obstetrics and Gynecology

University Hospital Bratislava and Comenius University
Ruzinovska 6

821 06 Bratislava (Slovak Republic)

e-mail: petrapsenkova@gmail.com