

**Evaluation form PhD thesis**

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Name PhD student: Iva URBANKOVA

Title thesis: "Modern technologies in the assessment and treatment of pelvic organ prolapse - Experimental and clinical studies"

Name referee: Prof. Jaromir Masata, MD, PhD.

**Evaluation score: please indicate in the table below your final score**

	Decision		Implication
<input type="checkbox"/>	Accepted without revision		Permission for public defense is granted immediately.
<input checked="" type="checkbox"/>	Minor revision - Accepted	<b>I do not want to review</b> the revised version	Permission for public defense will be granted via e-mail procedure.
<input type="checkbox"/>	Minor revision	<b>I want to review</b> the revised version	
<input type="checkbox"/>	Major revision required		Decisions 4 and 5 need to be confirmed by a formal meeting of the examining committee (external members are exempted from attending, but will be consulted via e-mail)
<input type="checkbox"/>	Not accepted	New version of manuscript has to be submitted	

## **Evaluation**

### General Remarks:

This thesis deals with very important questions in current urogynaecology and perinatal medicine. It employs very comprehensive and extensive research which could be the basis for more than one theses.

The thesis is subdivided into nine chapters. In the first chapter the pelvic floor anatomy is described in detail, with DeLancey description of the supportive system. The evolution of the pelvic floor is also described; this is very important to understand function and changes, as well as injuries which could happen during spontaneous vaginal birth. Another important aspect of pelvic floor function is changes during a lifetime, especially complex changes induced by pregnancy and delivery and finally changes induced by menopause and age.

Another important section here is a description of the epidemiology of pelvic organ prolapse surgery and an account of possible treatment. The use of grafts and graft-related complications following transvaginal use are widely discussed. In the next chapters clinical monitoring of the effect of vaginal birth on pelvic floor are explained, while the rest is experimental dealing with ovine pelvic floor anatomy and experimental models of mesh surgery on the vagina.

The clinical prospective cohort study was performed in the Institute for the Care of Mother and Child, Third Faculty of Medicine of Charles University in Prague, Czech Republic. The primary aim of this study was to determine occurrence and major risk factors for pelvic floor dysfunction among primiparous women one year after vaginal delivery.

The experimental part of the work was carried out at the Centre for Surgical Technologies of the Group Biomedical Sciences, KU Leuven, Belgium. All aims are properly formulated, methods are properly discussed and results are adequate.

I only have some minor comments on this thesis: I will comment on each chapter separately.

### Major comments:

None

### Minor comments:

Chapter 1: I have no comments on this chapter.

Chapter 2:

Abstract: in the Results section the number of included patients should be described in the same way as in the Results section in page 26.

Page 24: I think midwives work under the supervision of obstetricians, not gynecologists.

How did you define dyschezia? Did you exclude anatomical reasons for it (to exclude rectocele)?

Page 30: Previous studies mostly proved that avulsion is connected to POP, not to SUI – so this should be more precisely described.

Page 35:

“Occulat anal sphincter tear” – it would be better to change “not diagnosed”. There is good evidence that is palpation examination is performed properly after delivery it is possible to diagnose almost 100% of injuries.

Page 35: Conclusions section. I do not agree that perineal rupture grade 1 represents intrinsic tissue properties – this is speculation. Based on my practical experience I would say it is more related to the size of genital hiatus...

Chapter 3

Page 48: There is very nice comparison of the female and ovine bony pelvis. It would be also useful to compare the head off the newborns...

Page 56: It is said that the pudendal nerve is from S2-S3 – please compare to humans – where it is from S2, S3, and S4, please comment.

Chapter 4

No comments

Chapter 5

Page 89: this does not clearly explain the cited lifetime risk of POP surgery: this is the risk for POP and SUI surgery together.

Line 95: Obvious folding – this is mainly a problem induced by surgery. Stiffness of the implants is also influence by folding of the mesh material, so this could explain differences

between abdominal and vaginal approach. This primarily a surgical problem related to proper mesh spreading (unfolding).

Page 99: please describe in more detail the differences between contraction, folding and wrinkling.

Page 100: the stiffness of the explanted mesh is influenced by folding induced by surgery... please comment.

#### Chapter 6

Page 109: in your experiment heavy mesh was used (83 g/m<sup>2</sup>): this weight could be the reason for increased occurrence of mesh-related complications.

Line 117: again the term retraction is used: for those large meshes in particular, this is folding induced by surgery.

#### Chapter 7

Page 125: Why was such heavy mesh used again? It is a pity that MRI was not used immediately after surgery, as this could have assessed the direct effect of the surgery on the mesh size.

Line 141: High thickness region – is there any link to mesh folding? Could the explanation be that the mesh is too long and folded near the ventral mesh arms?

Conclusion: congratulations on an excellent study. Both the clinical and the experimental parts of the study provide very important information. It is unfortunate that experimental studies about mesh surgery of this sort were not performed before meshes were introduced into clinical practice.

#### Questions.

I have several questions regarding this thesis:

Do you mention whether there is still room for the use of polypropylene transvaginal meshes in clinical practice?

How were your experiments influenced by heavy weighted meshes?

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Could lightweight meshes and two-arm meshes decrease the occurrence of mesh-related complications?

Prague 23<sup>rd</sup> October 2017

Jaromir Masata, MD, PhD., Prof.