Annex No. 10 to the MU Directive on Habilitation Procedures and Professor Appointment Procedures

HABILITATION THESIS REVIEWER'S REPORT

Masaryk University	
Applicant	MUDr. Alica Hokynková, Ph.D.
Habilitation thesis	Multi-modal perspectives on pressure ulcers (Collection of previously published scholarly works)
Reviewer	Sebastian Probst, Full Professor of Tissue Viability and Wound Care, PhD, RN
Reviewer's home unit, institution	Skin Ostomy and Wound Care (SOWC) Unit, HES-SO University of Applied Sciences and Arts Western Switzerland, Geneva, Switzerland

1. General evaluation of the habilitation thesis

The submitted habilitation thesis *"*Multi-modal perspectives on pressure ulcers*"* represents a comprehensive, scientifically rigorous, and clinically highly relevant body of work addressing one of the most complex and persistent problems in modern healthcare, pressure ulcers (pressure injuries). The candidate presents an extensive and thematically coherent collection of publications that reflect long-term, systematic, and original research activity integrating clinical plastic surgery, nutrition, oxidative stress research, and artificial intelligence approaches.

The thesis demonstrates a clear personal scientific profile of the candidate, with strong continuity between experimental research, translational application, and everyday clinical practice. The chosen multi-modal perspective is highly appropriate and aligns well with contemporary trends emphasizing interdisciplinarity in wound healing research and pressure injury management.

The work fulfills the formal and substantive requirements of a habilitation thesis, both in scope and depth. The structure of the thesis is logical, well-organized, and reader-friendly, progressing from fundamental concepts of pressure ulcer pathophysiology and classification to advanced surgical, nutritional, biochemical, and computational approaches.

2. Scientific and clinical significance

One of the principal strengths of the submitted habilitation thesis is its consistent anchoring in clinical practice. The candidate does not confine the discussion to theoretical or experimental considerations but systematically relates scientific findings to everyday clinical decision-making. This approach is evident across several key areas, including the surgical management of deep pressure ulcers, the assessment and optimization of nutritional status prior to reconstructive procedures, the care of critically ill and spinal cord injured patients, and the prevention of postoperative complications and ulcer recurrence. In these contexts,

the candidate demonstrates a clear understanding of the complex interplay between systemic factors, local wound conditions, and surgical strategy.

The chapters addressing nutritional status and oxidative stress represent a particularly valuable component of the thesis. These topics remain comparatively underrepresented in classical pressure injury literature, despite their well-documented influence on wound healing and postoperative outcomes. The presented data and interpretations reflect the candidate's ability to integrate experimental physiological and biochemical findings with clinical observations and surgical results, thereby strengthening the translational relevance of the work.

An additional noteworthy aspect of the thesis is the inclusion of artificial intelligence and machine learning methodologies. This component reflects a forward-looking perspective and an awareness of emerging trends in medical research. The candidate demonstrates how the analysis of large clinical databases and the application of computational models may contribute to improved risk assessment, prevention strategies, and clinical decision support in pressure ulcer care, while maintaining a realistic appreciation of current limitations. Overall, this integrative approach enhances the scientific coherence and clinical applicability of the habilitation thesis.

3. Methodological quality and originality

From a methodological perspective, the submitted habilitation thesis demonstrates a high level of scientific quality. The candidate employs a broad spectrum of established and appropriate research methodologies, including clinical observational studies, experimental animal models, biochemical and oxidative stress analyses, as well as advanced statistical and computational approaches. The selection of methods corresponds well to the research questions addressed and reflects the interdisciplinary nature of the thesis.

The individual publications included in the habilitation thesis exhibit methodological consistency, adherence to ethical standards, and a generally appropriate interpretation of results. Experimental and clinical data are presented in a transparent manner, and conclusions are, for the most part, adequately supported by the obtained evidence. The methodological design across the candidate's work suggests a systematic and coherent research strategy rather than isolated or opportunistic studies.

The originality of the thesis does not primarily consist in the introduction of entirely new disease entities or radically novel techniques. Rather, it lies in the integrative approach that brings together clinical surgery, nutritional science, biochemical analysis, and computational methods into a unified conceptual framework for the understanding and management of pressure ulcers. This integrative perspective represents a meaningful contribution to the field, particularly in an area where research is often fragmented across disciplines.

The candidate's personal contribution to the presented work is clearly identifiable, both through authorship positions and through thematic continuity across the publications. Taken as a whole, the habilitation thesis demonstrates scientific independence, methodological competence, and academic maturity, fulfilling the essential criteria expected of a habilitation-level scientific work.

4. Critical comment: use of clinical guidelines and pathophysiology concept

While the overall scientific and clinical quality of the habilitation thesis is very high, one conceptual and methodological aspect merits comment. This remark should be understood as constructive and developmental, rather than as an indication of a fundamental deficiency.

Throughout the thesis, the 2019 International Guideline for the Prevention and Treatment of Pressure Ulcers/Injuries (EPUAP/NPIAP/PPPIA) is consistently used as the principal reference framework for definitions, classification, and pathophysiological interpretation. This guideline was unquestionably authoritative at the time many of the included publications were prepared. However, at the point of finalization of the habilitation thesis, the updated 2025 international guideline had already been published.

This issue is particularly relevant in relation to the pathophysiology of pressure injuries, an area in which the 2025 guideline introduces several important conceptual refinements. These include a stronger emphasis on tissue deformation–induced cellular damage as a primary mechanism rather than ischemia alone, clearer differentiation between pressure-induced injuries and moisture-associated skin damage, an expanded discussion of the role of microclimate, inflammation, and biomechanical stress, and improved terminological and conceptual clarity regarding deep tissue injury.

Given that the chapter on pathophysiology represents a foundational component of the thesis and provides the conceptual basis for preventive, conservative, and surgical strategies discussed in subsequent sections, the exclusive reliance on the 2019 guideline may slightly limit the theoretical contemporaneity of an otherwise forward-looking and innovative body of work. In this context, a critical reflection on the updated 2025 guideline, or at least on those elements that were already available prior to submission, would have further strengthened the conceptual framework of the thesis.

A brief comparative discussion outlining the evolution of pathophysiological concepts between guideline editions would enhance the theoretical robustness of the work and underscore the candidate’s engagement with the most current international consensus. Importantly, this comment does not detract from the scientific validity or clinical relevance of the candidate’s original results, which remain sound. Rather, it highlights an opportunity to further align an already strong habilitation thesis with the latest developments in the field.

5. Formal and editorial aspects

From a formal and editorial perspective, the habilitation thesis is very well prepared. The text is written in clear and precise scientific language, with appropriate and consistent use of professional terminology. The structure of the thesis is logical and facilitates orientation within the individual thematic sections.

Figures, diagrams, and tables are informative, clearly labeled, and professionally prepared. Their use contributes effectively to the understanding of complex anatomical, pathophysiological, and clinical concepts. The inclusion of original illustrations is particularly beneficial in the sections addressing anatomy, localization, and classification of pressure ulcers, where visual clarity supports accurate interpretation.

The referencing is extensive, relevant, and generally well integrated into the text, reflecting a thorough engagement with the current literature.

6. Overall assessment and recommendation

In summary, the habilitation thesis submitted by MUDr. Alica Hokynková, Ph.D. represents a substantial and original contribution to the field of pressure ulcer research and management. The work demonstrates scientific independence, methodological competence, and a high level of clinical expertise, and reflects sustained scholarly activity in an area of significant clinical relevance.
The thesis fulfills the academic, scientific, and professional criteria required for habilitation. It is characterized by thematic coherence, interdisciplinary integration, and clear translational relevance. The single critical remark concerning the use of updated international guidelines does not diminish the overall quality or validity of the presented work and can be readily addressed in future publications or during the habilitation defense.

Reviewer's questions for the habilitation thesis defence (number of questions up to the reviewer)

1. Pressure injuries are increasingly understood as the result of tissue deformation rather than ischemia alone. How does this evolving pathophysiological concept influence your preventive and early therapeutic strategies in immobilized or sedated patients, and where do you see the main limitations of its application in daily clinical practice?

2. Deep tissue injury often develops beneath intact skin and remains clinically occult. In your view, what combination of clinical assessment, risk scoring, and emerging technologies offers the most realistic approach to early detection, and why has this not yet been successfully implemented on a wider scale?

3. Your work highlights the importance of nutritional optimization before pressure injury reconstruction. How do you clinically balance the risks of delaying surgery for nutritional correction against the risks of operating in a catabolic or inflammatory state, particularly in complex or recurrent ulcers?

4. Given the persistently high recurrence rates of pressure injury, what factors most strongly guide your choice of reconstructive technique, and how does your personal definition of “surgical success” influence long-term treatment planning?

5. Oxidative stress plays a significant role in chronic wound biology. Do you see oxidative stress markers primarily as research tools, or do you anticipate a future role in guiding clinical decision-making in pressure injury management?

6. AI-based models show promise in pressure injury risk prediction and prevention. Which aspects of pressure ulcer care do you consider suitable for AI-supported decision-making today, and where must clinical judgment remain dominant to ensure patient safety and individualized care?

Conclusion

The habilitation thesis entitled Multi-modal perspectives on pressure ulcers (Collection of previously published scholarly works) by MUDr. Alica Hokynková, Ph.D., **fulfils** requirements expected of a habilitation thesis in the field of Surgery.

Date: 30.12.2025 Signature: