15th International Symposium on Computer Methods in Biomechanics and Biomedical Engineering
and
3rd Conference on Imaging and Visualization
CMBBE 2018
P. R. Fernandes and J. M. Tavares (Editors)

Abstract ID-220

THE USE OF EPISIOTOMY DURING A MALPOSITION CHILDBIRTH AND ITS EFFECT ON THE PELVIC FLOOR MUSCLES

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Keywords: Occipitoposterior fetal position, Finite element method, Numerical simulation, Pelvic floor muscles injuries, Vaginal delivery

Summary: Occipitoposterior position, referred as a fetal malposition, results in a larger presenting diameter, increasing the risk of pelvic floor muscles injury. Such injuries are considered a significant factor in the development of Pelvic Floor Dysfunction (PFD), affecting women's lives in several domains. Many insights relevant to the understanding of the pelvic floor biomechanics and subsequent dysfunction can be provided by accurate numerical simulation of vaginal delivery. The present work investigates the influence of performing mediolateral episiotomies in the mechanics of the pelvic floor, simulating a vaginal delivery with the fetus in occipitoposterior position. The numerical simulations of vaginal deliveries, with and without episiotomy, are performed based on the Finite Element Method. The biomechanical model includes the pelvic floor muscles, a surface to delimit the anterior region of the birth canal and a fetus. The study shows that fetal malposition induces a greater extension of the muscles compared to the normal position (occipitoanterior position), leading to increases of stretch. The anteroposterior diameter increases 5%. Likewise, in occipitoposterior position, the maximal enlargement of the muscular structure, for both diameters analyzed (anteroposterior and transverse), occurs for a smaller vertical descent of the fetus comparing with the occipitoanterior position. This faster enlargement may be responsible for a prolonged second stage of labor. Similarly, the enlargement of the incision is always superior in occipitoposterior position than in occipitoanterior position, being always greater for mediolateral episiotomies carried out at 30°. In addition, the force required to achieve delivery is almost 20% higher when we have a fetal malposition. Applying episiotomy, the values may decrease almost 60%. Furthermore, episiotomy is essential in reducing the damage to values near the ones obtained with normal position, making the fetal position irrelevant. The study provides evidence about the importance of performing episiotomy in specific angles in order to reduce muscle injuries during delivery. These biomechanical models are becoming non-invasive procedures to estimate how obstetrical factors influence labor and its outcomes, helping in the development of preventative strategies.