

## Relation Between Episiotomy and Osteomioarticular Symptoms

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doi: 10.19044/esj.2016.v12n30p353 [URL:http://dx.doi.org/10.19044/esj.2016.v12n30p353](http://dx.doi.org/10.19044/esj.2016.v12n30p353)

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### Abstract

Childbirth is a social and cultural phenomenon which has faced drastic changes from twentieth century as a shift to a gynecological position and an episiotomy routine. Fascia represents “the philosophy of the body” and any pathologic alteration in that tissue will affect the whole body. This study aims to verify the relation between episiotomy and osteomioarticular symptoms. 60 women who participated in this study were divided equally into two groups: group I (vaginal delivery with episiotomy) and group II (vaginal delivery without episiotomy). To assess them, we used an Initial assessment form and a Nordic Musculoskeletal Questionnaire. The data were analyzed with the *Spearman* Correlation Test and *t* Student Test for independent samples with a statistical significance of  $p \leq 0,05$ . Based on the results of the study, 60% women from group I related low back repercussions during the last year, while 53% women from group I related hip/lower limbs repercussions during the last week. Level of pain and musculoskeletal complaints prevailed in group I, as well. We concluded that there is a high prevalence of osteomioarticular symptoms in women who had episiotomy in her deliveries.

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**Keywords:** Episiotomy; Osteomioarticular symptoms; Fascia.

## **INTRODUCTION**

The episiotomy is nothing more than an incision in the perineum that is used to increase the diameter of the vaginal canal at the end of the second phase of vaginal labor. Thus, it aims to accelerate the release of the fetus which is possibly suffering of it (Zanetti et al., 2009). This procedure has become a usual practice in hospitals before their results after childbirth are well documented in the literature (Hartmann et al., 2005).

The practice of episiotomy has become common in Brazil. However, it is disseminated by Brazilian obstetrics as an established conduct. The reasons for using episiotomy include: prevention of trauma to the perineum; urinary and fecal incontinence; and damage to the pelvic floor (Oliveira & Miquilini, 2005). However, it was stated that the anal sphincter laceration, perineal pain, rectovaginal fistula, among others are risks associated with episiotomy (Frankman et al., 2009). Therefore, it has also been shown that dyspareunia and pelvic organ prolapse are also some of the focal onsets which results to major impacts in the quality of life of women's who submitted to this procedure (Pietras & Taiwo, 2012).

The fascia is a tissue with viscoelastic and continuous characteristic that forms a functional three-dimensional matrix. The fascia surrounds all the structures of the body, from head to toe (Kumka & Bonar, 2012). The body has lines of tension created by the deposited collagen. Therefore, these lines can be mutable according to the influences of external and internal environment, thus leading fascia to "keep" a memory tissue in the body. Consequently, the fascia has become an organ that can affect the health of the individual. With numerous proprioceptive cells and an organized stroma to their demands, the fascia has in all its layers, myofibroblasts, which gives this tissue one contractile capacity (Bordoni & Zanier, 2014). The muscles hardly carry all their strength because these functional units will need the help of the fascia and its various leaflets and compartments to convey the full force to the skeleton (Findley, 2012).

It was emphasized that the body acts in a global manner with musculoskeletal patterns that might undergo changes (compensations). This has opened new understandings on more macroscopic repercussions of the body. In addition, it sets aside the mechanistic and reductionist model of the last 500 years (Myers, 2003). Thus, it corroborated this logical tracing functional muscle chains throughout the body, which increasingly confirms the integrative role of the muscles and fascia (Busquet, 2001). In a study, it was explained that there is a fascial lesion and a fascial dysfunction (Bordoni & Zanier, 2013).

In addition to this evidence, new research has demonstrated that surgical procedures at specific points may present global changes in distal areas of the body. This, however, suggested a loss of the physiology of the

affected tissue (tendon, muscle, fascia) that do not fit to a new standard which was adopted. In addition to episiotomy which presents possible global changes, this study shows a preventive character. Here, we aim to also alert health professionals that the likely harm caused by episiotomy may exceed the injury site due to the logic of the continuity of fascial tissue and muscle chains or myofascial lines. Therefore, the general objective of this study is to verify the relation between musculoskeletal symptoms derived from normal delivery with episiotomy.

## **MATERIALS AND METHODS**

The present study has an analytical nature and quantitative approach carried out with an intentional sample of women who had suffered episiotomy and control group. It was drawn up and prompted that the patients should submit the questionnaire with a signed Consent Term. This will make it possible for the research ethical terms to be explained. In addition, it enables them to make a decision to choose to accept or not to participate.

The study sample consists of 60 women, 30 for each group. However, the women were sampled between 18 years to 38 years from the late postpartum period, prenatal care was done properly, and the literate and those who signed the informed consent for both groups, determined the group I (vaginal delivery with episiotomy) and group II (vaginal delivery without episiotomy). Subsequently, all who did not fit into the inclusion criteria was excluded from the study.

However, participants were provided with an initial evaluation sheet for the purpose of collecting the initial data of the participants. These data include socioeconomic variable; marital status and occupation, in addition to collecting data about the reproductive history of participant (number of calvings), Gestational history (prenatal care done properly), obstetrical (the occurrence of episiotomy), and post-pregnancy (evaluation of postpartum pain). The other questionnaire used was the Nordic Musculoskeletal Questionnaire (NMQ), an instrument characterized by multiple or binary choices facing osteomyoarticular symptoms in various anatomical regions that these symptoms appear more frequently, and a questionnaire that has good reliability (Legault et al., 2014; Pinheiro et al., 2002). Verification of the prevalence of osteomyoarticular symptoms was assessed in the last twelve months and in the last seven days preceding the questionnaire application (Branco et al., 2011; Pinheiro et al., 2002).

In the Brazilian version of NMQ, a section to admit the measure of demographic variables (gender, age, marital status, education), occupational variable (function, activity of exercise time, duration of working hours), and lifestyle (smoking, physical activity practice) was added. However, the NMQ

has six questions that will identify the presence of osteomyoarticular symptoms in nine anatomical regions (Figure 1). Subsequently, a standard index of severity of symptoms was created for the anatomical regions ranging from 0 to 3. Here, 0 represents the absence of symptoms. 1 **rarely** is the presence of symptoms. 2 is **often** the presence of symptoms, and 3 is **always** the presence of symptoms.

The data was submitted using descriptive statistical analysis (mean, standard deviation, simple frequency, and percentage). Thus, this is the comparison of statistics between groups (t test) and correlation analysis between variables (Spearman correlation).

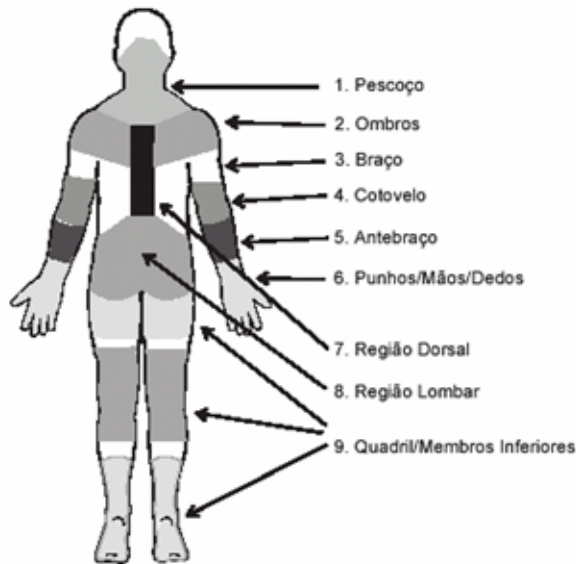


Figure 1 - Anatomic regions for mapping osteomyoarticular symptoms

## RESULTS

The research featured a sample of 60 women who had done prenatal properly. Consequently, the research found the prevalence of 50% in mothers aged between 18 and 24 years, 30% between 25 and 31 years, and 20% from 32 to 38 years. Regarding schooling, 43.3% of them had completed high school, 21.6% had not completed college, 11.6% have completed college, 11.6% have not completed high school, 6.6% have completed primary school, and 5% have not completed primary school. Concerning the amount of deliveries performed by women in the study, it was found 1 to 2 births accounts for 90%, while 3 to 4 births accounts for 10%. About the Marital status of the studied women, 70% were married and 30% were single. About their occupation, 55% of women have occupations and 45% doesn't.

Based on the analysis described in this study, the musculoskeletal symptoms were verified that in relation to the prevalence of pain, discomfort

or numbness in the last 12 months, the group I presented more repercussions than the group II. Concerning characterization of the prevalence of these repercussions, in group I, 60% reported pain in the lower back. Thus, this was followed by 20% in the dorsal region. Only 10% of the sample reported no pain. In group II, 77% of participants reported no pain, discomfort or numbness, followed by the region of the hip/lower limbs and forearms, both with 10%.

Related to prevalence of pain, discomfort or numbness in the last 7 days, the groups remained with a pattern of effects as checked into 12 months. However, this is with involvements in more anatomic areas. In group I, 53% of participants reported some pain in the hip region/lower limbs, followed by lower back with 13%. In Group II, shoulders with 7% and dorsal region with 3% were the anatomical areas reported by the participants by presenting some repercussions. However, 90% of participants in group II did not report any pain, discomfort, or numbness in the last 7 days.

As regards the levels of pregestational pain and post-pregnancy in group I, we noticed an increase in the appearance of pain and the increase in some levels of pain. Characterizing the sample in the pregestational period, 53% reported pain level 0, followed by level 2 of pain with 17%. In the post-pregnancy period, levels 4 and 5 pain was present in 17% of participants equally followed by the levels 3 and 7, each with 13%. In addition, there was also a drop to 17% at level 0 in pain.

In relation to the level of pregestational pain and post-pregnancy in group II, most of the participants did not refer pain. Featuring pregestational sample, 80% of participants had pain level 0, followed by 10% pain level 2. In the post-pregnancy period, 80% of participants remained on level 0 of pain, followed by 13% with Level 1 pain.

Relative to the quantity of musculoskeletal complaints, we noticed that 53% of participants had one to three musculoskeletal complaints. Also, 45% of the participants reported no musculoskeletal complaint. Furthermore, we observed that both groups had participants who mentioned musculoskeletal complaints.

Correlations about variables were made: Number of musculoskeletal complaints (M.C.) in the last 12 months vs. Episiotomy; Quantity of complaints (M.C.) vs. Episiotomy; Level of pain/discomfort vs. Episiotomy; Practitioners of physical activities vs. musculoskeletal complaints; Educational level vs. Episiotomy (Table 1).

Variables	$r_s$	$T$	$p$
Complaints M.C. the last 12 months vs. Episiotomy	-0.7166	-7.8256	< 0.0001
Quantity of complaints M.C. vs. Episiotomy	-0.6381	-6.3111	< 0.0001
Level of pain / discomfort vs. Episiotomy	-0.7234	-7.9795	<0.0001
Practitioners of physical activities vs. M.C. complaints	-0.0356	-0.2712	0.7872
Educational level vs. Episiotomy	0.4303	3.6307	0.0006

Note:  $r_s$ : Spearman correlation;  $p$ : descriptive level;  $t$ : t-Student

Table 1. Values of Spearman correlation

## DISCUSSION

According to WHO, the number of proper prenatal visits is equal or greater than six. However, studies have shown that the prevalence of prenatal visits is between 4 to 6 (Primo; Amorim & Castro, 2007). The age range of this prevailing mothers is between 15 to 19 years (91%), showing that early fertility rate is steadily increasing through the years (Caminha et al., 2012). As seen, it was verified that the mothers interviewed had low educational level, between 10 to 12 years of education (54.8%) (Rodrigues, Domingues & Nascimento, 2011). In epidemiologic surveys realized in maternity hospitals in the city of São Paulo-SP, most mothers had complete high school (65.8%) (Santos et al., 2015). Therefore, the obstetric profile found that women are mothers who had one to two births (Leite et al., 2013; Rodrigues et al, 2011). Consensual union is more frequent among women, reaching the range of 60%, and the same study found that 55% of mothers have no occupation (Caminha et al.,2012).

In subjects with lower back pain, there was a reduction in the sliding mechanism of the thoracolumbar fascia (TLF). Thus, the ones with low back pain for more than one year had increased the thickness and echogenicity of the perimuscular tissue of TLF through ultrasound examination. The consequences of this tissue change can be fibrosis and tissue adhesion leading to mobility loss (Langevin et al., 2011). It is likely that from an injury in the fascia of the pelvic floor during episiotomy, there is a cause of a derangement in the bending chain tension forces (perineum, rectus abdominis). Secondly, its connection with the TLF via aponeurosis of TLF would cause reduction in lumbar mobility, pain conditions, and tissue changes (fibrosis and adhesions). This hypothesis is supported due to the prevalence of repercussions in the last 12 months in the group I in the lower back (60%) and the dorsal region (20%), area of the thoracolumbar fascia.

The biggest repercussion of pain in the last 7 days and in the hip/lower limbs can be grounded in the loss-making role of the injured

fascia. Among several other myofascial lines anterior, posterior and coil is the previous deep line (PDL) (Myers, 2003). The role of LPA is to provide static support to the body. Thus, the PDL stability role is confirmed by the presence of muscles composed of slow-twitch fibers (Iliopsoas and the levatorani, for example) that provide strength and stability to each body segment which they are part of (Myers, 2003).

The PDL behaving like a muscle chain system appears to be a "continuous thread" that among various demands has to stabilize each segment of the lower limbs. It is likely that the loss of continuity of its tensional integrity and proprioceptive role of this "wire" in the perineum region caused by episiotomy, may be the reason for these effects on the hip and lower limbs in group I participants (53%).

Subsequently, there is also the possibility of more distal effects through these lines. In a study with corpses, the presence of a deep layer of fiber orientation and caudo medial caudo is lateral to the TLF (Loukas et al., 2008). Along with this data, the dorsal muscle of the back was observed (a muscle with insertion in the shoulder complex) being held by fibers of the superficial blade of TLF. However, this might be the explanation for the 10% of participants in the group I who mentioned pain, discomfort, or numbness in the last 7 days.

In clinical condition, pre- and post-pregnancy pain can be considered as yet another example of the body which is a unit. This is out of a more topographical view which reinforces the likely repercussions caused osteomioarticular after episiotomy. The pain levels present in the group I may be occurring because according to a study, the deep fascia was considered one of the origins of pain (Pavan, 2014). Therefore, this painful condition experienced pathological changes in the fascia as densification and fibrosis.

A possible cause for the appearance of musculoskeletal complaints in the group II can be in injuries during labor due to women's position in the process. It is said that as in other obstetrical procedures, gynecological position was adopted indiscriminately without checking their safety for the laboring woman. In addition, it was also expounded that the vertical position, the dimensions of the pelvis, increase significantly which benefits a better labor (Gayesk & Brügemann, 2009). Another study quoted that the squatting position allows the sacrum move around more (nutational movement), increasing the lower pelvis. We assume from this that in gynecological position, performed births may be linked to the use of episiotomy due to the position which go against the physiology of this process (Balaskas, 2012).

## CONCLUSION

The results of this study allowed us to conclude that there is a relationship between episiotomy and musculoskeletal symptoms in women which were subjected to this procedure during vaginal birth. The high prevalence of musculoskeletal complaints in the lower back (60%) and the hip/lower limbs (53%), along with increased levels of post-pregnancy pain in group I, may have its genesis in the logic of the loss of continuity of the fascia and integrity chains or myofascial lines that would cause secondary global repercussions regarding episiotomy. Besides these conclusions, the ratio between quantity of complaints and episiotomy and the pain level and episiotomy show statistical significance that women who have chosen to make the episiotomy may have more impact not only at the local level. Thus, this is because of the obstetric procedure.

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