



Hands-on during the expulsive period: hero or villain?

Hands-on durante o período expulsivo: herói ou vilão?

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ABSTRACT | BACKGROUND: Despite all the advances in health sciences, the approach during labor still follows a number of controversial and little consensus based on evidence, among which techniques with or without the use of hands during expulsion, respectively hands-on and hands-off, have gained prominence in the literature, but still lack in consensus. **AIMS:** to investigate whether the use of the hands-on technique, as opposed to the hands-off, is indeed beneficial to parturient women. **METHOD:** Systematic review, in Pubmed, BVS, PEDro and Scielo databases, using the keywords birth, hands-on and hands-off isolated or combined, as well as its variants in Portuguese. Data were organized by technique, measurement instrument and results. **RESULTS:** Of the 14 studies that comprised the present review, only three were controlled trials. Six studies pointed to the occurrence of less injuries when the hands-on technique was used, but in all controlled studies, there was no statistically significant difference between the results of the groups was low. **CONCLUSION:** The hands-on technique has been used around the world, but there is not enough evidence that it actually prevents any type of obstetric injury. Despite the existence of controlled trials, the contrast of the results regarding the laceration between the control and test groups is not strong enough for more solid conclusions.

KEYWORDS: Natural birth. Labor. Obstetric. Physical therapy

RESUMO | INTRODUÇÃO: Apesar de todos os avanços das ciências da saúde, a abordagem durante o trabalho de parto segue ainda ponto de inúmeras controversas e pouco consenso baseado em evidência, dentre as quais técnicas com ou sem o uso das mãos durante o expulsivo, respectivamente hands-on e hands-off, tem ganho destaque na literatura. **OBJETIVOS:** investigar se o uso da técnica hands-on, em oposição à hands-off, é de fato benéfico às parturientes. **MÉTODO:** Revisão sistemática, nas bases de dados Pubmed, BVS, PEDro e Scielo, usando as palavras-chave birth, hands-on e hands-off isoladas ou combinadas, bem como suas variantes em português. Dados foram organizados por técnica, instrumento de medida e resultados. **RESULTADOS:** Dos 14 estudos que compuseram a presente revisão, apenas três foram ensaios controlados. Seis estudos apontaram a ocorrência de menos lesões quando a técnica hands-on foi utilizada, mas em todos os estudos controlados não houve diferença estatística significativa entre os resultados dos grupos. **CONCLUSÃO:** A técnica hands-on vem sendo utilizada ao redor do mundo, mas não há suficiente evidência de que ela de fato previna qualquer tipo de lesão obstétrica. Apesar de existirem ensaios controlados, o contraste dos resultados quanto à laceração entre os grupos controle e teste não é forte o suficiente para conclusões mais sólidas.

PALAVRAS-CHAVE: Parto normal. Trabalho de parto. Fisioterapia

Introduction

The pelvic floor extends from the vulva to the anus, being mechanically formed by muscles, fascias and ligaments, limited by pubic symphysis, coccyx, ischiopubic branches and sciatic tuberosities. Among the urethral and anal trines we have the "perineal body" that favors the stability of the pelvic floor¹. In addition to the stability and support to the anorectal segment and the vaginal canal, it also offers physical barrier between the vagina and the rectum and favors the maintenance of urinary and fecal continence. In pregnancy, physiological changes occur such as increased vascularization, connective tissue distension and cellular hypertrophy, which prepare this region for biomechanical changes¹, even so vaginal delivery is considered a risk factor for dysfunctions to the female pelvic floor throughout the woman's life².

The pelvic floor undergoes anatomical and structural changes due to stretching and distension of its structures, during the expulsive forces of delivery. In this way, the parturient may suffer lacerations, spontaneously or not³. International Statistical Classification of Diseases and Health-Related Problems, 2018 edition (CID 11)⁴, these perinatal lacerations, can be classified as: first degree - commitment of the wishbone, lips, skin, vagina and vulva; second degree - pelvic floor, muscles of the perineum and vagina; third degree - anal sphincter and rectovaginal septum and fourth degree - anal and rectal mucosa.

This loss of integrity of the perinatal tissues or laceration may be the direct cause of several consequences for women's health, of impairment both in the immediate postpartum period, and in the periods more distant from the puerperium. Pelvic floor laceration can be caused by several factors, such as the stiffness of the perinatal soft tissues, the rapid processing of the expulsive stage, the size of the fetus, when the pelvic output does not allow a good adaptation of the fetal head with the pubic symphysis and even when the delivery takes place in abnormal positions⁵.

The lower the occurrence of perineal lacerations, the better the postpartum recovery of women who will be less exposed to perineal pain and the risk of infection, in addition to subsequent damages such as increased

postpartum pain, urinary and fecal incontinence, and dyspareunia⁶.

Due to these health risks, severe lacerations (third and fourth degree) are called obstetric maternal trauma and were included in international indicators of safety of obstetric care and in Brazil⁷. Together, all this knowledge refers to the importance of preventing the occurrence of these traumas and their complications⁸. For the promotion of perineal integrity, in the second stage in delivery the professional can employ techniques with or without the use of hands. In the hands-on technique, the professional supports the posterior part of the perineum and or a slight downward pressure is applied on the cephalic pole to assist the flexion of the baby's head at the time of fetal detachment. On the other hand, the expectant hands-off method is less interventional, favoring physiological delivery, with no touching on the baby's head or maternal perineum, unless the period of expulsion of the baby's head is very fast⁹.

In the case of episiotomy, according to the World Health Organization (WHO), this is a resource used when there is perineal and pelvic floor stiffness and the irenate of severe laceration of this region. It consists of an incision made in the perineum region as a resource for the expansion of the delivery canal. However, several parturients report that the application of this technique has consequences, especially increased sensitivity and even pain, and is still related to the risk of external anal sphincter injury¹⁰.

Research shows that the rates of laceration of third and fourth degrees are lower, when using the hands-off technique, even showing that currently this technique has been chosen in low-risk deliveries¹¹⁻¹³. Other authors also suggest that the decrease in blood supply caused by the maintenance of the hand in the perineum, in the case of the hands-on technique, could increase the risk of trauma¹².

However, even after almost a decade of the beginning of the use of hands-on technique in Scandinavian countries, today its use is still controversial, with no consensus in the literature regarding its real usefulness in reducing the risk or severity of perinatal lesions. Thus, the aim of the present study was to discuss the use of the hands-on technique in minimizing – or not – the obstetric sequelae of the pelvic floor resulting from vaginal delivery.

Methodology

This is a systematic review of studies collected electronically in the PubMed, Scientific Electronic Library Online (SciELO), Physical Therapy Evidence Database (PEDro) and Virtual Health Library (VHL). The investigation used as descriptors: delivery, hands-on, hands-poist and hands-off, isolated or combined, as well as their variants in Portuguese.

Clinical trials addressing the theme of the hands-on / hands off technique addressing the theme, published between 2007 and 2018, in Portuguese, Spanish and English were included. Experimental research studies were excluded.

The study selection process involved sorting titles and reading abstracts, after which potentially relevant

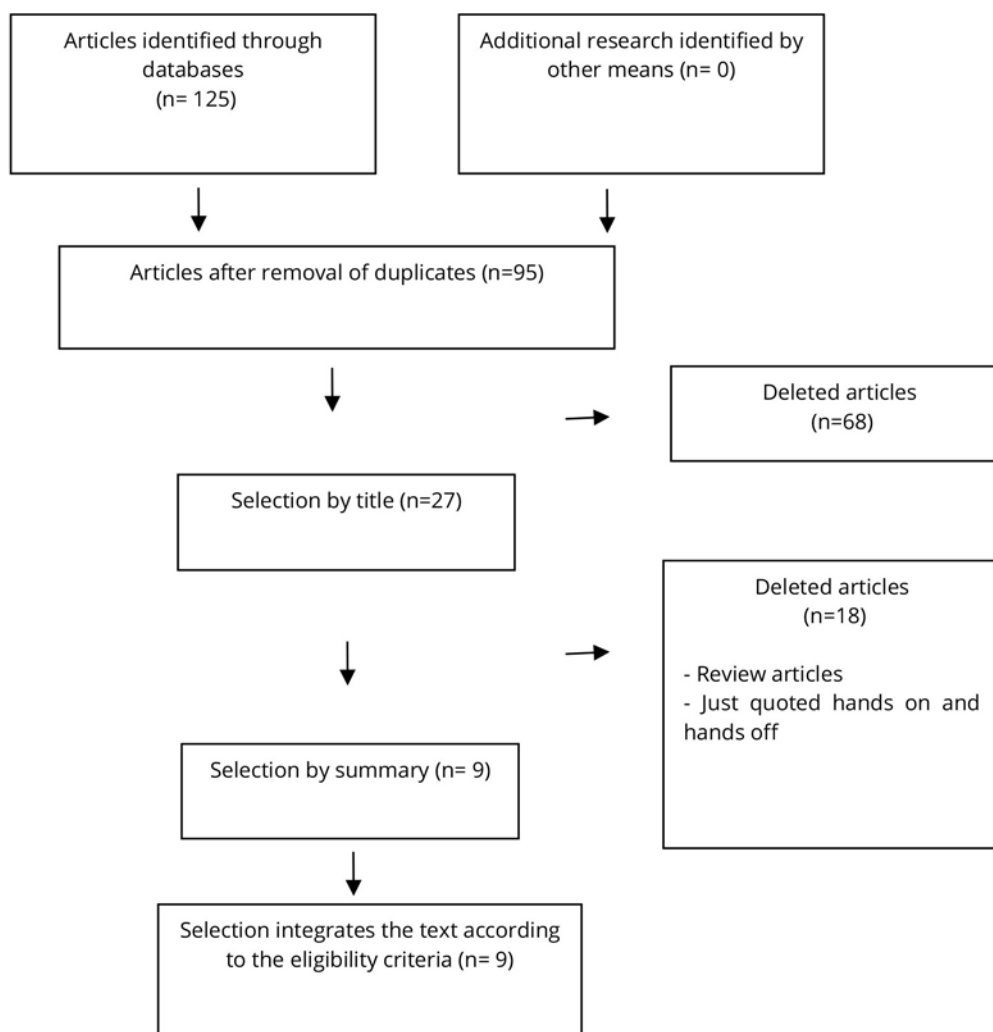
articles were obtained in the full text for further analysis of the eligibility criteria.

Two independent researchers, using a standardized form, performed the selection of studies and data extraction and, in case of disagreement, a third reviewer analyzed the results through discussion or arbitration. The data extracted were: authors, study objective, sample description and study conclusions.

Results

At the end of the search for the databases, 125 articles containing the search descriptors were found. The process of selecting the articles is described in Figure 1.

Figure 1. Selection of studies for inclusion in the systematic review



Thus, the present review was constructed on 9 articles, which were analyzed qualitatively and judiciously. Table 1 summarizes the main characteristics of the selected studies.

Table 1. Summary of the results of selected articles (to be continued)

| Author and Country | Objective | Method | Results |
|--|---|---|---|
| Mayerhofer et al. ¹² Austria | Investigate the influence of the traditional hands-on method versus the innovative hands-off method on the risk of perineal trauma during vaginal delivery and neonatal outcomes. | Prospective, randomized and multicenter study Hands-on group = 574 parturients Hands-off group = 502 parturients | Episiotomy occurred in 17,9% of the hands-on and 10,1% of the hands-off. Perineal injuries occurred in 32,5% of the hands-on and 35,8% of the hands-off. Third-degree perinatal injuries occurred in 2,7% in the hands-on group compared to 0,9% hands-off. |
| Costa e Riesco ¹⁴ Brazil | Determine the frequency, degree and location of perineal lacerations and neonatal outcomes associated with the use of two perineal protection techniques - expectant ("delivery") and interventionist ("delivery") - during delivery. | Controlled clinical trial with 70 Brazilian nulliparous, divided into two groups, hands-off and hands-on, 35 in each group. | Perineal laceration occurred in 81,4% of the women: first-degree lacerations (82,5%); lacerations in the anterior and posterior regions of the perineum occurred with similar frequencies. The use of the hands-off technique does not alter the frequency or degree of perinatal lacerations in delivery, in relation to the hands-on technique |
| Fretheim et al. ¹⁵ Norway | Reduce the incidence of anal sphincter injuries. | Time series analysis interrupted using segmented regression modeling. Use of hands-on technique 75 543 parturients | 2,1% reduction in incidence of sphincter rupture. |
| Ampt et al. ¹¹ Australia | Determine which perineal protection techniques midwives prefer for low-risk non-aquatic deliveries; whether preference is associated with the technique taught or other characteristics; and whether midwives change preference according to clinical scenario. | Cross-sectional study n sampling = 108 midwives | The preferred technique for a low-risk delivery seems to have changed from hands-on to hands-off, but most midwives adopt hands-on in high-risk situations. |
| Rasmussen et al. ¹⁶ Denmark | Study the implementation in Denmark of an intervention program with hands-on to reduce the risk of anal sphincter injuries. | Intervention comprised implementation of a care package and a certification process. 1,622 parturients. | By implementing the hands-on technique, the risk of obstetric lesions in the anal sphincter was halved. |

Table 1. Summary of the results of selected articles (conclusion)

| Author and Country | Objective | Method | Results |
|--|--|--|---|
| Lee et al. ¹⁷ Australia | Evaluate the association of four techniques used in the management of the second stage with risk of moderate and severe perineal injury. | Retrospective cross-sectional study 26,393 parturients divided into hands-on group and hands-off group. Hands-on= 16.148 Hands-off= 10245 | In primiparous women, there was no difference in the risk of perineal injury between the two techniques. In multiparous, the use of a hands-on approach was associated with increased risk of moderate injury (AOR 1,18, IC95% 1,10-1,27, p <0,001) and serious (AOR 1,50, IC 95%) 1,20-1,88, p <0,001) compared to hands-off. |
| Zhou et al. ¹³ China | Determine midwives' preference for "Hands-on" and "Hands-off" methods and explore impact factors. | Cross-sectional study, with application of online questionnaire. n= 5.225 midwives | The hands-off method is strongly practiced by Chinese midwives. However, most adopt the hands-on method in view of the high risk of obstetric injuries of the anal sphincter. |
| Begley et al. ¹⁸ Ireland and New Zealand | Explore the opinions of expert Irish and New Zealand midwives on the skills they employ in preserving intact perineum during spontaneous vaginal delivery. | Qualitative, descriptive study; semi-structured n= 21 midwives | Both techniques, hands-on and hands-off, could be used by all midwives to reduce perinatal trauma. |
| Zukoff et al. ⁹ Brazil | Identify obstetric factors associated with the use of perineal hands-on and hands-off protection techniques by obstetric nurses in normal delivery care. | Cross-sectional study of 560 records concerning this care and occurred in a public maternity hospital in Rio de Janeiro | Nurses use the hands-off technique for perineal protection in normal delivery and opt for the hands-on technique when there is a risk associated with the occurrence of traumatic injuries in the perineum. |

Source: Elaborated by the authors from the research data.

Mayerhofer et al.¹² in a prospective, randomized and multicenter study with 1,076 Viennese divided into two groups, 574 from the hands-on group and 502 from the hands-off group. At the end 32.5% of the women in the hands-on group and 35.8% of those in the hands-off group suffered pelvic floor injuries, but 2.7% of the hands-on group developed third-degree lacerations compared to 0.9% of the hands-off group. In the hands-on group, 17.9% underwent episiotomy, compared to 10.1% of the hands-off group. There were no significant differences in neonatal outcomes.

Costa and Riesco¹⁴ in a controlled trial with 70 Brazilian nulliparous, divided into two groups, hands-off and hands-on, studied "intact perineum", defined by the absence of laceration of skin, mucosa, fascia, muscles, perineal body and anal sphincter. In the end, the authors describe that the use of the techniques did not alter the protection, frequency or degree of pelvic floor lacerations.

Fretheim et al.¹⁵ in an uncontrolled trial in Norway studied 75,543 assisted deliveries where 85% were vaginal deliveries using the hands-on technique. The authors describe that the intervention program seems to have reduced the incidence of sphincter injuries by 2.1%, but stress that further studies are still needed to clarify whether intervention programs using hands-on are really effective.

Ampt et al.¹¹ interviewed 108 midwives in Australia regarding the usual or not of the hands-on technique, concluding that, in that country, practices seem to be tending to change to hands-off, especially in low-risk deliveries. In clinical situations demonstrated as high risk for anal sphincter injuries, midwives, in general, reported preferring hands-on, suggesting that this approach would offer greater protection specifically for these cases.

Lee et al.¹⁷ retrospectively studied 26,393 Australian pregnant women at term, with single-presentation fetus, cephalic, who underwent non-operative vaginal delivery. In these deliveries, the researchers used combinations of hand-directed, directed or non-directed practical grip. At the end, they describe that, in nulliparous, there was no difference in the risk of moderate or severe laceration between the different techniques. In multiparous, the use of a hands-on approach was associated with a significant increase

in the risk of severe pelvic floor laceration when compared to the hands-on technique.

Rasmussen et al.¹⁶ studied the implementation in Denmark of an intervention program based on the hands-on technique, with four elements in a care package in conjunction with a certification process for all employees of the delivery ward, concluding that this reduced in half the risks of obstetric injuries in the anal sphincter, based on a sample of 1,622 deliveries.

Zhou et al.¹³ conducted a cross-sectional study, in which a total of 5,225 online questionnaires were applied in Chinese midwives. At the end of the study, the questionnaires revealed that most of these midwives preferred the hands-off method, but adopted the hands-on method in view of the high risk of obstetric injuries. The authors concluded that further studies are needed to determine the association between the rate of obstetric anal sphincter lesions and perineal management for low-risk birth.

Begley, et al.¹⁸ conducted a qualitative, descriptive, semi-structured study to verify the vision, experience and skills that are employed in preserving pelvic floor integrity, without the presence of sutures or episiotomies, during spontaneous vaginal delivery, performed by 21 midwives from Ireland and New Zealand. These midwives adopted a care package involving hands-on technique, hand positioning, women's encouragement, breathing, often using hot compress and even anesthetic gel. According to the interviews of this study, it was recommended that these techniques be taught to midwives in training, due to presenting results of great relevance.

Zukoff et al.⁹ sought to identify in a cross-sectional study, from 560 records of birthbooks, the obstetric factors associated with the choice of hands-on or hands-off techniques by obstetric nurses from a public maternity hospital in Rio de Janeiro. Data collection was performed through a semi-structured form with closed questions. In the end, the authors concluded that, in the presence of a risk factor associated with the occurrence of severe pelvic floor injuries, the technique chosen is hands-on. The risk factors reported were: assessment of imminent risk of third or fourth degree laceration, history of severe perineal trauma, uncontrollable maternal pull, macrosomal baby, second stage of prolonged delivery or oxytocin administration.

Discussion

Despite all the advances in health sciences especially in the last century, the approach during labor still follows point of numerous controversial and little consensus based on evidence. It is interesting to note that the term obstetrix, adverb of the Greek *obstare*, means "the one who stands next to him; auxiliary"¹⁹. However, since the beginning of the 20th century obstetrics has assumed a role of guide, or protagonist, than properly auxiliary or supportive. This view has been questioned in recent decades, and measures in the reverse direction have been suggested and adopted internationally to change this paradigm in order to allow more natural and less guided births²⁰.

Currently, obstetric injuries, such as lacerations of the sphincter system²¹ and/or pelvic floor, especially the pubovisceral portion of its musculature²² follow with relevant prevalence, being the focus of scientific attention. Apart from the important advances in the understanding of the biomechanics of vaginal delivery, regarding the clinical or practical part, the use of hands-on and hands-off techniques remains controversial, that recommend manual intervention during the expulsive period in order, respectively, to actively protect the pelvic floor and brake the expulsive period with the same objective. Because they are not universally used maneuvers, the objective of this review was to answer whether the use of these techniques, as opposed to hands-off, that is, the expulsive without manual intervention on the pelvic floor, is in fact beneficial to parturients.

In this regard, the first important observation concerns the scarcity of randomized controlled trials regarding these techniques. Because there is no consensus and, therefore, of a golden pattern of intervention – or not – during the expulsive period of vaginal delivery, cohort studies, especially accompanying nulliparous women submitted to childbirth with these interventions having as a control group women whose deliveries occurred without manual intervention present simple methodology and relevant importance, which justifies our strangeness regarding literary scarcity on the subject: of the 14 studies that comprised this review, only three were controlled trials. In fact, women undergoing vaginal delivery may suffer pelvic floor injuries, which can be of different degrees and for different reasons. This first observation is in line with other authors who observed, for example, that

13% of vaginal nulliparous deliveries may end in laceration of the pubovisceral muscles – a more distal component of the anus lifters²².

Regarding the use of hands-on and hands-off techniques to prevent pelvic floor injury, six studies indicated the occurrence of fewer injuries when the hands-on technique was used, but in all controlled studies the statistical contrast between the results of the hands-on and hands-off groups was low. This observation may allow several interpretations, among them that the hands-on technique does not promote a difference as important as imagined, but also that it may not be performed in the best possible way.

Two studies^{12,17}, with a total of almost 30,000 deliveries, concluded that the use of the hands-on technique decreased the prevalence of lacerations, but when these occurred they were always of the most severe type, especially for multiparous women. Would there be some type of complication in labor, or some characteristic of the baby or pelvic floor for which the hands-on technique would be contra indicated? Would multiparity be a contraindication to hands-on? Correlation studies with multivariate logistic regression, with a large sample number, are necessary to answer this important question.

The hands-on technique was developed in Finland and quickly spread to other Scandinavian countries and, interestingly, we could observe that the best results of the technique were observed in studies in that region. From this observation emerges another intriguing question: would there be an excellent way to use this technique, which is not being performed optimally by countries other than those in the region where the technique was developed? Is there any secret in teaching the technique that is going unnoticed by science and technical education in the present? Finally, is the experience of the professional accompanying the delivery a relevant factor in the optimized use of the hands-on technique?

Mizrachi et al.²³, in a retrospective cohort study of 15,146 deliveries in Israel, observed that only two out of every 1,000 women accompanied by experienced midwives and assisted by the hands-on technique suffered lacerations. Perhaps the professional's experience and the existence of an "optimal way" of performing the hands-on technique can be decisive in this discussion, so that this issue seems relevant and deserving of urgent scientific investment.

Randomized controlled trials of high methodological quality are necessary in the present.

Interestingly, studies with midwives have described that, in general, these professionals claim to choose the hands-on technique when faced with deliveries which they consider to be a risk of obstetric injury. For other cases, where they do not perceive risky situation, prefer hands-off. The parameters by which midwives consider it an expulsion of risk or not for laceration have not been described in the studies, although it seems to be relevant to the understanding of the state of the art. Perhaps this better understanding can define whether this preference, described by midwives, actually has some rational basis, or if it is nothing more than culturally ingrained anecdotal evidence.

A new position regarding the health professional in labor has been unfolding, so that the current historical period, for this part of the health sciences, seems to be of revolution. Within this aspect, it is up to science to provide rational bases and to highlight the most appropriate techniques and procedures for each situation and each case, as well as to point out which of this actually work and which are nothing more than empirical belief. In this aspect much has yet to be studied and developed, because childbirth is an event present in the life of most women around the world, deserving for this fact all the scientific and human attention possible, so that motherhood is an unforgettable moment in the life of the woman for the best memories, and only the best.

Conclusion

There is not enough evidence that hands on actually prevents any type of obstetric injury. Despite the existence of controlled trials, the contrast of results regarding the laceration between the control and test groups is not strong or sufficient for the most solid judgments. It is possible that the use of the hands-on technique helps in the prevention of injuries for some specific cases of labor, but on the other hand, it is possible that for other cases, such as multiparous deliveries, the technique is even harmful. However, these are dubious notes from the point of view of scientific evidence, and further studies with better methodological quality are urgent to definitively answer these intriguing questions.

Authors contributions

Latorre GFS participated in the conception, design, search and statistical analysis of the research data, interpretation of the results, writing of the scientific article. De Lima EM, Bueno KJOB participated in the collection of research data and writing of the scientific article. Nunes EFC participated in the interpretation of the data and review of the scientific article.

Conflicts of interest

No financial, legal or political conflict involving third parties (government, companies and private foundations, etc.) was declared for no aspect of the work submitted (including, but not limited to, grants and funding, participation in advisory board, study design, manuscript preparation, statistical analysis, etc.).

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