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Commentary

Coaching a slow birth with the woman in an empowered position may be less harmful than routine hands-on practice to protect against severe tears in birth – A discussion paper

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ABSTRACT

Background: Different hands-on interventions to protect women from severe perineal tears after birth have been widely implemented. Evidence to support the routine use of hands-on interventions to reduce severe tears is mainly based on aggregated data from observational studies.
Aim: To critically discuss the current evidence for the implementation of hands-on intervention as a routine practice to protect women from severe tears after birth.
Discussion: Observational studies have been used to justify the routine use of hands-on intervention to protect women from severe perineal tears despite randomized controlled trials and systematic reviews showing lack of benefit. There is strong evidence supporting the slow speed at the time of birth to prevent severe perineal tears. While hands-on intervention does reduce the speed of birth, it may have a negative effect on the birth process, on neonatal outcomes and women's agency.
Conclusion: Evidence-based practice requires sufficient evaluation of interventions before being implemented in clinical practice as well as valuing the level of evidence when making clinical decisions. Evaluation of hands-on interventions to protect women from severe perineal tears must include not just one outcome of interest, but also an assessment of how the intervention interferes with the normal mechanism of birth, and how it affects neonatal outcomes and the autonomy of women.

Introduction

In the 1960s, in most European countries, a major shift in birthplace from home to hospital occurred for women with low-risk pregnancies. This change was not based on evidence – something that was noticed by Archie Cochrane, the founder of the Cochrane Collaboration. He pointed towards the potential disadvantages of moving all low-risk women into the hospital setting to give birth. The general concern about this shift in place of birth from home to hospital was the likelihood of an increase in unnecessary interventions in women with low-risk pregnancies [1,2].

The institutionalisation of birth in hospitals meant that healthy women were exposed to new interventions during the birth process. In the 1970s, a liberal or even routine use of episiotomy in nulliparous women was implemented widely in European countries [3]. Here too, the widespread use of episiotomy was not driven by evidence but by different untested rationales including reducing the length of the second stage of labor, preventing cerebral palsy by reducing the time the fetal head "was knocking against the perineum," and preventing maternal anal sphincter tears [4,5].

Years of routine use of episiotomy became a "proof" of the benefit of the practice, despite the lack of evidence. In 1983, Thacker and Banta published a review showing no clear evidence for the efficacy of episiotomy [6]. They called for well-conducted randomized trials on its use noting that observational designs for studying use of episiotomy are affected by confounding by indication [7]. In 1984, Sleep et al. published a randomized study revealing that episiotomy was used too frequently, resulting in unnecessary trauma to the women [8]; their conclusion were further confirmed in several other trials [5]. However, today the use of episiotomy remains high in some hospitals [9,10].

A more recent obstetric intervention targeted at reducing anal sphincter tears has been introduced in obstetric practice in many

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hospitals in the Nordic countries [10–14]. The intervention includes a more focused hands-on approach during birth and was initially introduced in Finland [15], but further developed and expanded in clinical practice in Norway [11]. The intervention implemented in Norway consists of four components to optimize the birth of the baby: (1) slowing the delivery of the baby's head with one hand supporting perineum, (2) with the other hand, squeezing with fingers (first and second) from the lateral part of the perineum toward the middle, in order to lower the pressure in the middle posterior perineum, (3) asking the woman not to push, and finally (4) training of professionals in correct performance of episiotomy [11].

The description of the intervention varies in the publications coming from Norway as a visual perineum and a birth position where the hands-on maneuver is possible to perform has further been included in the description of the intervention in some of the papers [10,11,16,17]. However, the hands-on approach remains the main focus of the intervention and the reason for iťs implementation [15].

Framework for researching complex interventions

Complex interventions such as the Norwegian hands-on intervention consist of multiple components. The components of a complex intervention are supposed to interact to create the expected effect, which in this case was to reduce the number of anal sphincter tears. According to the Medical Research Council [18] researchers introducing complex interventions need to address uncertainties about their values in using the four-stage-process "develop-test-evaluate-implement".

The development of a new and complex intervention, begins with a review of the existing literature, including similar or comparable interventions, and a description of a coherent theory behind the proposed intervention. As the development stage may leave some uncertainties or even practical challenges (e.g., the possibility of delivering the intervention with acceptable compliance), a feasibility study may be needed before embarking on a large-scale evaluation [18,19].

Essential in the evaluation stage is the selection of an appropriate research design as it is good practice to strive for an unbiased evaluation of a new intervention. The randomized controlled trial is considered the best design to evaluate interventions, as it distributes both measured and unmeasured confounding variables equally between study groups, assuming the sample is of adequate size [20,21]. If it is not possible to perform a randomized trial, observational studies may be used, preferably based on data at the individual level with sufficient control for confounders as observational studies are more prone to bias, both the design of the study and the analysis of the data need to consider these shortcomings, and must be taken into consideration when drawing conclusions. Further, ecological studies may be limited by the ecological-fallacy: inferences regarding individual-level associations based on group-level data can be misleading [20,21]. If solid evidence for the positive effects of a complex intervention is established, implementation into clinical practice may begin. Monitoring the implementation process, the results, and – not least important – the *experience* of those subject to, and those conducting the intervention are critical for assessing its value.

Hands-on approach or reduced speed

Earlier randomized trials evaluating hands-on (including Ritgen's maneuver) versus hands-off or 'hands- poised' approaches found no reduction in anal sphincter tears [22]. The studies were of different quality and sample size, but had similar and consistent results showing no superior effect of the hands-on approach. Similarly, observational studies did not find any difference in the risk of moderate or anal sphincter tears between hands-on versus hands-off approaches [23,24]. However, Lee et al. [23] found that the hands-on approach, together with directed pushing, *increased* the risk of severe tears in multiparous women. Interestingly, a large randomized trial of 1211 women found a lower risk of obstetric tears in women who delivered the fetal head between contractions [25]. Additional, spontaneous pushing, flexible birth position, and birth of the fetal head between, or at the end of the contraction was found to reduce the risk of moderate perineal tears in an experimental cohort study [26].

A recent observational study, done at the group-level, found a reduction in anal sphincter tears after implementing the STOMP approach [27]. The STOMP approach includes three key principles: Position (avoid the semi-recumbent position, encourage up-right, non-flat position), Coach (promote a more controlled and less expulsive pushing and verbal encouragement to slow down expulsive effort at crowning of the fetal head), and Speed (simple tactile control with one hand to slow down delivery of the fetal head – not manual manipulation of vertex, pinching of fourchette, or Ritgeńs manoeuver – and spontaneous and slow delivery of babýs shoulders) [27]. Another recent observational Norwegian study using data at individual-level also found breathing the fetal head out during crowning reduced the risk of anal sphincter tears [28]. Moreover, augmentation for more than 30 min in the second stage of labor was also associated with an increased risk of anal sphincter tears [28]. There is evidence suggesting that reduced speed at the time of crowning is crucial for reducing perineal tears, including anal sphincter tears. We still lack high quality evidence to support the use of a specific hands-on approach to reduce the risk of anal sphincter tears [22]. Several people have warned clinicians not to link the Norwegian hands-on intervention to the reduction in anal sphincter tears based on the existing group-level literature [12,13,29–31]. However, a simple tactile control with one hand on the fetal head and/or a hand gently placed on the perineum may help the midwife to assess the speed of birth if needed. The hands-on approach may be a proxy for measuring the speed of the babýs progress through the last part of the birth canal. Because the forces in question are internal, it is unlikely that external pressure would make a difference other than slowing down rapid expansion, which can be done just as well with coaching a slow birth of the head and shoulder.

Supporting the physiological birth process

Some of the main components included in the Norwegian hands-on intervention to reduce anal sphincter tears may interfere with the physiological birth process. Applying pressure to the fetal head during crowning and thereby partly obstructing the extension process may increase the diameter of the fetal skull [32] and may impose an increased risk of genital tract tears including labia and vaginal (and occult) tears. Labia and vaginal tears have not been reported in most of the studies using hands-on pressure during crowning of the fetal head. However, the use of episiotomy has been studied and consistently found to be increased when using the hands-on approach [10,13,16,33,34]. In the Norwegian studies, very high episiotomy rates – up to 33% – were found after implementation of the hands-on approach, despite the fact that one of the components in the intervention was education focused on performing episiotomies only on indication [10].

Pressure applied to the fetal head during crowning is not good for the baby, who experiences a backwards pressure caused by the contraction and, if applied, pressure from the attendanťs hand on the outside. Pressures applied from both sides will affect the weakest point of the baby's anatomy, which is, at the time just before and during crowning, the extending neck. Lower Apgar scores and lower neonatal blood gas levels have been found in babies after a hands-on approach (with applied pressure) [13,17]. Possible consequences such as neonatal headache or neck pain or delay in initiation of breastfeeding have not been studied. Furthermore, the rather fixed maternal birth position of either a supine or semi-recumbent birth position are required to allow the attendant to apply the Norwegian hands-on intervention. This, decreases the pelvic outlet, leaving less space for the baby to rotate and pass through the birth canal. Tunestveit et al. found that

women having a non-instrumental birth in the supine position had an increased risk of anal sphincter tears and women who gave birth in a kneeling position had the lowest risk of anal sphincter tear [28].

Providing women-centered care

Surprisingly, the experience of women subjected to the different interventions including their reactions to hands-on and hands-off approaches, the use of focused communication, and limited choice of birth position have not been examined. This indicate a birth culture where there is room for improvement regarding listening to womeńs voices and supporting their autonomy. When given by midwives, advice on birth positions, has a strong influence on the womańs actual choice of position [35]. Allowing birth positions to be chosen by the woman is associated with being in control and achieving a good birth experience [36]. This is important for all women but especially for women with a past history of sexual abuse for whom a hands-on approach may be contradictory. Supporting a womańs agency to find the most acceptable position preserves autonomy and leads to an empowering birth culture.

The homebirth setting allows considerable autonomy and promotes women-centered care. Women giving birth at home more often give birth in an upright birth position, in water without visibility of the perineum [37,38], both of which suggest a birth culture with a high level of autonomy and support of womeńs agency. Further, women who give birth at home experience a low level of anal sphincter tears [37,38]: they have half the risk of matched low risk women in hospital settings [39].

Evidence based practice

Archie Cochrane initiated and promoted a more evidence-based approach in the health care system [40]. As a part of this approach, different medical specialties were rated according to their capability to work in a manner that is evidence based. Obstetrics was famously awarded the wooden spoon for being the *least* evidence based medical specialty [2].

The Norwegian intervention has been implemented into the clinical practice based mainly on observational studies at group-level [10,11,15,16]. The need to conceptualize the model behind the intervention and to evaluate all components in care package bundle, including how this new complex intervention may interfere with the normal birth mechanism and reduce womeńs autonomy, remains. Ignoring level one evidence is violation of the principle behind the care package bundles that are meant to be based on the best possible evidence. Because this intervention may negatively affect neonatal outcomes, curtail womeńs choices of birth position, reduce the competence of midwives to support women giving birth in different birth positions, and increase the number of episiotomies, it is imperative that more research is done before it is widely implemented. Other, more methodologically rigorous, studies have found that slow speed at time of crowning of the fetal head and birth of the shoulders is associated with fewer perineal tears [26,27,41]. Slow speed at the time the fetal head is born may be promoted through communication with the woman, by birth of the fetal head between or at the end of the contraction, and by simple tactile touching of the fetal head. This approach can be used in several birth positions, without interfering with the mechanism of the normal birth, without increasing the risk of episiotomy, and with preserving the autonomy of the birthing woman. It is worth noticing that the reduction in number of anal sphincter tears in the Norwegian study was primarily found in low-risk women. Moreover, the most significant decrease began prior to the implementation of the intervention [11], indicating that the Hawthorne effect may also play a part in the observed reduction. Further, quality assessment of the outcome measure at the individual level is also important, as a recent study found 7% of the women being overdiagnosed with anal sphincter tear [42].

Promoting evidence-based practice in preventing perineal tears will promote good birth outcomes for both the mother and the baby, ensure the maintenance of clinical skills within the profession, and protect the autonomy of women.

What is already known

Different hands-on interventions to protect severe tears after birth have been implemented in clinical practice.
An association has been found between implementation of hands-on intervention and a reduction in severe tears.
The evidence used to support routine use of hands-on interventions is mainly based on observational studies at group level.

What this paper adds

The reduction found in severe tears after implementation of routine hands-on intervention may be confounded by the speed of the birth of the baby's head and shoulder at time of birth.
Some hands-on interventions may interfere with the normal birth mechanism, affect neonatal outcomes negatively, and deny women a free choice of birth position.
Randomised controlled trials and/or well conducted observational studies on individual level, with sufficient control for relevant confounders, are required to sufficiently evaluate a complex intervention before being implemented into clinical practice.

Declaration of interest

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Appendix A. Supplementary material

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References

[1] Olsen O, Clausen JA. Planned hospital birth versus planned home birth. Cochrane Database Syst Rev 2012 Sep 12;(9):CD000352. doi(9):CD000352.
[2] Cochrane A. Foreword. In: Chalmers I, Enkin M, Keirse MJNC, editors. Effective care in pregnancy and childbirth. Oxford: Oxford University Press; 1989.
[3] Myers-Helfgott MG, Helfgott AW. Routine use of episiotomy in modern obstetrics. Should it be performed? Obstet Gynecol Clin North Am 1999 Jun;26(2):305–25.
[4] Walsh D. Evidence and Skills for Normal Labour and Birth. 2nd ed.; 2007.
[5] Klein M. Rites of passage: episiotomy and the second stage of labour. Can Fam Physician 1988;34:2019–25.
[6] Thacker SB, Banta HD. Benefits and risks of episiotomy: an interpretative review of the English language literature, 1860–1980. Obstet Gynecol Surv 1983 Jun;38(6):322–38.
[7] Raisanen S, Selander T, Cartwright R, Gissler M, Kramer MR, Laine K, et al. The association of episiotomy with obstetric anal sphincter injury – a population based matched cohort study. PLoS One 2014;9(9). e107053.
[8] Sleep J, Grant A, Garcia J, Elbourne D, Spencer J, Chalmers I. West Berkshire perineal management trial. Br Med J (Clin Res Ed) 1984;289(6445):587–90.
[9] Wesnes SL, Hannestad Y, Rortveit G. Delivery parameters, neonatal parameters and incidence of urinary incontinence six months postpartum: a cohort study. Acta Obstet Gynecol Scand 2017;96(10):1214–22.
[10] Hals E, Oian P, Pirhonen T, Gissler M, Hjelle S, Nilsen EB, et al. A multicenter interventional program to reduce the incidence of anal sphincter tears. Obstet Gynecol 2010;116(4):901–8.
[11] Laine K, Skjeldestad FE, Sandvik L, Staff AC. Incidence of obstetric anal sphincter injuries after training to protect the perineum: cohort study. BMJ Open 2012;2(5):10.1136/bmjopen-2012-001649. Print 2012.
[12] Valbo A, Gjessing L, Herzog C, Goderstad JM, Laine K, Valset AM. Anal sphincter tears at spontaneous delivery: a comparison of five hospitals in Norway. Acta Obstet Gynecol Scand 2008;87(11):1176–80.
[13] Skriver-Moller AC, Madsen ML, Poulsen MO, Overgaard C. Do we know enough? A quality assessment of the Finnish intervention to prevent obstetric anal sphincter injuries. J Matern Fetal Neonatal Med 2016;29(21):3461–6.
[14] Rasmussen OB, Yding A, Anh OJ, Sander Andersen C, Boris J. Reducing the

incidence of Obstetric Sphincter Injuries using a hands-on technique: an interventional quality improvement project. BMJ Qual Improv Rep 2016;5(1):10.1136/bmjquality.u217936.w7106. eCollection 2016.
[15] Pirhonen JP, Grenman SE, Haadem K, Gudmundsson S, Lindqvist P, Siihola S, et al. Frequency of anal sphincter rupture at delivery in Sweden and Finland–result of difference in manual help to the baby's head. Acta Obstet Gynecol Scand 1998;77(10):974–7.
[16] Laine K, Pirhonen T, Rolland R, Pirhonen J. Decreasing the incidence of anal sphincter tears during delivery. Obstet Gynecol 2008;111(5):1053–7.
[17] Stedenfeldt M, Oian P, Gissler M, Blix E, Pirhonen J. Risk factors for obstetric anal sphincter injury after a successful multicentre interventional programme. BJOG 2014;121(1):83–91.
[18] Craig P, Dieppe P, Macintyre S, Michie S, Nazareth I, Petticrew M, et al. Developing and evaluating complex interventions: the new Medical Research Council guidance. BMJ 2008;29(337). a1655.
[19] Richards DA, Hallberg I editors. Complex interventions in helath - an overview of research methods. : Routledge; 2015.
[20] Rothman KJ, Greenland S, Lash TL (editor). Modern Epidemiology. Lippincott Williams & Wilkins; 2008.
[21] Abramson JH, Abramson ZH (editor). Research Methods in Community Medicine: Surveys, Epidemiological Research, Programme Evaluation, Clinical Trials. John Wiley & Sons; 2011.
[22] Aasheim V, Nilsen AB, Lukasse M, Reinar LM. Perineal techniques during the second stage of labour for reducing perineal trauma. Cochrane Database Syst Rev 2011;(12):CD006672. doi(12):CD006672.
[23] Lee N, Firmin M, Gao Y, Kildea S. Perineal injury associated with hands on/hands poised and directed/undirected pushing: a retrospective cross-sectional study of non-operative vaginal births, 2011–2016. Int J Nurs Stud 2018;83:11–7.
[24] Smith LA, Price N, Simonite V, Burns EE. Incidence of and risk factors for perineal trauma: a prospective observational study. BMC Pregnancy Childbirth 2013;7(13). 59-2393-13-59.
[25] Albers LL, Sedler KD, Bedrick EJ, Teaf D, Peralta P. Factors related to genital tract trauma in normal spontaneous vaginal births. Birth 2006;33(2):94–100.
[26] Edqvist M, Hildingsson I, Mollberg M, Lundgren I, Lindgren H. Midwives' management during the second stage of labor in relation to second-degree tears-an experimental study. Birth 2017;44(1):86–94.
[27] Basu M, Smith D, Edwards R. STOMP project team. Can the incidence of obstetric anal sphincter injury be reduced? The STOMP experience. Eur J Obstet Gynecol Reprod Biol 2016;202:55–9.
[28] Tunestveit JW, Baghestan E, Natvig GK, Eide GE, Nilsen ABV. Factors associated with obstetric anal sphincter injuries in midwife-led birth: a cross sectional study. Midwifery 2018;62:264–72.
[29] Fretheim A, Odgaard-Jensen J, Rottingen JA, Reinar LM, Vangen S, Tanbo T. The impact of an intervention programme employing a hands-on technique to reduce the incidence of anal sphincter tears: interrupted time-series reanalysis. BMJ Open 2013;3(10). e003355-2013-003355.
[30] Dahlen HG, Priddis H, Thornton C. Severe perineal trauma is rising, but let us not overreact. Midwifery 2015;31(1):1–8.
[31] Poulsen MO, Madsen ML, Skriver-Moller AC, Overgaard C. Does the Finnish intervention prevent obstetric anal sphincter injuries? A systematic review of the literature. BMJ Open 2015;5(9). e008346-2015-008346.
[32] Myrfield K, Brook C, Creedy D. Reducing perineal trauma: implications of flexion and extension of the fetal head during birth. Midwifery 1997;13(4):197–201.
[33] Mayerhofer K, Bodner-Adler B, Bodner K, Rabl M, Kaider A, Wagenbichler P, et al. Traditional care of the perineum during birth. A prospective, randomized, multicenter study of 1076 women. J Reprod Med 2002;47(6):477–82.
[34] McCandlish R, Bowler U, van Asten H, Berridge G, Winter C, Sames L, et al. A randomised controlled trial of care of the perineum during second stage of normal labour. Br J Obstet Gynaecol 1998;105(12):1262–72.
[35] de Jonge A, Teunissen DA, van Diem MT, Scheepers PL, Lagro-Janssen AL. Women's positions during the second stage of labour: views of primary care midwives. J Adv Nurs 2008;63(4):347–56.
[36] Nieuwenhuijze MJ, de Jonge A, Korstjens I, Bude L, Lagro-Janssen TL. Influence on birthing positions affects women's sense of control in second stage of labour. Midwifery 2013;29(11):e107–14.
[37] Maimburg RD. Homebirth organised in a caseload midwifery model with affiliation to a Danish university hospital – a descriptive study. Sex Reprod Healthc 2018;16:82–5.
[38] Edqvist M, Blix E, Hegaard HK, Olafsdottir OA, Hildingsson I, Ingversen K, et al. Perineal injuries and birth positions among 2992 women with a low risk pregnancy who opted for a homebirth. BMC Pregnancy Childbirth 2016;16(1). 196-016-0990-0.
[39] Scarf VL, Rossiter C, Vedam S, Dahlen HG, Ellwood D, Forster D, et al. Maternal and perinatal outcomes by planned place of birth among women with low-risk pregnancies in high-income countries: a systematic review and meta-analysis. Midwifery 2018;62:240–55.
[40] Koperny M, Lesniak W, Jankowski M, Bala M. The Cochrane collaboration – the role in the evolution of evidence-based medicine and development of cooperation in Poland. Przegl Epidemiol 2016;70(3):508–20.
[41] Albers LL, Sedler KD, Bedrick EJ, Teaf D, Peralta P. Midwifery care measures in the second stage of labor and reduction of genital tract trauma at birth: a randomized trial. J Midwifery Womens Health 2005;50(5):365–372.
[42] Sioutis D, Thakar R, Sultan AH. Overdiagnosis and rising rate of obstetric anal sphincter injuries (OASIS): time for reappraisal. Ultrasound Obstet Gynecol 2017;50(5):642–7.