Association of Birth Trauma with the Implementation of Obstetrical Monitoring Tools: A Retrospective Cohort Study

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Introduction Lacerations are common in vaginal births. They can result in immense physical and psychological morbidity. Ongoing efforts are being made to reduce birth trauma. In order to improve our obstetrical work in the labor ward, we implemented different monitoring tools and evaluated their association with the incidence and distribution of different types of birth lacerations in nulliparous and multiparous women.

Material and Methods We retrospectively analyzed nulliparous and multiparous women with singleton term pregnancies in vertex presentation, who gave birth vaginally in our tertiary care center between October 2014 and September 2015. We evaluated three different time intervals (T1 = 4 months before the implementation of the monitoring tools, T2 = 0–4 months and T3 = 5–8 months afterwards). The first monitoring tools we implemented were more detailed documentation of birth lacerations and a checklist for birth, and we video-recorded numerous deliveries. Outcome parameters were the incidence and distribution of different types of birth lacerations during the three different time intervals.

Results In the group of nulliparous women, there is a statistically significant difference only in maternal BMI at birth between T1, T2 and T3. In the group of multiparous women, there are several significant differing factors between the time intervals. The incidence of all types of birth trauma decreased from 95.52 % in nulliparous and 68.53 % in multiparous women at T1 to 89.92 % and 62.27 % respectively at T3, with a decrease in perineal and vulvar/labial lacerations to an increase of vaginal lacerations. The only statistically significant change was found in multiparous women, with a decrease in first-degree perineal tears and an increase of vaginal tears. The rate of episiotomies and third-/fourth-degree perineal tears remained stable for nulliparous (33 and 3 %) and multiparous (10 % and 0.4 %) women between the time intervals. The changes were not related to birth mode. Lacerations predominantly appeared as first- and second-degree perineal tears, and vaginal and labial lacerations. The neonatal outcome was unchanged at the same time.

Discussion The incidence of all types of birth trauma in our study is comparable to other studies. We found an association of the incidence and distribution of birth trauma and the implementation of different obstetrical monitoring measures. The shift from a decreasing number of “external” (perineal and labial lacerations, etc.) to an increasing number of “internal” (vaginal) lacerations is interesting and might be favorable for laboring women, because vaginal lacerations seem to restrict women less. An explanation might be that with better control and slowdown of the fetal head during crowning and expulsion and a longer resting of the fetal head within the introitus of the vulva during spontaneous delivery, the perineal tissue had more time to distend, which resulted in fewer first-degree perineal tears, whereas the pressure in the vagina was increased and might have led to more vaginal tears.

With the implementation of the monitoring tools, no procedural guidelines whatsoever were provided for the staff. However, because the monitoring tools aimed to sensitize obstetrical staff to the tools’ management and procedures, the more intense observation might itself have functioned as an intervention and led to more careful work of the staff. Because there are some differences in the characteristics of the study groups between the different observation intervals, it is questionable as to whether these differences can explain the shift in lacerations. In our opinion, they do not have any clinical relevance.

Conclusion The overall incidence of birth lacerations is high, with lacerations predominantly appearing as first- and second-degree perineal tears but also vaginal and labial lacerations. The initiation of different obstetrical monitoring tools is associated with a change in the incidence of birth traumas and a shift from an external to an internal distribution, probably due to more careful management by the obstetrical staff. The implementation of such tools might help to improve obstetrical management and laboring women might benefit. However, it is important to realize the effect of monitoring and observation itself on the course of observational studies.