Trends in mode of breech delivery in Japan

Kei Sagawa¹, Shunji Suzuki¹, Satoru Takeda², Katsuyuki Kinoshita³

¹Department of Obstetrics and Gynecology, Japanese Red Cross Katsushika Maternity Hospital, Tokyo, Japan, ²Department of Obstetrics and Gynecology, Faculty of Medicine, Juntendo University, Tokyo, Japan, ³Department of Obstetrics and Gynecology, Seijyo Kinoshita Hospital, Tokyo, Japan

Many facilities in Japan currently perform elective cesarean section for term singleton breech presentation, and young doctors training in obstetrics and gynecology may not have had a chance to experience vaginal breech delivery. However, vaginal breech delivery remains an option if comprehensive informed consent is obtained. To reduce the incidence of nuchal arm, “transverse figure 8 breech delivery (TF8 maneuver)” has been widely recommended in Japan. This review discusses trends in mode of breech delivery in Japan, with a focus on the TF8 maneuver.

Vaginal breech delivery maneuvers in Japan before 1960

Neonatal outcomes of vaginal delivery in breech presentation are poorer compared to those of cephalic presentation. Around 1940, the rate of stillbirth in spontaneous vaginal breech delivery without artificial assistance was reported to be about 12% in Tokyo, Japan, with a mortality rate after delivery of roughly 14%.¹⁻³ Japanese medical textbooks then available described the use of manual assistance in breech delivery, such as Bracht’s maneuver and Müller’s shoulder-arm freeing in spontaneous breech delivery, and the classical arm-freeing method as well as Maul’s and Lövset’s maneuvers.¹⁻² In Bracht’s maneuver, the infant’s body is gradually raised toward the mother’s abdomen to assist spontaneous delivery. This method was reportedly associated with a neonatal mortality rate of 1–6% around 1940.¹⁻³ Müller’s freeing method is used to deliver the anterior and posterior arms by moving the infant downward and upward.¹⁻² Both Maul’s and Lövset’s maneuvers are intended for delivering the arms of the infant from under the maternal pubic arch by rotating the infant’s body;¹⁻² these methods are only successful if the maternal pelvic cavity is wide enough. On the other hand, the classical arm-freeing method rotates the scapula of the infant 180 degrees after delivering the infant’s posterior arm, and the anterior arm is delivered from the posterior side (i.e., perineal side) manually. However, neonatal mortality rates associated with this method were reportedly 11–16% around 1940.¹⁻²,⁴

Given the poor neonatal outcomes following vaginal breech delivery, the rate of cesarean delivery for breech presentation dramatically increased in Japan, as in other developed countries.

Here, we review the background of “transverse figure 8 breech delivery (TF8 maneuver)” and the recent management of breech delivery at term in Japan. We then consider the ideal mode of breech delivery for Japanese patients.

Increase in rates of cesarean breech delivery in Japan

Many facilities in Japan currently perform elective cesarean section for term singleton breech presentation. Thus, a majority of young doctors training in obstetrics and gynecology may not have experienced vaginal breech delivery, and it is unclear when the rate of vaginal breech delivery decreased in Japan. Cesarean section for singleton breech presentation in Japan was performed at rates of roughly 15%, 70%, and 95% in 1960, 1980, and...
Mode of breech delivery in Japan

As for obstetric facilities that are members of the Tokyo Operation group, rates of cesarean breech delivery progressively increased from 1981 to 2010 (41.9% in 1981 vs. 94.4% in 2010, \( P < 0.01 \)).

During the same period, mortality of infants with breech presentation showed a significant decrease (1.9% in 1981 vs. 0.21% in 2010, \( P < 0.01 \)). In 2008–2010, the infant mortality rate after vaginal breech delivery was higher compared to cesarean breech delivery (3.4 vs. 0.07%, \( P < 0.01 \)).

The recent increase in the rate of cesarean delivery likely reflects an increase in maternal requests, attributable to medical counseling and the 2001 American College of Obstetricians and Gynecologists (ACOG) recommendation for planned cesarean delivery in term singleton breech.

This recommendation was based on a study by Hannah et al. in 2000, which reported that perinatal mortality, neonatal mortality, and serious neonatal morbidity were significantly lower in planned cesarean delivery compared to planned vaginal delivery (1.6 vs. 5.0%, relative risk [RR] 0.33, 95% confidence interval [CI] 0.19–0.56, \( P < 0.01 \)).

The rapid increase in the rate of cesarean delivery might also be due to a newly included guideline on decision-making regarding the mode of delivery, which states that a decision should be made based on the skills of each institution/physician.

In Japan, a shortage of obstetricians in many obstetric facilities makes it difficult to implement a strict 24-h delivery monitoring system for high-risk deliveries, including vaginal breech delivery. If these trends continue, the number of instructors who can teach vaginal breech delivery will decrease, and consequently, the safe environment for young obstetricians to receive training to learn the techniques will be lost.

In reality, vaginal breech delivery is no longer the first choice. However, acquiring basic techniques for vaginal breech delivery may be useful and can provide more breech delivery options for expecting pregnant women.

Transverse figure 8 breech delivery (the TF8 maneuver) by Dr. Syuusaku Takeoka

Dr. Syuusaku Takeoka (1901–1984) was the director of the Department of Obstetrics and Gynecology at San-iku kai Hospital, one of main perinatal centers in Tokyo, Japan. At San-iku kai Hospital, the rate of stillbirth in vaginal breech delivery at term weighing over 2,500 g was 12.4% (128/1,031) in 1933–1937; this rate decreased to 7.9% (90/1,137, odds ratio [OR] 0.606, 95%CI 0.46–0.81; \( P < 0.01 \) by Fisher’s exact test) in 1938–1945.

He examined the possible reasons for this decrease, and reported the following: in successful cases, (1) the physician is often calm, (2) the physician always recognizes spontaneous uterine force as the main subject of delivery and extraction as just a supplement, and (3) the physician frequently performs movements such as shaking, twisting, and pulling when performing Maul’s or Løvset’s maneuver. Based on these findings, for vaginal breech delivery, he emphasized the importance of (1) an environment where a physician’s...
attention is not distracted and he/she is not anxious, and that (2) the physician must feel and confirm sufficient uterine force for expulsion by pushing in the descending fetal breech with the palm of the dominant hand (Sakaki’s method) until the appropriate timing to start breech delivery (Figure 1), and (3) the fetal body must be pulled while twisting 2 or 3 times, as in drawing a transverse “8” in a direction whereby the fetal back always comes to the maternal ventral side until the fetal arms are delivered (Figure 2). This procedure, “transverse figure 8 breech delivery” (TF8 maneuver), is now widely recommended in Japan for reducing the incidence of nuchal arm. The original procedure required an intramuscular injection of oxytocin with no uterine fundal pressure or episiotomy. In other words, with Sakaki’s method, the delivery should be initiated at the time of oxytocin injection corresponding to the peak of labor pain without applying unnecessary force from the outside. Moreover, the goal of the procedure is to complete the delivery of the fetal navel to the shoulder during a single contraction (Figure 3). For the subsequent delivery of the fetal head, Mauriceau-Veit-Smelli’s or Wigand-Martin-Wincel-Veit-Smelli’s maneuver is recommended so as to prevent cervical spine injury of the fetus.

As a basic practice, a twisting movement should be performed whereby the wrists and palms are moved together as if drawing an “8” laterally (Figure 4). The fetal breech will be gently shaken and twisted, as if drawing an “8” horizontally, and traction should be added according to the force of labor pain. Shaking, twisting, and pulling movements are performed with the fetal back always facing forward.

The introduction of this procedure achieved a further decrease in the rate of stillbirth in vaginal breech delivery at term weighing over 2,500 g to 4.8% in 1946–1962 (66/1,475, OR 0.493, 95%CI 0.35–0.69; \( P < 0.01 \) vs. 1938–1945), and then to 2.0–1.5% and roughly 0.5% in 1963–1968 and 1969–1971, respectively (detailed data not presented).

In 1981, Dr. Takeoka made the following remark: “Do not tell the pregnant woman about breech presentation until the time of delivery so that she will not become anxious. External cephalic version or elective cesarean section for breech presentation should not be performed. If breech presentation exists at the onset of labor pains, management for vaginal delivery should be performed in principle”. This may not be acceptable from the perspective of modern medicine, which values the disclosure of information and prioritizes informed consent. Nonetheless, we respect his remarkable achievements in perinatal medicine in Japan.

### Recent management of breech delivery at term at our institute

As mentioned, many obstetric facilities lack a sufficient number of obstetricians to implement a strict 24-h delivery monitoring system for high-risk deliveries, including vaginal breech delivery. Accordingly, between 2006 and 2015, we performed a planned induction of vaginal breech delivery at 37–38 weeks’ gestation in 72 women who consented to 1) insertion of a balloon catheter into the uterine cervix (Fuji Metro, Fuji Latex Co., Ltd. Tokyo, Japan) filled with 400–500 ml sterile saline fluid;
2) intravenous administration of oxytocin after confirming that the balloon catheter naturally fell out; 3) partial breech extraction of the lower (or the remaining) part of the body using the TF8 maneuver as a breech-delivery technique (which is usually performed); and 4) selection of cesarean delivery when vaginal delivery cannot be expected by the evening. As a result, the total completion rate of vaginal delivery was 67% (48/72). Of the 48 vaginal deliveries, 36 (75%) were delivered by the TF8 maneuver, 11 (23%) by Bracht’s maneuver, and 1 (2%) by the classical arm-freeing method. Weak labor pain was the most frequent indication for emergency cesarean section, accounting for 67%, with an inadequately dilated cervix being the second frequent indication (21%). There were no cases of neonatal asphyxia or respiratory disorders. Although the rate of vaginal breech delivery at term by the TF8 maneuver was only 7.3% (48/654) of all breech presentations, the procedure is promising in that it may provide a valid and safe option for breech delivery in Japan.

A literature search in PubMed using the key words ‘breech delivery’ and ‘Japan’ yielded no reports concerning vaginal breech delivery in the last 10 years. However, acquiring rudimentary techniques for vaginal breech delivery will be needed irrespective of the future.

Lastly, although Dr. Takeoaka advocated the use of the TF8 maneuver as an almighty technique, unfortunately, 1 case required an additional arm-freeing maneuver (classical method). In our previous review, the TF8 maneuver could not be completed in 3 cases (7.5%) with a funnel-shaped pelvis due to frank breech presentation or oligohydramnios. Therefore, physicians need to familiarize themselves with the classical method as well.

Conclusion

This review discussed trends in mode of breech delivery in Japan, with a focus on the TF8 maneuver described by Dr. Takeoaka. He always ended his lecture with the following words: “Although the TF8 maneuver is very easy, it is dangerous to think about breech delivery easily”. Even in departments where vaginal breech delivery can be performed, it is necessary to obtain informed consent regarding the mode of breech delivery according to the physician’s skills, rather than focusing on the rate of cesarean breech delivery.

In the future, vaginal breech delivery may disappear in Japan. Even so, we believe that all obstetricians should be trained for vaginal breech delivery so that they can manage unexpected cases, such as those requiring forced delivery with non-vertex presentation.

Conflict of interest

None of the authors have conflicts of interest to report.

References

1. Kasamori S. Extraction in the breech presentation (in Japanese). Obstetric Surgery. The 26th of the Japan Obstetrics and Gynecology Complete Books. Kanehara Publisher (Kyoto, Japan), 1961; 303–351.
2. Takeishi Y. Breech extraction (in Japanese). Self-publishing. 1985.
3. Cotteel P, Delecour M. Bracht’s manueuer (in undetermined language). Echo Med Nord. 1951; 22: 22–24.
4. Suzuki S, Kubonoya K. Takeishi Y. Trends in mode of delivery for breech presentation in Japan: ‘Transverse figure 8 breech delivery’. Hypertens Res Preg. 2018; 6: 63–67.
5. Perinatal Committee Report (in Japanese). Japan Society of Obstetrics and Gynecology. http://www.jsog.or.jp/ (August 30, 2020).
6. Sato A, Fujimori T, Yamada H, Sugahara N. Breech presentation (in Japanese). Obstetrical and Gynecological Practice. 2005; 54: 1781–1790.
7. Kubonoya K, Furukawa S, Machida T, et al. A 30-year case study based on 64,528 breech presentations; Changes in delivery mode and infant mortality. Int J Gynecol Obstet. 2012(s3); 119: S796.
8. Suzuki S. Trends in mode of delivery of breech presentation over a 5-year period. J Perinatal. 2001; 27: 464–467.
9. Suzuki S, Nakata M. Factors associated with the recent increasing Cesarean delivery rate at a Japanese Perinatal Center. IRSN Obstet Gynecol. 2013; 2013: 863282.
10. ACOG Committee Opinion. Mode of term singleton breech delivery. Number 265, December 2001. Int J Gynecol Obstet. 2002; 77: 65–66.
11. Hannah ME, Hannah WJ, Hewson SA, Hodnett ED, Saigal S, Willan AR. Planned caesarean section versus planned vaginal birth for breech presentation at term: a randomised multicentre trial. Term Breech Trial Collaborative Group. Lancet. 2000; 356: 1375–1383.
12. Minakami H, Maeda T, Fujii T, et al. Guidelines for obstetrical practice in Japan: Japan Society of Obstetrics and Gynecology (JSOG) and Japan Association of Obstetricians and Gynecologists (JAOG) 2014 edition. J Obstet Gynaecol Res. 2014; 40: 1469–1499.
13. Japan Association of Obstetricians and Gynecologists (JAOG). Serious obstetrician shortage (in Japanese). JAOG Information. 2004. http://www.jaog.or.jp/wp/wp-content/uploads/2017/01/No40. (August 30, 2021).
14. Takeoaka S, Shizutani H. Breech extraction (in Japanese). Perinatal Medicine (Tokyo). 1973; 3: 191–197.
15. Takeoaka S. Transverse figure 8 breech delivery (in Japanese). Obstetrical and Gynecological Therapy. 1981; 42: 417–424.
16. Takeoaka S. My management procedure for breech presentation in 1973 (in Japanese). Midwife. 1973; 27: 17–26.
17. Takeoaka S. Transverse figure 8 breech delivery (in Japanese). The Journal of Obstetrics and Anesthesia. 1963; 30: 29–33.
18. Yagi H, Takeuchi S, Mitiy S, et al. Extraction in the breech presentation (in Japanese). Obstet Gynecol (Tokyo). 1952; 19: 583–596.
19. Owada M, Suzuki S. Outcomes of “one-day trial of vaginal breech delivery of singleton pregnancy” at 37–38 weeks’ gestation at a Japanese perinatal center J Matern Fetal Neonatal Med. 2020 in press.